REGULATION

36.608 Guidance concerning model codes.

Upon application by an authorized representative of a private entity responsible for developing a model code, the Assistant Attorney General may review the relevant model code and issue guidance concerning whether and in what respects the model code is consistent with the minimum requirements of the Act for the accessibility and usability of places of public accommodation and commercial facilities under this part.

§§36.609-36.999 [Reserved]

ANALYSIS

The final rule includes a new §36.608 concerning model codes. It was drafted in response to concerns raised by numerous commenters, many of which have been discussed under General comments (§36.406). It is intended to assist in alleviating the difficulties posed by attempting to certify possibly tens of thousands of codes. It is included in recognition of the fact that many codes are based on, or incorporate, model or consensus standards developed by nationally recognized organizations (e.g., the American National Standards Institute (ANSI); Building Officials and Code Administrators (BOCA) International; Council of American Building Officials (CABO) and its Board for the Coordination of Model Codes (BCMC); Southern Building Code Congress International (SBCCI)). While the Department will not certify or "precertify" model codes, as urged by some commenters, it does wish to encourage the continued viability of the consensus and model code process consistent with the purposes of the ADA.

The new section therefore allows an authorized representative of a private entity responsible for developing a model code to apply to the Assistant Attorney General for review of the code. The review process will be informal and will not be subject to the procedures of §§36.602 through 36.607. The result of the review will take the form of guidance from the Assistant Attorney General as to whether and in what respects the model code is consistent with the ADA's requirements. The guidance will not be binding on any entity or on the Department; it will assist in evaluations of individual State or local codes and may serve as a basis for establishing priorities for consideration of individual codes. The Department anticipates that this approach will foster further cooperation among various government levels, the private entities developing standards, and individuals with disabilities.

UNIFORM FEDERAL ACCESSIBILITY STANDARDS

INTRODUCTION

GENERAL SERVICES ADMINISTRATION

DEPARTMENT OF DEFENSE

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

U.S. POSTAL SERVICE

This document presents uniform standards for the design, construction, and alteration of buildings so that physically handicapped persons will have ready access to and use of them in accordance with the Architectural Barriers Act, 42 U.S.C. 4151-4157. The document embodies an agreement to minimize the differences between the standards previously used by four agencies (the General Services Administration, the departments of Housing and Urban Development and Defense, and the United States Postal Service) that are authorized to issue standards under the Architectural Barriers Act, and between those standards and the access standards recommended for facilities that are not federally funded or constructed.

The four standard-setting agencies establish and enforce standards for design, construction, and alteration of particular types of buildings and facilities. The General Services Administration (GSA) prescribes standards for all buildings subject to the Architectural Barriers Act that are not covered by standards issued by the other three standard-setting agencies; the Department of Defense (DoD) prescribes standards for DoD installations; the Department of Housing and Urban Development (HUD) prescribes standards for residential structures covered by the Architectural Barriers Act except those funded or constructed by DoD; and the U.S. Postal Service (USPS) prescribes standards for postal facilities. Each of the four agencies issues standards in accordance with its statutory authority.

To ensure compliance with the standards, Congress established the Architectural and Transportation Barriers Compliance Board (ATBCB) in Section 502 of the Rehabilitation Act of 1973 (the Rehabilitation Act), 29 U.S.C. 792. The ATBCB is composed of members representing eleven Federal agencies (the four standard-setting agencies; the departments of Education, Health and Human Services, Interior, Justice, Labor, and Transportation; and the Veterans Administration) and eleven members appointed by the President from the general public. A 1978 amendment to Section 502 of the Rehabilitation Act added to the ATBCB's functions the responsibility to issue minimum guidelines (Guidelines) and requirements for the standards established by the four standard-setting agencies. The final rule that established the Guidelines now in effect was published in the *Federal Register* on August 4, 1982 (47 FR 33862) and is codified at 36 CFR part 1190.

The four standard-setting agencies determined that the uniform standards adopted by them would, as much as possible, not only comply with the Guidelines adopted by the ATBCB but also be consistent with the standards published by the American National Standards Institute (ANSI) for general use. ANSI is a nongovernmental national organization that publishes a wide variety of recommended standards. ANSI's standards for barrier-free design are developed by a committee made up of 52 organizations representing associations of handicapped people, rehabilitation professionals, design professionals, builders, and manufacturers. The standards, which are called ANSI A117.1, "Specifications for Making Buildings and Facilities Accessible to, and Usable by, Physically Handicapped People," are developed using the consensus process. The original ANSI A117.1, adopted in 1961, formed the technical basis for the first accessibility standards adopted by the federal government and most state governments. The current edition, ANSI A117.1-1980, is based on research funded by HUD. It has generally been accepted by the private sector and has been recommended for use in model state and local building codes by the Council of American Building Officials.

In keeping with the objective of uniformity between federal requirements and those commonly applied by state and local governments, the Uniform Federal Accessibility Standards (UFAS) follows ANSI A117.1-1980 in format. Both the UFAS scope provisions, which establish the minimum number of elements and spaces required to comply with standards, and the UFAS technical requirements meet or exceed the comparable provisions of the Guidelines.

The UFAS was published in the *Federal Register* on August 7, 1984 (49 FR 31528). Each of the standard-setting agencies has taken action in accordance with its own procedures, including internally prescribed rulemaking and the Administrative Procedure Act where applicable, to incorporate the UFAS in its own standards, regulations, or other directives. GSA adopted the UFAS in 41 CFR 101-19.6, effective August 7, 1984. HUD adopted the UFAS in 24 CFR part 40, effective October 4, 1984. USPS adopted the UFAS in Handbook RE-4, "Standards for Facility Accessibility by the Physically Handicapped," effective November 15, 1984. DoD adopted the UFAS by revising Chapter 18 of DoD 4270.1-M, "Construction Criteria," by memorandum dated May 8,1985.

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1. PURPOSE.

This document sets standards for facility accessibility by physically handicapped persons for Federal and federally-funded facilities. These standards are to be applied during the design, construction, and alteration of buildings and facilities to the extent required by the Architectural Barriers Act of 1968, as amended.

The technical provisions of these standards are the same as those of the American National Standard Institute's document A117.1-1980, except as noted in this text and on figures by italics.

2. GENERAL.

2.1 Authority. *These standards were jointly developed by the General Services Administration, the Department of Housing and Urban Development, the Department of Defense, and the United States Postal Service, under the authority of sections 2, 3, 4, and 4a, respectively, of the Architectural Barriers Act of 1968, as amended, Pub. L. No. 90-480, 42 U.S.C. 4151-4157.*

2.2 Provisions For Adults. The specifications in *these standards* are based upon adult dimensions and anthropometrics.

3. MISCELLANEOUS INSTRUCTIONS AND DEFINITIONS.

3.1 Graphic Conventions. Graphic conventions are shown in Table 1. Dimensions that are not marked "minimum" or "maximum" are absolute, unless otherwise indicated in the text or captions.

3.2 Dimensional Tolerances. All dimensions are subject to conventional building industry tolerances for field conditions.

3.3 Notes. The text of *these standards* does not contain notes or footnotes. Additional information, explanations, and advisory materials are located in the Appendix. Paragraphs marked with an asterisk have related, nonmandatory material in the Appendix. In the Appendix, the corresponding paragraph numbers are preceded by an A.

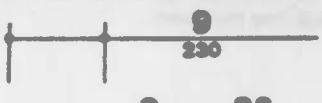
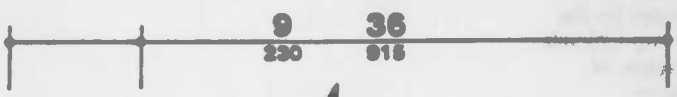
3.4 General Terminology.

comply with. Meet one or more specifications of this standard.

If, if...then. Denotes a specification that applies only when the conditions described are present.

may. Denotes an option or alternative.

Table 1
Graphic Conventions

Convention	Description
	Typical dimension line showing U.S. customary units (in inches) above the line and SI units (in millimeters) below
	Dimensions for short distances indicated on extended line
	Dimension line showing alternate dimensions required
	Direction of approach
max	Maximum
min	Minimum
	Boundary of clear floor area
— — — — — — ℄	Centerline

shall. Denotes a mandatory specification or requirement.

should. Denotes an advisory specification or recommendation.

3.5 Definitions. The following terms shall, for the purpose of *these standards*, have the meaning indicated in this section.

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 *these standards* and that can be approached, entered, and used by physically disabled people.

Accessible Element. An *element* specified by *these standards* (for example, telephone, controls, and the like).

Accessible Route. A continuous unobstructed path connecting all accessible elements and spaces in a building or facility. Interior accessible routes may include corridors, floors, ramps, elevators, lifts, and clear floor space at fixtures. Exterior accessible routes may include parking access aisles, curb ramps, walks, ramps, and lifts.

Accessible Space. Space that complies with these standards.

Adaptability. The ability of certain building *spaces and* elements, such as kitchen counters, sinks, and grab bars, to be *added or* altered so as to accommodate the needs of either disabled or nondisabled *persons*, or to accommodate the needs of persons with different types or degrees of disability.

Addition. An expansion, extension, or increase in the gross floor area of a building or facility.

Administrative Authority. A governmental agency that adopts or enforces regulations and standards for the design, construction, or alteration of buildings and facilities.

Alteration. As applied to a building or structure, means a change or rearrangement in the structural parts or elements, or in the means of egress or in moving from one location or position to another. It does not include normal maintenance, repair, reroofing, interior decoration, or changes to mechanical and electrical systems.

Assembly Area. A room or space accommodating fifty or more individuals for religious, recreational, educational, political, social, or amusement purposes, or for the consumption of food and drink, including all connected rooms or spaces with a common means of egress and ingress. Such areas as conference rooms would have to be accessible in accordance with other parts of this standard but would not have to meet all of the criteria associated with assembly areas.

Automatic Door. A door equipped with a power-operated mechanism and controls that open and close the door automatically upon receipt of a momentary actuating signal. The switch that begins the automatic cycle may be a photoelectric device, floor mat, or manual switch mounted on or near the door itself (see power-assisted door).

Circulation Path. An exterior or interior way of passage from one place to another for pedestrians, including, but not limited to, walks, hallways, courtyards, stairways, and stair landings.

Clear. Unobstructed.

Common Use. Refers to those interior and exterior rooms, spaces, or elements that are made available for the use of a restricted group of people (for example, residents of an apartment building, the occupants of an office building, or the guests of such residents or occupants).

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.

Dwelling Unit. A single unit of residence which provides a kitchen or food preparation area, in addition to rooms and spaces for living, bathing, sleeping, and the like. A single family home is a dwelling unit, and dwelling units are to be found in such housing types as townhouses and apartment buildings.

Egress, Means of. *An accessible route* of exit that meets all applicable code specifications of the regulatory building agency having jurisdiction over the building or facility.

Element. An architectural or mechanical component of a building, facility, space, or site, e.g., telephone, curb ramp, door, drinking fountain, seating, water closet.

Entrance. Any access point to a building or portion of building or facility used for the purpose of entering. An entrance includes the approach walk, the vertical access leading to the entrance platform, the entrance platform itself, vestibules if provided, the entry door(s) or gate(s), and the hardware of the entry door(s) or gate(s). The principal entrance of a building or facility is the main door through which most people enter.

Essential Features. Those elements and spaces that make a building or facility usable by, or serve the needs of, its occupants or users. Essential features include but are not limited to entrances, toilet rooms, and accessible routes. Essential features do not include those spaces that house the major activities for which the building or facility is intended, such as classrooms and offices.

Extraordinary Repair. The replacement or renewal of any element of an existing building or facility for purposes other than normal maintenance.

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 performed.*

Full and Fair Cash Value. *Full and fair cash value is calculated for the estimated date on which work will commence on a project and means:*

(1) The assessed valuation of a building or facility as recorded in the assessor's office of the municipality and as equalized at one hundred percent (100%) valuation, or
(2) The replacement cost, or
(3) The fair market value.

Functional Spaces. The rooms and spaces in a building or facility that house the major activities for which the building or facility is intended.

Housing. A building, facility, or portion thereof, excluding inpatient health care facilities, that contains one or more dwelling units or sleeping accommodations. Housing may include, but is not limited to, one and two-family dwellings, apartments, group homes, hotels, motels, dormitories, and mobile homes.

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

Multifamily Dwelling. Any building containing more than two dwelling units.

Operable Part. A part of a piece of equipment or appliance used to insert or withdraw objects, or to activate, deactivate, or adjust the equipment or appliance (for example, coin slot, pushbutton, handle).

Physically Handicapped. *An individual who has a physical impairment, including impaired sensory, manual, or speaking abilities, which results in a functional limitation in access to and use of a building or facility.*

Power-assisted Door. A door *used for human passage* with a mechanism that helps to open the door, or relieve the opening resistance of a door, upon the activation of a switch or a continued force applied to the door itself. If the switch or door is released, such doors immediately begin to close or close completely within 3 to 30 seconds (see automatic door).

Public Use. Describes interior or exterior rooms or spaces that are made available to the general public. Public use may be provided at a building or facility that is privately or publicly owned.

Ramp. A walking surface in an accessible space that has a running slope greater than 1:20.

Running Slope. The slope that is parallel to the direction of travel (see cross slope).

Service Entrance. An entrance intended primarily for delivery of services.

Signage. Verbal, symbolic, *tactile,* and pictorial information.

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

Site Improvement. Landscaping, paving for pedestrian and vehicular ways, outdoor lighting, recreational facilities, and the like, added to a site.

Sleeping Accommodations. Rooms in which people sleep, for example, dormitory and hotel or motel guest rooms.

Space. *A definable area, e.g., toilet room, hall, assembly area, entrance, storage room, alcove, courtyard, or lobby.*

Structural Impracticability. *Changes having little likelihood of being accomplished without removing or altering a load-bearing structural member and/or incurring an increased cost of 50 percent or more of the value of the element of the building or facility involved.*

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

Tactile Warning. A standardized surface texture applied to or built into walking surfaces or other elements to warn visually impaired people of hazards in the path of travel.

Temporary. Applies to facilities that are not of permanent construction but are extensively used or essential for public use for a given (short) period of time, for example, temporary classrooms or classroom buildings at schools and colleges, or facilities around a major construction site to make passage accessible, usable, and safe for everybody. Structures directly associated with the actual processes of major construction, such as porto potties, scaffolding, bridging, trailers, and the like, are not included. *Temporary as applied to elements means installed for less than 6 months and not required for safety reasons.*

Vehicular Way. A route intended for vehicular traffic, such as a street, driveway, or parking lot.

Walk. An exterior pathway with a prepared surface intended for pedestrian use, including general pedestrian areas such as plazas and courts.

4. ACCESSIBLE ELEMENTS AND SPACES: SCOPE AND TECHNICAL REQUIREMENTS.

4.1 Minimum Requirements.

4.1.1 Accessible Sites and Exterior Facilities: *New Construction.* An accessible site shall meet the following minimum requirements:

(1) At least one accessible route complying with 4.3 shall be provided *within the boundary of the site* from public transportation stops, accessible parking

spaces, passenger loading zones if provided, and public streets or sidewalks to an accessible building entrance.

(2) At least one accessible route complying with 4.3 shall connect accessible buildings, facilities, elements, and spaces that are on the same site.

(3) All objects that protrude from surfaces or posts into circulation paths shall comply with 4.4.

(4) Ground surfaces along accessible routes and in accessible spaces shall comply with 4.5.

(5) (a) *If parking spaces are provided for employees or visitors, or both, then accessible spaces, complying with 4.6, shall be provided in each such parking area in conformance with the following table:*

Total Parking in Lot	*Required Minimum Number of Accessible Spaces*
1 to 25	*1*
26 to 50	*2*
51 to 75	*3*
76 to 100	*4*
101 to 150	*5*
151 to 200	*6*
201 to 300	*7*
301 to 400	*8*
401 to 500	*9*
501 to 1000	*
1001 and over	**

* *2 percent of total.*
** *20 plus 1 for each 100 over 1000.*

EXCEPTION: The total number of accessible parking spaces may be distributed among parking lots, if greater accessibility is achieved.

EXCEPTION: This does not apply to parking provided for official government vehicles owned or leased by the government and used exclusively for government purposes.

(b) If passenger loading zones are provided, then at least one passenger loading zone shall comply with 4.6.5.

(c) Parking spaces for side lift vans are accessible parking spaces and may be used to meet the requirements of this paragraph.

(d) Parking spaces at accessible housing complying with 4.6 shall be provided in accordance with the following:

(i) Where parking is provided for all residents, one accessible parking space shall be provided for each accessible dwelling unit; and

(ii) Where parking is provided for only a portion of the residents, an accessible parking space shall be provided on request of the occupant of an accessible dwelling unit;

(iii) Where parking is provided for visitors, 2 percent of the spaces, or at least one, shall be accessible.

(e) Parking spaces at health care facilities complying with 4.6 shall be provided in accordance with the following:

(i) General health care facilities, employee and visitor parking: Comply with Table 4.1.1(5)(a);

(ii) Outpatient facilities: 10 percent of the total number of parking spaces provided;

(iii) Spinal cord injury facilities, employee and visitor parking: 20 percent of total parking spaces provided.

(6) If toilet facilities are provided on a site, then each such public or common use toilet facility shall comply with 4.22. If bathing facilities are provided on a site, then each such public or common use bathing facility shall comply with 4.23.

EXCEPTION: These provisions are not mandatory for single user portable toilet or bathing units clustered at a single location; however, at least one toilet unit complying with 4.22 or one bathing unit complying with 4.23 should be installed at each location whenever standard units are provided.

(7) All signs shall comply with 4.30. *Elements and spaces of accessible facilities which shall be identified by the International Symbol of Accessibility are:*

(a) Parking spaces designated as reserved for physically handicapped people;
(b) passenger loading zones;
(c) accessible entrances;
(d) accessible toilet and bathing facilities.

4.1.2 Accessible Buildings: *New Construction.* Accessible buildings and facilities shall meet the following minimum requirements:

(1) At least one accessible route complying with 4.3 shall connect accessible building or facility entrances with all accessible spaces and elements within the building or facility.

(2) All objects that overhang circulation paths shall comply with 4.4.

(3) Ground and floor surfaces along accessible routes and in accessible rooms and spaces shall comply with 4.5.

(4) Stairs connecting levels that are not connected by an elevator shall comply with 4.9.

(5) *One passenger elevator complying with 4.10 shall serve each level in all multi-story buildings and facilities. If more than one elevator is provided, each elevator shall comply with 4.10.*

EXCEPTION: Elevator pits, elevator penthouses, mechanical rooms, piping or equipment catwalks are excepted from this requirement.

EXCEPTION: Accessible ramps complying with 4.8 or, if no other alternative is feasible, accessible platform lifts complying with 4.11 may be used in lieu of an elevator.

(6) Windows. (Reserved).

(7) Doors:

(a) At each accessible entrance to a building or facility, at least one door shall comply with 4.13.

(b) Within a building or facility, at least one door at each accessible space shall comply with 4.13.

(c) Each door that is an element of an accessible route shall comply with 4.13.

(d) Each door required by 4.3.10, Egress, shall comply with 4.13.

EXCEPTION: In multiple-story buildings and facilities where at-grade egress from each floor is impossible, either of the following is permitted: the provision within each story of approved fire and smoke partitions that create horizontal exits, or, the provision within each floor of areas of refuge approved by agencies having authority for safety.

(8) At least one principal entrance at each grade floor level to a building or facility shall comply with 4.14, Entrances. When a building or facility has entrances which normally serve any of the following functions: transportation facilities, passenger loading zones, accessible parking facilities, taxi stands, public streets and sidewalks, or accessible interior vertical access, then at least one of the entrances serving each such function shall comply with 4.14, Entrances. Because entrances also serve as emergency exits, whose proximity to all parts of buildings and facilities is essential, it is preferable that all or most exits be accessible.

(9) If drinking fountains or water coolers are provided, approximately 50 percent of those provided on each floor shall comply with 4.15 and shall be on an accessible route. If only one drinking fountain or water cooler is provided on any floor, it shall comply with 4.15.

(10) If toilet facilities are provided, then each public and common use toilet room shall comply with 4.22. Other toilet rooms shall be adaptable. If bathing facilities are provided, then each public and common use bathroom shall comply with 4.23. Accessible toilet rooms and bathing facilities shall be on an accessible route.

(11) If storage facilities such as cabinets, shelves, closets, and drawers are provided in accessible spaces, at least one of each type provided shall contain storage space complying with 4.25. Additional storage may be provided outside of the dimensions shown in Fig. 38.

(12) Controls and operating mechanisms in accessible spaces, along accessible routes, or as parts of accessible elements (for example, light switches and dispenser controls) shall comply with 4.27.

(13) If emergency warning systems are provided, then they shall include both audible alarms complying with 4.28.2 and visual alarms complying with 4.28.3. In facilities with sleeping accommodations, the sleeping accommodations shall have an alarm system complying with 4.28.4. Emergency warning systems in health care facilities may be modified to suit standard health care alarm design practice.

(14) Tactile warnings shall be provided at hazardous conditions as specified in 4.29.3.

(15) If signs are provided, they shall comply with 4.30. In addition, permanent signage that identifies rooms and spaces shall also comply with 4.30.4 and 4.30.6.

EXCEPTION: The provisions of 4.30.4 are not mandatory for temporary information on room and space signage, such as current occupant's name, provided the permanent room or space identification complies with 4.30.4.

(16) Public telephones:

(a) If public telephones are provided, then accessible public telephones shall comply with 4.31, Telephones, and the following table:

Number of public telephones provided on each floor:	Number of telephones required to be accessible:*
1 or more single unit installations	1 per floor
1 bank**	1 per floor
2 or more banks**	1 per bank. Accessible unit may be installed as a single unit in proximity (either visible or with signage) to the bank. At least one public telephone per floor shall meet the requirements for a forward reach telephone.***

*Additional public telephones may be installed at any height. Unless otherwise specified, accessible telephones may be either forward or side reach telephones.

**A bank consists of two or more adjacent public telephones, often installed as a unit.

***EXCEPTION: For exterior installations only, if dial tone first service is not available, then a side reach telephone may be installed instead of the required forward reach telephone (i.e., one telephone in proximity to each bank shall comply with 4.31).

(b) At least one of the public telephones complying with 4.31, Telephones, shall be equipped with a volume control. The installation of additional volume controls is encouraged, and these may be installed on any public telephone provided.

(17) If fixed or built-in seating, tables, or work surfaces are provided in accessible spaces, at least 5 percent, but always at least one, of seating spaces, tables, or work surfaces shall comply with 4.32.

(18) Assembly areas:

(a) If places of assembly are provided, they shall comply with the following table:

Capacity of Seating & Assembly Areas	Number of Required Wheelchair Locations
50 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	*
over 1,000	**

* 2 percent of total
** 20 plus 1 for each 100 over 1,000.

(b) Assembly areas with audio-amplification systems shall have a listening system complying with 4.33 to assist a reasonable number of people, but no fewer than two, with severe hearing loss. For assembly areas without amplification systems and for spaces used primarily as meeting and conference rooms, a permanently installed or portable listening system shall be provided. If portable systems are used for conference or meeting rooms, the system may serve more than one room.

4.1.3 Accessible Housing. Accessible housing shall comply with the requirements of 4.1 and 4.34 except as noted below:

(1) **Elevators:** Where provided, elevators shall comply with 4.10. Elevators or other accessible means of vertical movement are not required in residential facilities when:

(a) No accessible dwelling units are located above or below the accessible grade level; and

(b) At least one of each type of common area and amenity provided for use of residents and visitors is available at the accessible grade level.

(2) **Entrances:** Entrances complying with 4.14 shall be provided as necessary to achieve access to and egress from buildings and facilities.

EXCEPTION: In projects consisting of one-to-four family dwellings where accessible entrances would be extraordinarily costly due to site conditions or local code restrictions, accessible entrances are required only to those buildings containing accessible dwelling units.

(3) **Common Areas:** At least one of each type of common area and amenity in each project shall be accessible and shall be located on an accessible route to any accessible dwelling unit.

4.1.4 Occupancy Classifications. Buildings and facilities shall comply with these standards to the extent noted in this section for various occupancy classifications, unless otherwise modified by a special application section. Occupancy classifications, and the facilities covered under each category include, but are not necessarily limited to, the listing which follows:

(1) **General Exceptions.** Accessibility is not required to elevator pits, elevator penthouses, mechanical rooms, piping or equipment catwalks, lookout galleries, electrical and telephone closets, and general utility rooms.

(2) **Military Exclusions.** The following facilities need not be designed to be accessible, but accessibility is recommended since the intended use of the facility may change with time.

(a) Unaccompanied personnel housing, closed messes, vehicle and aircraft maintenance facilities, where all work is performed by able-bodied military personnel, and, in general, all facilities which are intended for use or occupancy by able-bodied military personnel only.

(b) Those portions of Reserve and National Guard facilities which are designed and constructed primarily for use by able-bodied military personnel. This exclusion does not apply to those portions of a building or facility which may be open to the public or which may be used by the public during the conduct of normal business or which may be used by physically handicapped persons employed or seeking employment at such building or facility. These portions of the building or facility shall be accessible.

(c) Where the number of accessible spaces required is determined by the design capacity of a facility (such as parking or assembly areas), the number of able-bodied military persons used in determining the design capacity need not be counted when computing the number of accessible spaces required.

(3) **Military Housing.** In the case of military housing, which is primarily available for able-bodied military personnel and their dependents, at least 5

percent of the total but at least one unit (on an installation-by-installation basis) of all housing constructed will be designed and built to be either accessible or readily and easily modifiable to be accessible, but in any event, modification of individual units (including the making of adaptations), will be accomplished on a high priority basis when a requirement is identified. Common areas such as walks, streets, parking and play areas, and common entrances to multi-unit facilities shall be designed and built to be accessible.

(4) **Assembly.** Assembly occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering together of persons for purposes such as civic, social or religious functions, recreation, food or drink consumption, or awaiting transportation. A room or space used for assembly purposes by less than fifty (50) persons and accessory to another occupancy shall be included as a part of that major occupancy. For purposes of these standards, assembly occupancies shall include the following:

Facilities	Application
Amusement arcades Amusement park structures Arenas Armories Art galleries Auditoriums Banquet halls Bleachers Bowling alleys Carnivals Churches Clubs Community halls Courtrooms (public areas) Dance halls Drive-in theaters Exhibition halls Fairs Funeral parlors Grandstands Gymnasiums Motion picture theaters Indoor & outdoor swimming pools Indoor & outdoor tennis courts Lecture halls Libraries* Museums Night clubs Passenger stations Pool & billiard halls Restaurants** Skating rinks	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons.
Stadiums Taverns & bars Television studios admitting audiences Theaters	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons.

*See Part 8 for special applications.
**See Part 5 for special applications.

(5) **Business.** Business occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service type transactions, including storage of records and accounts.

Facilities	Application
Animal hospitals, kennels, pounds Automobile and other motor vehicle showrooms Banks Barber shops Beauty shops Car wash Civic administration Clinic, outpatient Dry cleaning Educational above 12th grade Electronic data processing Fire stations Florists & nurseries Laboratories: testing & research Laundries Motor vehicle service stations Police stations Post offices* Print shops Professional services: attorney, dentist, physician, engineer, etc. Radio & T.V. stations Telephone exchanges	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons.

*See Part 9 for special applications.

(6) **Educational.** Educational occupancy includes, among others, the use of a building or structure, or portion thereof, by six or more persons at any time for educational purposes through the 12th grade.

Schools for business or vocational training shall conform to the requirements of the trade, vocation or business taught.

4.1.4 Occupancy Classifications

Facilities	Application
Academies Kindergarten Nursery schools Schools	All areas shall comply.

(7) Factory Industrial. Factory industrial occupancy includes, among others, the use of a building or structure, or portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, processing or other operations that are not classified as a Hazardous Occupancy.

Facilities	Application
Aircraft Appliances Athletic equipment Automobile and other motor vehicle Bakeries Beverages Bicycles Boats, building Brick and masonry Broom or brush Business machines Canvas or similar Cameras and photo equipment Carpets & rugs, including cleaning Ceramic products Clothing Construction & agricultural machinery Disinfectants Dry cleaning & dyeing Electronics Engines, including rebuilding Film, photographic Food processing Foundries Furniture Glass products Gypsum Hemp products Ice Jute products Laundries Leather products Machinery Metal Motion pictures & television film Musical instruments Optical goods Paper products Plastic products	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons.
Printing or publishing Recreational vehicles Refuse incineration Shoes Soaps & detergents Steel products: fabrication, assembly Textiles Tobacco Trailers Upholstering Wood, distribution Millwork Woodworking, cabinet Postal mail: processing facilities*	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons.

*See Part 9 for special applications.

(8) Hazardous. Hazardous occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of corrosive, highly toxic, highly combustible, flammable or explosive materials that constitute a high fire or explosive hazard, including loose combustible fibers, dust and unstable materials.

Facilities	Application
Combustible dust Combustible fibers Combustible liquid Corrosive liquids Explosive material Flammable gas Flammable liquid Liquified petroleum gas Nitromethane Oxidizing materials Organic peroxide	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons.

(9) Institutional. Institutional occupancy includes, among others, the use of a building or structure, or any portion thereof, in which people have physical or medical treatment or care, or in which the liberty of the occupants is restricted. Institutional occupancies shall include the following subgroups:

(a) Institutional occupancies for the care of children, including:

Facilities	Application
Child care facilities	All public use, common use, or areas which may result in employment of physically handicapped persons.

4.1.4 Occupancy Classifications

(b) Institutional occupancies used for medical or other treatment or care of persons, some of whom are suffering from physical or mental illness, disease or infirmity, including:

Facilities	Application
Long Term Care Facilities: (including Skilled Nursing Facilities, Intermediate Care Facilities, Bed & Care, and Nursing Homes).	At least 50 percent of patient toilets and bedrooms; all public use, common use or areas which may result in employment of physically handicapped persons.
Outpatient Facilities:	All patient toilets and bedrooms, all public use, common use, or areas which may result in employment of physically handicapped persons.
Hospital*:	
General Purpose Hospital:	At least 10 percent of patient toilets and bedrooms, all public use, common use, or areas which may result in employment of physically handicapped persons.
Special Purpose Hospital: (Hospitals that treat conditions that affect mobility).	All patient toilets and bedrooms, all public use, common use, or areas which may result in employment of physically handicapped persons.

* See Part 6 for special applications.

(c) Institutional occupancies where the occupants are under some degree of restraint or restriction for security reasons including:

Facilities	Application
Jails Prisons Reformatories Other detention or correctional facilities	5 percent of residential units available, or at least one unit, whichever is greater; all common use, visitor use, or areas which may result in employment of physically handicapped persons.

(10) Mercantile*. Mercantile occupancy includes, among others, all buildings and structures or parts thereof, for the display and sale of merchandise, and involving stocks of goods, wares or merchandise incidental to such purposes and accessible to the public.

Facilities	Application
Department stores Drug stores Markets Retail stores Shopping centers Sales rooms	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons.

* See Part 7 for special applications.

(11) Residential. Residential occupancy includes, among others, the use of a building or structure, or portion thereof, for sleeping accommodations when not classed as an institutional occupancy. Residential occupancies shall comply with the requirements of 4.1 and 4.34 except as follows:

(a) Residential occupancies where the occupants are primarily transient in nature (less than 30 days) including:

Facilities	Application
Hotels Motels Boarding houses	5 percent of the total units, or at least one, whichever is greater, and all public use, common use, and areas which may result in employment of physically handicapped persons.

(b) Residential occupancies in multiple dwellings where the occupants are primarily permanent in nature, including:

Facilities	Application
Multifamily housing (Apartment houses):	
Federally assisted	5 percent of the total, or at least one unit, whichever is greater, in projects of 15 or more dwelling units, or as determined by the appropriate Federal agency following a local needs assessment conducted by local government bodies or states under applicable regulations.
Federally owned	5 percent of the total, or at least one unit, whichever is greater.
Dormitories	5 percent of the total, or at least one unit, whichever is greater.

(c) Residential occupancies in one (1) and two (2) family dwellings where the occupancies are primarily permanent in nature and not classified as preceding residential categories or as institutional.

Facilities	Application
One and two family dwelling:	
Federally assisted, rental	5 percent of the total, or at least one unit, whichever is greater, in projects of 15 or more dwelling units, or as determined by the appropriate Federal agency following a local needs assessment conducted by local government bodies or states under applicable regulations.
Federally assisted, homeownership	To be determined by home buyer.
Federally owned	5 percent of the total, or at least one unit, whichever is greater.

(12) Storage. Storage occupancy includes, among others, the use of a building or structure, or portion thereof, for storage that is not classified as a Hazardous Occupancy.

Facilities	Application
Metal desks Electrical coils Electrical motors Dry cell batteries Metal parts Empty cans Stoves Washers & Dryers Metal cabinets Glass bottles with noncombustible liquid Mirrors Foods in non-combustible containers Frozen foods Meats Fresh fruits and vegetables Dairy products Beer or wine up to 12 percent alcohol Distribution transformers	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons shall comply.
Cement in bags Electrical insulators Gypsum board Inert pigments Dry insecticides	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons shall comply.

(13) Utility and Miscellaneous. Utility and miscellaneous occupancies include, among others, accessory buildings and structures, such as:

Facilities	Application
Fences over 6 ft. high Tanks Cooling towers Retaining walls Buildings of less than 1,000 sq. ft. such as: Private garages Carports Sheds Agricultural buildings	All areas for which the intended use will require public access or which may result in employment of physically handicapped persons shall comply.

4.1.5 Accessible Buildings: Additions. Each addition to an existing building shall comply with 4.1.1 to 4.1.4 of 4.1, Minimum Requirements, except as follows:

(1) Entrances. If a new addition to a building or facility does not have an entrance, then at least one entrance in the existing building or facility shall comply with 4.1.4, Entrances.

(2) Accessible route. If the only accessible entrance to the addition is located in the existing building or facility, then at least one accessible route shall comply with 4.3, Accessible Route, and shall provide access through the existing building or facility to all rooms, elements, and spaces in the new addition.

(3) Toilet and bathing facilities. If there are no toilet rooms and bathing facilities in the addition and these facilities are provided in the existing building, then at least one toilet and bathing facility in the existing building shall comply with 4.22, Toilet Rooms, or 4.23, Bathrooms, Bathing Facilities, and Shower Rooms.

(4) Elements, spaces, and common areas. If elements, spaces, or common areas are located in the existing building and they are not provided in the addition, then consideration should be given to making those elements, spaces, and common areas accessible in the existing building.

4.1.5 Accessible Buildings: Additions

EXCEPTIONS: Mechanical rooms, storage areas, and other such minor additions which normally are not frequented by the public or employees of the facility are excepted from 4.1.5.

(5) Housing: (Reserved).

4.1.6 Accessible Buildings: Alterations.

(1) General. Alterations to existing buildings or facilities shall comply with the following:

(a) If existing elements, spaces, essential features, or common areas are altered, then each such altered element, space, feature, or area shall comply with the applicable provisions of 4.1.1 to 4.1.4 of 4.1, Minimum Requirements.

(b) If power-driven vertical access equipment (e.g., escalator) is planned or installed where none existed previously, or if new stairs (other than stairs installed to meet emergency exit requirements) requiring major structural changes are planned or installed where none existed previously, then a means of accessible vertical access shall be provided that complies with 4.7, Curb Ramps; 4.8, Ramps; 4.10, Elevators; or 4.11, Platform Lifts; except to the extent where it is structurally impracticable in transit facilities.

(c) If alterations of single elements, when considered together, amount to an alteration of a space of a building or facility, the entire space shall be made accessible.

(d) No alteration of an existing element, space, or area of a building shall impose a requirement for greater accessibility than that which would be required for new construction. For example, if the elevators and stairs in a building are being altered and the elevators are, in turn, being made accessible, then no accessibility modifications are required to the stairs connecting levels connected by the elevator.

(e) If the alteration work is limited solely to the electrical, mechanical, or plumbing system and does not involve the alteration of any elements and spaces required to be accessible under these standards, then 4.1.6(3) does not apply.

(f) No new accessibility alterations will be required of existing elements or spaces previously constructed or altered in compliance with earlier standards issued pursuant to the Architectural Barriers Act of 1968, as amended.

(g) Mechanical rooms and other spaces which normally are not frequented by the public or employees of the building or facility or which by nature of their use are not required by the Architectural Barriers Act to be accessible are excepted from the requirements of 4.1.6.

(2) Where a building or facility is vacated and it is totally altered, then it shall be altered to comply with 4.1.1 to 4.1.5 of 4.1, Minimum Requirements, except to the extent where it is structurally impracticable.

(3) Where substantial alteration occurs to a building or facility, then each element or space that is altered or added shall comply with the applicable provisions of 4.1.1 to 4.1.4 of 4.1, Minimum Requirements, except to the extent where it is structurally impracticable. The altered building or facility shall contain:

(a) At least one accessible route complying with 4.3, Accessible Route, and 4.1.6(a);

(b) At least one accessible entrance complying with 4.14, Entrances. If additional entrances are altered then they shall comply with 4.1.6(a); and

(c) The following toilet facilities, whichever is greater:

(i) At least one toilet facility for each sex in the altered building complying with 4.22, Toilet Rooms, and 4.23, Bathrooms, Bathing Facilities, and Shower Rooms.

(ii) At least one toilet facility for each sex on each substantially altered floor, where such facilities are provided, complying with 4.22, Toilet Rooms; and 4.23, Bathrooms, Bathing Facilities, and Shower Rooms.

(d) In making the determination as to what constitutes "substantial alteration," the agency issuing standards for the facility shall consider the total cost of all alterations (including but not limited to electrical, mechanical, plumbing, and structural changes) for a building or facility within any twelve (12) month period. For guidance in implementing this provision, an alteration to any building or facility is to be considered substantial if the total cost for this twelve month period amounts to 50 percent or more of the full and fair cash value of the building as defined in 3.5.

EXCEPTION: If the cost of the elements and spaces required by 4.1.6(3)(a), (b), or (c) exceeds 15 percent of the total cost of all other alterations, then a schedule may be established by the standard-setting and/or funding agency to provide the required improvements within a 5-year period.

EXCEPTION: Consideration shall be given to providing accessible elements and spaces in each altered building or facility complying with:

(i) 4.6, Parking and Passenger Loading Zones,
(ii) 4.15, Drinking Fountains and Water Coolers,
(iii) 4.25, Storage,
(iv) 4.28, Alarms,
(v) 4.31, Telephones,
(vi) 4.32, Seating, Tables, and Work Surfaces,
(vii) 4.33, Assembly Areas.

(4) Special technical provisions for alterations to existing buildings or facilities:

(a) *Ramps. Curb ramps and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as shown in Table 2 if space limitations prohibit the use of a 1:12 slope or less.*

Table 2
Allowable Ramp Dimensions for Construction in Existing Sites, Buildings, and Facilities

	Maximum Rise		Maximum Run	
Slope*	in	mm	ft	m
Steeper than 1:10 but no steeper than 1:8	3	75	2	0.6
Steeper than 1:12 but no steeper than 1:10	6	150	5	1.5

*A slope steeper than 1:8 not allowed.

(b) *Stairs. Full extension of stair handrails shall not be required in alterations where such extensions would be hazardous or impossible due to plan configuration.*

(c) *Elevators.*

(i) *If a safety door edge is provided in existing automatic elevators, then the automatic door reopening devices may be omitted (see 4.10.6).*

(ii) *Where existing shaft or structural elements prohibit strict compliance with 4.10.9, then the minimum floor area dimensions may be reduced by the minimum amount necessary, but in no case shall they be less than 48 in by 48 in (1220 mm by 1220 mm).*

(d) *Doors.*

(i) *Where existing elements prohibit strict compliance with the clearance requirements of 4.13.5, a projection of 5/8 in (16 mm) maximum will be permitted for the latch side door stop.*

(ii) *If existing thresholds measure 3/4 in (19 mm) high or less, and are beveled or modified to provide a beveled edge on each side, then they may be retained.*

(e) *Toilet rooms. Where alterations to existing facilities make strict compliance with 4.22 and 4.23 structurally impracticable, the addition of one "unisex" toilet per floor containing one water closet complying with 4.16 and one lavatory complying with 4.19, located adjacent to existing toilet facilities, will be acceptable in lieu of making existing toilet facilities for each sex accessible.*

EXCEPTION: In instances of alteration work where provision of a standard stall (Fig. 30(a)) is structurally impracticable or where plumbing code requirements prevent combining existing stalls to provide space, an alternate stall (Fig. 30(b)) may be provided in lieu of the standard stall.

(f) Assembly areas.

(i) *In alterations where it is structurally impracticable to disperse seating throughout the assembly area, seating may be located in collected areas as structurally feasible. Seating shall adjoin an accessible route that also serves as a means of emergency egress.*

(ii) *In alterations where it is structurally impracticable to alter all performing areas to be on an accessible route, then at least one of each type shall be made accessible.*

(5) Housing. *(Reserved).*

4.1.7 Accessible Buildings: Historic Preservation.

(1) Applicability.

(a) *As a general rule, the accessibility provisions of part 4 shall be applied to "qualified" historic buildings and facilities. "Qualified" buildings or facilities are those buildings and facilities that are eligible for listing in the National Register of Historic Places, or such properties designated as historic under a statute of the appropriate state or local government body. Comments of the Advisory Council on Historic Preservation shall be obtained when required by Section 106 of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 and 36 CFR Part 800, before any alteration to a qualified historic building.*

(b) *The Advisory Council shall determine, on a case-by-case basis, whether provisions required by part 4 for accessible routes (exterior and interior), ramps, entrances, toilets, parking, and displays and signage, would threaten or destroy the historic significance of the building or facility.*

(c) *If the Advisory Council determines that any of the accessibility requirements for features listed in 4.1.7(1) would threaten or destroy the historic significance of a building or facility, then the special application provisions of 4.1.7(2) for that feature may be utilized. The special application provisions listed under 4.1.7(2) may only be utilized following a written determination by the Advisory Council that application of a requirement contained in part 4 would threaten or destroy the historic integrity of a qualified building or facility.*

(2) *Historic Preservation: Minimum Requirements.*

(a) At least one accessible route complying with 4.3 from a site access point to an accessible entrance shall be provided.

EXCEPTION: A ramp with a slope no greater than 1:6 for a run not to exceed 2 ft (610 mm) may be used as part of an accessible route at an entrance.

(b) At least one accessible entrance which is used by the public complying with 4.14 shall be provided.

EXCEPTION: If it is determined that no entrance used by the public can comply with 4.14, then access at any entrance not used by the general public but open (unlocked) with directional signs at the primary entrance may be used.

(c) If toilets are provided, then at least one toilet facility complying with 4.22 and 4.1.6 shall be provided along an accessible route that complies with 4.3. Such toilet facility may be "unisex" in design.

(d) Accessible routes from an accessible entrance to all publicly used spaces on at least the level of the accessible entrance shall be provided. Access should be provided to all levels of a building or facility in compliance with 4.1 whenever practical.

(e) Displays and written information, documents, etc., should be located where they can be seen by a seated person. Exhibits and signage displayed horizontally, e.g., books, should be no higher than 44 in (1120 mm) above the floor surface.

4.2 Space Allowance and Reach Ranges

4.2.1° Wheelchair Passage Width. The minimum clear width for single wheelchair passage shall be 32 in (815 mm) at a point and 36 in (915 mm) continuously (see Fig. 1 *and 24(e)).*

4.2.2 Width for Wheelchair Passing. The minimum width for two wheelchairs to pass is 60 in (1525 mm) (see Fig. 2).

4.2.3° Wheelchair Turning Space. The space required for a wheelchair to make a 180-degree turn is a clear space of 60 in (1525 mm) diameter (see Fig. 3(a)) or a T-shaped space (see Fig. 3(b)).

4.2.4° Clear Floor or Ground Space for Wheelchairs.

4.2.4.1 Size and Approach. The minimum clear floor or ground space required to accommodate a single, stationary wheelchair occupant is 30 in by 48 in (760 mm by 1220 mm) (see Fig. 4(a)). The minimum clear floor or ground space for wheelchairs may be positioned for forward or parallel approach to an object

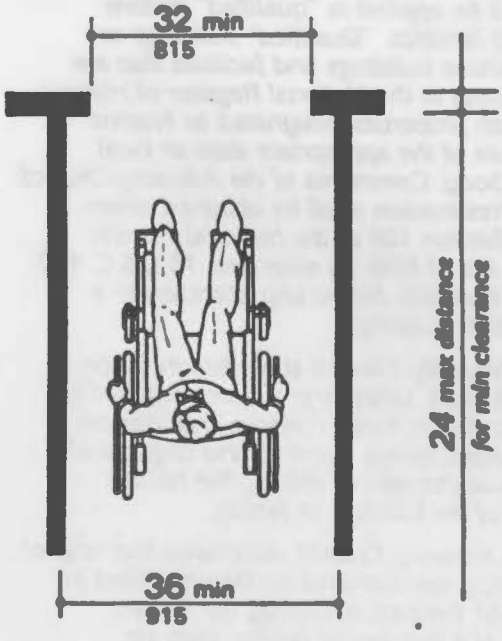


Fig. 1
Minimum Clear Width for Single Wheelchair

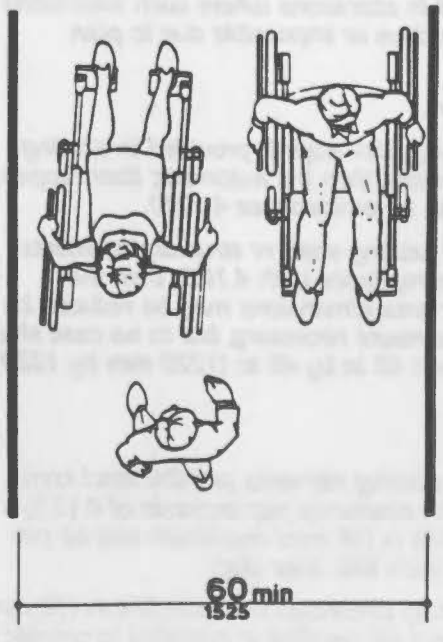
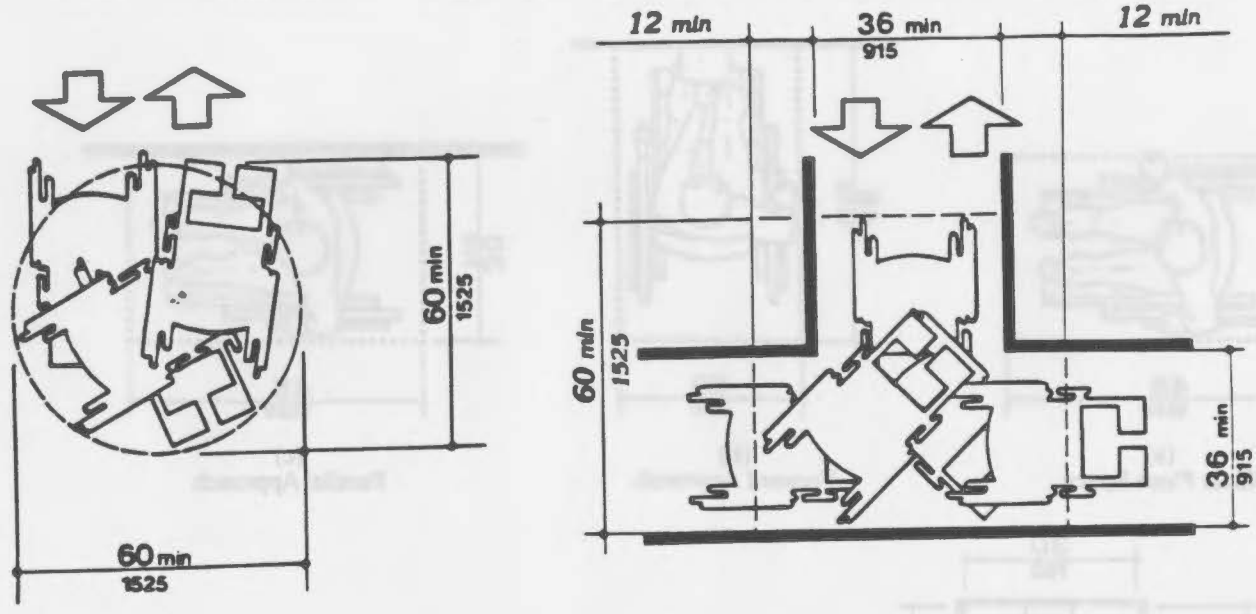


Fig. 2
Minimum Clear Width for Two Wheelchairs



(a)
60-in (1525-mm)-Diameter Space

(b)
T-Shaped Space for 180° Turns

Fig. 3
Wheelchair Turning Space

(see Fig. 4(b) and (c)). Clear floor or ground space for wheelchairs may be part of the knee space required under some objects.

4.2.4.2 Relationship of Maneuvering Clearance to Wheelchair Spaces. One full unobstructed side of the clear floor or ground space for a wheelchair shall adjoin or overlap an accessible route or adjoin another wheelchair clear floor space. If a clear floor space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearances shall be provided as shown in Fig. 4(d) and (e).

4.2.4.3 Surfaces for Wheelchair Spaces. Clear floor or ground spaces for wheelchairs shall comply with 4.5.

4.2.5 Forward Reach. If the clear floor space only allows forward approach to an object, the maximum high forward reach allowed shall be 48 in (1220 mm) (see Fig. 5(a)). *The minimum low forward reach is 15 in (380 mm).* If the high forward reach is over an obstruction, reach and clearances shall be as shown in Fig. 5(b).

4.2.6* Side Reach. If the clear floor space allows parallel approach by a person in a wheelchair, the maximum high side reach allowed shall be 54 in (1370 mm) and the low side reach shall be no less than 9 in (230 mm) above the floor (Fig. 6(a) and (b)). If the side reach is over an obstruction, the reach and clearances shall be as shown in Fig. 6(c).

4.3 Accessible Route.

4.3.1* General. All walks, halls, corridors, aisles, and other spaces that are part of an accessible route shall comply with 4.3.

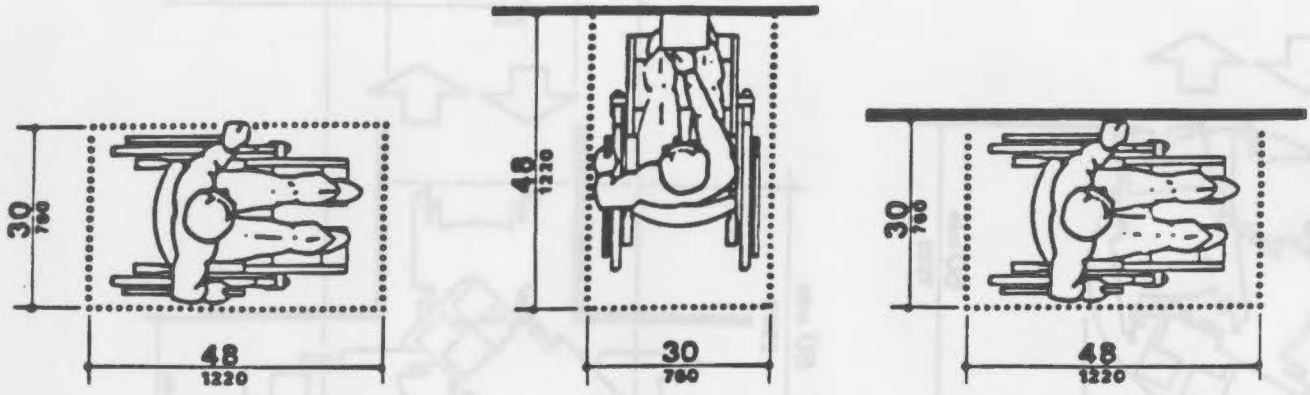
4.3.2 Location.

(1) At least one accessible route *within the boundary of the site* shall be provided from public transportation stops, accessible parking, and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance they serve.

(2) At least one accessible route shall connect accessible buildings, facilities, elements, and spaces that are on the same site.

(3) At least one accessible route shall connect accessible building or facility entrances with all accessible spaces and elements and with all accessible dwelling units within the building or facility.

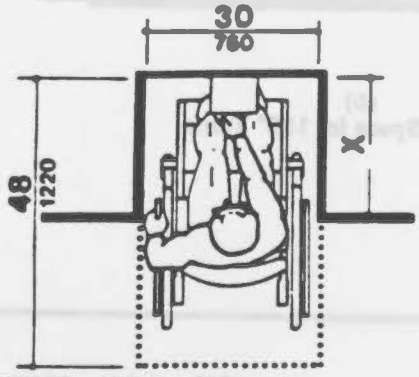
(4) An accessible route shall connect at least one accessible entrance of each accessible dwelling unit with those exterior and interior spaces and facilities that serve the accessible dwelling unit.



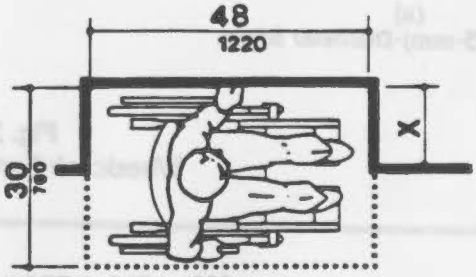
(a)
Clear Floor Space

(b)
Forward Approach

(c)
Parallel Approach

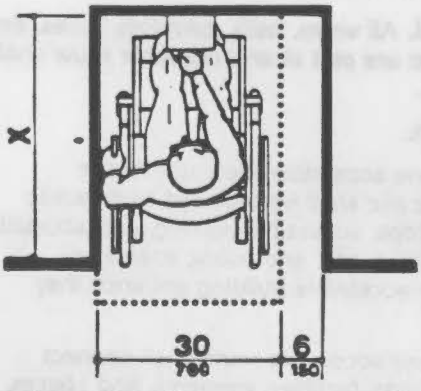


NOTE: x ≤ 24 in (610 mm).

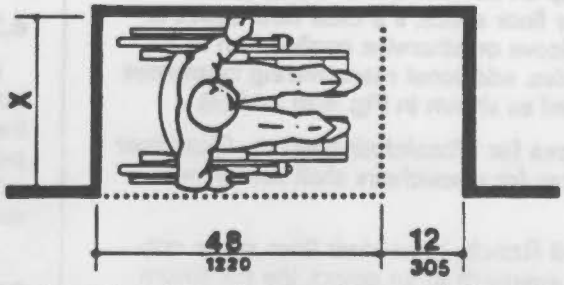


NOTE: x ≤ 15 in (380 mm).

(d)
Clear Floor Space in Alcoves



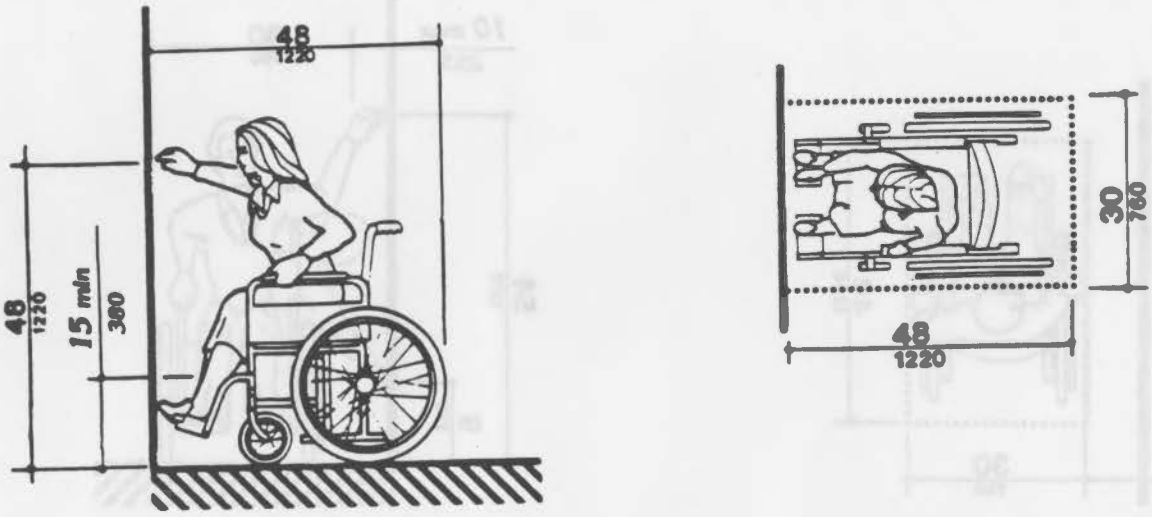
NOTE: If x > 24 in (610 mm), then an additional maneuvering clearance of 6 in (150 mm) shall be provided as shown.



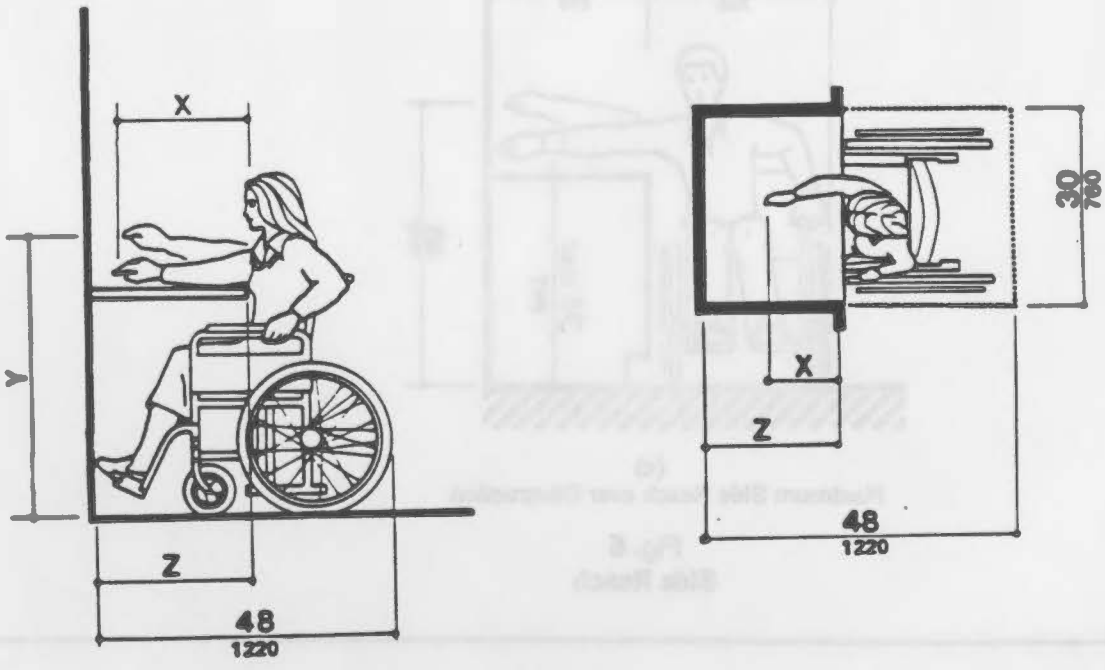
NOTE: If x > 15 in (380 mm), then an additional maneuvering clearance of 12 in (305 mm) shall be provided as shown.

(e)
Additional Maneuvering Clearances for Alcoves

Fig. 4
Minimum Clear Floor Space for Wheelchairs



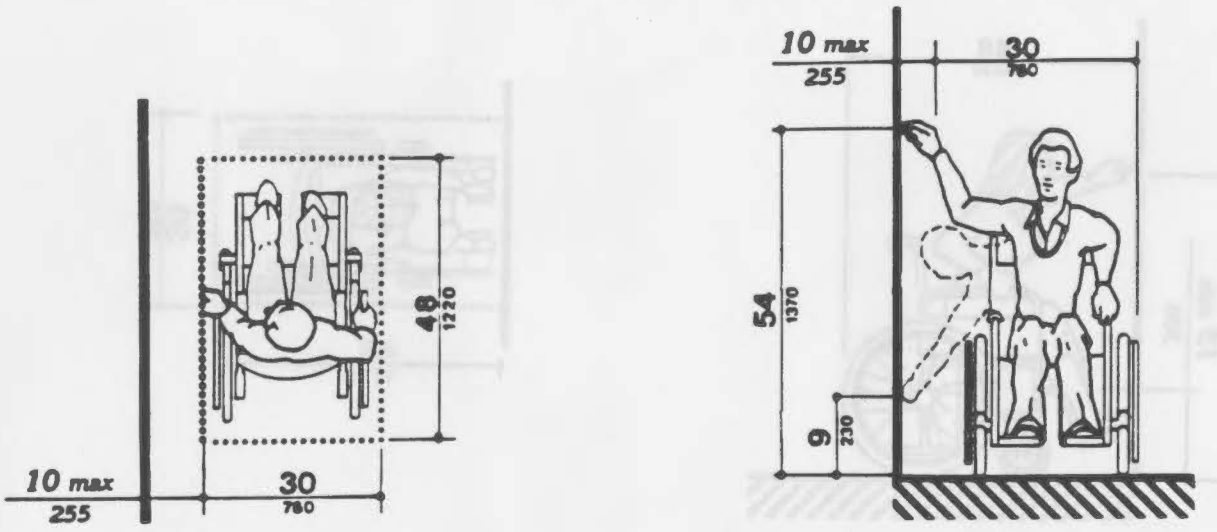
(a)
High Forward Reach Limit



NOTE: x shall be ⩽ 25 in (635 mm); z shall be ⩾ x. When x < 20 in (510 mm), then y shall be 48 in (1220 mm) maximum. When x is 20 to 25 in (510 to 635 mm), then y shall be 44 in (1120 mm) maximum.

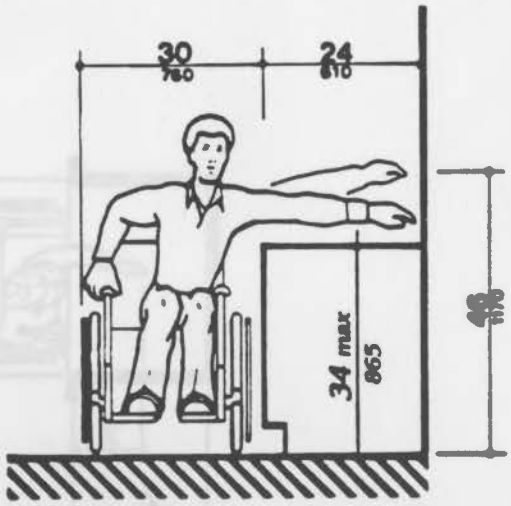
(b)
Maximum Forward Reach over an Obstruction

Fig. 5
Forward Reach



(a) Clear Floor Space Parallel Approach

(b) High and Low Side Reach Limits



(c) Maximum Side Reach over Obstruction

Fig. 6
Side Reach

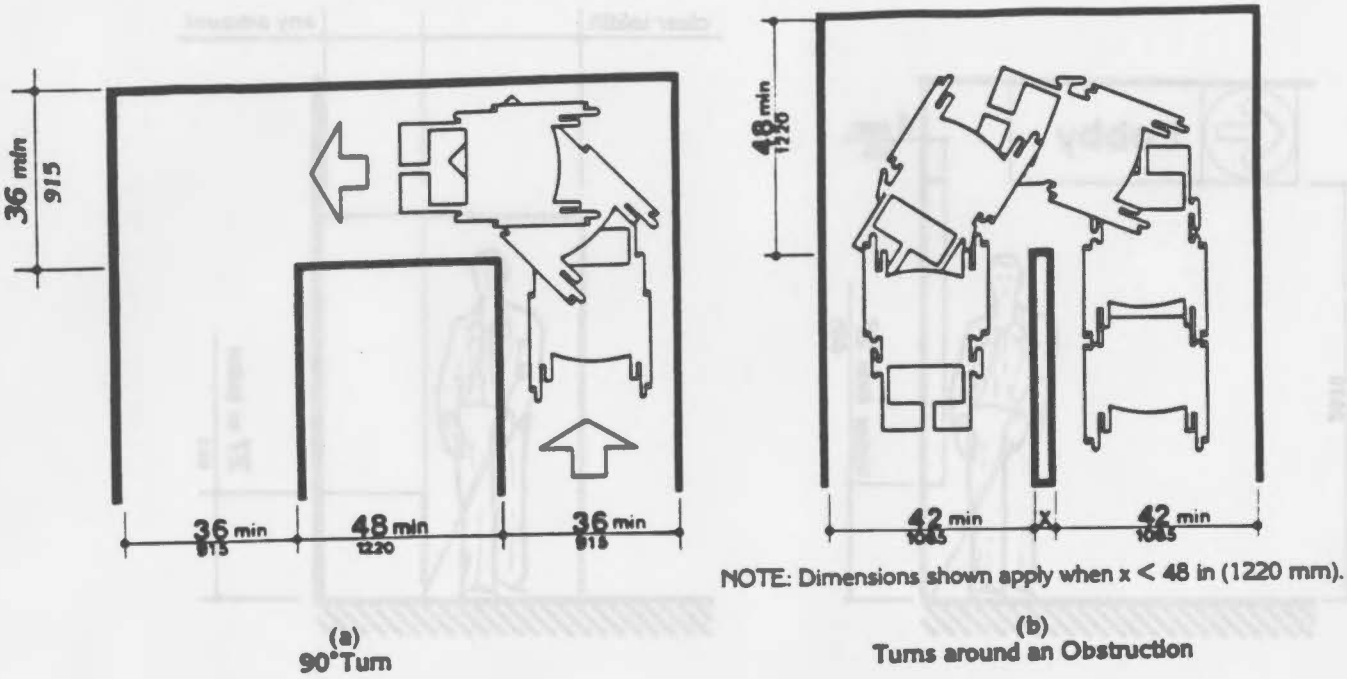
4.3.3 Width. The minimum clear width of an accessible route shall be 36 in (915 mm) except at doors (see 4.13.5). If a person in a wheelchair must make a turn around an obstruction, the minimum clear width of the accessible route shall be as shown in Fig. 7.

4.3.4 Passing Space. If an accessible route has less than 60 in (1525 mm) clear width, then passing spaces at least 60 in by 60 in (1525 mm by 1525 mm) shall be located at reasonable intervals not to exceed 200 ft (61 m). A T-intersection of two corridors or walks is an acceptable passing place.

4.3.5 Head Room. Accessible routes shall comply with 4.4.2.

4.3.6 Surface Textures. The surface of an accessible route shall comply with 4.5.

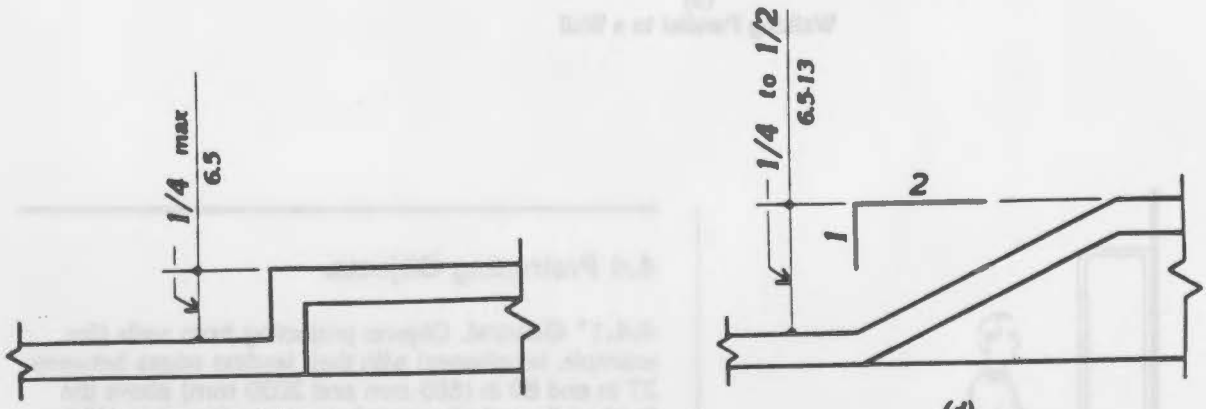
4.3.7 Slope. An accessible route with a running slope greater than 1:20 is a ramp and shall comply with 4.8. Nowhere shall the cross slope of an accessible route exceed 1:50.



NOTE: Dimensions shown apply when x < 48 in (1220 mm).

(a)
90° Turn

(b)
Turns around an Obstruction



(c)
Changes in level

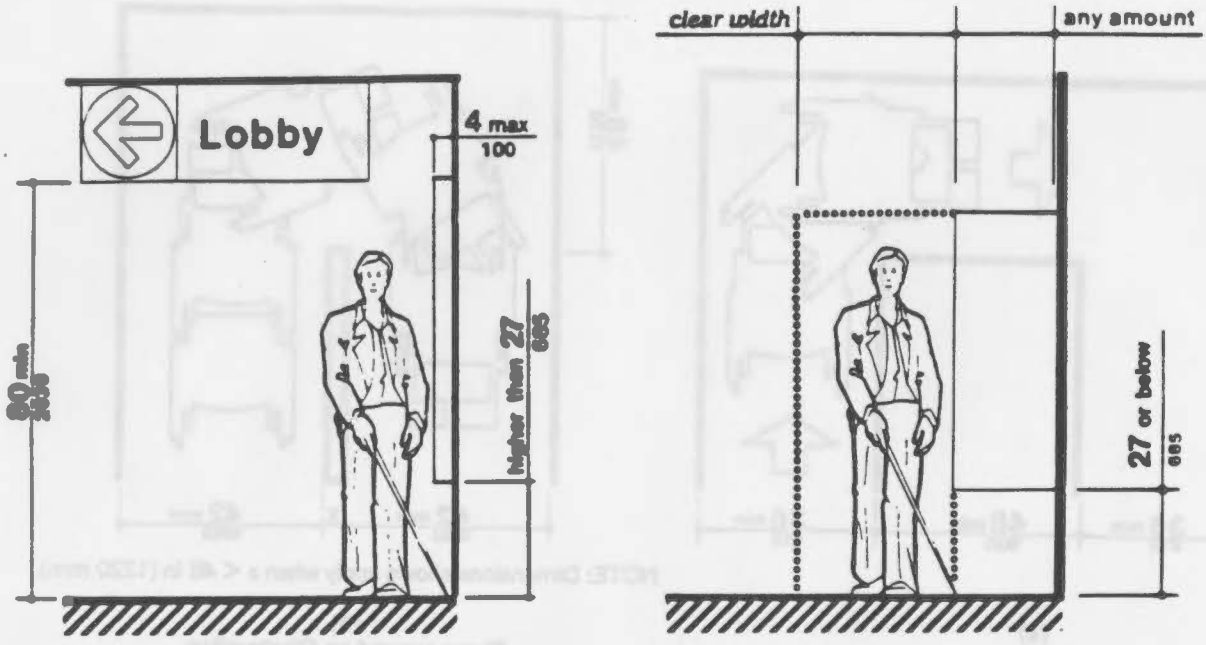
(d)
Changes in level

Fig. 7
Width of Accessible Route

4.3.8 Changes in Levels. Changes in levels along an accessible route shall comply with 4.5.2. If an accessible route has changes in level greater than 1/2 in (13 mm), then a curb ramp, ramp, elevator, or platform lift shall be provided that complies with 4.7, 4.8, 4.10, or 4.11, respectively. Stairs shall not be part of an accessible route.

4.3.9 Doors. Doors along an accessible route shall comply with 4.13.

4.3.10* Egress. Accessible routes serving any accessible space or element shall also serve as a means of egress for emergencies or connect to an accessible place of refuge. Such accessible routes and places of refuge shall comply with the requirements of the administrative authority having jurisdiction. *Where fire code provisions require more than one means of egress from any space or room, then more than one accessible means of egress shall also be provided for handicapped people. Arrange egress so as to be readily accessible from all accessible rooms and spaces.*



(a)
Walking Parallel to a Wall

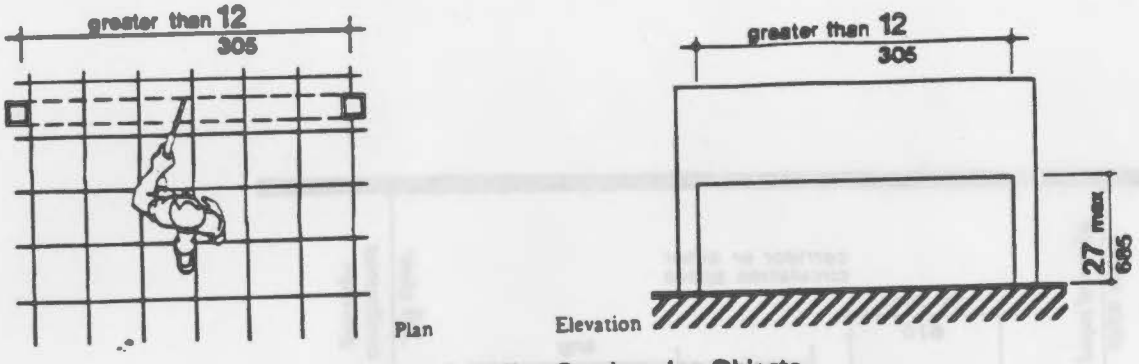
(b)
Walking Perpendicular to a Wall

Fig. 8
Protruding Objects

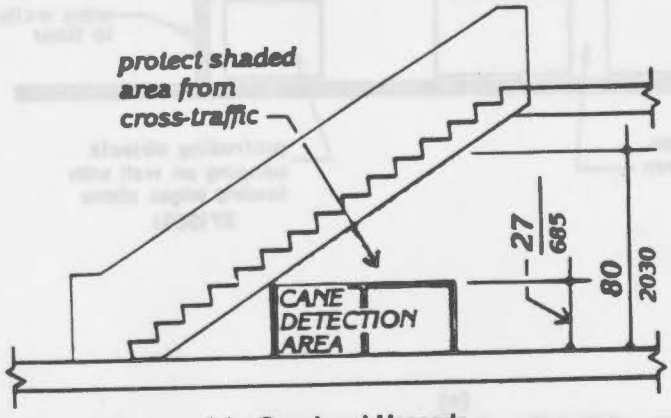
4.4 Protruding Objects.

4.4.1° General. Objects projecting from walls (for example, telephones) with their leading edges between 27 in and 80 in (685 mm and 2030 mm) above the finished floor shall protrude no more than 4 in (100 mm) into walks, halls, corridors, passageways, or aisles (see Fig. 8(a)). Objects mounted with their leading edges at or below 27 in (685 mm) above the finished floor may protrude any amount (see Fig. 8(a) and (b)). Free-standing objects mounted on posts or pylons may overhang 12 in (305 mm) maximum from 27 in to 80 in (685 mm to 2030 mm) above the ground or finished floor (see Fig. 8(c) and (d)). Protruding objects shall not reduce the clear width of an accessible route or maneuvering space (see Fig. 8(e)).

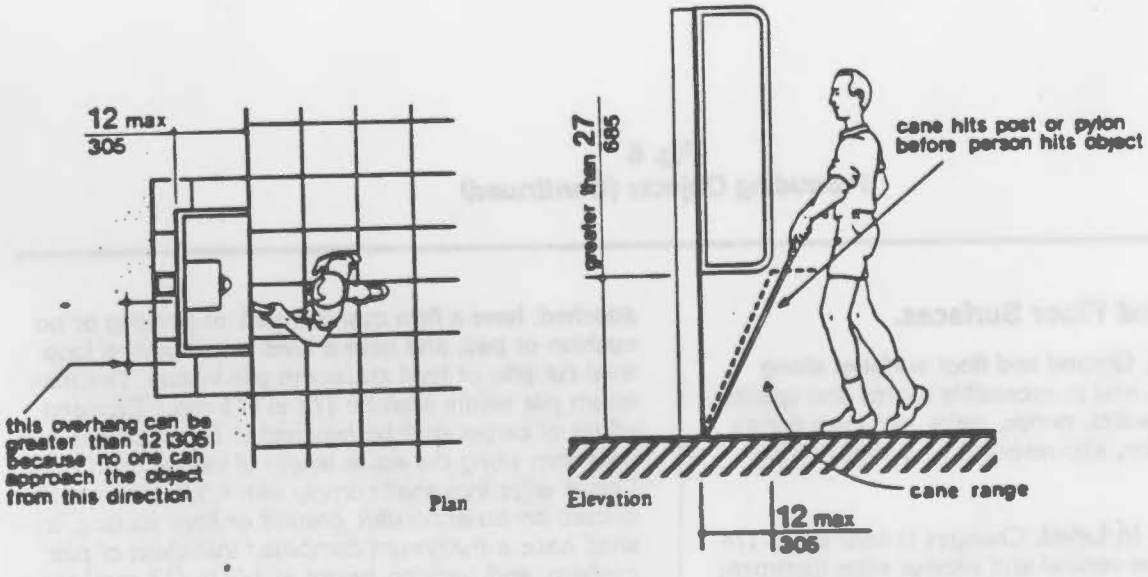
4.4.2 Head Room. Walks, halls, corridors, passageways, aisles, or other circulation spaces shall have 80 in (2030 mm) minimum clear head room (see Fig. 8(a)). *If vertical clearance of an area adjoining an accessible route is reduced to less than 80 in (nominal dimension), a barrier to warn blind or visually-impaired persons shall be provided (see Fig. 8(c)).*



(c) Free-Standing Overhanging Objects

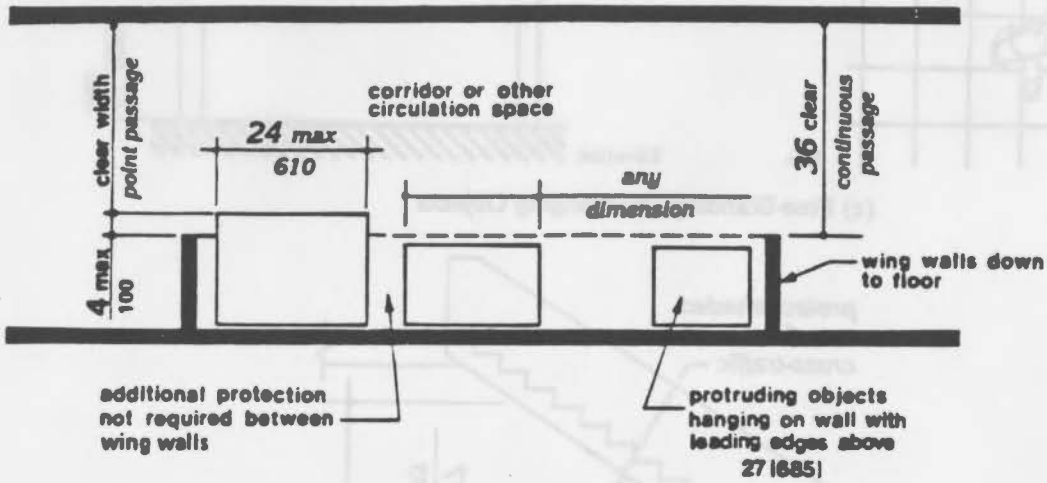


(c) Overhead Hazards



(d)
Objects Mounted on Posts or Pylons

Fig. 8
Protruding Objects (Continued)



(e)
Example of Protection around Wall-Mounted Objects and Measurements of Clear Widths

Fig. 8
Protruding Objects *(Continued)*

4.5 Ground and Floor Surfaces.

4.5.1* General. Ground and floor surfaces along accessible routes and in accessible rooms and spaces, including floors, walks, ramps, stairs, and curb ramps, shall be stable, firm, *slip-resistant*, and shall comply with 4.5.

4.5.2 Changes in Level. Changes in level up to 1/4 in (6 mm) may be vertical and without edge treatment *(see Fig. 7(c))*. Changes in level between 1/4 in and 1/2 in (6 mm and 13 mm) shall be beveled with a slope no greater than 1:2 *(see Fig. 7(d))*. Changes in level greater than 1/2 in (13 mm) shall be accomplished by means of a ramp that complies with 4.7 or 4.8.

4.5.3* Carpet. If carpet or carpet tile is used on a ground or floor surface, then it shall be securely attached; have a firm cushion, pad, or backing or no cushion or pad; and have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. The maximum pile height shall be 1/2 in (13 mm). Exposed edges of carpet shall be fastened to floor surfaces and have trim along the entire length of the exposed edge. Carpet edge trim shall comply with 4.5.2. *If carpet tile is used on an accessible ground or floor surface, it shall have a maximum combined thickness of pile, cushion, and backing height of 1/2 in (13 mm) (see Fig. 8(f)).*

4.5.4 Gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2 in (13 mm) wide in one direction *(see Fig. 8(g))*. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel *(see Fig. 8(h))*.

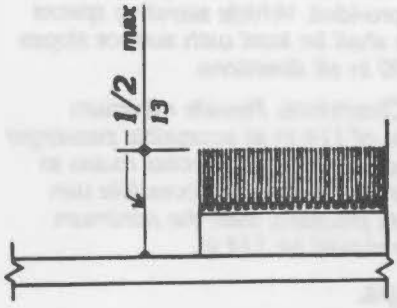


Fig. 8(f)
Carpet Tile Thickness

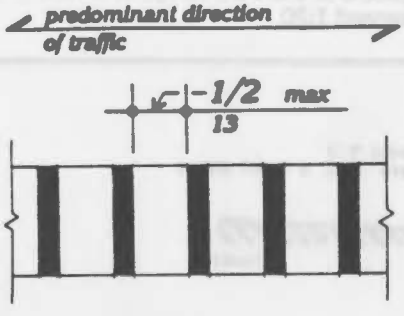


Fig. 8(g)
Gratings

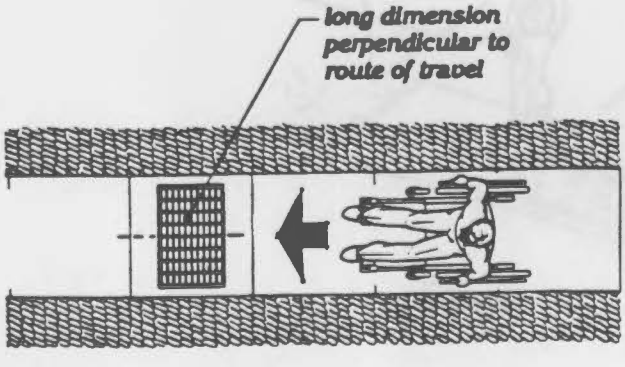


Fig. 8(h)
Grating Orientation

4.6 Parking and Passenger Loading Zones.

4.6.1 Minimum Number. *Parking spaces required to be accessible by 4.1 shall comply with 4.6.2 through 4.6.4. Passenger loading zones required to be accessible by 4.1 shall comply with 4.6.5 and 4.6.6.*

4.6.2 Location. Parking spaces for disabled people and accessible passenger loading zones that serve a particular building shall be *the spaces or zones located closest to the nearest accessible entrance on an accessible route.* In separate parking structures or lots that do not serve a particular building, parking spaces for disabled people shall be located on the shortest possible circulation route to an accessible pedestrian entrance of the parking facility.

4.6.3° Parking Spaces. Parking spaces for disabled people shall be at least 96 in (2440 mm) wide and shall have an adjacent access aisle 60 in (1525 mm) wide minimum (see Fig. 9). Parking access aisles shall be part of an accessible route to the building or facility entrance and shall comply with 4.3. Two accessible parking spaces may share a common access aisle. Parked vehicle overhangs shall not reduce the clear width of an accessible circulation route. *Parking spaces and access aisles shall be level with surface slopes not exceeding 1:50 in all directions.*

EXCEPTION: If accessible parking spaces for vans designed for handicapped persons are provided, each should have an adjacent access aisle at least 96 in (2440 mm) wide complying with 4.5, Ground and Floor Surfaces.

4.6.4° Signage. Accessible parking spaces shall be designated as reserved for the disabled by a sign showing the symbol of accessibility (see 4.30.5). Such signs shall not be obscured by a vehicle parked in the space.

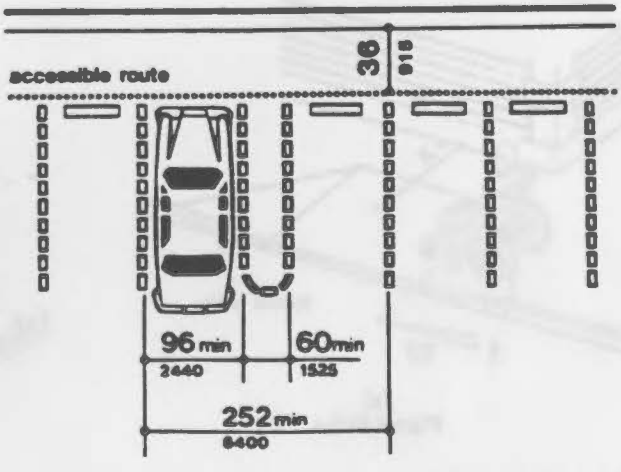


Fig. 9
Dimensions of Parking Spaces

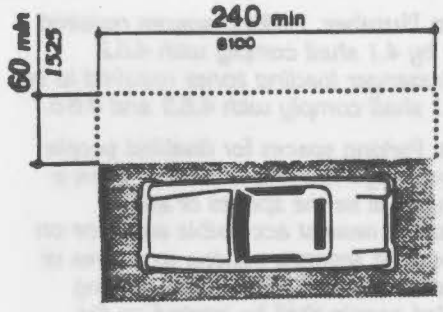


Fig. 10
Access Aisle at Passenger Loading Zones

4.6.5 Passenger Loading Zones. Passenger loading zones shall provide an access aisle at least 60 in (1525 mm) wide and 20 ft (6 m) long adjacent and parallel to the vehicle pull-up space (see Fig. 10). If there are curbs between the access aisle and the vehicle pull-up space, then a curb ramp complying with 4.7 shall be provided. *Vehicle standing spaces and access aisles shall be level with surface slopes not exceeding 1:50 in all directions.*

4.6.6 *Vertical Clearance.* *Provide minimum vertical clearances of 114 in at accessible passenger loading zones and along vehicle access routes to such areas from site entrances. If accessible van parking spaces are provided, then the minimum vertical clearance should be 114 in.*

4.7 Curb Ramps.

4.7.1 Location. Curb ramps complying with 4.7 shall be provided wherever an accessible route crosses a curb.

4.7.2 Slope. Slopes of curb ramps shall comply with 4.8.2. The slope shall be measured as shown in Fig. 11. *Transitions from ramps to walks, gutters, or streets shall be flush and free of abrupt changes. Maximum slopes of adjoining gutters, road surface immediately adjacent to the curb ramp, or accessible route shall not exceed 1:20.*

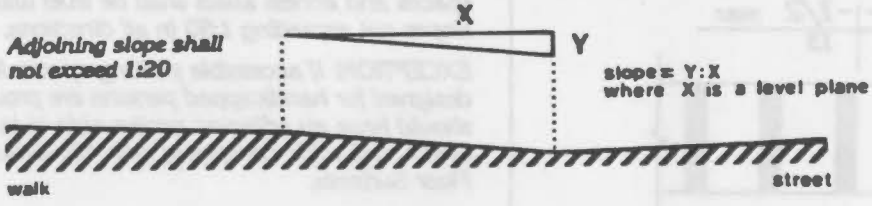
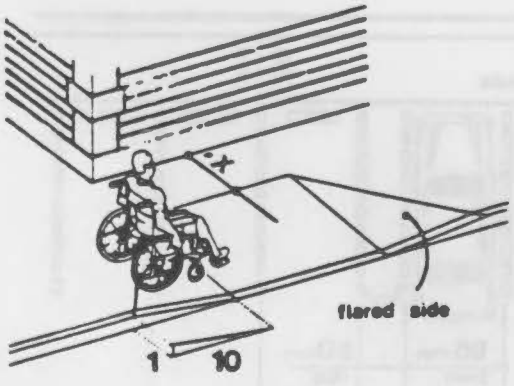
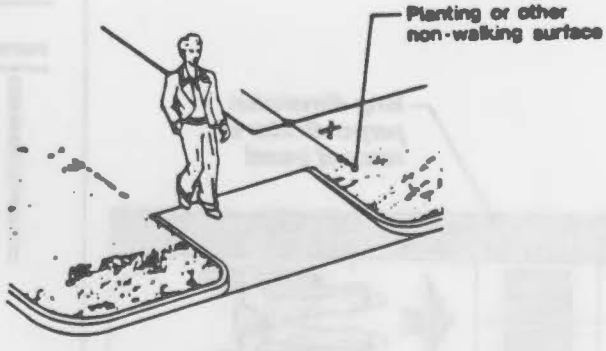


Fig. 11
Measurement of Curb Ramp Slopes



(a)
Flared Sides



(b)
Returned Curb

If X is less than 48 in, then the slope of the flared side shall not exceed 1:12.

Fig. 12
Sides of Curb Ramps

4.7.3 Width. The minimum width of a curb ramp shall be 36 in (915 mm), exclusive of flared sides.

4.7.4 Surface. Surfaces of curb ramps shall comply with 4.5.

4.7.5 Sides of Curb Ramps. If a curb ramp is located where pedestrians must walk across the ramp, *or where it is not protected by handrails or guardrails*, then it shall have flared sides; the maximum slope of the flare shall be 1:10 (see Fig. 12(a)). Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp (see Fig. 12(b)).

4.7.6 Built-up Curb Ramps. Built-up curb ramps shall be located so that they do not project into vehicular traffic lanes (see Fig. 13).

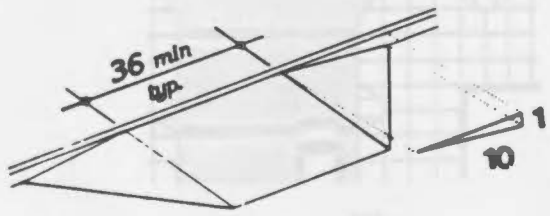


Fig. 13
Built-Up Curb Ramp

4.7.7 Warning Textures. *(Removed and reserved).*

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

4.7.9 Location at Marked Crossings. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides (see Fig. 15).

4.7.10 Diagonal Curb Ramps. If diagonal (or corner type) curb ramps have returned curbs or other well-defined edges, such edges shall be parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have 48 in (1220 mm) minimum clear space as shown in Fig. 15(c) and (d). If diagonal curb ramps are provided at marked crossings, the 48 in (1220 mm) clear space shall be within the markings (see Fig. 15(c) and (d)). If diagonal curb ramps have flared sides, they shall also have at least a 24 in (610 mm) long segment of straight curb located on each side of the curb ramp and within the marked crossing (see Fig. 15(c)).

4.7.11 Islands. Any raised islands in crossings shall be cut through level with the street or have curb ramps at both sides and a level area at least 48 in (1220 mm) long in the part of the island intersected by the crossings (see Fig. 15(a) and (b)).

4.7.12 Uncurbed Intersections. *(Removed and reserved).*

4.8 Ramps.

4.8.1* General. Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp and shall comply with 4.8.

4.8.2* Slope and Rise. The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12. The maximum rise for any run shall be 30 in (760 mm) (see Fig. 16). Curb ramps and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as shown in Table 2 if space limitations prohibit the use of a 1:12 slope or less *(see 4.1.6)*.

4.8.3 Clear Width. The minimum clear width of a ramp shall be 36 in (915 mm).

4.8.4 Landings. Ramps shall have level landings at the bottom and top of each run. Landings shall have the following features:

(1) The landing shall be at least as wide as the ramp run leading to it.

(2) The landing length shall be a minimum of 60 in (1525 mm) clear.

(3) If ramps change direction at landings, the minimum landing size shall be 60 in by 60 in (1525 mm by 1525 mm).

(4) If a doorway is located at a landing, then the area in front of the doorway shall comply with 4.13.6.

4.8.5* Handrails. If a ramp run has a rise greater than 6 in (250 mm) or a horizontal projection greater than 72 in (1830 mm), then it shall have handrails on both sides. Handrails are not required on curb ramps. Handrails shall comply with 4.26 and shall have the following features:

(1) Handrails shall be provided along both sides of ramp segments. The inside handrail on switchback or dogleg ramps shall always be continuous.

(2) If handrails are not continuous, they shall extend at least 12 in (305 mm) beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface.

(3) The clear space between the handrail and the wall shall be 1-1/2 in (38 mm).

(4) Gripping surfaces shall be continuous.

(5) *Top of handrail gripping surfaces shall be mounted between 30 in and 34 in (760 mm and 865 mm) above ramp surfaces.*

(6) *Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post.*

(7) *Handrails shall not rotate within their fittings.*

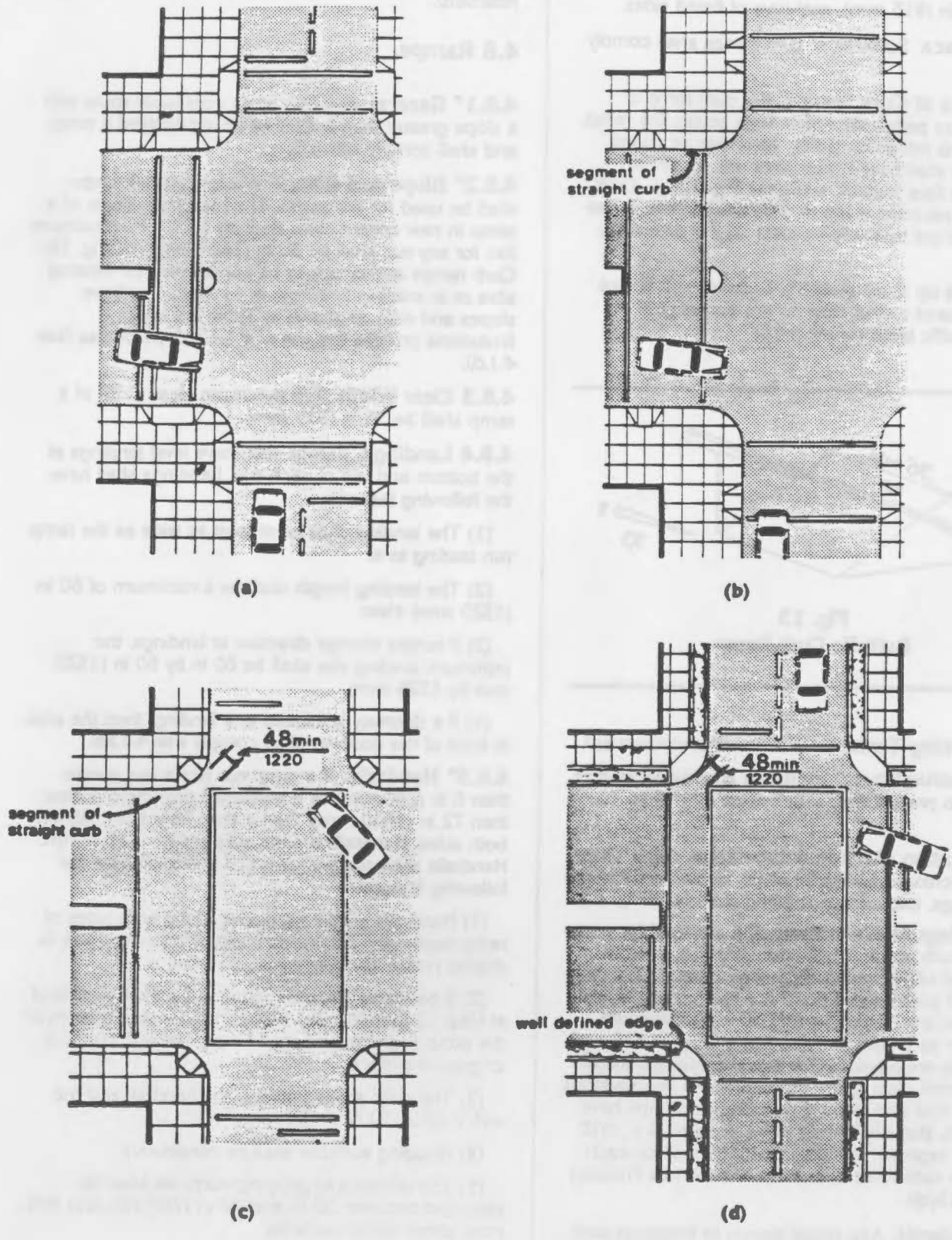
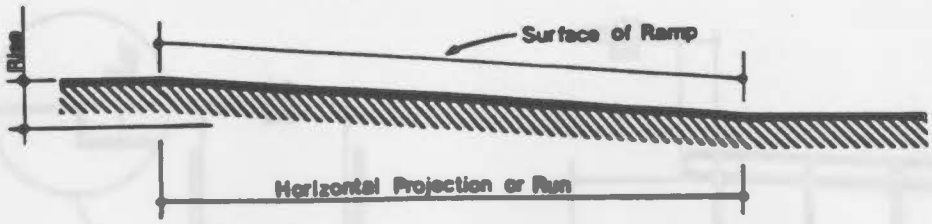


Fig. 15
Curb Ramps at Marked Crossings



Slope	Maximum Rise in	Maximum Rise mm	Maximum Horizontal Projection ft	Maximum Horizontal Projection m
1:12 to < 1:16	30	760	30	9
1:16 to < 1:20	30	760	40	12

Fig. 16
Components of a Single Ramp Run and Sample Ramp Dimensions

4.8.6 Cross Slope and Surfaces. The cross slope of ramp surfaces shall be no greater than 1:50. Ramp surfaces shall comply with 4.5.

4.8.7 Edge Protection. Ramps and landings with drop-offs shall have curbs, walls, railings, or projecting surfaces that prevent people from slipping off the ramp. Curbs shall be a minimum of 2 in (50 mm) high (see Fig. 17).

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

4.9 Stairs.

4.9.1 Minimum Number. Stairs *required to be accessible by 4.1 shall comply with 4.9.*

4.9.2 Treads and Risers. On any given flight of stairs, all steps shall have uniform riser heights and uniform tread widths. Stair treads shall be no less than 11 in (280 mm) wide, measured from riser to riser (see Fig. 18(a)). *Open risers are not permitted on accessible routes.*

4.9.3 Nosings. The undersides of nosings shall not be abrupt. The radius of curvature at the leading edge of the tread shall be no greater than 1/2 in (13 mm). Risers shall be sloped or the underside of the nosing shall have an angle not less than 60 degrees from the horizontal. Nosings shall project no more than 1-1/2 in (38 mm) (see Fig. 18).

4.9.4 Handrails. Stairways shall have handrails at both sides of all stairs. Handrails shall comply with 4.26 and shall have the following features:

(1) Handrails shall be continuous along both sides of stairs. The inside handrail on switchback or dogleg stairs shall always be continuous (see Fig. 19(a) and (b)).

(2) If handrails are not continuous, they shall extend at least 12 in (305 mm) beyond the top riser and at least 12 in (305 mm) plus the width of one tread beyond the bottom riser. At the top, the extension shall be parallel with the floor or ground surface. At the bottom, the handrail shall continue to slope for a distance of the width of one tread from the bottom riser; the remainder of the extension shall be horizontal (see Fig. 19(c) and (d)). Handrail extensions shall comply with 4.4.

(3) The clear space between handrails and wall shall be 1-1/2 in (38 mm).

(4) Gripping surfaces shall be uninterrupted by newel posts, other construction elements, or obstructions.

(5) *Top of handrail gripping surface shall be mounted between 30 in and 34 in (760 mm and 865 mm) above stair nosings.*

(6) *Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post.*

(7) *Handrails shall not rotate within their fittings.*

4.9.5 Tactile Warnings at Stairs. *(Removed and reserved).*

4.9.6 Outdoor Conditions. Outdoor stairs and their approaches shall be designed so that water will not accumulate on walking surfaces.

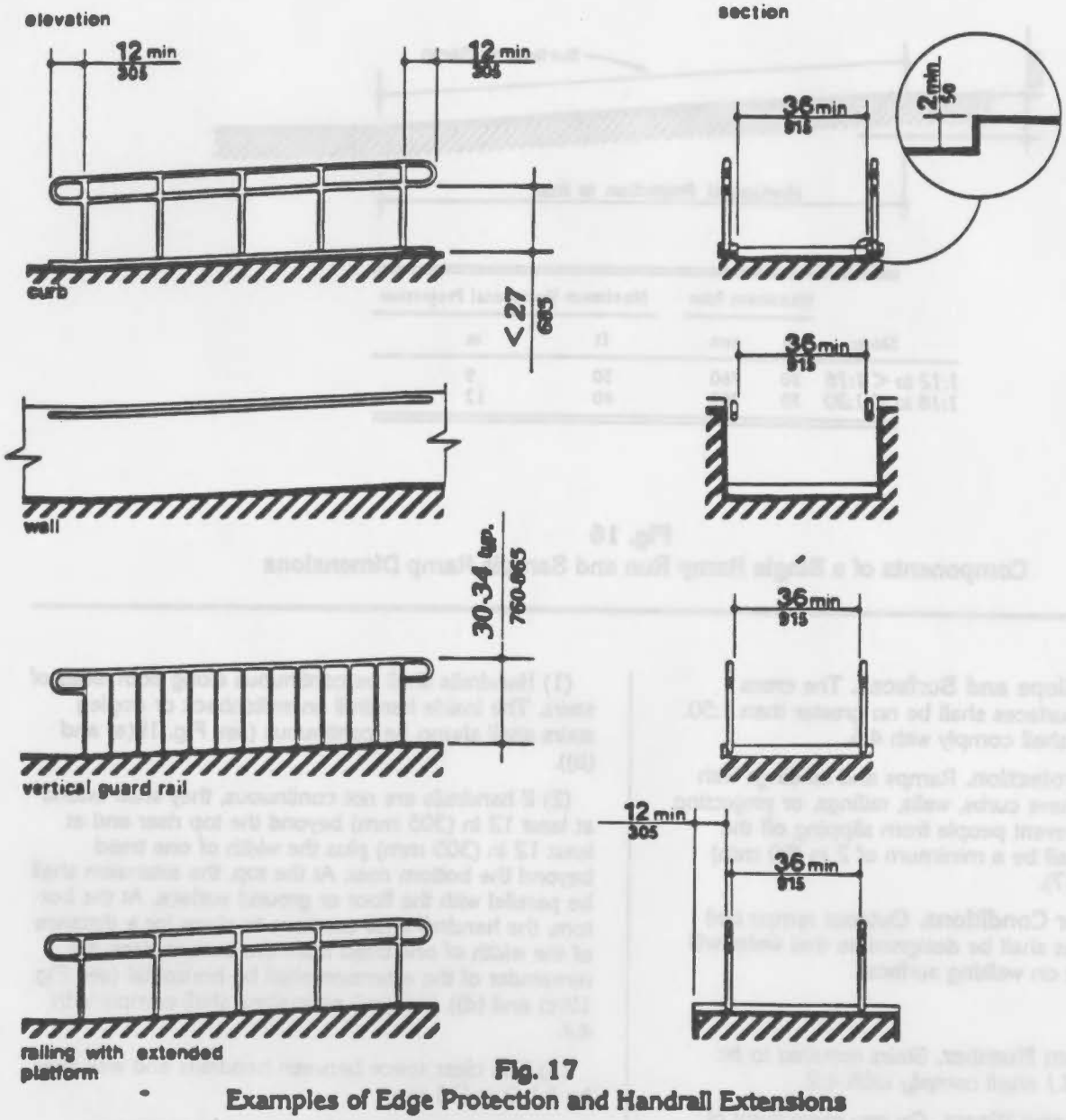
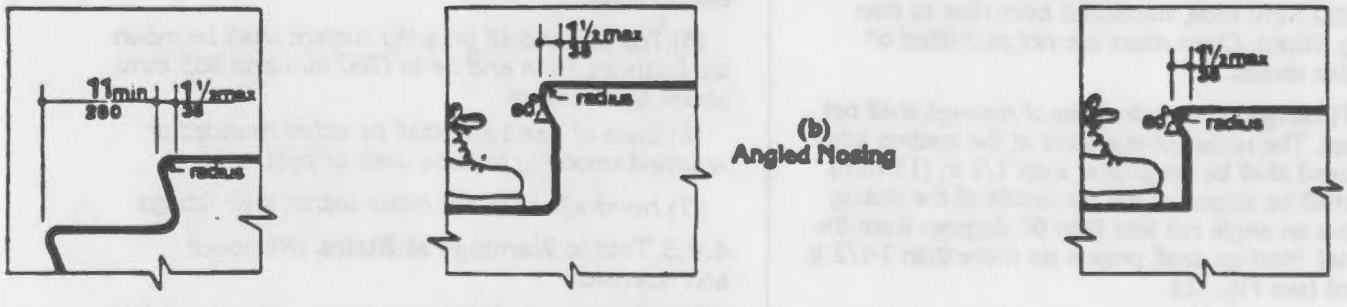


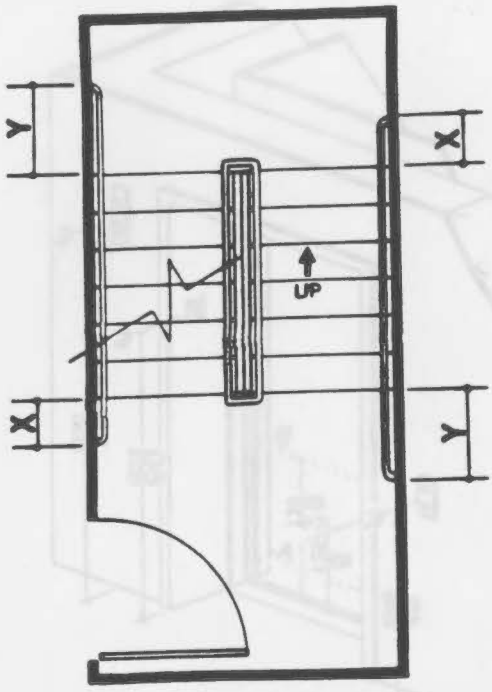
Fig. 17
Examples of Edge Protection and Handrail Extensions



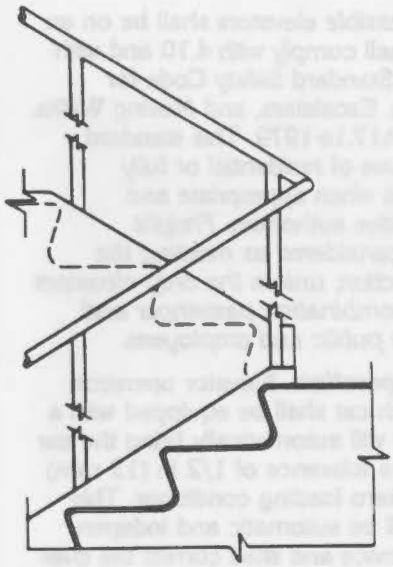
(a)
Flush Riser

Fig. 18
Usable Tread Width and Examples of Acceptable Nosings

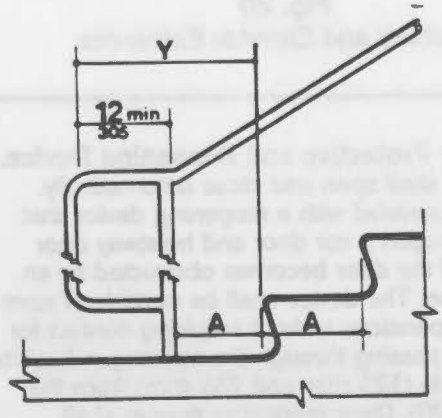
(c)
Rounded Nosing



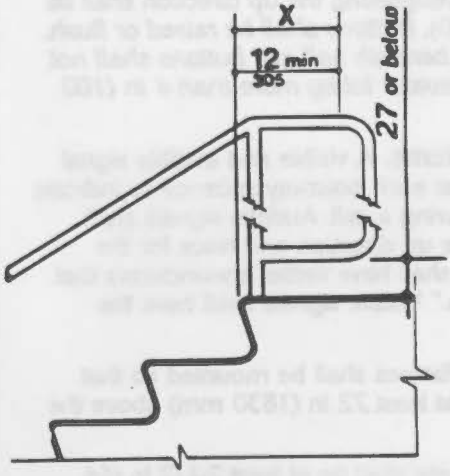
(a)
Plan



(b)
Elevation of Center Handrail



(c)
Extension at Bottom of Run



(d)
Extension at Top of Run

NOTE:

X is the 12 in minimum handrail extension required at each top riser.

Y is the minimum handrail extension of 12 in plus the width of one tread that is required at each bottom riser.

Fig. 19
Stair Handrails

4.10 Elevators.

4.10.1 General. *Accessible* elevators shall be on an accessible route and shall comply with 4.10 and with the American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks, ANSI A17.1-1978 and A17.1a-1979. This standard does not preclude the use of residential or fully enclosed wheelchair lifts when appropriate and approved by administrative authorities. *Freight elevators shall not be considered as meeting the requirements of this section, unless the only elevators provided are used as combination passenger and freight elevators for the public and employees.*

4.10.2 Automatic Operation. Elevator operation shall be automatic. Each car shall be equipped with a self-leveling feature that will automatically bring the car to floor landings within a tolerance of 1/2 in (13 mm) under rated loading to zero loading conditions. This self-leveling feature shall be automatic and independent of the operating device and shall correct the overtravel or undertravel.

4.10.3 Hall Call Buttons. Call buttons in elevator lobbies and halls shall be centered at 42 in (1065 mm) above the floor. Such call buttons shall have visual signals to indicate when each call is registered and when each call is answered. Call buttons shall be a minimum of 3/4 in (19 mm) in the smallest dimension. The button designating the up direction shall be on top (see Fig. 20). *Buttons shall be raised or flush. Objects mounted beneath hall call buttons shall not project into the elevator lobby more than 4 in (100 mm).*

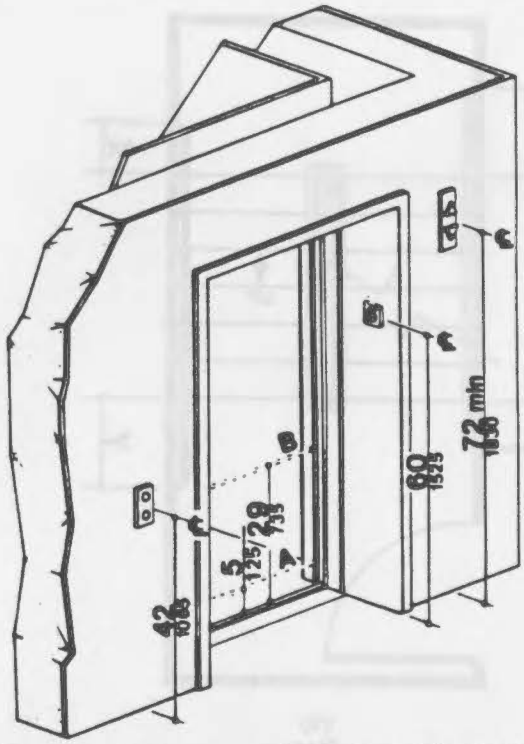
4.10.4 Hall Lanterns. A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call. Audible signals shall sound once for the up direction and twice for the down direction or shall have verbal annunciators that say "up" or "down." Visible signals shall have the following features:

(1) Hall lantern fixtures shall be mounted so that their centerline is at least 72 in (1830 mm) above the lobby floor.

(2) Visual elements shall be at least 2-1/2 in (64 mm) in the smallest dimension.

(3) Signals shall be visible from the vicinity of the hall call button. In-car lanterns located in cars, visible from the vicinity of hall call buttons, and conforming to the above requirements, shall be acceptable (see Fig. 20).

4.10.5 *Raised* Characters on Hoistway Entrances. All elevator hoistway entrances shall have *raised* floor designations provided on both jambs. The centerline of the characters shall be 60 in (1525 mm) from the floor. Such characters shall be 2 in (50 mm) high and shall comply with 4.30. Permanently applied plates are acceptable if they are permanently fixed to the jambs. (See Fig. 20).



NOTE: The automatic door reopening device is activated if an object passes through either line A or line B. Line A and line B represent the vertical locations of the door reopening device not requiring contact.

Fig. 20
Hoistway and Elevator Entrances

4.10.6* Door Protective and Reopening Device. Elevator doors shall open and close automatically. They shall be provided with a reopening device that will stop and reopen a car door and hoistway door automatically if the door becomes obstructed by an object or person. The device shall be capable of completing these operations without requiring contact for an obstruction passing through the opening at heights of 5 in and 29 in (125 mm and 735 mm) from the floor (see Fig. 20). Door reopening devices shall remain effective for at least 20 seconds. After such an interval, doors may close in accordance with the requirements of ANSI A17.1-1978 and A17.1a-1979.

4.10.7* Door and Signal Timing for Hall Calls. The minimum acceptable time from notification that a car is answering a call until the doors of that car start to close shall be calculated from the following equation:

$$T = \frac{D}{1.5\ ft/s} \qquad \text{or } T = \frac{D}{445\ mm/s}$$

where T = total time in seconds and D = distance (in feet or millimeters) from a point in the lobby or corridor 60 in (1525 mm) directly in front of the farthest

call button controlling that car to the centerline of its hoistway door (see Fig. 21). For cars with in-car lanterns, T begins when the lantern is visible from the vicinity of hall call buttons and an audible signal is sounded. *The minimum acceptable notification time shall be 5 seconds.*

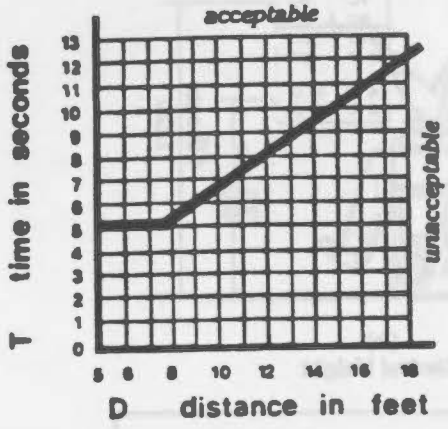


Fig. 21
Graph of Timing Equation

4.10.8 Door Delay for Car Calls. The minimum time for elevator doors to remain fully open in response to a car call shall be 3 seconds.

4.10.9 Floor Plan of Elevator Cars. The floor area of elevator cars shall provide space for wheelchair users to enter the car, maneuver within reach of controls, and exit from the car. Acceptable door opening and inside dimensions shall be as shown in Fig. 22. The clearance between the car platform sill and the edge of any hoistway landing shall be no greater than 1-1/4 in (32 mm).

4.10.10 Floor Surfaces. Floor surfaces shall comply with 4.5.

4.10.11 Illumination Levels. The level of illumination at the car controls, platform, and car threshold and landing sill shall be at least 5 footcandles (53.8 lux).

4.10.12* Car Controls. Elevator control panels shall have the following features:

(1) Buttons. All control buttons shall be at least 3/4 in (19 mm) in their smallest dimension. They may be *raised* or flush.

(2) Tactile and Visual Control Indicators. All control buttons shall be designated by *raised* standard alphabet characters for letters, arabic characters for numerals, or standard symbols as shown in Fig. 23(a), and as required in ANSI A17.1-1978 and A17.1a-1979. Raised characters and symbols shall comply with 4.30. The call button for the main entry floor shall be

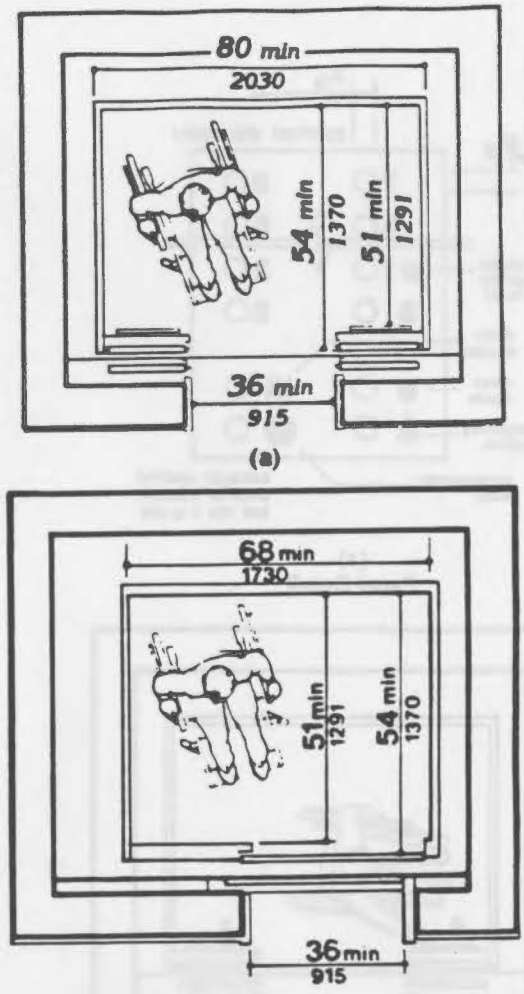
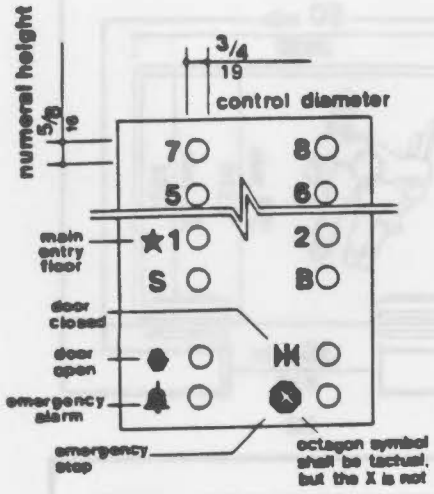


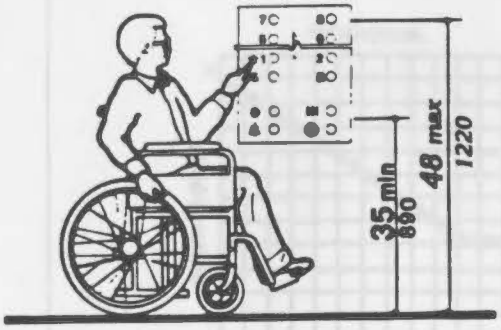
Fig. 22
Minimum Dimensions of Elevator Cars

designated by a *raised* star at the left of the floor designation (see Fig. 23(a)). All *raised* designations for control buttons shall be placed immediately to the left of the button to which they apply. Applied plates, permanently attached, are an acceptable means to provide *raised* control designations. Floor buttons shall be provided with visual indicators to show when each call is registered. The visual indicators shall be extinguished when each call is answered.

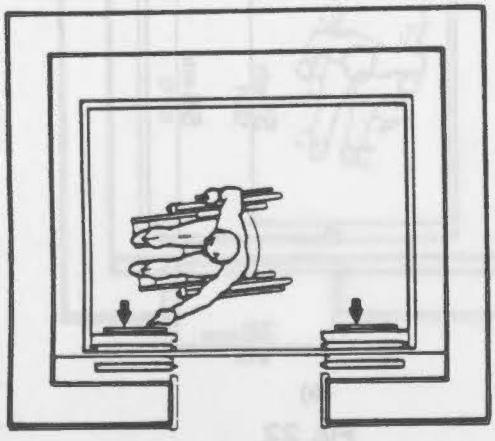
(3) Height. All floor buttons shall be no higher than *48 in (1220 mm), unless there is a substantial increase in cost, in which case the maximum mounting height may be increased to 54 in (1370 mm),* above the floor. Emergency controls, including the emergency alarm and emergency stop, shall be grouped at the bottom of the panel and shall have their centerlines no less than 35 in (890 mm) above the floor (see Fig. 23(a) and (b)).



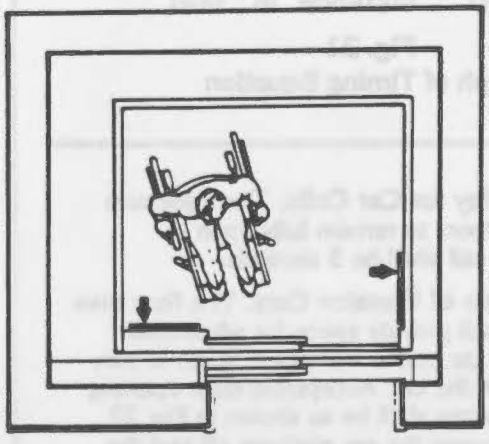
(a)
Panel Detail



(b)
Control Height



(c)
Alternate Locations of Panel with Center Opening Door



(d)
Alternate Locations of Panel with Side Opening Door

Fig. 23
Car Controls

(4) Location. Controls shall be located on a front wall if cars have center opening doors, and at the side wall or at the front wall next to the door if cars have side opening doors (see Fig. 23(c) and (d)).

4.10.13* Car Position Indicators. In elevator cars, a visual car position indicator shall be provided above the car control panel or over the door to show the position of the elevator in the hoistway. As the car passes or stops at a floor served by the elevators, the corresponding numerals shall illuminate, and an audible signal shall sound. Numerals shall be a minimum of 1/2 in (13 mm) high. The audible signal shall be no less than 20 decibels with a frequency no higher than 1500 Hz. An automatic verbal announcement of the floor number at which a car stops or which a car passes may be substituted for the audible signal.

4.10.14* Emergency Communications. If provided, emergency two-way communication systems between the elevator and a point outside the hoistway shall comply with ANSI A17.1-1978 and A17.1a-1979. The highest operable part of a two-way communication system shall be a maximum of 48 in (1220 mm) from the floor of the car. It shall be identified by a raised or recessed symbol and lettering complying with 4.30 and located adjacent to the device. If the system uses a handset, then the length of the cord from the panel to

the handset shall be at least 29 in (735 mm). *If the system is located in a closed compartment, the compartment door hardware shall conform to 4.27, Controls and Operating Mechanisms. The emergency intercommunication system shall not require voice communication.*

4.11* Platform Lifts.

4.11.1 Location. *Platform lifts permitted by 4.1 shall comply with the requirements of 4.11.*

4.11.2 Other Requirements. If platform lifts are used, they shall comply with 4.2.4, 4.5, 4.27, and the applicable safety regulations of administrative authorities having jurisdiction.

4.11.3 *Entrance.* *If platform lifts are used, then they should facilitate unassisted entry and exit from the lift in compliance with 4.11.2.*

4.12 Windows. *(Reserved).*

4.13 Doors.

4.13.1 General. *Doors required to be accessible by 4.1 shall comply with the requirements of 4.13.*

4.13.2 Revolving Doors and Turnstiles. Revolving doors or turnstiles shall not be the only means of passage at an accessible entrance or along an accessible route. *An accessible gate or door shall be provided adjacent to the turnstile or revolving door and shall be so designed as to facilitate the same use pattern.*

4.13.3 Gates. Gates, including ticket gates, shall meet all applicable specifications of 4.13.

4.13.4 Double-Leaf Doorways. If doorways have two *independently operated* door leaves, then at least one leaf shall meet the specifications in 4.13.5 and 4.13.6. That leaf shall be an active leaf.

4.13.5 Clear Width. Doorways shall have a minimum clear opening of 32 in (815 mm) with the door open 90 degrees, measured between the face of the door and the stop (see Fig. 24(a), (b), (c), and (d)). Openings more than 24 in (610 mm) in depth shall comply with 4.2.1 and 4.3.3 (see Fig. 24(e)).

EXCEPTION: Doors not requiring full user passage, such as shallow closets, may have the clear opening reduced to 20 in (510 mm) minimum.

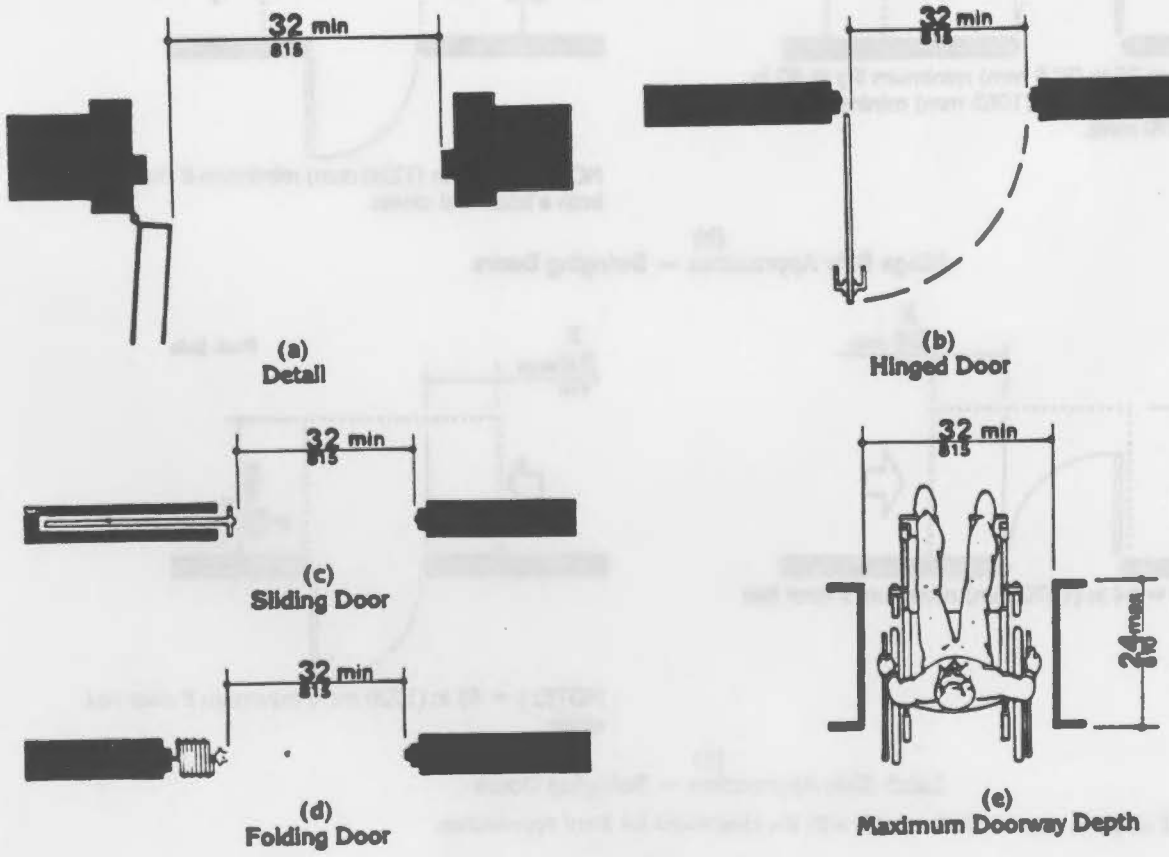
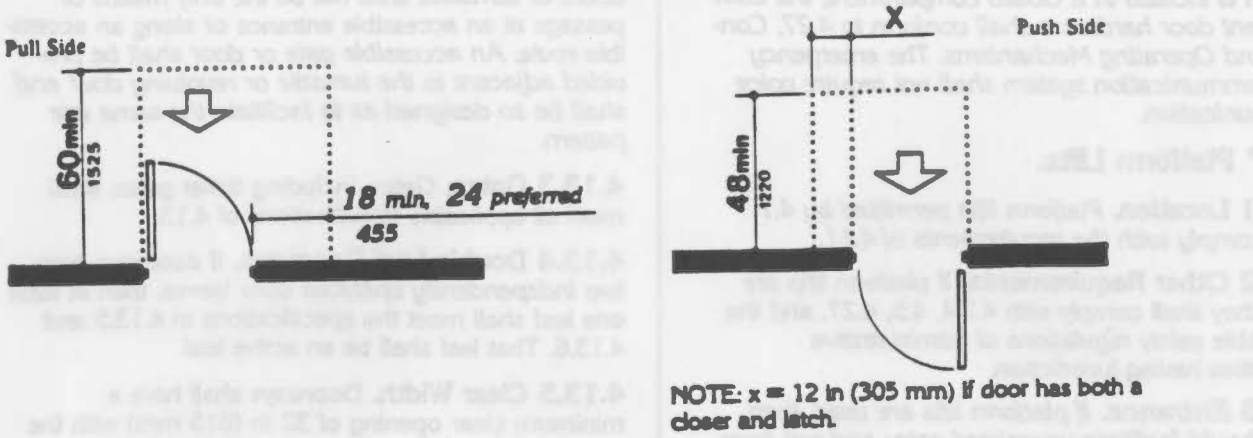
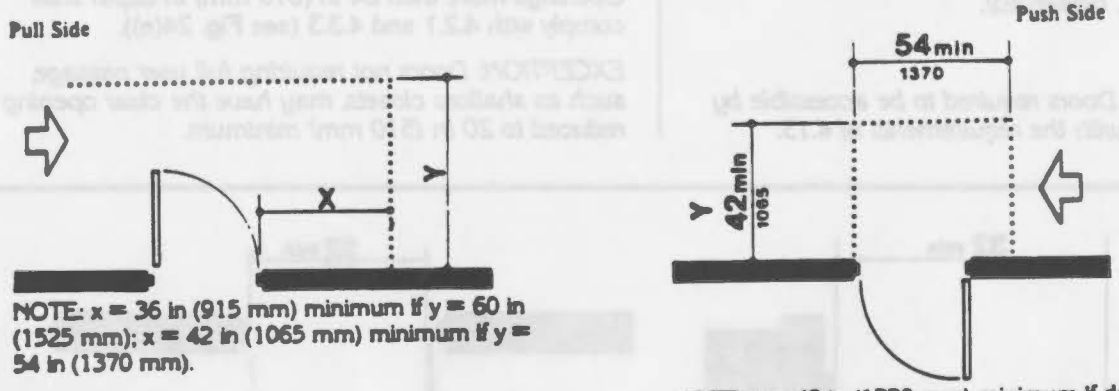


Fig. 24
Clear Doorway Width and Depth



NOTE: x = 12 in (305 mm) if door has both a closer and latch.

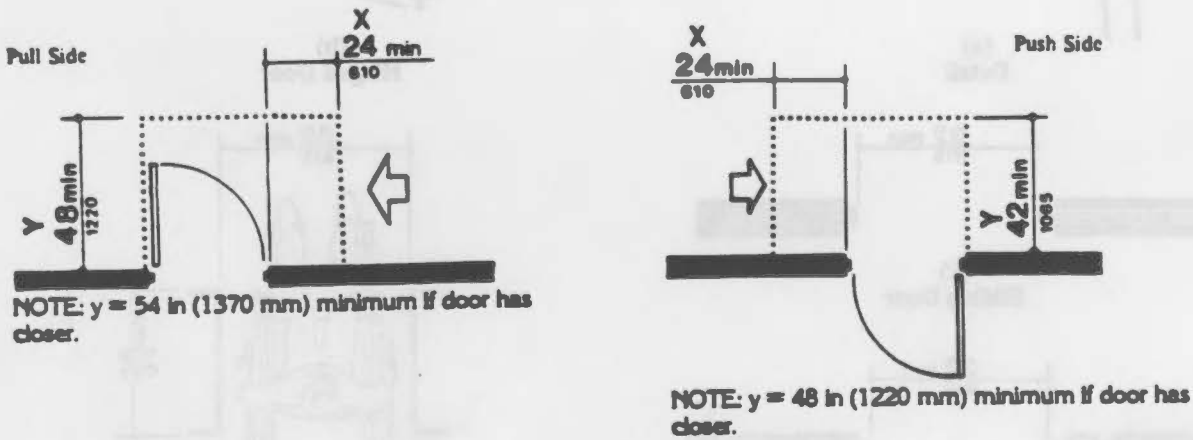
(a)
Front Approaches — Swinging Doors



NOTE: x = 36 in (915 mm) minimum if y = 60 in (1525 mm); x = 42 in (1065 mm) minimum if y = 54 in (1370 mm).

NOTE: y = 48 in (1220 mm) minimum if door has both a latch and closer.

(b)
Hinge Side Approaches — Swinging Doors



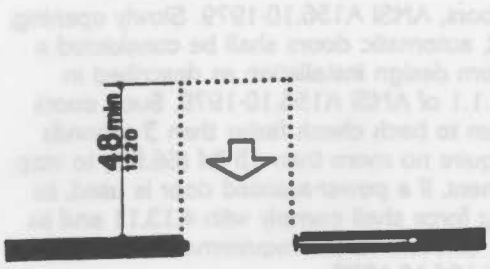
NOTE: y = 54 in (1370 mm) minimum if door has closer.

NOTE: y = 48 in (1220 mm) minimum if door has closer.

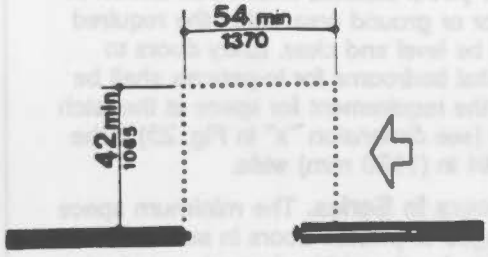
(c)
Latch Side Approaches — Swinging Doors

NOTE: All doors in alcoves shall comply with the clearances for front approaches.

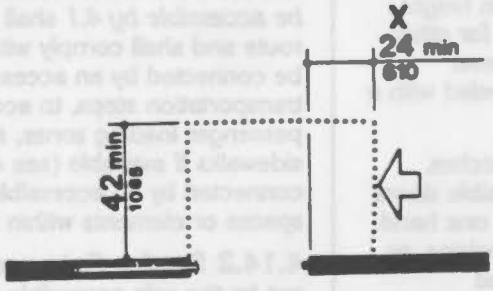
Fig. 25
Maneuvering Clearances at Doors



(d)
Front Approach — Sliding Doors *and Folding Doors*



(e)
Slide Side Approach — Sliding Doors *and Folding Doors*



(f)
Latch Side Approach — Sliding Doors *and Folding Doors*

NOTE: All doors in alcoves shall comply with the clearances for front approaches.

Fig. 25
Maneuvering Clearances at Doors *(Continued)*

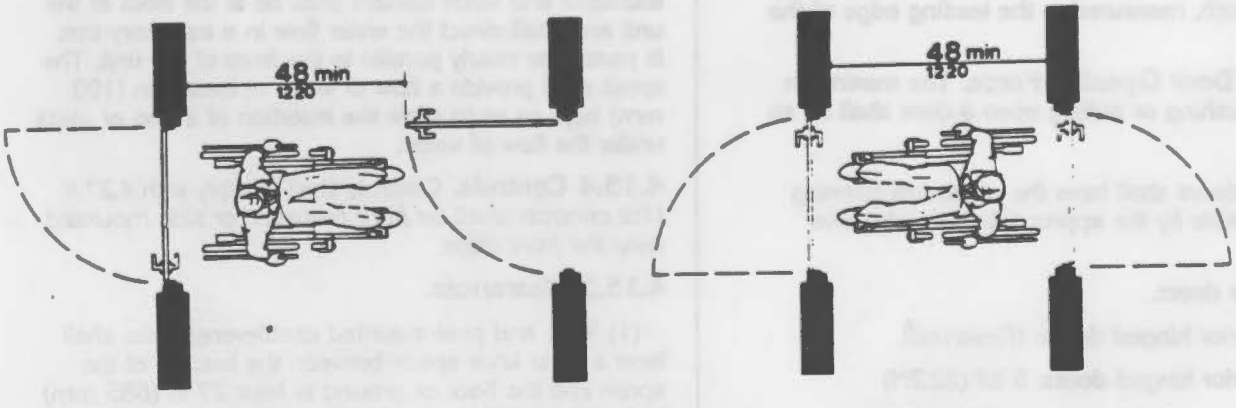


Fig. 26
Two Hinged Doors in Series

4.13.6 Maneuvering Clearances at Doors. Minimum maneuvering clearances at doors that are not automatic or power-assisted shall be as shown in Fig. 25. The floor or ground area within the required clearances shall be level and clear. Entry doors to acute care hospital bedrooms for in-patients shall be exempted from the requirement for space at the latch side of the door (see dimension "x" in Fig. 25) if the door is at least 44 in (1120 mm) wide.

4.13.7 Two Doors in Series. The minimum space between two hinged or pivoted doors in series shall be 48 in (1220 mm) plus the width of any door swinging into the space. Doors in series shall swing either in the same direction or away from the space between the doors (see Fig. 26).

4.13.8* Thresholds at Doorways. Thresholds at doorways shall not exceed 3/4 in (19 mm) in height for exterior sliding doors or 1/2 in (13 mm) for other types of doors. Raised thresholds and floor level changes at accessible doorways shall be beveled with a slope no greater than 1:2 (see 4.5.2).

4.13.9* Door Hardware. Handles, pulls, latches, locks, and other operating devices on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. Lever-operated mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs. When sliding doors are fully open, operating hardware shall be exposed and usable from both sides. In dwelling units, only doors at accessible entrances to the unit itself shall comply with the requirements of this paragraph. Doors to hazardous areas shall have hardware complying with 4.29.3. *Mount no hardware required for accessible door passage higher than 48 in (1220 mm) above finished floor.*

4.13.10* Door Closers. If a door has a closer, then the sweep period of the closer shall be adjusted so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 in (75 mm) from the latch, measured to the leading edge of the door.

4.13.11* Door Opening Force. The maximum force for pushing or pulling open a door shall be as follows:

(1) Fire doors shall have the minimum opening force allowable by the appropriate administrative authority.

(2) Other doors.

(a) exterior hinged doors: *(Reserved).*

(b) interior hinged doors: 5 lbf (22.2N)

(c) sliding or folding doors: 5 lbf (22.2N)

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

4.13.12* Automatic Doors and Power-Assisted Doors. If an automatic door is used, then it shall comply with American National Standard for Power-Operated Doors, ANSI A156.10-1979. Slowly opening, low-powered, automatic doors shall be considered a type of custom design installation as described in paragraph 1.1.1 of ANSI A156.10-1979. Such doors shall not open to back check faster than 3 seconds and shall require no more than 15 lbf (66.6N) to stop door movement. If a power-assisted door is used, its door-opening force shall comply with 4.13.11 and its closing shall conform to the requirements in section 10 of ANSI A156.10-1979.

4.14 Entrances.

4.14.1 Minimum Number. *Entrances required to be accessible by 4.1* shall be part of an accessible route and shall comply with 4.3. Such entrances shall be connected by an accessible route to public transportation stops, to accessible parking and passenger loading zones, and to public streets or sidewalks if available (see 4.3.2(1)). They shall also be connected by an accessible route to all accessible spaces or elements within the building or facility.

4.14.2 Service Entrances. A service entrance shall not be the sole accessible entrance unless it is the only entrance to a building or facility (for example, in a factory or garage).

4.15 Drinking Fountains and Water Coolers.

4.15.1 Minimum Number. *Drinking fountains or water coolers required to be accessible by 4.1 shall comply with 4.15.*

4.15.2* Spout Height. Spouts shall be no higher than 36 in (915 mm), measured from the floor or ground surfaces to the spout outlet (see Fig. 27(a)).

4.15.3 Spout Location. The spouts of drinking fountains and water coolers shall be at the front of the unit and shall direct the water flow in a trajectory that is parallel or nearly parallel to the front of the unit. The spout shall provide a flow of water at least 4 in (100 mm) high so as to allow the insertion of a cup or glass under the flow of water.

4.15.4 Controls. Controls shall comply with 4.27.4. *Unit controls shall be front mounted or side mounted near the front edge.*

4.15.5 Clearances.

(1) Wall- and post-mounted cantilevered units shall have a clear knee space between the bottom of the apron and the floor or ground at least 27 in (685 mm) high, 30 in (760 mm) wide, and 17 in to 19 in (430 mm to 485 mm) deep (see Fig. 27(a) and (b)). Such units shall also have a minimum clear floor space 30 in by 48 in (760 mm by 1220 mm) to allow a person in a wheelchair to approach the unit facing forward.

(2) Free-standing or built-in units not having a clear space under them shall have a clear floor space at least 30 in by 48 in (760 mm by 1220 mm) that allows a person in a wheelchair to make a parallel approach to the unit (see Fig. 27(c) and (d)). This clear floor space shall comply with 4.2.4.

4.16 Water Closets.

4.16.1 General. Accessible water closets shall comply with 4.16. For water closets in *accessible* dwelling units, see 4.34.5.2.

4.16.2 Clear Floor Space. Clear floor space for water closets not in stalls shall comply with Fig. 28. Clear floor space may be arranged to allow either a left-handed or right-handed approach.

4.16.3* Height. The height of water closets shall be 17 in to 19 in (430 mm to 485 mm), measured to the top of the toilet seat (see Fig. 29(b)). *Seats shall not be sprung to return to a lifted position.*

4.16.4* Grab Bars. Grab bars for water closets not located in stalls shall comply with Fig. 29 and 4.26.

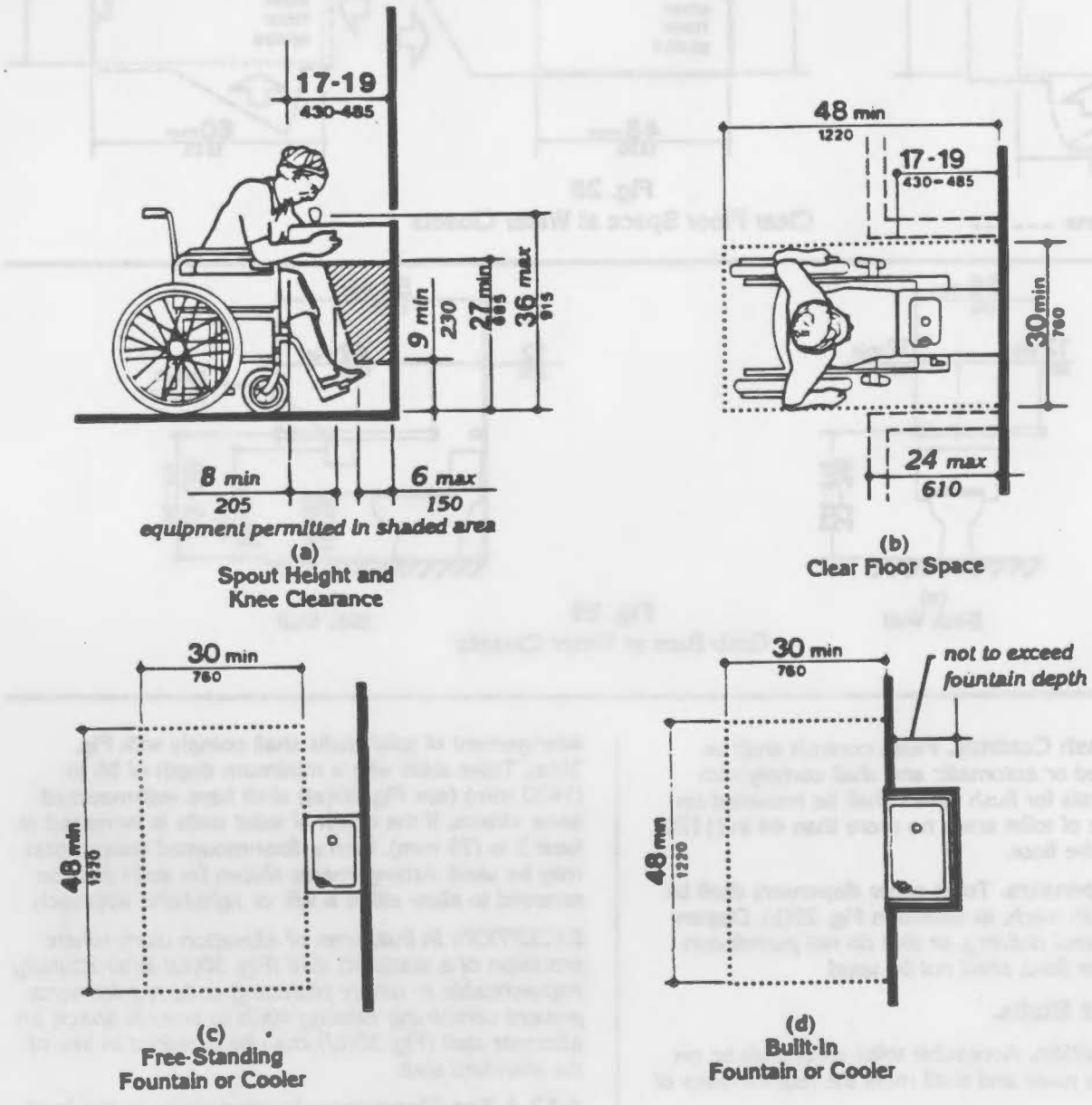
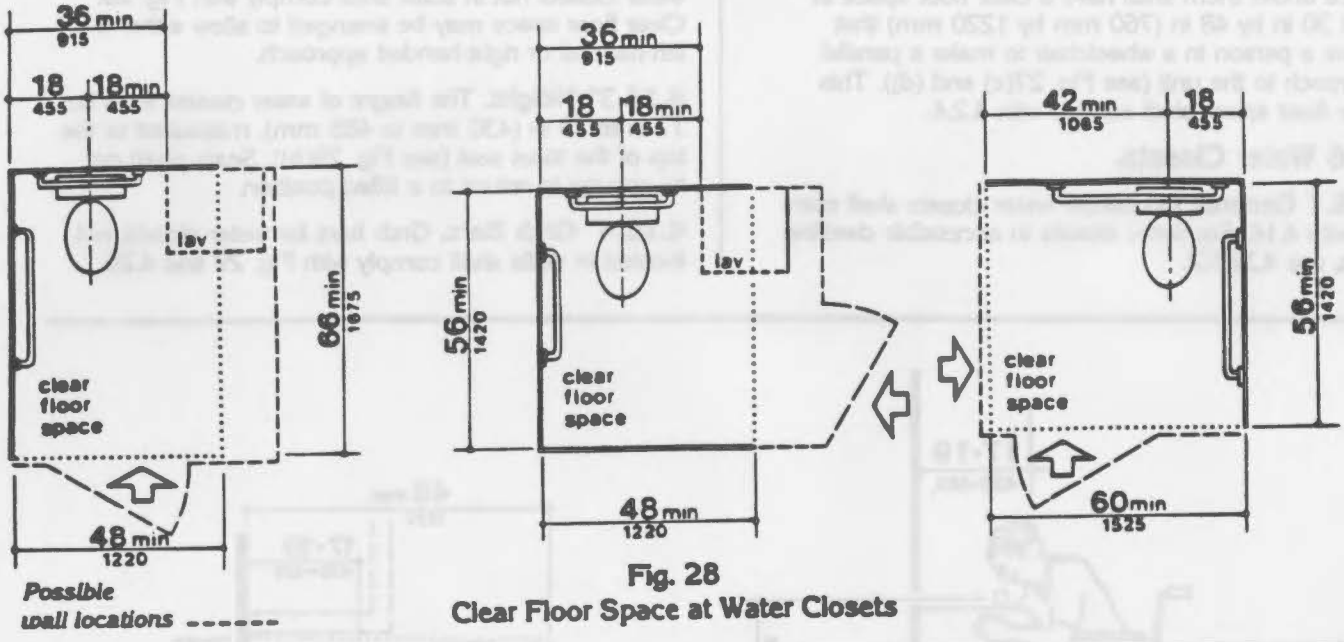


Fig. 27
Drinking Fountains and Water Coolers

4.16 Water Closets



Possible wall locations ------

Fig. 28
Clear Floor Space at Water Closets

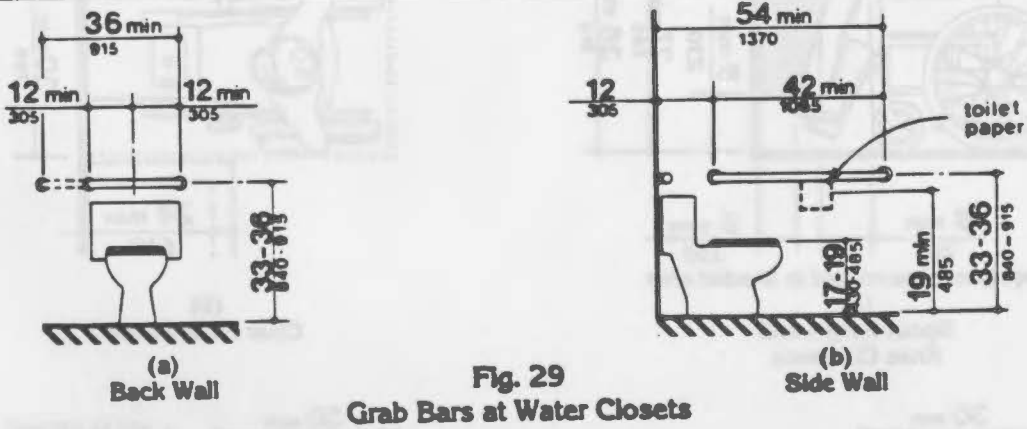


Fig. 29
Grab Bars at Water Closets

4.16.5* Flush Controls. Flush controls shall be hand operated *or automatic* and shall comply with 4.27.4. Controls for flush valves shall be mounted on the wide side of toilet areas no more than 44 in (1120 mm) above the floor.

4.16.6 Dispensers. Toilet paper dispensers shall be installed within reach, as shown in Fig. 29(b). *Dispensers that control delivery, or that do not permit continuous paper flow, shall not be used.*

4.17 Toilet Stalls.

4.17.1 Location. Accessible toilet stalls shall be on an accessible route and shall meet the requirements of 4.17.

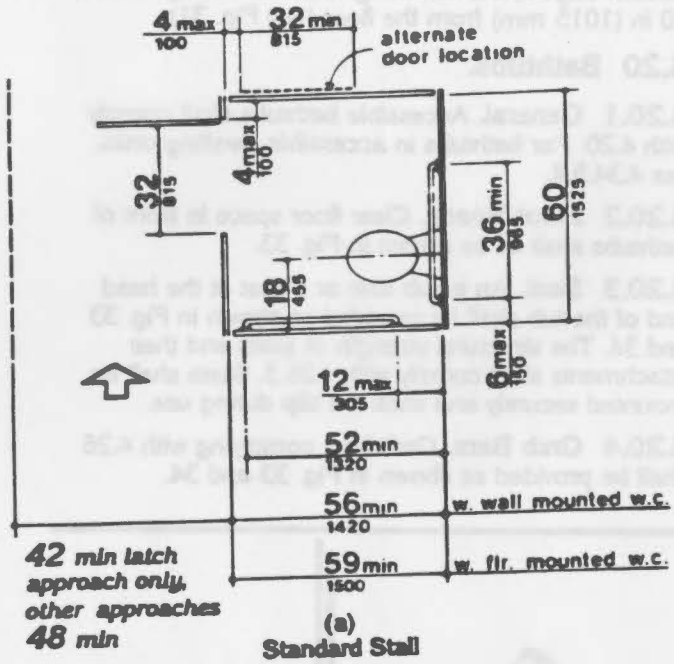
4.17.2 Water Closets. Water closets in *accessible* stalls shall comply with 4.16.

4.17.3 Size and Arrangement. The size and arrangement of toilet stalls shall comply with Fig. 30(a). Toilet stalls with a minimum depth of 56 in (1420 mm) (see Fig. 30(a)) shall have wall-mounted water closets. If the depth of toilet stalls is increased at least 3 in (75 mm), then a floor-mounted water closet may be used. Arrangements shown for stalls may be reversed to allow either a left- or right-hand approach.

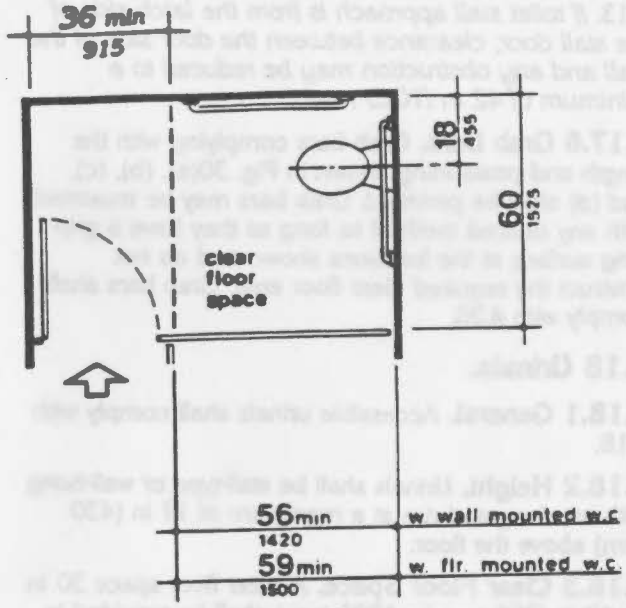
EXCEPTION: In instances of alteration work where provision of a standard stall (Fig. 30(a)) is structurally impracticable or where plumbing code requirements prevent combining existing stalls to provide space, an alternate stall (Fig. 30(b)) may be provided in lieu of the standard stall.

4.17.4 Toe Clearances. In standard stalls, the front partition and at least one side partition shall provide a toe clearance of at least 9 in (230 mm) above the floor. If the depth of the stall is greater than 60 in (1525 mm), then the toe clearance is not required.

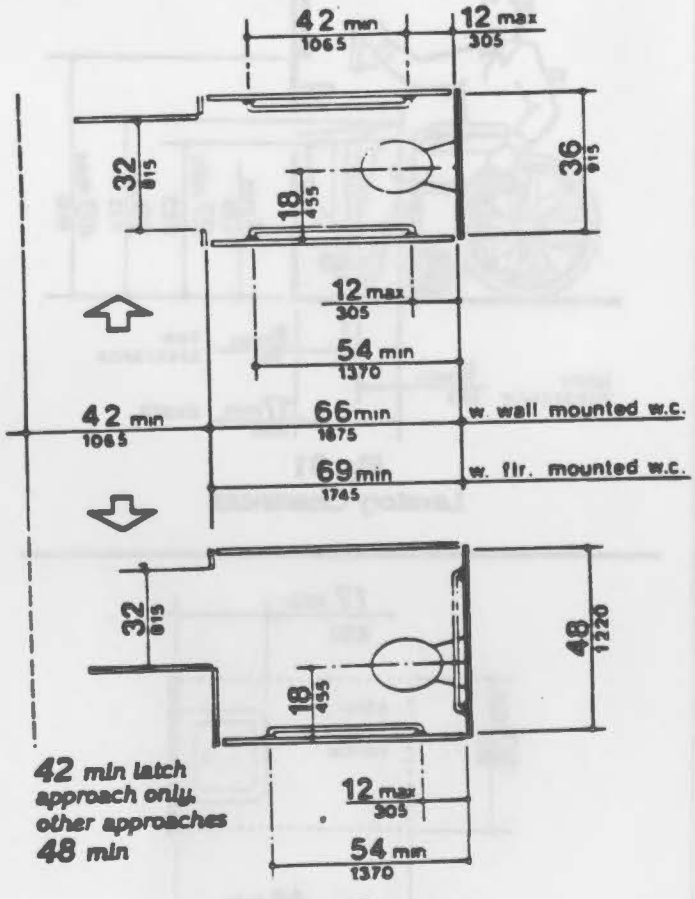
4.17 Toilet Stalls



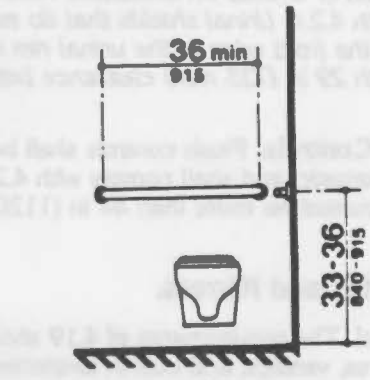
(a)
Standard Stall



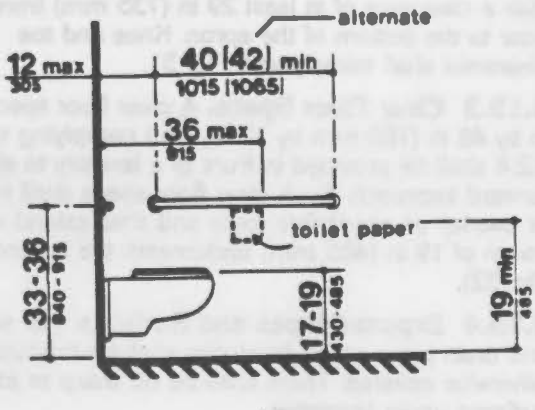
(a-1)
Standard Stall (end of row)



(b)
Alternate Stalls



(c)
Rear Wall of Standard Stall



(d)
Side Walls

Fig. 30
Toilet Stalls

4.17.5* Doors. Toilet stall doors shall comply with 4.13. *If toilet stall approach is from the latch side of the stall door, clearance between the door side of the stall and any obstruction may be reduced to a minimum of 42 in (1065 mm).*

4.17.6 Grab Bars. Grab bars complying with the length and positioning shown in Fig. 30(a), (b), (c), and (d) shall be provided. Grab bars may be mounted with any desired method as long as they have a gripping surface at the locations shown and do not obstruct the required clear floor area. Grab bars shall comply with 4.26.

4.18 Urinals.

4.18.1 General. Accessible urinals shall comply with 4.18.

4.18.2 Height. Urinals shall be stall-type or wall-hung with an elongated rim at a maximum of 17 in (430 mm) above the floor.

4.18.3 Clear Floor Space. A clear floor space 30 in by 48 in (760 mm by 1220 mm) shall be provided in front of urinals to allow forward approach. This clear space shall adjoin or overlap an accessible route and shall comply with 4.2.4. *Urinal shields that do not extend beyond the front edge of the urinal rim may be provided with 29 in (735 mm) clearance between them.*

4.18.4 Flush Controls. Flush controls shall be hand operated or automatic, and shall comply with 4.27.4, and shall be mounted no more than 44 in (1120 mm) above the floor.

4.19 Lavatories and Mirrors.

4.19.1 General. The requirements of 4.19 shall apply to lavatory fixtures, vanities, and built-in lavatories.

4.19.2 Height and Clearances. Lavatories shall be mounted with *the rim or counter surface no higher than 34 in (865 mm) above the finished floor. Provide* a clearance of at least 29 in (735 mm) from the floor to the bottom of the apron. Knee and toe clearance shall comply with Fig. 31.

4.19.3 Clear Floor Space. A clear floor space 30 in by 48 in (760 mm by 1220 mm) complying with 4.2.4 shall be provided in front of a lavatory to allow forward approach. Such clear floor space shall adjoin or overlap an accessible route and shall extend a maximum of 19 in (485 mm) underneath the lavatory (see Fig. 32).

4.19.4 Exposed Pipes and Surfaces. Hot water and drain pipes under lavatories shall be insulated or otherwise covered. There shall be no sharp or abrasive surfaces under lavatories.

4.19.5 Faucets. Faucets shall comply with 4.27.4. Lever-operated, push-type, and electronically controlled mechanisms are examples of acceptable designs. Self-closing valves are allowed if the faucet remains open for at least 10 seconds.

4.19.6* Mirrors. Mirrors shall be mounted with the bottom edge *of the reflecting surface* no higher than 40 in (1015 mm) from the floor (see Fig. 31).

4.20 Bathtubs.

4.20.1 General. Accessible bathtubs shall comply with 4.20. For bathtubs in *accessible* dwelling units, see 4.34.5.4.

4.20.2 Floor Space. Clear floor space in front of bathtubs shall be as shown in Fig. 33.

4.20.3 Seat. An in-tub seat or a seat at the head end of the tub shall be provided as shown in Fig. 33 and 34. The structural strength of seats and their attachments shall comply with 4.26.3. Seats shall be mounted securely and shall not slip during use.

4.20.4 Grab Bars. Grab bars complying with 4.26 shall be provided as shown in Fig. 33 and 34.

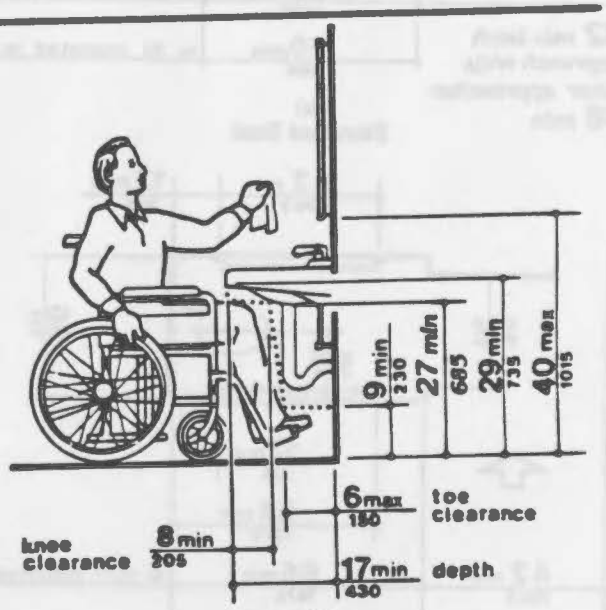


Fig. 31
Lavatory Clearances

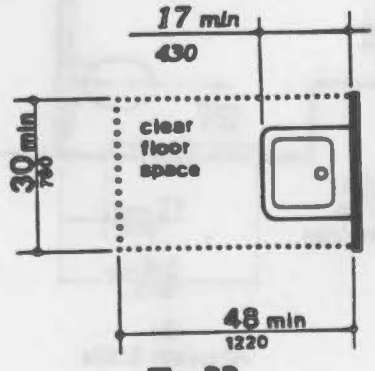


Fig. 32
Clear Floor Space at Lavatories

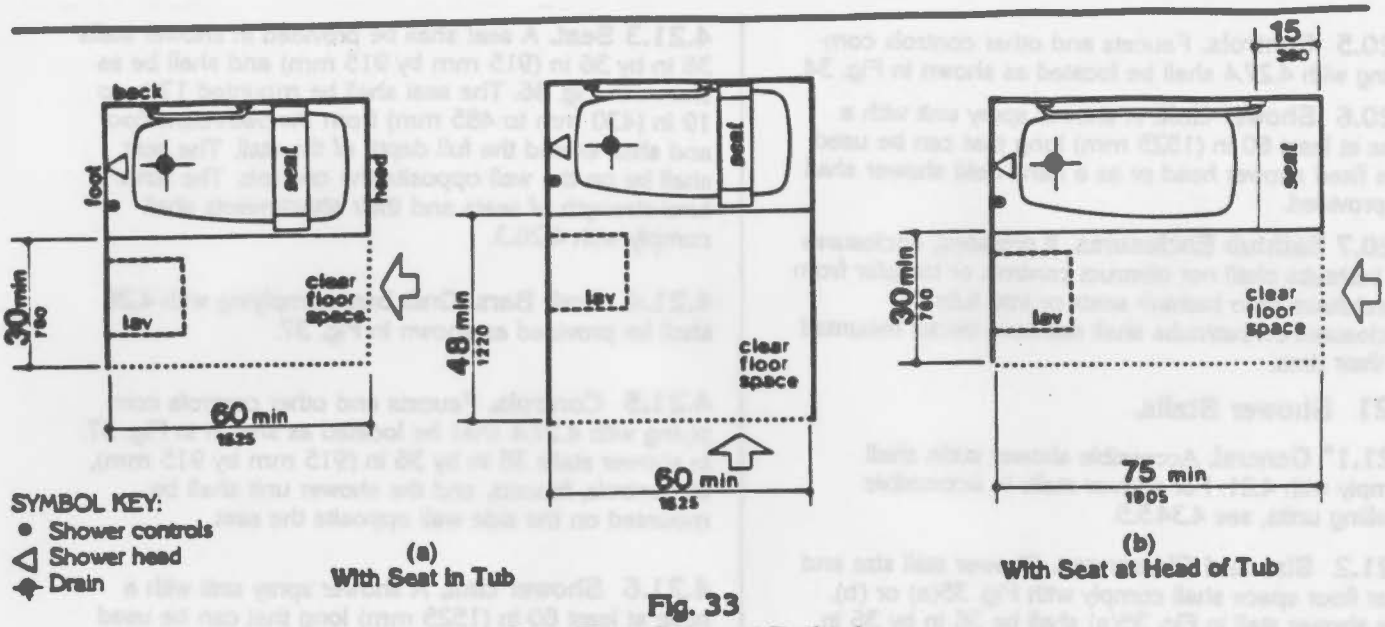


Fig. 33
Clear Floor Space at Bathtubs

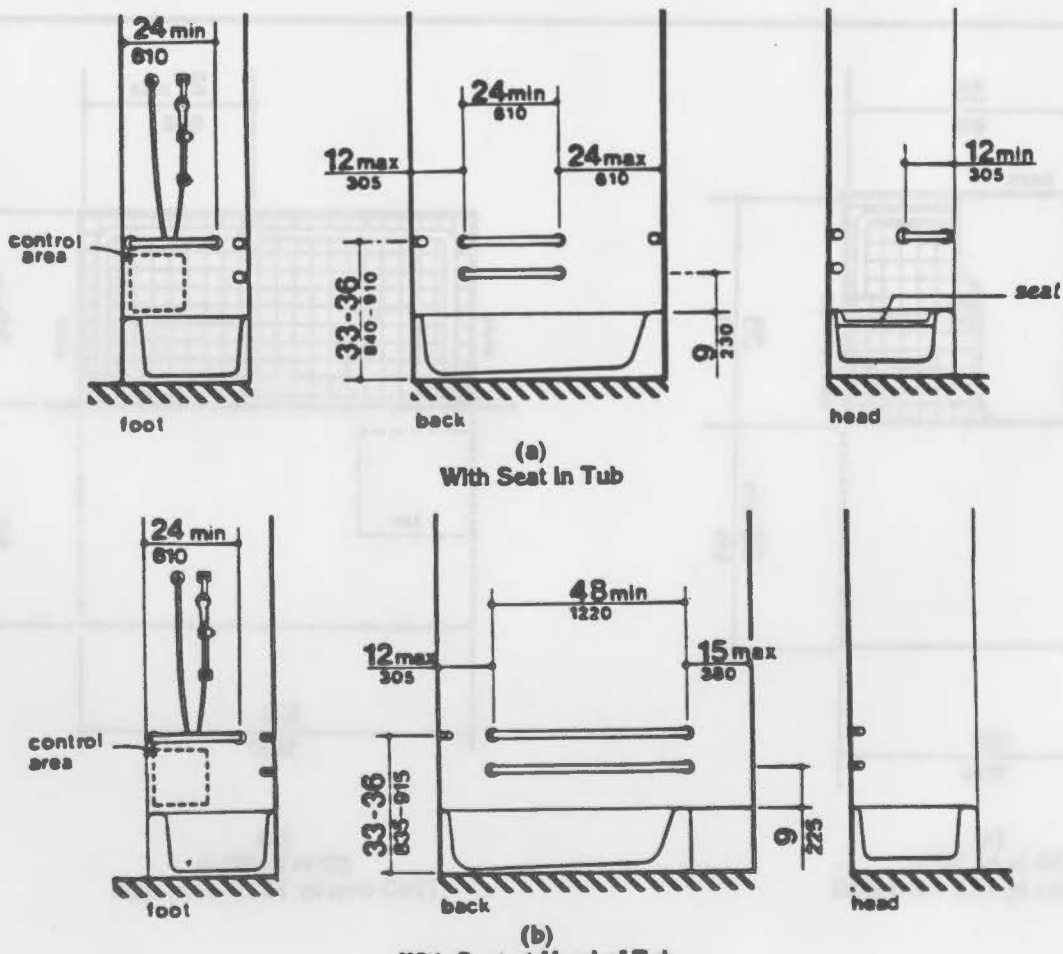


Fig. 34
Grab Bars at Bathtubs

4.20 Bathtubs

4.20.5 Controls. Faucets and other controls complying with 4.27.4 shall be located as shown in Fig. 34.

4.20.6 Shower Unit. A shower spray unit with a hose at least 60 in (1525 mm) long that can be used as a fixed shower head or as a hand-held shower shall be provided.

4.20.7 Bathtub Enclosures. If provided, enclosures for bathtubs shall not obstruct controls or transfer from wheelchairs onto bathtub seats or into tubs. Enclosures on bathtubs shall not have tracks mounted on their rims.

4.21 Shower Stalls.

4.21.1* General. Accessible shower stalls shall comply with 4.21. For shower stalls in *accessible* dwelling units, see 4.34.5.5.

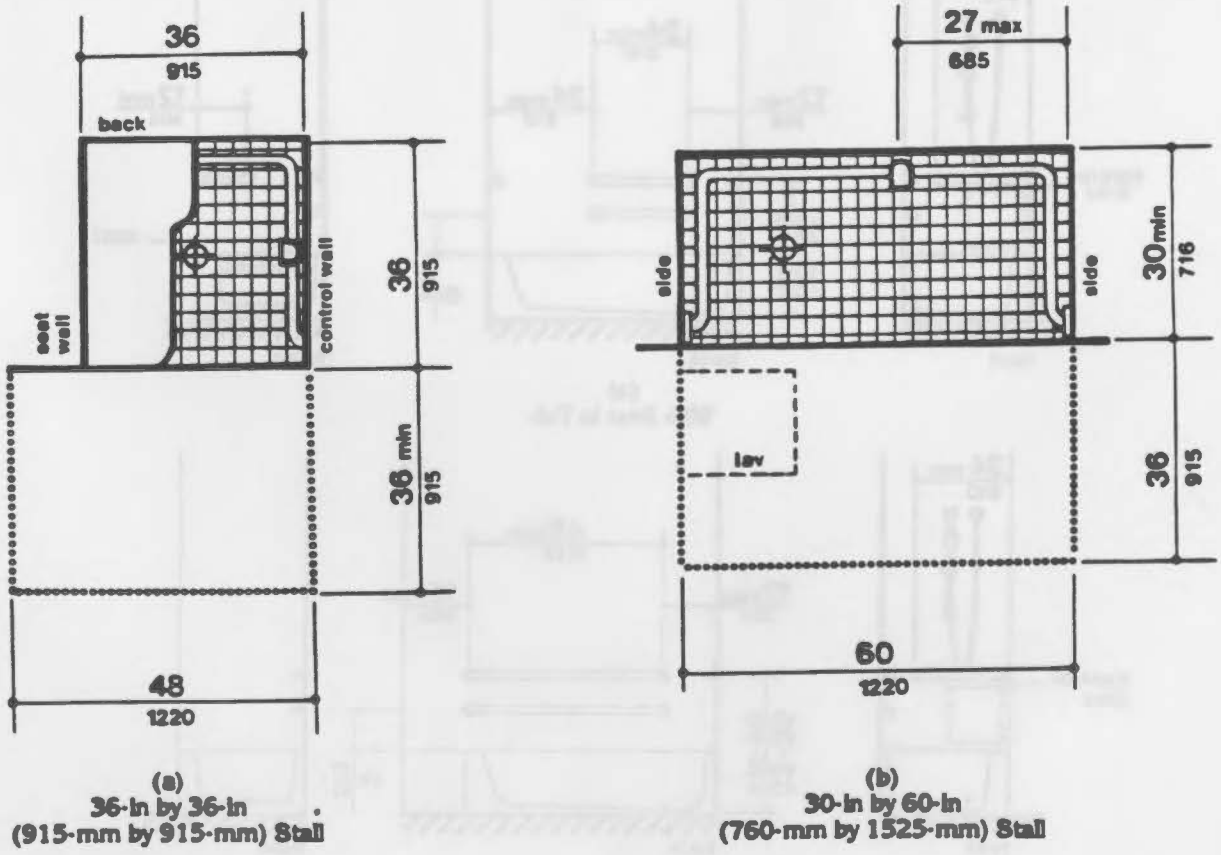
4.21.2 Size and Clearances. Shower stall size and clear floor space shall comply with Fig. 35(a) or (b). The shower stall in Fig. 35(a) shall be 36 in by 36 in (915 mm by 915 mm). The shower stall in Fig. 35(b) will fit into the space required for a bathtub.

4.21.3 Seat. A seat shall be provided in shower stalls 36 in by 36 in (915 mm by 915 mm) and shall be as shown in Fig. 36. The seat shall be mounted 17 in to 19 in (430 mm to 485 mm) from the bathroom floor and shall extend the full depth of the stall. The seat shall be on the wall opposite the controls. The structural strength of seats and their attachments shall comply with 4.26.3.

4.21.4 Grab Bars. Grab bars complying with 4.26 shall be provided as shown in Fig. 37.

4.21.5 Controls. Faucets and other controls complying with 4.27.4 shall be located as shown in Fig. 37. In shower stalls 36 in by 36 in (915 mm by 915 mm), all controls, faucets, and the shower unit shall be mounted on the side wall opposite the seat.

4.21.6 Shower Unit. A shower spray unit with a hose at least 60 in (1525 mm) long that can be used as a fixed shower head or as a hand-held shower shall be provided.



(a)
36-in by 36-in
(915-mm by 915-mm) Stall

(b)
30-in by 60-in
(760-mm by 1525-mm) Stall

Fig. 35
Shower Size and Clearances

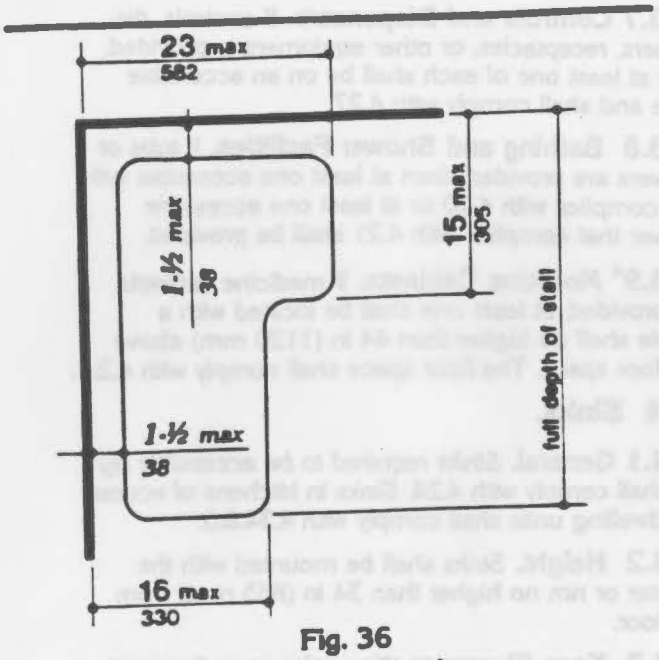


Fig. 36
Shower Seat Design

EXCEPTION: In unmonitored facilities where vandalism is a consideration, a fixed shower head mounted at 48 in (1220 mm) above the shower floor may be used in lieu of a hand-held shower head.

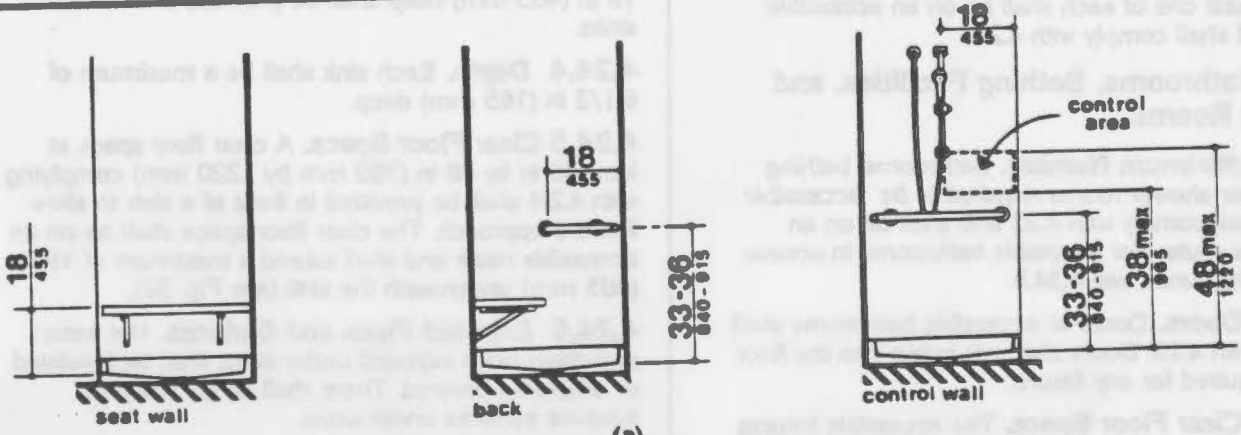
4.21.7 Curbs. If provided, curbs in shower stalls 36 in by 36 in (915 mm by 915 mm) shall be no higher than *1/2 in (13 mm)*. Shower stalls that are 30 in by 60 in (760 mm by 1525 mm) shall not have curbs.

4.21.8 Shower Enclosures. If provided, enclosures for shower stalls shall not obstruct controls or obstruct transfer from wheelchairs onto shower seats.

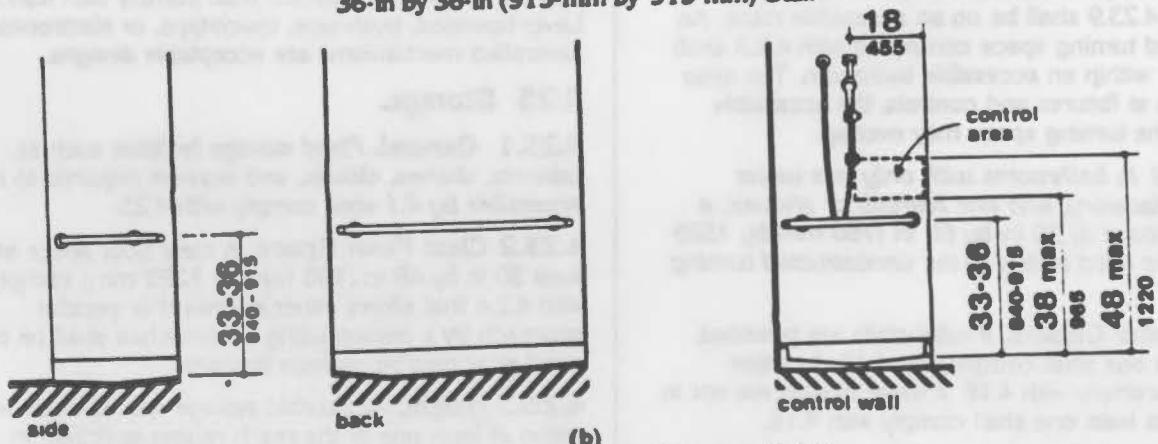
4.22 Toilet Rooms.

4.22.1 Minimum Number. *Toilet facilities required to be accessible by 4.1* shall comply with 4.22. Accessible toilet rooms shall be on an accessible route.

4.22.2 Doors. All doors to accessible toilet rooms shall comply with 4.13. Doors shall not swing into the clear floor space required for any fixture.



(a)
36-in by 36-in (915-mm by 915-mm) Stall



(b)
30-in by 60-in (760-mm by 1525-mm) Stall

Fig. 37
Grab Bars at Shower Stalls

4.22.3 Clear Floor Space. The accessible fixtures and controls required in 4.22.4, 4.22.5, 4.22.6, and 4.22.7 shall be on an accessible route. An unobstructed turning space complying with 4.2.3 shall be provided within an accessible toilet room. The clear floor space at fixtures and controls, the accessible route, and the turning space may overlap.

EXCEPTION: In toilet rooms with only one water closet and one lavatory, a clear floor space of 30 in by 60 in (815 mm by 1525 mm) may be used in lieu of the unobstructed turning space.

4.22.4 Water Closets. If toilet stalls are provided, then at least one shall comply with 4.17; its water closet shall comply with 4.16. If water closets are not in stalls, then at least one shall comply with 4.16.

4.22.5 Urinals. If urinals are provided, *then* at least one shall comply with 4.18.

4.22.6 Lavatories and Mirrors. If lavatories and mirrors are provided, *then* at least one of each shall comply with 4.19.

4.22.7 Controls and Dispensers. If controls, dispensers, receptacles, or other equipment is provided, *then* at least one of each shall be on an accessible route and shall comply with 4.27.

4.23 Bathrooms, Bathing Facilities, and Shower Rooms.

4.23.1 Minimum Number. Bathrooms, bathing facilities, or shower rooms *required to be accessible by 4.1* shall comply with 4.23 and shall be on an accessible route. For adaptable bathrooms in accessible dwelling units, see 4.34.5.

4.23.2 Doors. Doors to accessible bathrooms shall comply with 4.13. Doors shall not swing into the floor space required for any fixture.

4.23.3 Clear Floor Space. The accessible fixtures and controls required in 4.23.4, 4.23.5, 4.23.6, 4.23.7, 4.23.8, and 4.23.9 shall be on an accessible route. An unobstructed turning space complying with 4.2.3 shall be provided within an accessible bathroom. The clear floor spaces at fixtures and controls, the accessible route, and the turning space may overlap.

EXCEPTION: In bathrooms with only one water closet, one lavatory, and one bathtub or shower, a clear floor space of 30 in by 60 in (760 mm by 1525 mm) may be used in lieu of the unobstructed turning space.

4.23.4 Water Closets. If toilet stalls are provided, then at least one shall comply with 4,17; its water closet shall comply with 4.16. If water closets are not in stalls, then at least one shall comply with 4.16.

4.23.5 Urinals. If urinals are provided, then at least one shall comply with 4.18.

4.23.6 Lavatories and Mirrors. If lavatories and mirrors are provided, then at least one of each shall comply with 4.19.

4.23.7 Controls and Dispensers. If controls, dispensers, receptacles, or other equipment is provided, *then* at least one of each shall be on an accessible route and shall comply with 4.27.

4.23.8 Bathing and Shower Facilities. If tubs or showers are provided, then at least one accessible tub that complies with 4.20 or at least one accessible shower that complies with 4.21 shall be provided.

4.23.9° Medicine Cabinets. If medicine cabinets are provided, at least one shall be located with a usable shelf no higher than 44 in (1120 mm) above the floor space. The floor space shall comply with 4.2.4.

4.24 Sinks.

4.24.1 General. *Sinks required to be accessible by 4.1* shall comply with 4.24. Sinks in kitchens of accessible dwelling units shall comply with 4.34.6.5.

4.24.2 Height. Sinks shall be mounted with the counter or rim no higher than 34 in (865 mm) from the floor.

4.24.3 Knee Clearance. Knee clearance that is *at least* 27 in (685 mm) high, 30 in (760 mm) wide, and 19 in (485 mm) deep shall be provided underneath sinks.

4.24.4 Depth. Each sink shall be a maximum of 6-1/2 in (165 mm) deep.

4.24.5 Clear Floor Space. A clear floor space at least 30 in by 48 in (760 mm by 1220 mm) complying with 4.2.4 shall be provided in front of a sink to allow forward approach. The clear floor space shall be on an accessible route and shall extend a maximum of 19 in (485 mm) underneath the sink (see Fig. 32).

4.24.6 Exposed Pipes and Surfaces. Hot water and drain pipes exposed under sinks shall be insulated or otherwise covered. There shall be no sharp or abrasive surfaces under sinks.

4.24.7 Faucets. Faucets shall comply with 4.27.4. Lever-operated, push-type, touch-type, or electronically controlled mechanisms are acceptable designs.

4.25 Storage.

4.25.1 General. *Fixed* storage facilities such as cabinets, shelves, closets, and drawers *required to be accessible by 4.1* shall comply with 4.25.

4.25.2 Clear Floor Space. A clear floor space at least 30 in by 48 in (760 mm by 1220 mm) complying with 4.2.4 that allows either a forward or parallel approach by a person using a wheelchair shall be provided at accessible storage facilities.

4.25.3 Height. Accessible storage spaces shall be within at least one of the reach ranges specified in 4.2.5 and 4.2.6. Clothes rods shall be a maximum of 54 in (1370 mm) from the floor (see Fig. 38).

4.25.4 Hardware. Hardware for accessible storage facilities shall comply with 4.27.4. Touch latches and U-shaped pulls are acceptable.

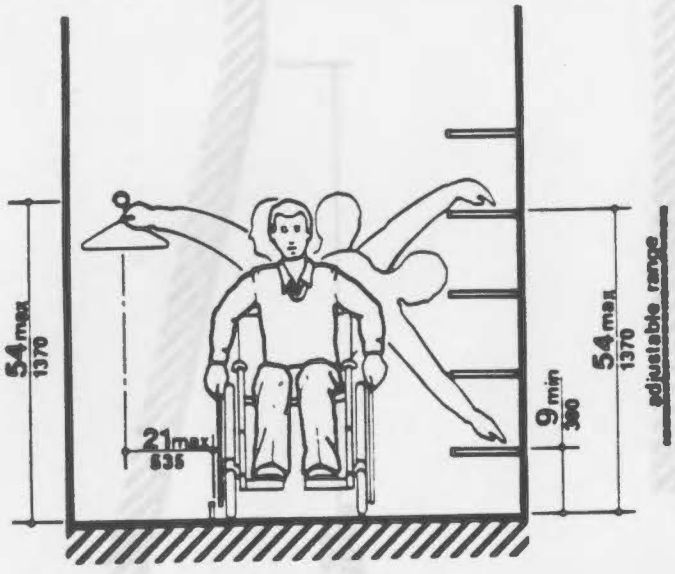


Fig. 38
Storage Shelves and Closets

4.26 Handrails, Grab Bars, and Tub and Shower Seats.

4.26.1* General. All handrails, grab bars, and tub and shower seats *required to be accessible by 4.1, 4.8, or 4.9* shall comply with 4.26.

4.26.2* Size and Spacing of Grab Bars and Handrails. The diameter or width of the gripping surfaces of a handrail or grab bar shall be 1-1/4 in to 1-1/2 in (32 mm to 38 mm), or the shape shall provide an equivalent gripping surface. If handrails or grab bars are mounted adjacent to a wall, the space between the wall and the grab bar shall be 1-1/2 in (38 mm) (see Fig. 39(a), (b), and (c)). Handrails may be located in a recess if the recess is a maximum of 3 in (75 mm) deep and extends at least 18 in (455 mm) above the top of the rail (see Fig. 39(d)).

4.26.3 Structural Strength. The structural strength of grab bars, tub and shower seats, fasteners, and mounting devices shall meet the following specification:

(1) Bending stress in a grab bar or seat induced by the maximum bending moment from the application of 250 lbf (1112N) shall be less than the allowable stress for the material of the grab bar or seat.

(2) Shear stress induced in a grab bar or seat by the application of 250 lbf (1112N) shall be less than the allowable shear stress for the material of the grab bar or seat. If the connection between the grab bar or seat and its mounting bracket or other support is considered to be fully restrained, then direct and torsional shear stresses shall be totaled for the combined shear stress, which shall not exceed the allowable shear stress.

(3) Shear force induced in a fastener or mounting device from the application of 250 lbf (1112N) shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.

(4) Tensile force induced in a fastener by a direct tension force of 250 lbf (1112N) plus the maximum moment from the application of 250 lbf (1112N) shall be less than the allowable withdrawal and the supporting structure.

(5) Grab bars shall not rotate within their fittings.

4.26.4 Eliminating Hazards. A handrail or grab bar and any wall or other surface adjacent to it shall be free of any sharp or abrasive elements. Edges shall have a minimum radius of 1/8 in (3.2 mm).

4.27 Controls and Operating Mechanisms.

4.27.1 General. Controls and operating mechanisms *required to be accessible by 4.1* shall comply with 4.27.

4.27.2 Clear Floor Space. Clear floor space complying with 4.2.4 that allows a forward or a parallel approach by a person using a wheelchair shall be provided at controls, dispensers, receptacles, and other operable equipment.

4.27.3* Height. The highest operable part of all controls, dispensers, receptacles, and other operable equipment shall be placed within at least one of the reach ranges specified in 4.2.5 and 4.2.6. Except where the use of special equipment dictates otherwise, electrical and communications system receptacles on walls shall be mounted no less than 15 in (380 mm) above the floor.

4.27.4 Operation. Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 5 lbf (22.2 N).

4.28 Alarms.

4.28.1 General. *Alarm systems required to be accessible by 4.1 shall comply with 4.28.*

4.28.2* Audible Alarms. If provided, audible emergency alarms shall produce a sound that exceeds the prevailing equivalent sound level in the room or space by at least 15 decibels or exceeds any maximum sound level with a duration of 30 seconds by 5 decibels, whichever is louder. Sound levels for alarm signals shall not exceed 120 decibels.

4.28.3* Visual Alarms. If provided, electrically powered internally illuminated emergency exit signs shall flash as a visual emergency alarm in conjunction with audible emergency alarms. The flashing frequency of visual alarm devices shall be less than 5 Hz. If such alarms use electricity from the building as a power source, then they shall be installed on the same system as the audible emergency alarms.

4.28 Alarms

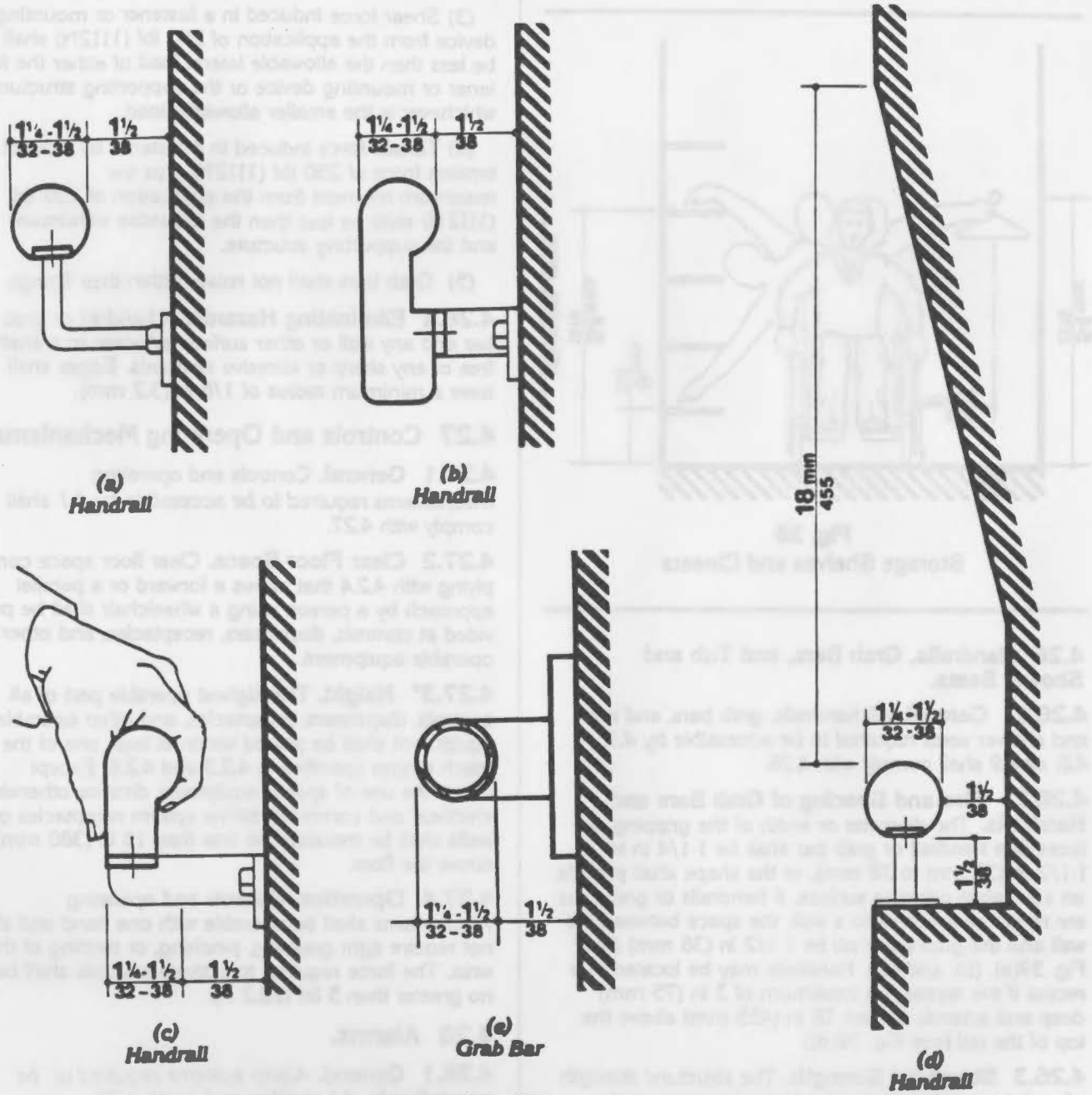


Fig. 39
Size and Spacing of Handrails and Grab Bars

EXCEPTIONS:

(1) Visual alarm devices that are mounted adjacent to emergency exit signs may be used in lieu of flashing exit signs.

(2) Specialized systems utilizing advanced technology may be substituted for the visual systems specified above if equivalent protection is afforded handicapped users of the building or facility.

4.28.4* Auxiliary Alarms. Accessible sleeping accommodations shall have a visual alarm connected to the building emergency alarm system or shall have a standard 110-volt electrical receptacle into which such an alarm could be connected. Instructions for use of the auxiliary alarm or connection shall be provided.

4.29 Tactile Warnings.

4.29.1 General. Tactile warnings *required to be accessible by 4.1* shall comply with 4.29.

4.29.2* Tactile Warnings on Walking Surfaces. *(Reserved).*

4.29.3° Tactile Warnings on Doors to Hazardous Areas. Doors that lead to areas that might prove dangerous to a blind person (for example, doors to loading platforms, boiler rooms, stages, and the like) shall be made identifiable to the touch by a textured surface on the door handle, knob, pull, or other operating hardware. This textured surface may be made by knurling or roughing or by a material applied to the contact surface. Such textured surfaces shall not be provided for emergency exit doors or any doors other than those to hazardous areas.

4.29.4 Tactile Warnings at Stairs. *(Reserved).*

4.29.5° Tactile Warnings at Hazardous Vehicular Areas. *(Reserved).*

4.29.6° Tactile Warnings at Reflecting Pools. *(Reserved).*

4.29.7° Standardization. Textured surfaces for tactile door warnings shall be standard within a building, facility, site, or complex of buildings.

4.30 Signage.

4.30.1° General. *Signage required to be accessible by 4.1 shall comply with 4.30.*

4.30.2° Character Proportion. Letters and numbers on signs shall have a width-to-height ratio between 3:5 and 1:1 and a stroke width-to-height ratio between 1:5 and 1:10.

4.30.3° Color Contrast. Characters and symbols shall contrast with their background — either light characters on a dark background or dark characters on a light background.

4.30.4° Raised or Indented Characters or Symbols. Letters and numbers on signs shall be raised or incised 1/32 in (0.8 mm) minimum and shall be sans serif characters. Raised characters or symbols shall be at least 5/8 in (16 mm) high, but no higher than 2 in (50 mm). Indented characters or symbols shall have a stroke width of at least 1/4 in (6 mm). Symbols or pictographs on signs shall be raised or indented 1/32 in (0.8 mm) minimum.

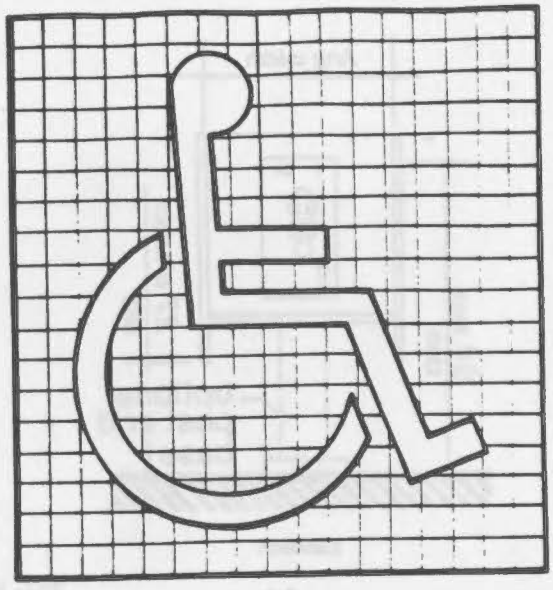
4.30.5 Symbols of Accessibility. Accessible facilities *required to be* identified *by 4.1, shall use* the international symbol of accessibility. The symbol shall be displayed as shown in Fig. 43.

4.30.6 *Mounting Location and Height.* *Interior signage shall be located alongside the door on the latch side and shall be mounted at a height of between 54 in and 66 in (1370 mm and 1675 mm) above the finished floor.*

4.31 Telephones.

4.31.1 General. *Public telephones required to be accessible by 4.1 shall comply with 4.31.*

4.31.2 Clear Floor or Ground Space. A clear floor or ground space at least 30 in by 48 in (760 mm by 1220 mm) that allows either a forward or parallel approach by a person using a wheelchair shall be provided at telephones (see Fig. 44). The clear floor or ground space shall comply with 4.2.4. Bases, enclosures, and fixed seats shall not impede approaches to telephones by people who use wheelchairs.



(a)
Proportions

(b)
Display Conditions

Fig. 43
International Symbol of Accessibility

4.31.3° Mounting Height. The highest operable part of the telephone shall be within the reach ranges specified in 4.2.5 or 4.2.6.

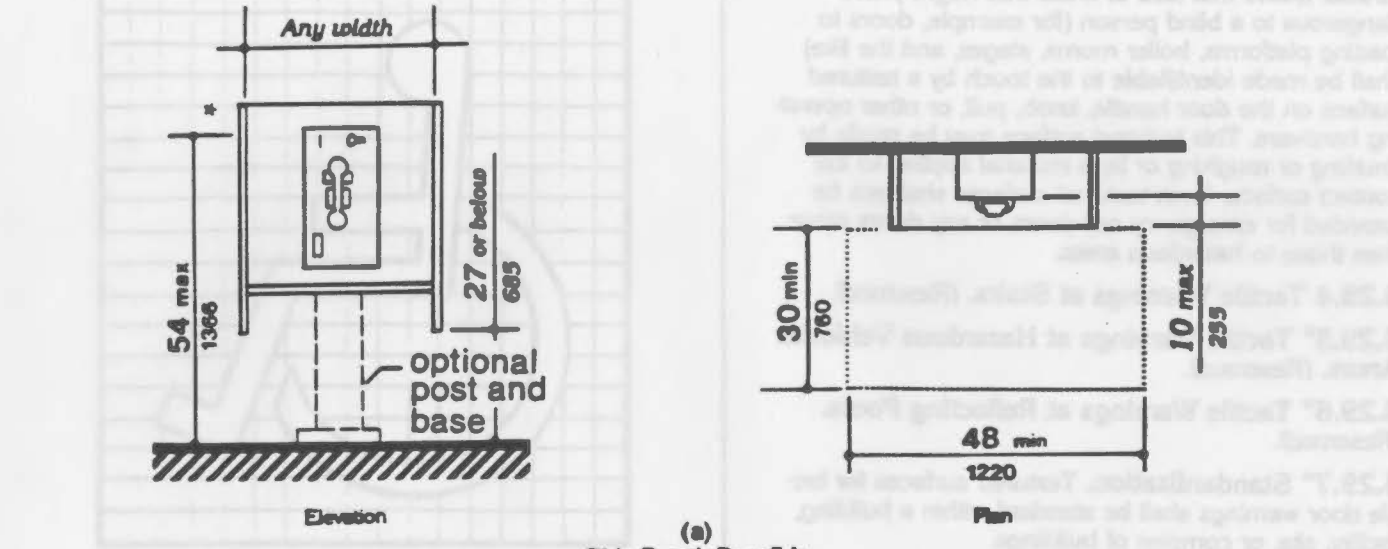
4.31.4 *Protruding Objects.* *Telephones shall comply with 4.4.*

4.31.5° Equipment for Hearing Impaired People. Telephones shall be equipped with a receiver that generates a magnetic field in the area of the receiver cap. *Volume controls shall be provided in accordance with 4.1.2.*

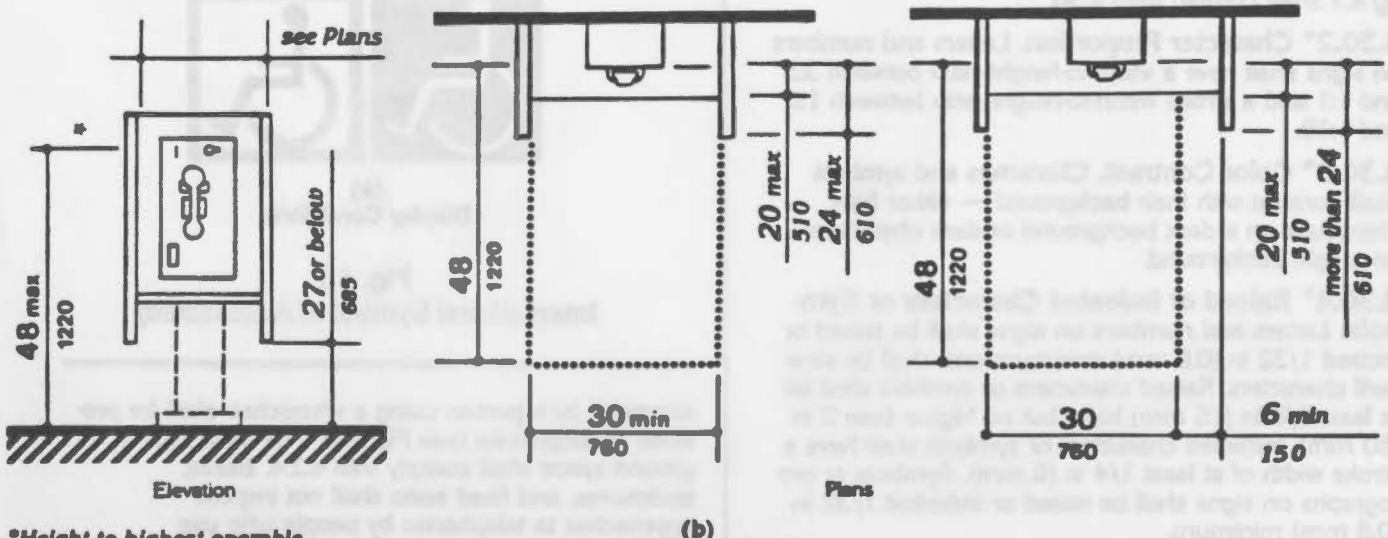
4.31.6 Controls. Telephones shall have pushbutton controls where service for such equipment is available.

4.31.7 Telephone Books. Telephone books, if provided, shall be located *in a position that complies with the reach ranges specified in 4.2.5 and 4.2.6.*

4.31 Telephones



(a)
Side Reach Possible



*Height to highest operable parts which are essential to basic operation of telephone.

(b)
Forward Reach Required

Fig. 44
Mounting Heights and Clearances for Telephones

4.31.8 Cord Length. The cord from the telephone to the handset shall be at least 29 in (735 mm) long.

4.32 Seating, Tables, and Work Surfaces.

4.32.1 Minimum Number. Fixed or built-in seating, tables, or work surfaces *required to be accessible by 4.1 shall comply with 4.32.*

4.32.2 Seating. If seating spaces for people in wheelchairs are provided at tables, counters, or work surfaces, clear floor space complying with 4.2.4 shall be provided. Such clear floor space shall not overlap knee space by more than 19 in (485 mm) (see Fig. 45).

4.32.3 Knee Clearances. If seating for people in wheelchairs is provided at tables, counters, and work surfaces, knee spaces at least 27 in (685 mm) high, 30 in (760 mm) wide, and 19 in (485 mm) deep shall be provided (see Fig. 45).

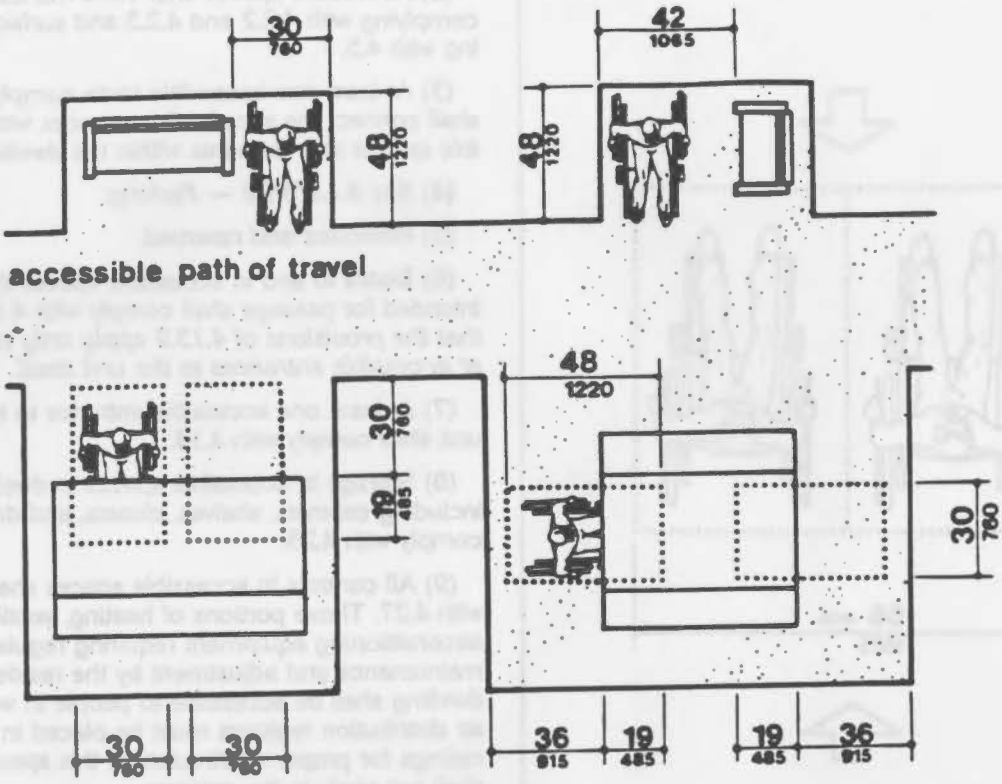


Fig. 45
Minimum Clearances for Seating and Tables

4.32.4° Height of Work Surfaces. The tops of tables and work surfaces shall be from 28 in to 34 in (710 mm to 865 mm) from the floor or ground.

4.33 Assembly Areas.

4.33.1 Minimum Number. Assembly *and associated areas required to be accessible by 4.1 shall comply with 4.33.*

4.33.2° Size of Wheelchair Locations. Each wheelchair location shall provide minimum clear ground or floor spaces as shown in Fig. 46.

4.33.3° Placement of Wheelchair Locations. Wheelchair areas shall be an integral part of any fixed seating plan and shall be dispersed throughout the seating area. They shall adjoin an accessible route that also serves as a means of egress in case of emergency and shall be located to provide lines of sight comparable to those for all viewing areas.

EXCEPTION: Accessible viewing positions may be clustered for bleachers, balconies, and other areas having sight lines that require slopes of greater than 5 percent. Equivalent accessible viewing positions may be located on levels having accessible egress.

4.33.4 Surfaces. The ground or floor at wheelchair locations shall be level and shall comply with 4.5.

4.33.5 Access to Performing Areas. An accessible route shall connect wheelchair seating locations with performing areas, including stages, arena floors, dressing rooms, locker rooms, and other spaces used by performers.

4.33.6° Placement of Listening Systems. If the listening system provided serves individual fixed seats, then such seats shall be located within a 50 ft (15 m) viewing distance of the stage or playing area and shall have a complete view of the stage or playing area.

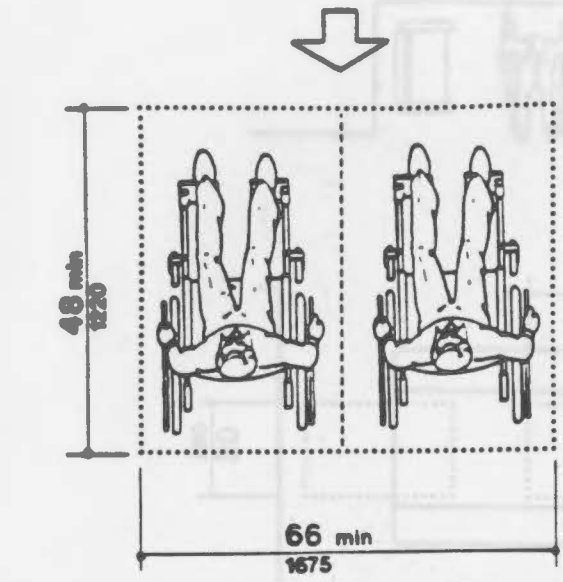
4.33.7° Types of Listening Systems. Audio loops and radio frequency systems are two acceptable types of listening systems.

4.34 Dwelling Units.

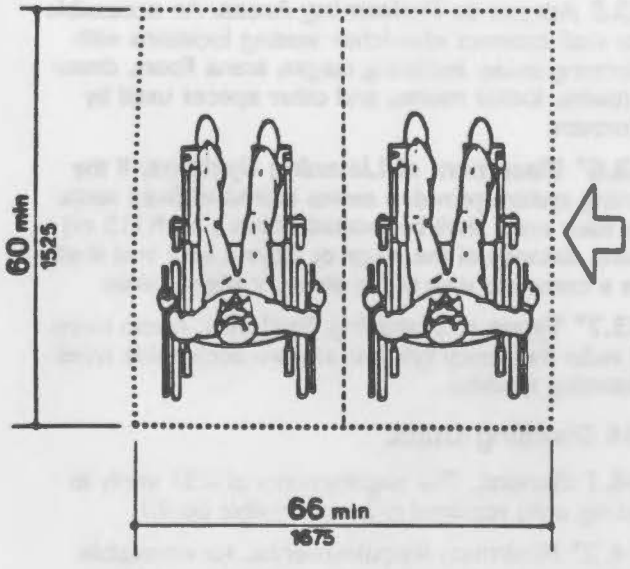
4.34.1 General. The requirements of 4.34 apply to dwelling units *required to be accessible by 4.1.*

4.34.2° Minimum Requirements. An accessible dwelling unit shall be on an accessible route. An accessible dwelling unit shall have the following accessible elements and spaces as a minimum:

(1) Common spaces and facilities serving individual accessible dwelling units (for example, entry walks, trash disposal facilities, and mail boxes) shall comply with 4.2 through 4.33.



(a)
Forward or Rear Access



(b)
Side Access

Fig. 46
Space Requirements for Wheelchair Seating Spaces in Series

(2) Accessible spaces shall have maneuvering space complying with 4.2.2 and 4.2.3 and surfaces complying with 4.5.

(3) At least one accessible route complying with 4.3 shall connect the accessible entrances with all accessible spaces and elements within the dwelling units.

(4) *See 4.1.1(5)(d) — Parking.*

(5) *Removed and reserved.*

(6) Doors to and in accessible spaces that are intended for passage shall comply with 4.13, *except that the provisions of 4.13.9 apply only to the doors at accessible entrances to the unit itself.*

(7) At least one accessible entrance to the dwelling unit shall comply with 4.14.

(8) Storage in accessible spaces in dwelling units, including cabinets, shelves, closets, and drawers, shall comply with 4.25.

(9) All controls in accessible spaces shall comply with 4.27. Those portions of heating, ventilating, and airconditioning equipment requiring regular, periodic maintenance and adjustment by the resident of a dwelling shall be accessible to people in wheelchairs. If air distribution registers must be placed in or close to ceilings for proper air circulation, this specification shall not apply to the registers.

(10) Emergency alarms *as required by 4.1 and* complying with 4.28.4 shall be provided in the dwelling unit.

(11) *Removed and reserved.*

(12) At least one full bathroom shall comply with 4.34.5. A full bathroom shall include a water closet, a lavatory, and a bathtub or a shower.

(13) The kitchen shall comply with 4.34.6.

(14) If laundry facilities are provided, they shall comply with 4.34.7.

(15) The following spaces shall be accessible and shall be on an accessible route:

(a) The living area.

(b) The dining area.

(c) The sleeping area, or the bedroom in one bedroom dwelling units, or at least two bedrooms or sleeping spaces in dwelling units with two or more bedrooms.

(d) Patios, terraces, balconies, carports, and garages, if provided with the dwelling unit.

4.34.3 Adaptability. The specifications for 4.34.5 and 4.34.6 *include* the concept of adaptability. *Accessible dwelling units may be designed for either permanent accessibility or adaptability.*

4.34.4 Consumer Information. To ensure that the existence of adaptable features will be known to the owner or occupant of a dwelling, the following con-

sumer information shall be provided in each *adaptable* dwelling unit available for *occupancy:*

(1) Notification of the alternate heights available for the kitchen counter and sink, and the existence of removable cabinets and bases, if provided, under counters, sinks, and lavatories.

(2) Notification of the provisions for the installation of grab bars at toilets, bathtubs, and showers.

(3) Notification that the dwelling unit is equipped to have a visual emergency alarm installed.

(4) Identification of the location where information and instructions are available for changing the height of counters, removing cabinets and bases, installing a visual emergency alarm system, and installing grab bars.

(5) Notification that the dwelling unit has been designed in accordance with this *Uniform Federal Accessibility Standards.*

In addition, the *parties who will be responsible for making adaptations* shall be provided with the following information:

(1) Instructions for adjusting or replacing kitchen counter and sink heights and for removing cabinets.

(2) A scale drawing showing methods and locations for the installation of grab bars.

(3) A scale drawing showing the location of adjustable or replaceable counter areas and removable cabinets.

(4) Identification of the location of any equipment and parts required for adjusting or replacing counter tops, cabinets, and sinks.

(5) Instructions for installing a visual emergency alarm system, if the dwelling unit is equipped for such an installation.

4.34.5° Bathrooms. *Accessible or* adaptable bathrooms shall be on an accessible route and shall comply with the requirements of 4.34.5.

4.34.5.1 Doors. Doors shall not swing into the clear floor space required for any fixture.

4.34.5.2 Water Closets.

(1) Clear floor space at the water closet shall be as shown in Fig. 47(a). The water closet may be located with the clear area at either the right or left side of the toilet.

(2) The height of the water closet shall be at least 15 in (380 mm), *and no more than 19 in (485 mm),* measured to the top of the toilet seat.

(3) Structural reinforcement or other provisions that will allow installation of grab bars shall be provided in the locations shown in Fig. 47(b). If provided, grab bars shall be installed as shown in Fig. 29 and shall comply with 4.26.

(4) The toilet paper dispenser shall be installed within reach as shown in Fig. 47(b).

4.34.5.3 Lavatory, Mirrors, and Medicine Cabinets.

(1) The lavatory and mirrors shall comply with 4.22.6.

(2) If a cabinet is provided under the lavatory in adaptable bathrooms, then it shall be removable to provide the clearances specified in 4.22.6.

(3) If a medicine cabinet is provided above the lavatory, then the bottom of the medicine cabinet shall be located with a usable shelf no higher than 44 in (1120 mm) above the floor.

4.34.5.4 Bathtubs. If a bathtub is provided, then it shall have the following features:

(1) Floor space. Clear floor space at bathtubs shall be as shown in Fig. 33.

(2) Seat. An in-tub seat or a seat at the head end of the tub shall be provided as shown in Fig. 33 and 34. The structural strength of seats and their attachments shall comply with 4.26.3. Seats shall be mounted securely and shall not slip during use.

(3) Grab bars. Structural reinforcement or other provisions that will allow installation of grab bars shall be provided in the locations shown in Fig. 48. If provided, grab bars shall be installed as shown in Fig. 34 and shall comply with 4.26.

(4) Controls. Faucets and other controls shall be located as shown in Fig. 34 and shall comply with 4.27.4.

(5) Shower unit. A shower spray unit with a hose at least 60 in (1525 mm) long that can be used as a fixed shower head or as a hand-held shower shall be provided.

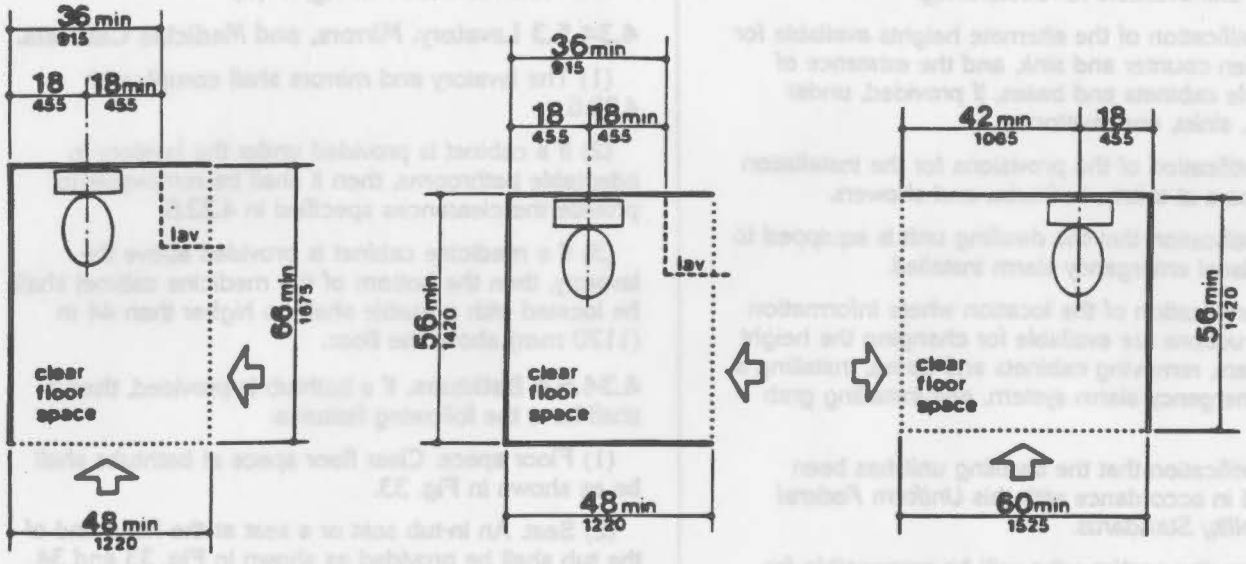
4.34.5.5 Showers. If a shower is provided, it shall have the following features:

(1) Size and clearances. Shower stall size and clear floor space shall comply with either Fig. 35(a) or (b). The shower stall in Fig. 35(a) shall be 36 in by 36 in (915 mm by 915 mm). The shower stall in Fig. 35(b) will fit into the same space as a standard 60 in (1525 mm) long bathtub.

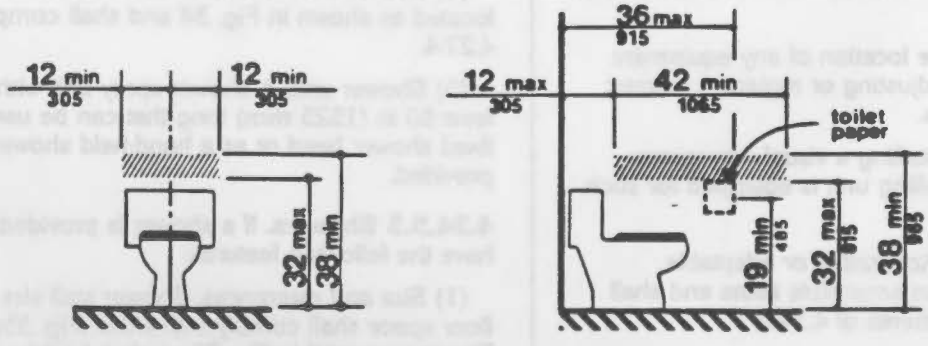
(2) Seat. A seat shall be provided in the shower stall in Fig. 35(a) as shown in Fig. 36. The seat shall be 17 in to 19 in (430 mm to 485 mm) high measured from the bathroom floor and shall extend the full depth of the stall. The seat shall be on the wall opposite the controls. The structural strength of seats and their attachments shall comply with 4.26.3. Seats shall be mounted securely and shall not slip during use.

(3) Grab bars. Structural reinforcement or other provisions that will allow installation of grab bars shall be provided in the locations shown in Fig. 49. If provided, grab bars shall be installed as shown in Fig. 37 and shall comply with 4.26.

4.34 Dwelling Units



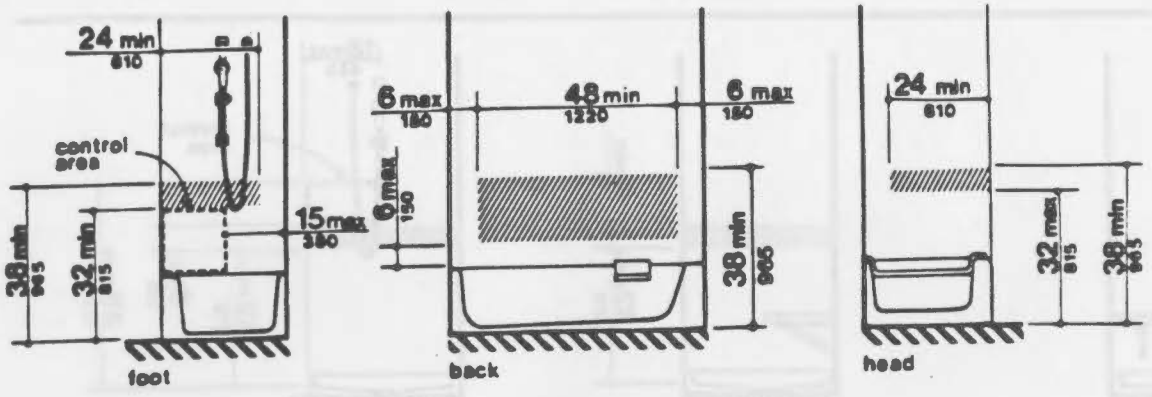
(a)
Clear Floor Space for Adaptable Bathrooms



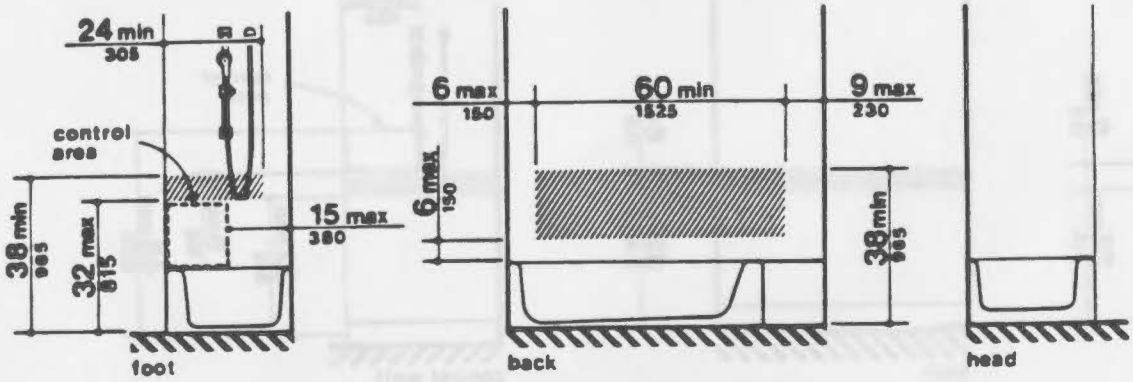
NOTE: The hatched areas are reinforced to receive grab bars.

(b)
Reinforced Areas for Installation of Grab Bars

Fig. 47
Water Closets in Adaptable Bathrooms



(a)
With Seat in Tub



(b)
With Seat at Head of Tub

NOTE: The hatched areas are reinforced to receive grab bars.

Fig. 48
Location of Grab Bars and Controls of Adaptable Bathtubs

(4) Controls. Faucets and other controls shall be located as shown in Fig. 37 and shall comply with 4.27.4. In the shower stall in Fig. 35(a), all controls, faucets, and the shower unit shall be mounted on the side wall opposite the seat.

(5) Shower unit. A shower spray unit with a hose at least 60 in (1525 mm) long that can be used as a fixed shower head at various heights or as a hand-held shower shall be provided.

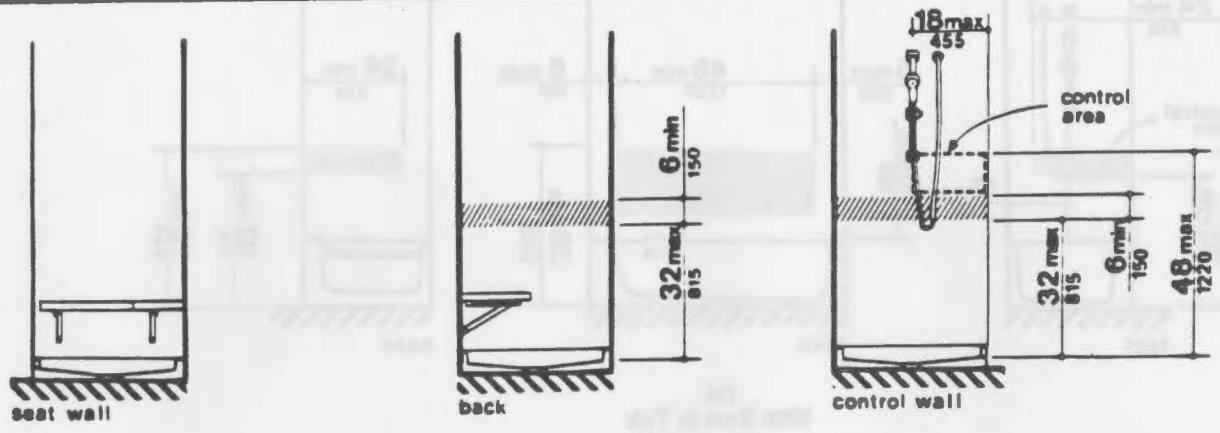
4.34.5.6 Bathtub and Shower Enclosures. Enclosures for bathtubs or shower stalls shall not obstruct controls or transfer from wheelchairs onto shower or bathtub seats. Enclosures on bathtubs shall not have tracks mounted on their rims.

4.34.5.7 Clear Floor Space. Clear floor space at fixtures may overlap.

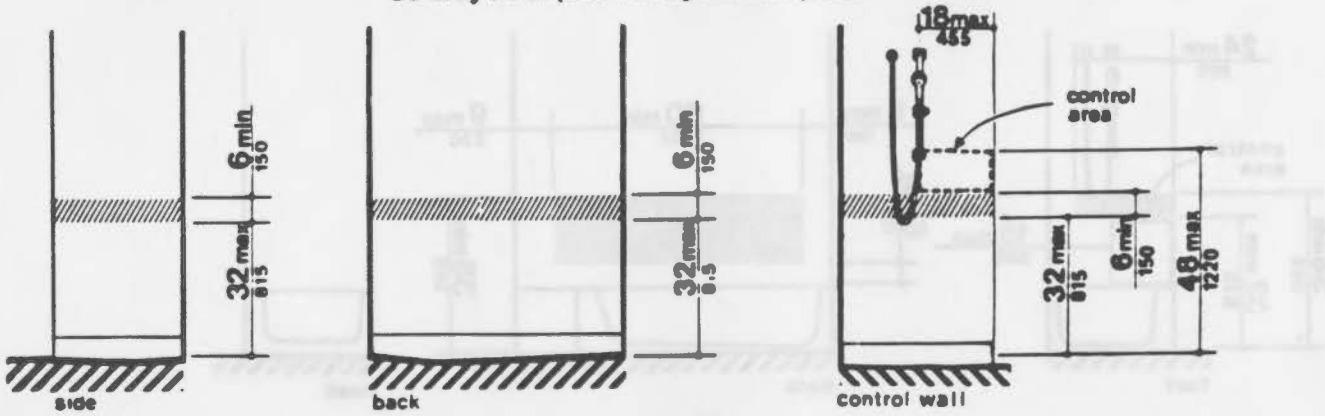
4.34.6 Kitchens. *Accessible or adaptable* kitchens and their components shall be on an accessible route and shall comply with the requirements of 4.34.6.

4.34.6.1* Clearance. Clearances between all opposing base cabinets, counter tops, appliances, or walls shall be 40 in (1015 mm) minimum, except in U-shaped kitchens, where such clearance shall be 60 in (1525 mm) minimum.

4.34.6.2 Clear Floor Space. A clear floor space at least 30 in by 48 in (760 mm by 1220 mm) complying with 4.2.4 that allows either a forward or a parallel approach by a person in a wheelchair shall be provided at all appliances in the kitchen, including the range or cooktop, oven, refrigerator/freezer, dishwasher, and trash compactor. Laundry equipment located in the kitchen shall comply with 4.34.7.



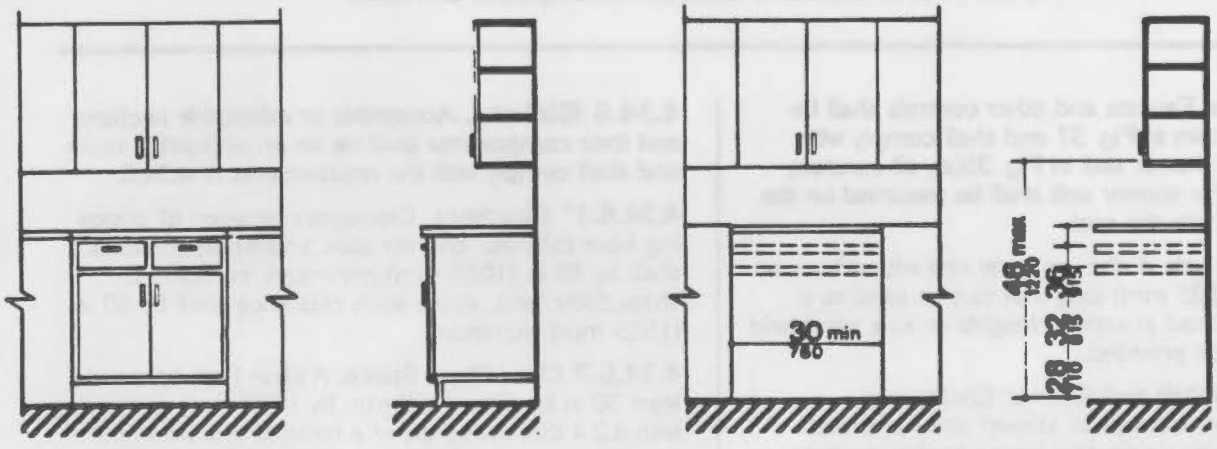
(a)
36-in by 36-in (915-mm by 915-mm) Stall



(b)
30-in by 60-in (750-mm by 1525-mm) Stall

NOTE: The hatched areas are reinforced to receive grab bars.

Fig. 49
Location of Grab Bars and Controls of Adaptable Showers



(a)
Before Removal of Cabinets and Base

(b)
Cabinets and Base Removed and Height Alternatives

Fig. 50
Counter Work Surface

4.34.6.3 Controls. All controls in kitchens shall comply with 4.27.

4.34.6.4 Work Surfaces. At least one 30 in (760 mm) section of counter shall provide a work surface that complies with the following requirements (see Fig. 50):

(1) The counter shall be *mounted at a maximum height of 34 in (865 mm) above the floor, measured from the floor to the top of the counter surface, or shall be* adjustable or replaceable as a unit to provide alternative heights of 28 in, 32 in, and 36 in (710 mm, 815 mm, and 915 mm), measured from the top of the counter surface.

(2) Base cabinets, if provided, shall be removable under the full 30 in (760 mm) minimum frontage of the counter. The finished floor shall extend under the counter to the wall.

(3) Counter thickness and supporting structure shall be 2 in (50 mm) maximum over the required clear area.

(4) A clear floor space 30 in by 48 in (760 mm by 1220 mm) shall allow a forward approach to the counter. Nineteen inches (485 mm) maximum of the clear floor space may extend underneath the counter. The knee space shall have a minimum clear width of 30 in (760 mm) and a minimum clear depth of 19 in (485 mm).

(5) There shall be no sharp or abrasive surfaces under such counters.

4.34.6.5° Sink. The sink and surrounding counter shall comply with the following requirements (see Fig. 51):

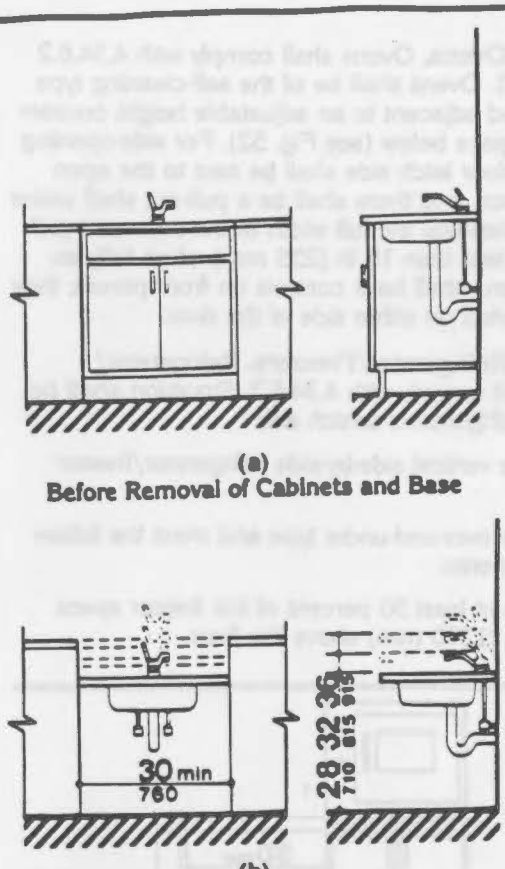
(1) The sink and surrounding counter shall be *mounted at a maximum height of 34 in (865 mm) above the floor, measured from the floor to the top of the counter surface, or shall* be adjustable or replaceable as a unit to provide alternative heights of 28 in, 32 in, and 36 in (710 mm, 815 mm, and 915 mm), measured from the floor to the top of the counter surface or sink rim. The total width of sink and counter area shall be 30 in (760 mm).

(2) Rough-in plumbing shall be located to accept connections of supply and drain pipes for sinks mounted at the height of 28 in (710 mm).

(3) The depth of a sink bowl shall be no greater than 6-1/2 in (165 mm). Only one bowl of double-or triple-bowl sinks needs to meet this requirement.

(4) Faucets shall comply with 4.27.4. Lever-operated or push-type mechanisms are two acceptable designs.

(5) Base cabinets, if provided, shall be removable under the full 30 in (760 mm) minimum frontage of the sink and surrounding counter. The finished flooring shall extend under the counter to the wall.



(a)
Before Removal of Cabinets and Base

(b)
Cabinets and Base Removed and Height Alternatives

Fig. 51
Kitchen Sink

(6) Counter thickness and supporting structure shall be 2 in (50 mm) maximum over the required clear space.

(7) A clear floor space 30 in by 48 in (760 mm by 1220 mm) shall allow forward approach to the sink. Nineteen inches (485 mm) maximum of the clear floor space may extend underneath the sink. The knee space shall have a clear width of 30 in (760 mm) and a clear depth of 19 in (485 mm).

(8) There shall be no sharp or abrasive surfaces under sinks. Hot water and drain pipes under sinks shall be insulated or otherwise covered.

4.34.6.6° Ranges and Cooktops. Ranges and cooktops shall comply with 4.34.6.2 and 4.34.6.3. If ovens or cooktops have knee spaces underneath, then they shall be insulated or otherwise protected on the exposed contact surfaces to prevent burns, abrasions, or electrical shock. The clear floor space may overlap the knee space, if provided, by 19 in (485 mm) maximum. The location of controls for ranges and cooktops shall not require reaching across burners.

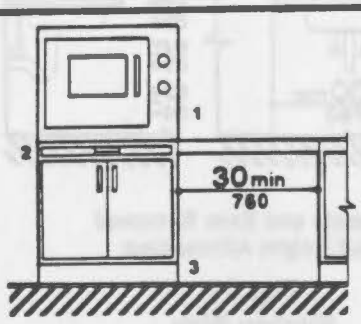
4.34.6.7* Ovens. Ovens shall comply with 4.34.6.2 and 4.34.6.3. Ovens shall be of the self-cleaning type or be located adjacent to an adjustable height counter with knee space below (see Fig. 52). For side-opening ovens, the door latch side shall be next to the open counter space, and there shall be a pull-out shelf under the oven extending the full width of the oven and pulling out not less than 10 in (255 mm) when fully extended. Ovens shall have controls on front panels; they may be located on either side of the door.

4.34.6.8* Refrigerator/Freezers. Refrigerator/freezers shall comply with 4.34.6.3. *Provision shall be made for refrigerators which are:*

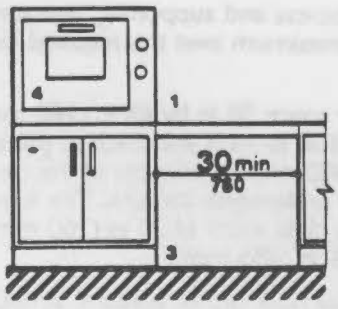
(1) Of the vertical side-by-side refrigerator/freezer type; or

(2) Of the over-and-under type and meet the following requirements:

(a) Have at least 50 percent of the freezer space below 54 in (1370 mm) above the floor.



(a)
Side-Hinged Door



(b)
Bottom-Hinged Door

SYMBOL KEY:
1. Countertop or wall-mounted oven.
2. Pull-out board preferred with side-opening door.
3. Clear open space.
4. Bottom-hinged door.

Fig. 52
Ovens without Self-Cleaning Feature

(b) Have 100 percent of the refrigerator space and controls below 54 in (1370 mm).

Freezers with less than 100 percent of the storage volume within the limits specified in 4.2.5 or 4.2.6 shall be the self-defrosting type.

4.34.6.9 Dishwashers. Dishwashers shall comply with 4.34.6.2 and 4.34.6.3. Dishwashers shall have all rack space accessible from the front of the machine for loading and unloading dishes.

4.34.6.10* Kitchen Storage. Cabinets, drawers, and shelf areas shall comply with 4.25 and shall have the following features:

(1) Maximum height shall be 48 in (1220 mm) for at least one shelf of all cabinets and storage shelves mounted above work counters (see Fig. 50).

(2) Door pulls or handles for wall cabinets shall be mounted as close to the bottom of cabinet doors as possible. Door pulls or handles for base cabinets shall be mounted as close to the top of cabinet doors as possible.

4.34.7 Laundry Facilities. If laundry equipment is provided within individual accessible dwelling units, or if separate laundry facilities serve one or more accessible dwelling units, then they shall meet the requirements of 4.34.7.1 through 4.34.7.3.

4.34.7.1 Location. Laundry facilities and laundry equipment shall be on an accessible route.

4.34.7.2 Washing Machines and Clothes Dryers. Washing machines and clothes dryers in common use laundry rooms shall be front loading.

4.34.7.3 Controls. Laundry equipment shall comply with 4.27.

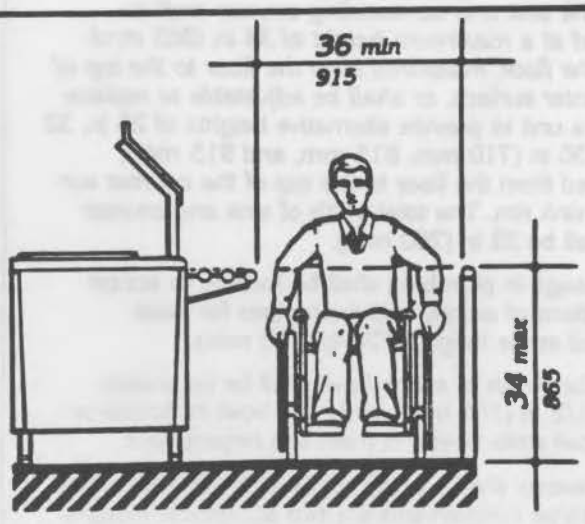


Fig. 53
Food Service Lines

5. RESTAURANTS AND CAFETERIAS.

5.1 General. In addition to the requirements of 4.1 to 4.33, the design of at least 5 percent of all fixed seating or tables in a restaurant or cafeteria shall comply with 4.32. Access aisles between tables shall comply with 4.3. Where practical, accessible tables should be distributed throughout the space or facility. In restaurants or cafeterias where there are mezzanine levels, loggias, or raised platforms, accessibility to all such spaces is not required providing that the same services and decorative character are provided in spaces located on accessible routes.

5.2 Food Service Lines. Food service lines shall have a minimum clear width of 36 in (915 mm), with a preferred clear width of 42 in (1065 mm) where passage of stopped wheelchairs by pedestrians is desired. Tray slides shall be mounted no higher than 34 in (865 mm) above the floor. If self-service shelves are provided, a reasonable portion must be within the ranges shown in Fig. 53.

5.3 Tableware Areas. Install tableware, dishware, condiment, food and beverage display shelves, and dispensing devices in compliance with 4.2 (see Fig. 54).

5.4 Vending Machines. Install vending machines in compliance with 4.27.

6. HEALTH CARE.

6.1 General. In addition to the requirements of 4.1 to 4.33, Health Care buildings and facilities shall comply with 6.

6.2 Entrances. At least one accessible entrance that complies with 4.14 shall be protected from the weather by canopy or roof overhang. Such entrances shall incorporate a passenger loading zone that complies with 4.6.5 (see 4.13.6).

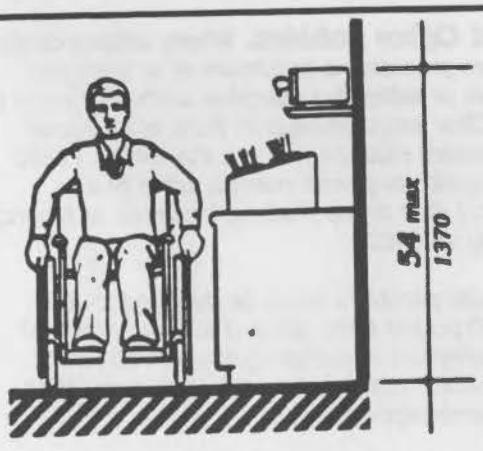


Fig. 54
Tableware Areas

6.3 Patient Bedrooms. Provide accessible patient bedrooms in compliance with 4. Accessible patient bedrooms shall comply with the following:

(1) Each bedroom shall have a turning space that complies with 4.2.3, and preferably that is located near the entrance.

(2) Each one-bed room shall have a minimum clear floor space of 36 in (915 mm) along each side of the bed, and 42 in (1065 mm) between the foot of the bed and the wall.

(3) Each two-bed room shall have a minimum clear floor space of 42 in (1065 mm), preferably 48 in (1220 mm), between the foot of the bed and the wall; 36 in (915 mm) between the side of the bed and the wall; and 48 in (1220 mm) between beds.

(4) Each four-bed room shall have a minimum clear floor space of 48 in (1220 mm) from the foot of the bed to the foot of the opposing bed; 36 in (915 mm) between the side of the bed and the wall; and 48 in (1220 mm) between beds.

(5) Each bedroom shall have a door that complies with 4.13.

6.4 Patient Toilet Rooms. Provide each patient bedroom that is required to be accessible with an accessible toilet room that complies with 4.22 or 4.23.

7. MERCANTILE.

7.1 General. In addition to the requirements of 4.1 to 4.33, the design of all areas used for business transactions with the public shall comply with 7.

7.2 Service Counters. Where service counters exceeding 36 in (915 mm) in height are provided for standing sales or distribution of goods to the public, an auxiliary counter or a portion of the main counter shall be provided with a maximum height of between 28 in to 34 in (710 mm to 865 mm) above the floor in compliance with 4.32.4.

7.3 Check-Out Aisles. At least one accessible check-out aisle shall be provided in buildings or facilities with check-out aisles. Clear aisle width shall comply with 4.2.1 and maximum adjoining counter height shall not exceed 36 in (915 mm) above the floor.

7.4 Security Bollards. Any device used to prevent the removal of shopping carts from store premises shall not prevent access or egress to those in wheelchairs. An alternate entry that is equally convenient to that provided for the ambulatory population is acceptable.

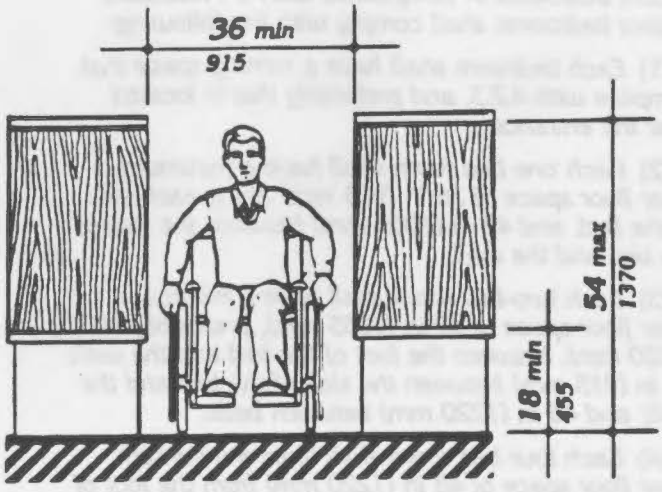


Fig. 55
Card Catalog

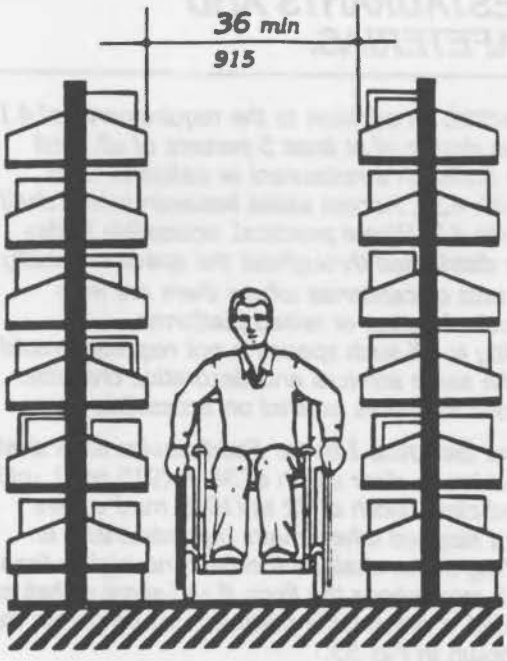


Fig. 56
Stacks

8. LIBRARIES.

8.1 General. *In addition to the requirements of 4.1 to 4.33, the design of all public areas of a library shall comply with 8, including reading and study areas, stacks, reference rooms, reserve areas, and special facilities or collections. As provided, elements such as public toilet rooms, telephones, and parking shall be accessible.*

8.2 Reading and Study Areas. *At least 5 percent or a minimum of one of each element of fixed seating, tables, or study carrels shall comply with 4.2 and 4.32. Clearances between fixed accessible tables and study carrels shall comply with 4.3.*

8.3 Check-Out Areas. *At least one lane at each check-out area shall comply with 4.32. Any traffic control or book security gates or turnstiles shall comply with 4.13.*

8.4 Card Catalogs. *Minimum clear aisle space at card catalogs, magazine displays, or reference stacks shall comply with Fig. 55. Maximum reach height shall comply with 4.2, with a height of 48 in (1370 mm) preferred, irrespective of reach allowed.*

8.5 Stacks. *Minimum clear aisle width between stacks shall comply with 4.3, with a minimum clear aisle width of 42 in (1065 mm) preferred where possible. Shelf height in stack areas is unrestricted (see Fig. 56).*

9. POSTAL FACILITIES.

9.1 General. *In addition to the requirements of 4.1 to 4.33, the design of U.S. postal facilities shall comply with the requirements of 9. In addition, employee toilet rooms, water fountains, lunchrooms, lounges, attendance-recording equipment, medical treatment rooms, emergency signals, and switches and controls shall be made accessible or adaptable in accordance with the requirements of these standards.*

9.2* Post Office Lobbies. *Where writing desks or tables are provided, a minimum of at least one writing desk or table that complies with 4.32 must be provided. Clear passageways in front of customer service counters shall be not less than 48 in (1220 mm) clear width to permit maneuvering of a wheelchair. Letter drops shall be mounted at heights that comply with 4.2.*

(1) All fixed partitions must be installed to withstand a 250-pound force applied at any point and from any direction. Avoid designs that call for, or may necessitate, non-fixed partitions in circulation routes of handicapped people.

(2) Walls where handrails are provided for handicapped people must be capable of supporting handrails designed to support a 250-pound pull force in any direction.

9.3 Self-Service Postal Centers. Parcel post depositories, stamp vending machines, multi-commodity vending machines, and currency-coin changing machines shall be installed so that the operating mechanisms of all machines comply with 4.2 and 4.27. All mechanisms must be installed to permit close parallel approach by a wheelchair user.

9.4 Post Office Boxes. At least 5 percent of the post office boxes in a facility shall be accessible to wheelchair users. The total number of accessible post office boxes provided shall include a representative number of each of the standard USPS boxes currently being installed. Accessible post office boxes shall be located in the second or third set of modules from the floor, approximately 12 in to 36 in (305 mm to 915 mm) above the finished floor. Aisles between post office boxes shall be a minimum of 66 in (1675 mm) clear width.

9.5 Locker Rooms. Lockers in easily accessible areas must be provided for use by handicapped people. When double-tier lockers are used, only the bottom row of lockers may be assigned for use by wheelchair users. When full length lockers are used, all hooks, shelves, etc., intended for use by people in wheelchairs shall be located no higher than 48 in (1220 mm) above the finished floor. Lockers intended for use by handicapped people shall be equipped with latches and latch handles that comply with 4.27. Unobstructed aisle space in front of lockers used by handicapped people shall be a minimum of 42 in (1065 mm) clear width.

9.6 Attendance-Recording Equipment. Time clocks, card racks, log books, and other work assignment or attendance-recording equipment used by people in wheelchairs must be installed at a height no more than 48 in (1220 mm) above the finished floor. Counter space at check-in areas must be no more than 36 in (915 mm) above the finished floor.

APPENDIX

This appendix contains additional information that should help the designer to understand the minimum requirements of the standard or to design buildings or facilities for greater accessibility. The paragraph numbers correspond to the sections or paragraphs of the standard to which the material relates and are therefore not consecutive (for example, A4.2.1 contains additional information relevant to 4.2.1). Sections for which additional material appears in this appendix have been indicated by an asterisk.

A4.2 Space Allowances and Reach Ranges.

A4.2.1 Wheelchair Passage Width.

(1) Space Requirements for Wheelchairs. Most wheelchair users need a 30 in (760 mm) clear opening width for doorways, gates, and the like, when the latter are entered head-on. If the wheelchair user is unfamiliar with a building, if competing traffic is heavy, if sudden or frequent movements are needed, or if the wheelchair must be turned at an opening, then greater clear widths are needed. For most situations, the addition of an inch of leeway on either side is sufficient. Thus, a minimum clear width of 32 in (815 mm) will provide adequate clearance. However, when an opening or a restriction in a passageway is more than 24 in (610 mm) long, it is essentially a passageway and must be at least 36 in (915 mm) wide.

(2) Space Requirements for Use of Walking Aids. Although people who use walking aids can maneuver through clear width openings of 32 in (815 mm), they need 36 in (915 mm) wide passageways and walks for comfortable gaits. Crutch tips, often extending down at a wide angle, are a hazard in narrow passageways where they might not be seen by other pedestrians. Thus, the 36 in (915 mm) width provides a safety allowance both for the disabled person and for others.

(3) Space Requirements for Passing. Able-bodied people in winter clothing, walking straight ahead with arms swinging, need 32 in (815 mm) of width, which includes 2 in (50 mm) on either side for sway, and another 1 in (25 mm) tolerance on either side for clearing nearby objects or other pedestrians. Almost all wheelchair users and those who use walking aids can also manage within this 32 in (815 mm) width for short distances. Thus, two streams of traffic can pass in 64 in (1625 mm) in a comfortable flow. Sixty inches (1525 mm) provide a minimum width for a somewhat more restricted flow. If the clear width is less than 60 in (1525 mm), two wheelchair users will not be able to pass but will have to seek a wider place for passing. Forty-eight inches (1220 mm) is the minimum width needed for an ambulatory person to pass a nonambulatory or semiambulatory person. Within this 48 in (1220 mm) width, the ambulatory person will have to twist to pass a wheelchair user, a person with a seeing eye dog, or a semiambulatory person. There will be little leeway for swaying or missteps (see Fig. A1).

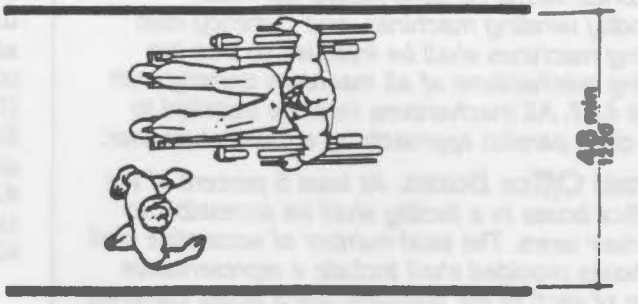


Fig. A1
Minimum Passage Width for One Wheelchair and One Ambulatory Person

A4.2.3 Wheelchair Turning Space. This standard specifies a minimum space of 60 in (1525 mm) diameter for a pivoting 180-degree turn of a wheelchair. This space is usually satisfactory for turning around, but many people will not be able to turn without repeated tries and bumping into surrounding objects. The space shown in Fig. A2 will allow most wheelchair users to complete U-turns without difficulty.

A4.2.4 Clear Floor or Ground Space for Wheelchairs. The wheelchair and user shown in Fig. A3 represent typical dimensions for a large adult male. The space requirements in this standard are based upon maneuvering clearances that will accommodate most larger wheelchairs. Fig. A3 provides a uniform reference for design not covered by this standard.

A4.2.5 & A4.2.6 Reach. *Reach ranges for persons seated in wheelchairs may be further clarified by Fig. A3(a). These drawings approximate in the plan view information shown in Fig. 4, 5, and 6 in other views.*

A4.3 Accessible Route.

A4.3.1 General.

(1) Travel Distances. Many disabled people can move at only very slow speeds; for many, traveling 200 ft (61 m) could take about 2 minutes. This assumes a rate of about 1.5 ft/s (455 mm/s) on level ground. It also assumes that the traveler would move continuously. However, on trips over 100 ft (30 m), disabled people are apt to rest frequently, which substantially increases their trip times. Resting periods of 2 minutes for every 100 ft (30 m) can be used to estimate travel times for people with severely limited stamina. In

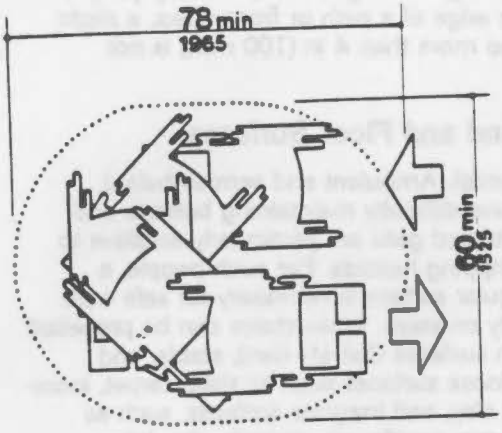
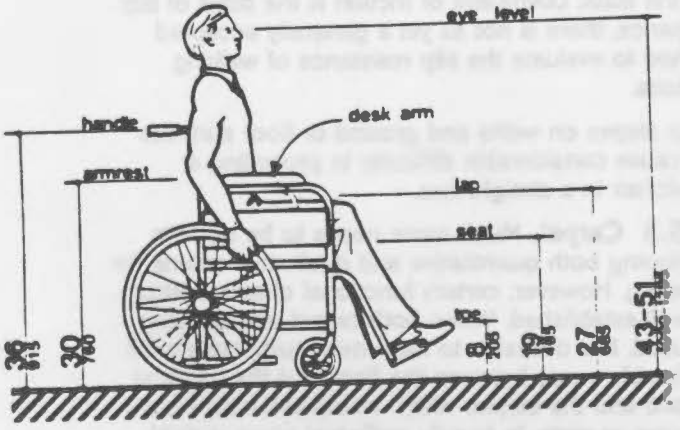
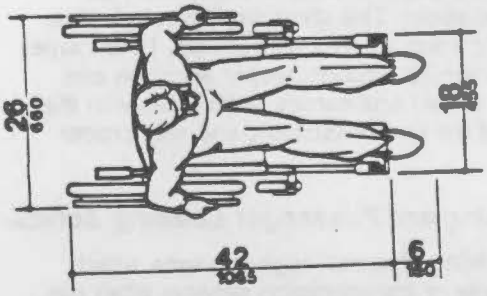


Fig. A2
Space Needed for Smooth U-Turn in a Wheelchair





NOTE: Footrests may extend further for very large people.

Fig. A3
Dimensions of Adult-Sized Wheelchairs

inclement weather, slow progress and resting can greatly increase a disabled person's exposure to the elements.

(2) Sites. Level, indirect routes or those with running slopes lower than 1:20 can sometimes provide more convenience than direct routes with maximum allowable slopes or with ramps.

A4.3.10 Egress. In buildings where physically handicapped people are regularly employed or are residents, an emergency management plan for their evacuation also plays an essential role in fire safety.

A4.4 Protruding Objects.

A4.4.1 General. Guide dogs are trained to recognize and avoid hazards. However, most people with severe impairments of vision use the long cane as an aid to mobility. The two principal cane techniques are the touch technique, where the cane arcs from side to side and touches points outside both shoulders; and the diagonal technique, where the cane is held in a stationary position diagonally across the body with the cane tip touching or just above the

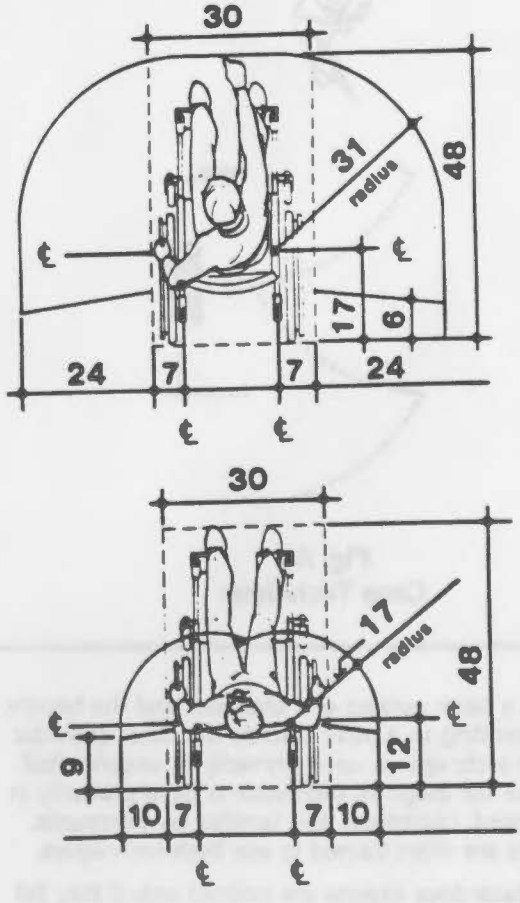


Fig. A3 (a)

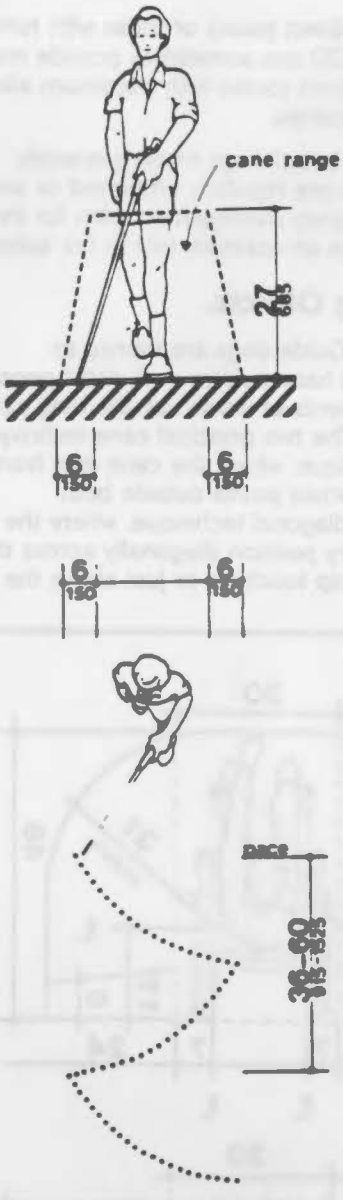


Fig. A4
Cane Technique

ground at a point outside one shoulder and the handle or grip extending to a point outside the other shoulder. The touch technique is used primarily in uncontrolled areas, while the diagonal technique is used primarily in certain limited, controlled, and familiar environments. Cane users are often trained to use both techniques.

Potential hazardous objects are noticed only if they fall within the detection range of canes (see Fig. A4). Visually impaired people walking toward an object can detect an overhang if its lowest surface is not higher than 27 in (685 mm). When walking alongside projecting objects, they cannot detect overhangs. Since proper cane and guide dog techniques keep people away from the edge of a path or from walks, a slight overhang of no more than 4 in (100 mm) is not hazardous.

A4.5 Ground and Floor Surfaces.

A4.5.1 General. Ambulant and semiambulant people who have difficulty maintaining balance and those with restricted gaits are particularly sensitive to slipping and tripping hazards. For such people, a stable and regular surface is necessary for safe walking, particularly on stairs. Wheelchairs can be propelled most easily on surfaces that are hard, stable, and regular. Soft, loose surfaces such as shag carpet, loose sand, and wet clay, and irregular surfaces, such as cobblestones, can significantly impede wheelchair movement.

Slip resistance is based on the frictional force necessary to keep a shoe heel or crutch tip from slipping on a walking surface under the conditions of use likely to be found on the surface. Although it is known that the static coefficient of friction is the basis of slip resistance, there is not as yet a generally accepted method to evaluate the slip resistance of walking surfaces.

Cross slopes on walks and ground or floor surfaces can cause considerable difficulty in propelling a wheelchair in a straight line.

A4.5.3 Carpet. Much more needs to be done in developing both quantitative and qualitative criteria for carpeting. However, certain functional characteristics are well established. When both carpet and padding are used, it is desirable to have minimum movement (preferably none) between the floor and the pad and the pad and the carpet, which would allow the carpet to hump or warp. In heavily trafficked areas, a thick, soft (plush) pad or cushion, particularly in combination with long carpet pile, makes it difficult for individuals in wheelchairs and those with other ambulatory disabilities to get about. This should not preclude their use in specific areas where traffic is light. Firm carpeting can be achieved through proper selection and combination of pad and carpet, sometimes with the elimination of the pad or cushion, and with proper installation.

A4.6 Parking and Passenger Loading Zones.

A4.6.3 Parking Spaces. High-top vans, which disabled people or transportation services often use, require higher clearances in parking garages than automobiles. *When optional van spaces are provided within a garage, only the spaces themselves and a vehicle route to them require the specified clearances.*

A4.6.4 Signage. Signs designating parking places for disabled people can be seen from a driver's seat if the signs are mounted high enough above the ground and located at the front of a parking space.

A4.8 Ramps.

A4.8.1 General. Ramps are essential for wheelchair users if elevators or lifts are not available to connect different levels. However, some people who use walking aids have difficulty with ramps and prefer stairs.

A4.8.2 Slope and Rise. The ability to manage an incline is related to both its slope and its length. Wheelchair users with disabilities affecting arms or with low stamina have serious difficulty using inclines. Most ambulatory people and most people who use wheelchairs can manage a slope of 1:16. Many people cannot manage a slope of 1:12 for 30 ft (9 m). Many people who have difficulty negotiating very long ramps at relatively shallow slopes can manage very short ramps at steeper slopes.

A4.8.5 Handrails. The requirements for stair and ramp handrails in this standard are for adults. When children are principal users in a building or facility, a second set of handrails at an appropriate height can assist them and aid in preventing accidents.

A4.10 Elevators.

A4.10.6 Door Protective and Reopening Device. The required door reopening device would hold the door open for 20 seconds if the doorway remains unobstructed. After 20 seconds, the door may begin to close. However, if designed in accordance with ANSI A17.1-1978, the door closing movement could still be stopped if a person or object exerts sufficient force at any point on the door edge.

A4.10.7 Door and Signal Timing for Hall Calls. This paragraph allows variation in the location of call buttons, advance time for warning signals, and the door-holding period used to meet the time requirement.

A4.10.12 Car Controls. Industry-wide standardization of elevator control panel design would make all elevators significantly more convenient for use by people with severe visual impairments.

In many cases, it will be possible to locate the highest control on elevator panels within 48 in (1220 mm) from the floor.

A4.10.13 Car Position Indicators. A special button may be provided that would activate the audible signal within the given elevator only for the desired trip, rather than maintaining the audible signal in constant operation.

A4.10.14 Emergency Communications. A device that requires no handset is easier to use by people who have difficulty reaching.

A4.11 Platform Lifts.

Platform lifts include porch lifts and other devices used for short-distance, vertical transportation of people in wheelchairs. At the present time, generally recognized safety standards for such lifts have not been developed. Care should be taken in selecting and installing lifts to ensure that they are free from hazards to users or to other individuals who may be in the vicinity where they are being operated.

A4.13 Doors.

A4.13.8 Thresholds at Doorways. Thresholds and surface height changes in doorways are particularly inconvenient for wheelchair users who also have low stamina or restrictions in arm movement, because complex maneuvering is required to get over the level change while operating the door.

A4.13.9 Door Hardware. Some disabled persons must push against a door with their chair or walker to open it. Applied kickplates on doors with closers can reduce required maintenance by withstanding abuse from wheelchairs and canes. To be effective, they should cover the door width, less approximately 2 in (51 mm), up to a height of 16 in (405 mm) from its bottom edge and be centered across the top.

A4.13.10 Door Closers. Closers with delayed action features give a person more time to maneuver through doorways. They are particularly useful on frequently used interior doors such as entrances to toilet rooms.

A4.13.11 Door Opening Force. Although most people with disabilities can exert at least 5 lbf (22.2N), both pushing and pulling from a stationary position, a few people with severe disabilities cannot exert even 3 lbf (13.3N). Although some people cannot manage the allowable forces in this standard and many others have difficulty, door closers must have certain minimum closing forces to close doors satisfactorily. Forces for pushing or pulling doors open are measured with a push-pull scale under the following conditions:

(1) Hinged doors: Force applied perpendicular to the door at the door opener or 30 in (760 mm) from the hinged side, whichever is farther from the hinge.

(2) Sliding or folding doors: Force applied parallel to the door at the door pull or latch.

(3) Application of force: Apply force gradually so that the applied force does not exceed the resistance of the door.

In high-rise buildings, air-pressure differentials may require a modification of this specification in order to meet the functional intent.

A4.13.12 Automatic Doors and Power-Assisted Doors. Sliding automatic doors do not need guard rails and are more convenient for wheelchair users and visually impaired people to use. If slowly opening automatic doors can be reactuated before their closing cycle is completed, they will be more convenient in busy doorways.

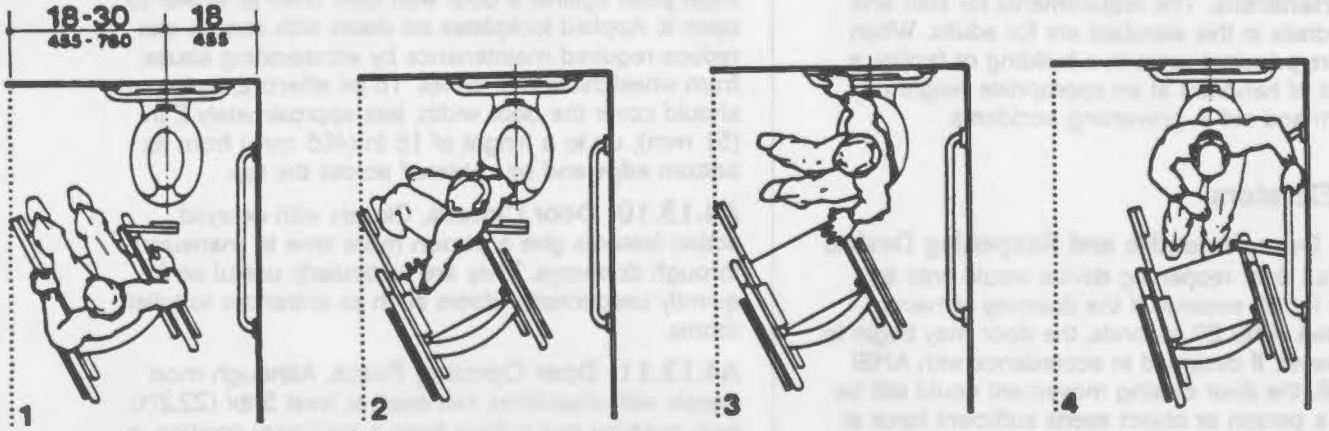
A4.15 *Drinking Fountains and Water Coolers.*

A4.15.2 *Drinking fountains with two spouts can assist both handicapped people and those people who find it difficult to bend over.*

A4.16 Water Closets.

A4.16.3 Height. Preferences for toilet seat heights vary considerably among disabled people. Higher seat heights may be an advantage to some ambulatory disabled people but a disadvantage for wheelchair users and others. Toilet seats 18 in (455 mm) high seem to be a reasonable compromise. Thick seats and filler rings are available to adapt standard fixtures to these requirements.

A4.16.4 Grab Bars. Fig. A5(a) and (b) show the diagonal and side approaches most commonly used to transfer from a wheelchair to a water closet. Some wheelchair users can transfer from the front of the toilet, while others use a 90-degree approach. Most people who use the two additional approaches can also use either the diagonal approach or the side approach.



1. Takes transfer position, swings ·otrest out of the way, sets ·rakes.
2. Removes armrest, transfers.
3. Moves wheelchair out of the way, changes position (some people fold chair or pivot it 90° to the toilet).
4. Positions on toilet, releases brake.

(a)
Diagonal Approach

1. Takes transfer position, removes armrest, sets brakes.
2. Transfers.
3. Positions on toilet.

(b)
Side Approach

Fig. A5
Wheelchair Transfers

A4.16.5 Flush Controls. Flush valves and related plumbing can be located behind walls or to the side of the toilet, or a toilet seat lid can be provided if plumbing fittings are directly behind the toilet seat. Such designs reduce the chance of injury and imbalance caused by leaning back against the fittings. Flush controls for tank-type toilets have a standardized mounting location on the left side of the tank (facing the tank). Tanks can be obtained by special order with controls mounted on the right side. If administrative authorities require flush controls for flush valves to be located in a position that conflicts with the location of the rear grab bar, then that bar may be split or shifted toward the wide side of the toilet area.

A4.17 Toilet Stalls.

A4.17.5 Doors. To make it easier for wheelchair users to close toilet stall doors, doors can be provided with closers, spring hinges, or a pull bar mounted on the inside surface of the door near the hinge side.

A4.19 Lavatories and Mirrors.

A4.19.6 Mirrors. If mirrors are to be used by both ambulatory people and wheelchair users, then they must be at least 74 in (1880 mm) high at their topmost edge. A single full length mirror can accommodate all people, including children.

A4.21 Shower Stalls.

A4.21.1 General. Shower stalls that are 36 in by 36 in (915 mm by 915 mm) wide provide additional safety to people who have difficulty maintaining balance because all grab bars and walls are within easy reach. Seated people use the walls of 36 in by 36 in (915 mm by 915 mm) showers for back support. Shower stalls that are 60 in (1525 mm) wide and have no curb may increase usability of a bathroom by wheelchair users because the shower area provides additional maneuvering space.

A4.23 Bathrooms, Bathing Facilities, and Shower Rooms.

A4.23.9 Medicine Cabinets. Other alternatives for storing medical and personal care items are very useful to disabled people. Shelves, drawers, and floor-mounted cabinets can be provided within the reach ranges of disabled people.

A4.26 Handrails, Grab Bars, and Tub and Shower Seats.

A4.26.1 General. Many disabled people rely heavily upon grab bars and handrails to maintain balance and prevent serious falls. Many people brace their forearms between supports and walls to give them more leverage and stability in maintaining balance or for lifting. The maximum grab bar clearance of 1-1/2 in (38 mm) required in this standard is a safety clearance to prevent injuries from arms slipping through the opening. It also provides adequate gripping room.

A4.26.2 Size and Spacing of Grab Bars and Handrails. This specification allows for alternate shapes of handrails as long as they allow an opposing grip similar to that provided by a circular section of 1-1/4 in to 1-1/2 in (32 mm to 38 mm).

A4.27 *Controls and Operating Mechanisms.*

A4.27.3 *Height.* *Fig. A6 further illustrates mandatory and advisory control mounting height provisions for typical equipment. Note distinction between built-in equipment (considered real property) and movable equipment (considered chattel, and not covered by the Architectural Barriers Act of 1968).*

A4.28 Alarms.

A4.28.2 Audible Alarms. Audible emergency signals must have an intensity and frequency that can attract the attention of individuals who have partial hearing loss. People over 60 years of age generally have difficulty perceiving frequencies higher than 10,000 Hz.

A4.28.3 Visual Alarms. The specifications in this section do not preclude the use of zoned or coded alarm systems. In zoned systems, the emergency exit lights in an area will flash whenever an audible signal rings in the area.

A4.28.4 Auxiliary Alarms. Locating visual emergency alarms in rooms where deaf individuals may work or reside alone can ensure that they will always be warned when an emergency alarm is activated. To be effective, such devices must be located and oriented so that they will spread signals and reflections throughout a space or raise the overall light level sharply. The amount and type of light necessary to wake a deaf person from a sound sleep in a dark room will vary depending on a number of factors, including the size and configuration of the room, the distance between the source and the person, whether or not the light flashes, and the cycle of flashing. A 150-watt flashing bulb can be effective under some conditions. Certain devices currently available are designed specifically as visual alarms for deaf people. Deaf people may not need accessibility features other than the emergency alarm connections and communications devices. Thus, rooms in addition to those accessible for wheelchair users also should be equipped with emergency visual alarms or connections.

A4.29 Tactile Warnings.

A4.29.2 Tactile Warnings on Walking Surfaces. *(Reserved).*

A4.29.3 Tactile Warnings on Doors to Hazardous Areas. Tactile signals for hand reception are useful if it is certain that the signals will be touched.

A4.29.5 Tactile Warnings at Hazardous Vehicular Areas. *(Reserved).*

4.29 Tactile Warnings

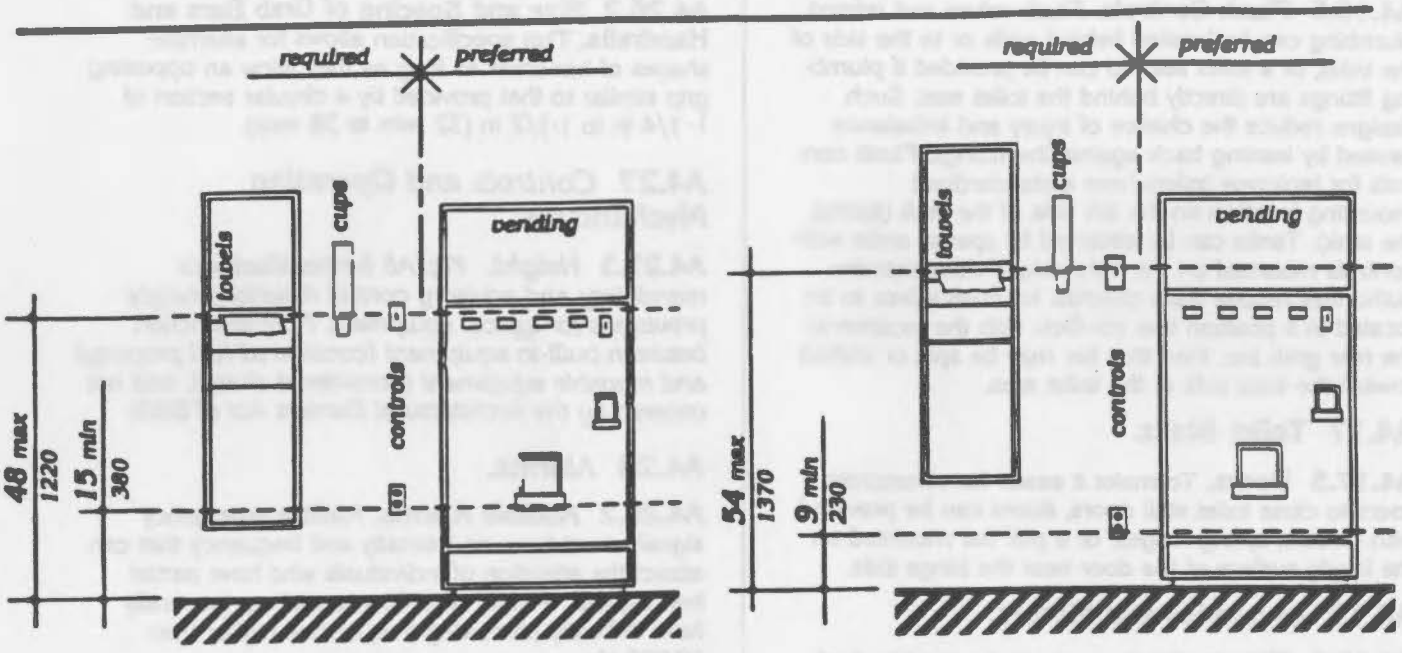


Fig. A6
Control Reach Limitations

A4.29.6 Tactile Warnings at Reflecting Pools. *(Reserved).*

A4.29.7 Standardization. Too many tactile warnings or lack of standardization weakens their usefulness. Tactile signals can also be visual signals to guide dogs, since dogs can be trained to respond to a large variety of visual cues.

A4.30 Signage.

A4.30.1 General. In building complexes where finding locations independently on a routine basis may be a necessity (for example, college campuses), tactile maps or prerecorded instructions can be very helpful to visually impaired people. Several maps and auditory instructions have been developed and tested for specific applications. The type of map or instructions used must be based on the information to be communicated, which depends highly on the type of buildings or users.

Landmarks that can easily be distinguished by visually impaired individuals are useful as orientation cues. Such cues include changes in illumination level, bright colors, unique patterns, wall murals, location of special equipment, or other architectural features (for example, an exterior view).

Many people with disabilities have limitations in movement of their head and reduced peripheral vision. Thus, signage positioned perpendicular to the path of travel is easiest for them to notice. People can generally distinguish signage within an angle of 30 degrees to either side of the centerline of their face without moving their head.

A4.30.2 Character Proportion. The legibility of printed characters is a function of the viewing distance, character height, the ratio of the stroke width to the height of the character, the contrast of color between character and background, and print font. The size of characters must be based upon the intended viewing distance. A severely nearsighted person may have to be much closer to see a character of a given size accurately than a person with normal visual acuity.

A4.30.3 Color Contrast. The greatest readability is usually achieved through the use of light-colored characters or symbols on a dark background.

A4.30.4 Raised or Indented Characters or Symbols. Signs with descriptive materials about public buildings, monuments, and objects of cultural interest can be raised or incised letters. However, a sighted guide or audio-tape device is often a more effective way to present such information. Raised characters are easier to feel at small sizes and are not susceptible to maintenance problems as are indented characters, which can fill with dirt, cleaning compounds, and the like.

Braille characters can be used in addition to standard alphabet characters and numbers. Placing braille

characters to the left of standard characters makes them more convenient to read. Standard dot sizing and spacing as used in braille publications are acceptable. Raised borders around raised characters can make them confusing to read unless the border is set far away from the characters.

A4.31 Telephones.

A4.31.3 Mounting Height. In localities where the dial-tone first system is in operation, calls can be placed at a coin telephone through the operator without inserting coins. The operator button is located at a height of 46 in (1170 mm) if the coin slot of the telephone is at 54 in (1370 mm).

A generally available public telephone with a coin slot mounted lower on the equipment would allow universal installation of telephones at a height of 48 in (1220 mm) or less to all operable parts.

A4.31.5 Equipment for Hearing Impaired People. Other aids for people with hearing impairments are telephones, teleprinter, and other telephonic devices that can be used to transmit printed messages through telephone lines to a teletype printer or television monitor.

A4.32 Seating, Tables, and Work Surfaces.

A4.32.4 Height of Work Surfaces. Different types of work require different work surface heights for comfort and optimal performance. Light detailed work such as writing requires a work surface close to elbow height for a standing person. Heavy manual work such as rolling dough requires a work surface height about 10 in (255 mm) below elbow height for a standing person. The principle of a high work surface height for light detailed work and a low work surface for heavy manual work also applies for seated persons; however, the limiting condition for seated manual work is clearance under the work surface.

Table A1 shows convenient work surface heights for seated persons. The great variety of heights for comfort and optimal performance indicates a need for alternatives or a compromise in height if people who stand and people who sit will be using the same counter area.

A4.33 Assembly Areas.

A4.33.2 Size of Wheelchair Locations. Spaces large enough for two wheelchairs allow people who are coming to a performance together to sit together.

A4.33.3 Placement of Wheelchair Locations. The location of wheelchair areas can be planned so that a variety of positions within the seating area are provided. This will allow choice in viewing and price categories.

A4.33.6 Placement of Listening Systems. A distance of 50 ft (15 m) allows a person to distinguish performers' facial expressions.

Table A1
Convenient Heights of Work Surfaces for Seated People*

Conditions of Use	Short Women in	Short Women mm	Tall Men in	Tall Men mm
Seated in a wheelchair:				
Manual work				
Desk or removable armrests	26	660	30	760
Fixed, full-size armrests†	32‡	815	32‡	815
Light, detailed work:				
Desk or removable armrests	29	735	34	865
Fixed, full-size armrests†	32‡	815	34	865
Seated in a 16-in (405-mm) -high chair:				
Manual work	26	660	27	685
Light, detailed work	28	710	31	785

*All dimensions are based on a work-surface thickness of 1-1/2 in (38 mm) and a clearance of 1-1/2 in (38 mm) between legs and the underside of a work surface.

†This type of wheelchair arm does not interfere with the positioning of a wheelchair under a work surface.

‡This dimension is limited by the height of the armrests: a lower height would be preferable. Some people in this group prefer lower work surfaces, which require positioning the wheelchair back from the edge of the counter.

A4.33.7 Types of Listening Systems. A listening system that can be used from any seat in a seating area is the most flexible way to meet this specification. Earphone jacks with variable volume controls can benefit only people who have slight hearing losses and do not help people with hearing aids. At the present time, audio loops are the most feasible type of listening system for people who use hearing aids, but people without hearing aids or those with hearing aids not equipped with inductive pickups cannot use them. Loops can be portable and moved to various locations within a room. Moreover, for little cost, they can serve a large area within a seating area. Radio frequency systems can be extremely effective and inexpensive. People without hearing aids can use them, but people with hearing aids need custom-designed equipment to use them as they are presently designed. If hearing aids had a jack to allow a by-pass of microphones, then radio frequency systems would be suitable for people with and without hearing aids. Some listening systems may be subject to interference from other equipment and feedback from hearing aids of people who are using the systems. Such interference can be controlled by careful engineering design that anticipates feedback and sources of interference in the surrounding area.

A4.34 Dwelling Units.

A4.34.2 Minimum Requirements. Handicapped people who live in accessible dwelling units of multi-family buildings or housing projects will want to participate in all on-site social activities, including visiting neighbors in their dwelling units. Hence, any circulation paths among all dwelling units and among all on-site facilities should be as accessible as possible. An accessible second exit to dwelling units provides an extra margin of safety in a fire.

A4.34.5 Bathrooms. Although not required by these specifications, it is important to install grab bars at toilets, bathtubs, and showers if it is known that a dwelling unit will be occupied by elderly or severely disabled people.

A4.34.6 Kitchens.

A4.34.6.1 Clearance. The minimum clearances provide satisfactory maneuvering spaces for wheelchairs only if cabinets are removed at the sink.

A4.34.6.5 Sink. Installing a sink with a drain at the rear so that plumbing is as close to the wall as possible can provide additional clear knee space for wheelchair users.

A4.34.6.6 Ranges and Cooktops. Although not required for minimum accessibility, countertop range units in a counter with adjustable heights can be an added convenience for wheelchair users.

A4.34.6.7 Ovens. Countertop or wall-mounted ovens with side-opening doors are easier for people in wheelchairs to use. Clear spaces at least 30 in (760 mm) wide under counters at the side of ovens are an added convenience. The pullout board or fixed shelf under side-opening oven doors provides a resting place for heavy items being moved from the oven to a counter.

A4.34.6.8 Refrigerator/Freezers. Side-by-side refrigerator/freezers provide the most usable freezer compartments. Locating refrigerators so that their doors can swing back 180 degrees is more convenient for wheelchair users.

A4.34.6.10 Kitchen Storage. Full height cabinets or tall cabinets can be provided rather than cabinets mounted over work counters. Additional storage space located conveniently adjacent to kitchens can be provided to make up for space lost when cabinets under counters are removed.

A9. Postal Facilities.

A9.2 *Post Office Lobbies.* *Furniture as chattel is not covered under the Architectural Barriers Act of 1968, but the requirements for lobby furniture and equipment are imposed by the United States Postal Service for greater accessibility in its customer lobbies.*

Note: Unedited copies of the American National Standards Institute standard, A117.1-1980, "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People," are available from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.

THE ARCHITECTURAL BARRIERS ACT (Public Law 90-480) of August 12, 1968
AS AMENDED THROUGH 1984
42 U.S.C. §§4151 *et seq.*

An Act to insure that certain buildings financed with Federal funds are so designed and constructed as to be accessible to the physically handicapped.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, as used in this Act, the term "building" means any building or facility (other than (A) a privately owned residential structure not leased by the Government for subsidized housing programs and (B) any building or facility on a military installation designed and constructed primarily for use by able bodied military personnel) the intended use for which either will require that such building or facility be accessible to the public, or may result in employment or residence therein of physically handicapped persons, which building or facility is —

(1) to be constructed or altered by or on behalf of the United States;

(2) to be leased in whole or in part by the United States after August 12, 1968;*

(3) to be financed in whole or in part by a grant or a loan made by the United States after August 12, 1968, if such building or facility is subject to standards for design, construction, or alteration issued under authority of the law authorizing such grant or loan; or

(4) to be constructed under authority of the National Capital Transportation Act of 1960, the National Capital Transportation Act of 1965, or title III of the Washington Metropolitan Area Transit Regulation Compact.

Sec. 2 The Administrator of General Services, in consultation with the Secretary of Health and Human Services, shall prescribe standards for the design, construction, and alteration of buildings (other than residential structures subject to this Act and buildings, structures, and facilities of the Department of Defense and of the United States Postal Service subject to this Act) to insure whenever possible that physically handicapped persons will have ready access to, and use of, such buildings.

A 1976 amendment, Public Law 94-541, deleted the following words from the end of section 2: "after construction or alteration in accordance with plans and specifications of the United States." Section 202 of Public Law 94-541 states that the amendment applies to "every lease entered into on or after January 1, 1977, including any renewal of a lease entered into before such a date which renewal is on or after such date." Regulations at 43 Fed. Reg. 16478 (April 19, 1978) amending 41 C.F.R. §101-19.6.

Sec. 3 The Secretary of Housing and Urban Development, in consultation with the Secretary of Health and Human Services, shall prescribe standards for the design, construction, and alteration of buildings which are residential structures subject to this Act to insure whenever possible that physically handicapped persons will have ready access to, and use of, such buildings.

Sec. 4 The Secretary of Defense, in consultation with the Secretary of Health and Human Services, shall prescribe standards for the design, construction, and alteration of buildings, structures, and facilities of the Department of Defense subject to this Act to insure whenever possible that physically handicapped persons will have ready access to, and use of, such buildings.

Sec. 4a The United States Postal Service, in consultation with the Secretary of Health and Human Services, shall prescribe such standards for the design, construction, and alteration of its buildings to insure whenever possible that physically handicapped persons will have ready access to, and use of, such buildings.

Sec. 5 Every building designed, constructed, or altered after the effective date of a standard issued under this Act which is applicable to such building, shall be designed, constructed, or altered in accordance with such standard.

Sec. 6 The Administrator of General Services, with respect to standards issued under section 2 of this Act, and the Secretary of Housing and Urban Development, with respect to standards issued under section 3 of this Act, and the Secretary of Defense, with respect to standards issued under section 4 of this Act, and the United States Postal Service, with respect to standards issued under section 4a of this Act —

(1) is authorized to modify or waive any such standard, on a case-by-case basis, upon application made by the head of the department, agency, or instrumentality of the United States concerned, and upon a determination by the Administrator or Secretary, as the case may be, that such modification or waiver is clearly necessary, and

(2) shall establish a system of continuing surveys and investigations to insure compliance with such standards.

Sec. 7(a) The Administrator of General Services shall report to Congress during the first week of January of each year on his activities and those of other departments, agencies, and instrumentalities of the Federal Government under this Act during the preceding fiscal year including, but not limited to, standards issued, revised, amended, or repealed under this Act and all case-by-case modifications, and waivers of such standards during such year.

(b) The Architectural and Transportation Barriers Compliance Board established by section 502 of the Rehabilitation Act of 1973 (Public Law 93-112) shall report to the Public Works and Transportation Committee of the House of Representatives and the Public Works Committee of the Senate during the first week of January of each year on its activities and actions to insure compliance with the standards prescribed under this Act.

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ACCESS AISLES

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NOTE

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APPENDIX B

ADA ACCESSIBILITY GUIDELINES

1. PURPOSE.

This document sets guidelines for accessibility to places of public accommodation and commercial facilities by individuals with disabilities. These guidelines are to be applied during the design, construction, and alteration of such buildings and facilities to the extent required by regulations issued by Federal agencies, including the Department of Justice, under the Americans with Disabilities Act of 1990.

The technical specifications 4.2 through 4.35, of these guidelines are the same as those of the American National Standard Institute's document A117.1-1980, except as noted in this text by italics. However, sections 4.1.1 through 4.1.7 and sections 5 through 10 are different from ANSI A117.1 in their entirety and are printed in standard type.

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2. GENERAL.

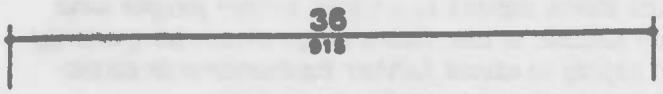
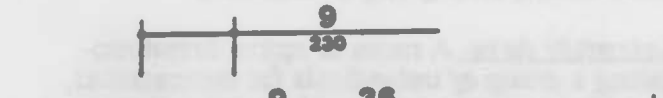
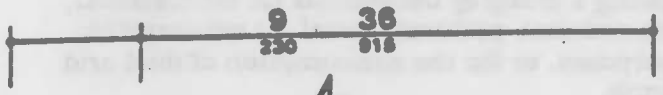
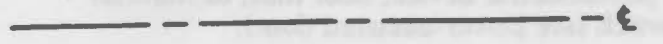
2.1 Provisions for Adults. *The specifications in these guidelines are based upon adult dimensions and anthropometrics.*

2.2* Equivalent Facilitation. *Departures from particular technical and scoping requirements of this guideline by the use of other designs and technologies are permitted where the alternative designs and technologies used will provide substantially equivalent or greater access to and usability of the facility.*

3. MISCELLANEOUS INSTRUCTIONS AND DEFINITIONS.

3.1 Graphic Conventions. Graphic conventions are shown in Table 1. Dimensions that are not marked minimum or maximum are absolute, unless otherwise indicated in the text or captions.

Table 1
Graphic Conventions

Convention	Description
	Typical dimension line showing U.S. customary units (in inches) above the line and SI units (in millimeters) below
	Dimensions for short distances indicated on extended line
	Dimension line showing alternate dimensions required
	Direction of approach
max	Maximum
min	Minimum
	Boundary of clear floor area
	Centerline

3.2 Dimensional Tolerances. All dimensions are subject to conventional building industry tolerances for field conditions.

3.3 Notes. The text of *these guidelines* does not contain notes or footnotes. Additional information, explanations, and advisory materials are located in the Appendix. Paragraphs marked with an asterisk have related, nonmandatory material in the Appendix. In the Appendix, the corresponding paragraph numbers are preceded by an A.

3.4 General Terminology.

comply with. Meet one or more specifications of *these guidelines*.

if, if ... then. Denotes a specification that applies only when the conditions described are present.

may. Denotes an option or alternative.

shall. Denotes a mandatory specification or requirement.

should. Denotes an advisory specification or recommendation.

3.5 Definitions.

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 *these guidelines*.

Accessible Element. An *element* specified by *these guidelines* (for example, telephone, controls, and the like).

Accessible Route. A continuous unobstructed path connecting all accessible elements and spaces of a building or facility. Interior accessible routes may include corridors, floors, ramps, elevators, lifts, and clear floor space at fixtures. Exterior accessible routes may include parking access aisles, curb ramps, *crosswalks at vehicular ways*, walks, ramps, and lifts.

Accessible Space. *Space that complies with these guidelines.*

Adaptability. The ability of certain building spaces and elements, such as kitchen counters, sinks, and grab bars, to be added or altered so as to accommodate the needs of *individuals with or without disabilities* or to accommodate the needs of persons with different types or degrees of disability.

Addition. *An expansion, extension, or increase in the gross floor area of a building or facility.*

Administrative Authority. A governmental agency that adopts or enforces regulations and *guidelines* for the design, construction, or *alteration* of buildings and facilities.

Alteration. *An alteration is a change to a building or facility made by, on behalf of, or for the use of a public accommodation or commercial facility, that affects or could affect the usability of the building or facility or part thereof. Alterations include, but are not limited to, remodeling, renovation, rehabilitation, reconstruction, historic restoration, changes or rearrangement of the structural parts or elements, and changes or rearrangement in the plan configuration of walls and full-height partitions. Normal maintenance, reroofing, painting or wallpapering, or changes to mechanical and electrical systems are not alterations unless they affect the usability of the building or facility.*

Area of Rescue Assistance. *An area, which has direct access to an exit, where people who are unable to use stairs may remain temporarily in safety to await further instructions or assistance during emergency evacuation.*

Assembly Area. A room or space accommodating a *group of* individuals for recreational, educational, political, social, or amusement purposes, or for the consumption of food and drink.

Automatic Door. A door equipped with a power-operated mechanism and controls that open and close the door automatically upon receipt of a momentary actuating signal. The switch that begins the automatic cycle may be a photoelectric device, floor mat, or manual switch (see power-assisted door).

Building. Any structure used and intended for supporting or sheltering any use or occupancy.

Circulation Path. An exterior or interior way of passage from one place to another for pedestrians, including, but not limited to, walks, hallways, courtyards, stairways, and stair landings.

Clear. Unobstructed.

Clear Floor Space. *The minimum unobstructed floor or ground space required to accommodate a single, stationary wheelchair and occupant.*

Closed Circuit Telephone. *A telephone with dedicated line(s) such as a house phone, courtesy phone or phone that must be used to gain entrance to a facility.*

Common Use. Refers to those interior and exterior rooms, spaces, or elements that are made available for the use of a restricted group of people (for example, *occupants of a homeless shelter*, the occupants of an office building, or the guests of such occupants).

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.

Detectable Warning. *A standardized surface feature built in or applied to walking surfaces or other elements to warn visually impaired people of hazards on a circulation path.*

Dwelling Unit. A single unit which provides a kitchen or food preparation area, in addition to rooms and spaces for living, bathing, sleeping, and the like. *Dwelling units include a single family home or a townhouse used as a transient group home; an apartment building used as a shelter; guestrooms in a hotel that provide sleeping accommodations and food preparation areas; and other similar facilities used on a transient basis. For purposes of these guidelines, use of the term "Dwelling Unit" does not imply the unit is used as a residence.*

Egress, Means of. *A continuous and unobstructed way of exit travel from any point in a building or facility to a public way. A means of egress comprises vertical and horizontal travel and may include intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, horizontal exits, courts and yards. An accessible means of egress is one that complies with these guidelines and does not include stairs, steps, or escalators. Areas of rescue assistance or evacuation elevators may be included as part of accessible means of egress.*

Element. *An architectural or mechanical component of a building, facility, space, or site, e.g., telephone, curb ramp, door, drinking fountain, seating, or water closet.*

Entrance. *Any access point to a building or portion of a building or facility used for the purpose of entering. An entrance includes the approach walk, the vertical access leading to the entrance platform, the entrance platform itself, vestibules if provided, the entry door(s) or gate(s), and the hardware of the entry door(s) or gate(s).*

Facility. *All or any portion of buildings, structures, site improvements, complexes, equipment, roads, walks, passageways, parking lots, or other real or personal property located on a site.*

Ground Floor. *Any occupiable floor less than one story above or below grade with direct access to grade. A building or facility 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.*

Mezzanine or Mezzanine Floor. *That portion of a story which is an intermediate floor level placed within the story and having occupiable space above and below its floor.*

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

Multifamily Dwelling. Any building containing more than two dwelling units.

Occupiable. *A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes, or in which occupants are engaged at labor, and which is equipped with means of egress, light, and ventilation.*

Operable Part. A part of a piece of equipment or appliance used to insert or withdraw objects, or to activate, deactivate, or adjust the equipment or appliance (for example, coin slot, pushbutton, handle).

Path of Travel. *(Reserved).*

Power-assisted Door. A door used *for human passage* with a mechanism that helps to open the door, or relieves the opening resistance of a door, upon the activation of a switch or a continued force applied to the door itself.

Public Use. Describes interior or exterior rooms or spaces that are made available to the general public. Public use may be provided at a building or facility that is privately or publicly owned.

Ramp. A walking surface which has a running slope greater than 1:20.

Running Slope. The slope that is parallel to the direction of travel (see cross slope).

Service Entrance. An entrance intended primarily for delivery of goods or services.

Signage. *Displayed* verbal, symbolic, *tactile,* and pictorial information.

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

Site Improvement. Landscaping, paving for pedestrian and vehicular ways, outdoor lighting, recreational facilities, and the like, added to a site.

Sleeping Accommodations. Rooms in which people sleep; for example, dormitory and hotel or motel guest rooms or suites.

Space. *A definable area, e.g., room, toilet room, hall, assembly area, entrance, storage room, alcove, courtyard, or lobby.*

Story. *That portion of a building included between the upper surface of a floor and upper surface of the floor or roof next above. If such portion of a building does not include occupiable space, it is not considered a story for purposes of these guidelines. There may be more than one floor level within a story as in the case of a mezzanine or mezzanines.*

Structural Frame. The structural frame shall be considered to be the columns and the girders, beams, trusses and spandrels having direct connections to the columns and all other members which are essential to the stability of the building as a whole.

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

Text Telephone. *Machinery or equipment that employs interactive graphic (i.e., typed) communications through the transmission of coded signals across the standard telephone network. Text telephones can include, for example, devices known as TDD's (telecommunication display devices or telecommunication devices for deaf persons) or computers.*

Transient Lodging. *A building, facility, or portion thereof, excluding inpatient medical care facilities, that contains one or more dwelling units or sleeping accommodations. Transient lodging may include, but is not limited to, resorts, group homes, hotels, motels, and dormitories.*

Vehicular Way. A route intended for vehicular traffic, such as a street, driveway, or parking lot.

Walk. An exterior pathway with a prepared surface intended for pedestrian use, including general pedestrian areas such as plazas and courts.

NOTE: Sections 4.1.1 through 4.1.7 are different from ANSI A117.1 in their entirety and are printed in standard type (ANSI A117.1 does not include scoping provisions).

4. ACCESSIBLE ELEMENTS AND SPACES: SCOPE AND TECHNICAL REQUIREMENTS.

4.1 Minimum Requirements

4.1.1* Application.

(1) General. All areas of newly designed or newly constructed buildings and facilities required to be accessible by 4.1.2 and 4.1.3 and altered portions of existing buildings and facilities required to be accessible by 4.1.6 shall comply with these guidelines, 4.1 through 4.35, unless otherwise provided in this section or as modified in a special application section.

(2) Application Based on Building Use. Special application sections 5 through 10 provide additional requirements for restaurants and cafeterias, medical care facilities, business and mercantile, libraries, accessible transient lodging, and transportation facilities. When a building or facility contains more than one use covered by a special application section, each portion shall comply with the requirements for that use.

(3)* Areas Used Only by Employees as Work Areas. Areas that are used only as work areas shall be designed and constructed so that individuals with disabilities can approach, enter, and exit the areas. These guidelines do not require that any areas used only as work areas be constructed to permit maneuvering within the work area or be constructed or equipped (i.e., with racks or shelves) to be accessible.

(4) Temporary Structures. These guidelines cover temporary buildings or facilities as well as permanent facilities. Temporary buildings and facilities are not of permanent construction but are extensively used or are essential for public use for a period of time. Examples of temporary buildings or facilities covered by these guidelines include, but are not limited to: reviewing stands, temporary classrooms, bleacher areas, exhibit areas, temporary banking facilities, temporary health screening services, or temporary safe pedestrian passageways around a construction site. Structures, sites and equipment directly associated with the actual processes of construction, such as scaffolding, bridging, materials hoists, or construction trailers are not included.

(5) General Exceptions.

(a) In new construction, a person or entity is not required to meet fully the requirements of these guidelines where that person or entity can demonstrate that it is structurally impracticable to do so. Full compliance will be considered structurally impracticable only in those rare circumstances when the unique characteristics of terrain prevent the incorporation of accessibility features. If full compliance with the requirements of these guidelines is structurally impracticable, a person or entity shall comply with the requirements to the extent it is not structurally impracticable. Any portion of the building or facility which can be made accessible shall comply to the extent that it is not structurally impracticable.

(b) Accessibility is not required to (i) observation galleries used primarily for security purposes; or (ii) in non-occupiable spaces accessed only by ladders, catwalks, crawl spaces, very narrow passageways, or freight (non-passenger) elevators, and frequented only by service personnel for repair purposes; such spaces include, but are not limited to, elevator pits, elevator penthouses, piping or equipment catwalks.

4.1.2 Accessible Sites and Exterior Facilities: New Construction.

An accessible site shall meet the following minimum requirements:

(1) At least one accessible route complying with 4.3 shall be provided within the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones if provided, and public streets or sidewalks, to an accessible building entrance.

(2) At least one accessible route complying with 4.3 shall connect accessible buildings, accessible facilities, accessible elements, and accessible spaces that are on the same site.

(3) All objects that protrude from surfaces or posts into circulation paths shall comply with 4.4.

(4) Ground surfaces along accessible routes and in accessible spaces shall comply with 4.5.

(5) (a) If parking spaces are provided for self-parking by employees or visitors, or both, then accessible spaces complying with 4.6 shall be provided in each such parking area in conformance with the table below. Spaces required by the table need not be provided in the particular lot. They may be provided in a different location if equivalent or greater accessibility, in terms of distance from an accessible entrance, cost and convenience is ensured.

Total Parking in Lot	Required Minimum Number of Accessible Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20 plus 1 for each 100 over 1000

Except as provided in (b), access aisles adjacent to accessible spaces shall be 60 in (1525 mm) wide minimum.

(b) One in every eight accessible spaces, but not less than one, shall be served by an access aisle 96 in (2440 mm) wide minimum and shall be designated "van accessible" as required by 4.6.4. The vertical clearance at such spaces shall comply with 4.6.5. All such spaces may be grouped on one level of a parking structure.

EXCEPTION: Provision of all required parking spaces in conformance with "Universal Parking Design" (see appendix A4.6.3) is permitted.

(c) If passenger loading zones are provided, then at least one passenger loading zone shall comply with 4.6.6.

(d) At facilities providing medical care and other services for persons with mobility impairments, parking spaces complying with 4.6 shall be provided in accordance with 4.1.2(5)(a) except as follows:

(i) Outpatient units and facilities: 10 percent of the total number of parking spaces provided serving each such outpatient unit or facility;

(ii) Units and facilities that specialize in treatment or services for persons with mobility impairments: 20 percent of the total number of parking spaces provided serving each such unit or facility.

(e) Valet parking: Valet parking facilities shall provide a passenger loading zone complying with 4.6.6 located on an accessible route to the entrance of the facility. Paragraphs 5(a), 5(b), and 5(d) of this section do not apply to valet parking facilities.

(6) If toilet facilities are provided on a site, then each such public or common use toilet facility shall comply with 4.22. If bathing facilities are provided on a site, then each such public or common use bathing facility shall comply with 4.23.

For single user portable toilet or bathing units clustered at a single location, at least 5% but no less than one toilet unit or bathing unit complying with 4.22 or 4.23 shall be installed at each cluster whenever typical inaccessible units are provided. Accessible units shall be identified by the International Symbol of Accessibility.

EXCEPTION: Portable toilet units at construction sites used exclusively by construction personnel are not required to comply with 4.1.2(6).

(7) Building Signage. Signs which designate permanent rooms and spaces shall comply with 4.30.1, 4.30.4, 4.30.5 and 4.30.6. Other signs which provide direction to, or information about, functional spaces of the building shall comply with 4.30.1, 4.30.2, 4.30.3, and 4.30.5. Elements and spaces of accessible facilities which shall be identified by the International Symbol of Accessibility and which shall comply with 4.30.7 are:

(a) Parking spaces designated as reserved for individuals with disabilities;

(b) Accessible passenger loading zones;

(c) Accessible entrances when not all are accessible (inaccessible entrances shall have directional signage to indicate the route to the nearest accessible entrance);

(d) Accessible toilet and bathing facilities when not all are accessible.

4.1.3 Accessible Buildings: New Construction. Accessible buildings and facilities shall meet the following minimum requirements:

(1) At least one accessible route complying with 4.3 shall connect accessible building or facility entrances with all accessible spaces and elements within the building or facility.

(2) All objects that overhang or protrude into circulation paths shall comply with 4.4.

(3) Ground and floor surfaces along accessible routes and in accessible rooms and spaces shall comply with 4.5.

(4) Interior and exterior stairs connecting levels that are not connected by an elevator, ramp, or other accessible means of vertical access shall comply with 4.9.

(5)* One passenger elevator complying with 4.10 shall serve each level, including mezzanines, in all multi-story buildings and facilities unless exempted below. If more than one elevator is provided, each full passenger elevator shall comply with 4.10.

EXCEPTION 1: Elevators are not required in facilities that are less than three stories or that have less than 3000 square feet per story unless the building is a shopping center, a shopping mall, or the professional office of a health care provider, or another type of facility as determined by the Attorney General. The elevator exemption set forth in this paragraph does not obviate or limit in any way the obligation to comply with the other accessibility requirements established in section 4.1.3. For example, floors above or below the accessible ground floor must meet the requirements of this section except for elevator service. If toilet or bathing facilities are provided on a level not served by an elevator, then toilet or bathing facilities must be provided on the accessible ground floor. In new construction if a building or facility is eligible for this exemption but a full passenger elevator is nonetheless planned, that elevator shall meet the requirements of 4.10 and shall serve each level in the building. A full passenger elevator that provides service from a garage to only one level of a building or facility is not required to serve other levels.

EXCEPTION 2: Elevator pits, elevator penthouses, mechanical rooms, piping or equipment catwalks are exempted from this requirement.

EXCEPTION 3: Accessible ramps complying with 4.8 may be used in lieu of an elevator.

EXCEPTION 4: Platform lifts (wheelchair lifts) complying with 4.11 of this guideline and applicable state or local codes may be used in lieu of an elevator only under the following conditions:

(a) To provide an accessible route to a performing area in an assembly occupancy.

(b) To comply with the wheelchair viewing position line-of-sight and dispersion requirements of 4.33.3.

(c) To provide access to incidental occupiable spaces and rooms which are not open to the general public and which house no more than five persons, including but not limited to equipment control rooms and projection booths.

(d) To provide access where existing site constraints or other constraints make use of a ramp or an elevator infeasible.

(6) Windows: (Reserved).

(7) Doors:

(a) At each accessible entrance to a building or facility, at least one door shall comply with 4.13.

(b) Within a building or facility, at least one door at each accessible space shall comply with 4.13.

(c) Each door that is an element of an accessible route shall comply with 4.13.

(d) Each door required by 4.3.10, Egress, shall comply with 4.13.

(8) In new construction, at a minimum, the requirements in (a) and (b) below shall be satisfied independently:

(a)(i) At least 50% of all public entrances (excluding those in (b) below) must be accessible. At least one must be a ground floor entrance. Public entrances are any entrances that are not loading or service entrances.

(ii) Accessible entrances must be provided in a number at least equivalent to the number of exits required by the applicable building/fire codes. (This paragraph does not require an increase in the total number of entrances planned for a facility.)

(iii) An accessible entrance must be provided to each tenancy in a facility (for example, individual stores in a strip shopping center).

One entrance may be considered as meeting more than one of the requirements in (a). Where feasible, accessible entrances shall be the entrances used by the majority of people visiting or working in the building.

(b)(i) In addition, if direct access is provided for pedestrians from an enclosed parking garage to the building, at least one direct entrance from the garage to the building must be accessible.

(ii) If access is provided for pedestrians from a pedestrian tunnel or elevated walkway, one entrance to the building from each tunnel or walkway must be accessible.

One entrance may be considered as meeting more than one of the requirements in (b).

Because entrances also serve as emergency exits whose proximity to all parts of buildings and facilities is essential, it is preferable that all entrances be accessible.

(c) If the only entrance to a building, or tenancy in a facility, is a service entrance, that entrance shall be accessible.

(d) Entrances which are not accessible shall have directional signage complying with 4.30.1, 4.30.2, 4.30.3, and 4.30.5, which indicates the location of the nearest accessible entrance.

(9)* In buildings or facilities, or portions of buildings or facilities, required to be accessible, accessible means of egress shall be provided in the same number as required for exits by local building/life safety regulations. Where a required exit from an occupiable level above or below a level of accessible exit discharge is not accessible, an area of rescue assistance shall be provided on each such level (in a number equal to that of inaccessible required exits). Areas of rescue assistance shall comply with 4.3.11. A horizontal exit, meeting the requirements of local building/life safety regulations, shall satisfy the requirement for an area of rescue assistance.

EXCEPTION: Areas of rescue assistance are not required in buildings or facilities having a supervised automatic sprinkler system.

(10)* Drinking Fountains:

(a) Where only one drinking fountain is provided on a floor there shall be a drinking fountain which is accessible to individuals who use wheelchairs in accordance with 4.15 and one accessible to those who have difficulty bending or stooping. (This can be accommodated by the use of a "hi-lo" fountain; by providing one fountain accessible to those who use wheelchairs and one fountain at a standard height convenient for those who have difficulty bending; by providing a fountain accessible under 4.15 and a water cooler; or by such other means as would achieve the required accessibility for each group on each floor.)

(b) Where more than one drinking fountain or water cooler is provided on a floor, at least 50% of those provided shall comply with 4.15 and shall be on an accessible route.

(11) Toilet Facilities: If toilet rooms are provided, then each public and common use toilet room shall comply with 4.22. Other toilet rooms provided for the use of occupants of specific spaces (i.e., a private toilet room for the occupant of a private office) shall be adaptable. If bathing rooms are provided, then each public and common use bathroom shall comply with 4.23. Accessible toilet rooms and bathing facilities shall be on an accessible route.

(12) Storage, Shelving and Display Units:

(a) If fixed or built-in storage facilities such as cabinets, shelves, closets, and drawers are provided in accessible spaces, at least one of each type provided shall contain storage space complying with 4.25. Additional storage may be provided outside of the dimensions required by 4.25.

(b) Shelves or display units allowing self-service by customers in mercantile occupancies shall be located on an accessible route complying with 4.3. Requirements for accessible reach range do not apply.

(13) Controls and operating mechanisms in accessible spaces, along accessible routes, or as parts of accessible elements (for example, light switches and dispenser controls) shall comply with 4.27.

(14) If emergency warning systems are provided, then they shall include both audible alarms and visual alarms complying with 4.28. Sleeping accommodations required to comply with 9.3 shall have an alarm system complying with 4.28. Emergency warning systems in medical care facilities may be modified to suit standard health care alarm design practice.

(15) Detectable warnings shall be provided at locations as specified in 4.29.

(16) Building Signage:

(a) Signs which designate permanent rooms and spaces shall comply with 4.30.1, 4.30.4, 4.30.5 and 4.30.6.

(b) Other signs which provide direction to or information about functional spaces of the building shall comply with 4.30.1, 4.30.2, 4.30.3, and 4.30.5.

EXCEPTION: Building directories, menus, and all other signs which are temporary are not required to comply.

(17) Public Telephones:

(a) If public pay telephones, public closed circuit telephones, or other public telephones are provided, then they shall comply with 4.31.2 through 4.31.8 to the extent required by the following table:

Number of each type of telephone provided on each floor	Number of telephones required to comply with 4.31.2 through 4.31.8[1]
1 or more single unit	1 per floor
1 bank[2]	1 per floor
2 or more banks[2]	1 per bank. Accessible unit may be installed as a single unit in proximity (either visible or with signage) to the bank. At least one public telephone per floor shall meet the requirements for a forward reach telephone[3].

[1] Additional public telephones may be installed at any height. Unless otherwise specified, accessible telephones may be either forward or side reach telephones.

[2] A bank consists of two or more adjacent public telephones, often installed as a unit.

[3] EXCEPTION: For exterior installations only, if dial tone first service is available, then a side reach telephone may be installed instead of the required forward reach telephone (i.e., one telephone in proximity to each bank shall comply with 4.31).

(b)* All telephones required to be accessible and complying with 4.31.2 through 4.31.8 shall be equipped with a volume control. In addition, 25 percent, but never less than one, of all other public telephones provided shall be equipped with a volume control and shall be dispersed among all types of public telephones, including closed circuit telephones, throughout the building or facility. Signage complying with applicable provisions of 4.30.7 shall be provided.

(c) The following shall be provided in accordance with 4.31.9:

(i) If a total number of four or more public pay telephones (including both interior and exterior phones) is provided at a site, and at least one is in an interior location, then at least one interior public text telephone shall be provided.

(ii) If an interior public pay telephone is provided in a stadium or arena, in a convention center, in a hotel with a convention center, or

in a covered mall, at least one interior public text telephone shall be provided in the facility.

(iii) If a public pay telephone is located in or adjacent to a hospital emergency room, hospital recovery room, or hospital waiting room, one public text telephone shall be provided at each such location.

(d) Where a bank of telephones in the interior of a building consists of three or more public pay telephones, at least one public pay telephone in each such bank shall be equipped with a shelf and outlet in compliance with 4.31.9(2).

(18) If fixed or built-in seating or tables (including, but not limited to, study carrels and student laboratory stations), are provided in accessible public or common use areas, at least five percent (5%), but not less than one, of the fixed or built-in seating areas or tables shall comply with 4.32. An accessible route shall lead to and through such fixed or built-in seating areas, or tables.

(19)* Assembly areas:

(a) In places of assembly with fixed seating accessible wheelchair locations shall comply with 4.33.2, 4.33.3, and 4.33.4 and shall be provided consistent with the following table:

Capacity of Seating in Assembly Areas	Number of Required Wheelchair Locations
4 to 25	1
26 to 50	2
51 to 300	4
301 to 500	6
over 500	6, plus 1 additional space for each total seating capacity increase of 100

In addition, one percent, but not less than one, of all fixed seats shall be aisle seats with no armrests on the aisle side, or removable or folding armrests on the aisle side. Each such seat shall be identified by a sign or marker. Signage notifying patrons of the availability of such seats shall be posted at the ticket office. Aisle seats are not required to comply with 4.33.4.

(b) This paragraph applies to assembly areas where audible communications are integral to the use of the space (e.g., concert and lecture halls, playhouses and movie theaters, meeting rooms, etc.). Such assembly areas, if (1) they accommodate at least 50 persons, or if they have audio-amplification systems, and (2) they have fixed seating, shall have a permanently installed assistive listening system complying with 4.33. For other assembly areas, a permanently installed assistive listening system, or an adequate number of electrical outlets or other supplementary wiring necessary to support a portable assistive listening system shall be provided. The minimum number of receivers to be provided shall be equal to 4 percent of the total number of seats, but in no case less than two. Signage complying with applicable provisions of 4.30 shall be installed to notify patrons of the availability of a listening system.

(20) Where automated teller machines (ATMs) are provided, each ATM shall comply with the requirements of 4.34 except where two or more are provided at a location, then only one must comply.

EXCEPTION: Drive-up-only automated teller machines are not required to comply with 4.27.2, 4.27.3 and 4.34.3.

(21) Where dressing and fitting rooms are provided for use by the general public, patients, customers or employees, 5 percent, but never less than one, of dressing rooms for each type of use in each cluster of dressing rooms shall be accessible and shall comply with 4.35.

Examples of types of dressing rooms are those serving different genders or distinct and different functions as in different treatment or examination facilities.

4.1.4 (Reserved).

4.1.5 Accessible Buildings: Additions. Each addition to an existing building or facility shall be regarded as an alteration. Each space or element added to the existing building or facility shall comply with the applicable provisions of 4.1.1 to 4.1.3, Minimum Requirements (for New Construction) and the applicable technical specifications of 4.2 through 4.35 and sections 5 through 10. Each addition that

affects or could affect the usability of an area containing a primary function shall comply with 4.1.6(2).

4.1.6 Accessible Buildings: Alterations.

(1) General. Alterations to existing buildings and facilities shall comply with the following:

(a) No alteration shall be undertaken which decreases or has the effect of decreasing accessibility or usability of a building or facility below the requirements for new construction at the time of alteration.

(b) If existing elements, spaces, or common areas are altered, then each such altered element, space, feature, or area shall comply with the applicable provisions of 4.1.1 to 4.1.3 Minimum Requirements (for New Construction). If the applicable provision for new construction requires that an element, space, or common area be on an accessible route, the altered element, space, or common area is not required to be on an accessible route except as provided in 4.1.6(2) (Alterations to an Area Containing a Primary Function.)

(c) If alterations of single elements, when considered together, amount to an alteration of a room or space in a building or facility, the entire space shall be made accessible.

(d) No alteration of an existing element, space, or area of a building or facility shall impose a requirement for greater accessibility than that which would be required for new construction. For example, if the elevators and stairs in a building are being altered and the elevators are, in turn, being made accessible, then no accessibility modifications are required to the stairs connecting levels connected by the elevator. If stair modifications to correct unsafe conditions are required by other codes, the modifications shall be done in compliance with these guidelines unless technically infeasible.

(e) At least one interior public text telephone complying with 4.31.9 shall be provided if:

(i) alterations to existing buildings or facilities with less than four exterior or interior public pay telephones would increase the total number to four or more telephones with at least one in an interior location; or

(ii) alterations to one or more exterior or interior public pay telephones occur in an existing building or facility with four or more public telephones with at least one in an interior location.

(f) If an escalator or stair is planned or installed where none existed previously and major structural modifications are necessary for such installation, then a means of accessible vertical access shall be provided that complies with the applicable provisions of 4.7, 4.8, 4.10, or 4.11.

(g) In alterations, the requirements of 4.1.3(9), 4.3.10 and 4.3.11 do not apply.

(h)*Entrances: If a planned alteration entails alterations to an entrance, and the building has an accessible entrance, the entrance being altered is not required to comply with 4.1.3(8), except to the extent required by 4.1.6(2). If a particular entrance is not made accessible, appropriate accessible signage indicating the location of the nearest accessible entrance(s) shall be installed at or near the inaccessible entrance, such that a person with disabilities will not be required to retrace the approach route from the inaccessible entrance.

(i) If the alteration work is limited solely to the electrical, mechanical, or plumbing system, or to hazardous material abatement, or automatic sprinkler retrofitting, and does not involve the alteration of any elements or spaces required to be accessible under these guidelines, then 4.1.6(2) does not apply.

(j) EXCEPTION: In alteration work, if compliance with 4.1.6 is technically infeasible, the alteration shall provide accessibility to the maximum extent feasible. Any elements or features of the building or facility that are being altered and can be made accessible shall be made accessible within the scope of the alteration.

Technically Infeasible. Means, with respect to an alteration of a building or a facility, that it has little likelihood of being accomplished because existing structural conditions would require removing or altering a load-bearing member which is an essential part of the structural frame; or because other existing physical or site constraints prohibit modification or

addition of elements, spaces, or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.

(k) EXCEPTION:

(i) These guidelines do not require the installation of an elevator in an altered facility that is less than three stories or has less than 3,000 square feet per story unless the building is a shopping center, a shopping mall, the professional office of a health care provider, or another type of facility as determined by the Attorney General.

(ii) The exemption provided in paragraph (i) does not obviate or limit in any way the obligation to comply with the other accessibility requirements established in these guidelines. For example, alterations to floors above or below the ground floor must be accessible regardless of whether the altered facility has an elevator. If a facility subject to the elevator exemption set forth in paragraph (i) nonetheless has a full passenger elevator, that elevator shall meet, to the maximum extent feasible, the accessibility requirements of these guidelines.

(2) Alterations to an Area Containing a Primary Function: In addition to the requirements of 4.1.6(1), an alteration that affects or could affect the usability of or access to an area containing a primary function shall be made so as to ensure that, to the maximum extent feasible, the path of travel to the altered area and the restrooms, telephones, and drinking fountains serving the altered area, are readily accessible to and usable by individuals with disabilities, unless such alterations are disproportionate to the overall alterations in terms of cost and scope (as determined under criteria established by the Attorney General).

(3) Special Technical Provisions for Alterations to Existing Buildings and Facilities:

(a) Ramps: Curb ramps and interior or exterior ramps to be constructed on sites or in existing buildings or facilities where space limitations prohibit the use of a 1:12 slope or less may have slopes and rises as follows:

(i) A slope between 1:10 and 1:12 is allowed for a maximum rise of 6 inches.

(ii) A slope between 1:8 and 1:10 is allowed for a maximum rise of 3 inches. A slope steeper than 1:8 is not allowed.

(b) Stairs: Full extension of handrails at stairs shall not be required in alterations where such extensions would be hazardous or impossible due to plan configuration.

(c) Elevators:

(i) If safety door edges are provided in existing automatic elevators, automatic door reopening devices may be omitted (see 4.10.6).

(ii) Where existing shaft configuration or technical infeasibility prohibits strict compliance with 4.10.9, the minimum car plan dimensions may be reduced by the minimum amount necessary, but in no case shall the inside car area be smaller than 48 in by 48 in.

(iii) Equivalent facilitation may be provided with an elevator car of different dimensions when usability can be demonstrated and when all other elements required to be accessible comply with the applicable provisions of 4.10. For example, an elevator of 47 in by 69 in (1195 mm by 1755 mm) with a door opening on the narrow dimension, could accommodate the standard wheelchair clearances shown in Figure 4.

(d) Doors:

(i) Where it is technically infeasible to comply with clear opening width requirements of 4.13.5, a projection of 5/8 in maximum will be permitted for the latch side stop.

(ii) If existing thresholds are 3/4 in high or less, and have (or are modified to have) a beveled edge on each side, they may remain.

(e) Toilet Rooms:

(i) Where it is technically infeasible to comply with 4.22 or 4.23, the installation of at least one unisex toilet/bathroom per floor, located in the same area as existing toilet facilities, will be permitted in lieu of modifying existing toilet facilities to be accessible. Each unisex toilet room shall contain one water closet complying with 4.16 and one lavatory complying with 4.19, and the door shall have a privacy latch.

(ii) Where it is technically infeasible to install a required standard stall (Fig. 30(a)), or where other codes prohibit reduction of the fixture count (i.e., removal of a water closet in order to create a double-wide stall), either alternate stall (Fig.30(b)) may be provided in lieu of the standard stall.

(iii) When existing toilet or bathing facilities are being altered and are not made accessible, signage complying with 4.30.1, 4.30.2, 4.30.3, 4.30.5, and 4.30.7 shall be provided indicating the location of the nearest accessible toilet or bathing facility within the facility.

(f) Assembly Areas:

(i) Where it is technically infeasible to disperse accessible seating throughout an altered assembly area, accessible seating areas may be clustered. Each accessible seating area shall have provisions for companion seating and shall be located on an accessible route that also serves as a means of emergency egress.

(ii) Where it is technically infeasible to alter all performing areas to be on an accessible route, at least one of each type of performing area shall be made accessible.

(g) Platform Lifts (Wheelchair Lifts): In alterations, platform lifts (wheelchair lifts) complying with 4.11 and applicable state or local codes may be used as part of an accessible route. The use of lifts is not limited to the four conditions in exception 4 of 4.1.3(5).

(h) Dressing Rooms: In alterations where technical infeasibility can be demonstrated, one dressing room for each sex on each level shall be made accessible. Where only unisex dressing rooms are provided, accessible unisex dressing rooms may be used to fulfill this requirement.

4.1.7 Accessible Buildings: Historic Preservation.

(1) Applicability:

(a) General Rule. Alterations to a qualified historic building or facility shall comply with 4.1.6,Accessible Buildings: Alterations, the applicable technical specifications of 4.2 through 4.35 and the applicable special application sections 5 through 10 unless it is determined in accordance with the procedures in 4.1.7(2) that compliance with the requirements for accessible routes (exterior and interior), ramps, entrances, or toilets would threaten or destroy the historic significance of the building or facility in which case the alternative requirements in 4.1.7(3) may be used for the feature.

EXCEPTION: (Reserved).

(b) Definition. A qualified historic building or facility is a building or facility that is:

(i) Listed in or eligible for listing in the National Register of Historic Places; or

(ii) Designated as historic under an appropriate State or local law.

(2) Procedures:

(a) Alterations to Qualified Historic Buildings and Facilities Subject to Section 106 of the National Historic Preservation Act:

(i) Section 106 Process. Section 106 of the National Historic Preservation Act (16 U.S.C. 470 f) requires that a Federal agency with jurisdiction over a Federal, federally assisted, or federally licensed undertaking consider the effects of the agency's undertaking on buildings and facilities listed in or eligible for listing in the National Register of Historic Places and give the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking prior to approval of the undertaking.

(ii) ADA Application. Where alterations are undertaken to a qualified historic building or facility that is subject to section 106 of the National Historic Preservation Act, the Federal agency with jurisdiction over the undertaking shall follow the section 106 process. If the State Historic Preservation Officer or Advisory Council on Historic Preservation agrees that compliance with the requirements for accessible routes (exterior and interior), ramps, entrances, or toilets would threaten or destroy the historic significance of the building or facility, the alternative requirements in 4.1.7(3) may be used for the feature.

(b) Alterations to Qualified Historic Buildings and Facilities Not Subject to Section 106 of the National Historic Preservation Act. Where alterations are undertaken to a qualified historic building or facility that is not subject to section 106 of the National Historic Preservation Act, if the entity undertaking the alterations believes that compliance with the requirements for accessible routes (exterior and interior), ramps, entrances, or toilets would threaten or destroy the historic significance of the building or facility and that the alternative requirements in 4.1.7(3) should be used for the feature, the entity should consult with the State Historic Preservation Officer. If the State Historic Preservation Officer agrees that compliance with the accessibility requirements for accessible routes (exterior and interior), ramps, entrances or toilets would threaten or destroy the historical significance of the building or facility, the alternative requirements in 4.1.7(3) may be used.

(c) Consultation With Interested Persons. Interested persons should be invited to participate in the consultation process, including State or local accessibility officials, individuals with disabilities, and organizations representing individuals with disabilities.

(d) Certified Local Government Historic Preservation Programs. Where the State Historic Preservation Officer has delegated the consultation responsibility for purposes of this section to a local government historic preservation program that has been certified in accordance with section 101(c) of the National Historic Preservation Act of 1966 (16 U.S.C. 470a (c)) and implementing regulations (36 CFR 61.5), the responsibility may be carried out by the appropriate local government body or official.

(3) Historic Preservation: Minimum Requirements:

(a) At least one accessible route complying with 4.3 from a site access point to an accessible entrance shall be provided.

EXCEPTION: A ramp with a slope no greater than 1:6 for a run not to exceed 2 ft (610 mm) may be used as part of an accessible route to an entrance.

(b) At least one accessible entrance complying with 4.14 which is used by the public shall be provided.

EXCEPTION: If it is determined that no entrance used by the public can comply with 4.14, then access at any entrance not used by the general public but open (unlocked) with directional signage at the primary entrance may be used. The accessible entrance shall also have a notification system. Where security is a problem, remote monitoring may be used.

(c) If toilets are provided, then at least one toilet facility complying with 4.22 and 4.1.6 shall be provided along an accessible route that complies with 4.3. Such toilet facility may be unisex in design.

(d) Accessible routes from an accessible entrance to all publicly used spaces on at least the level of the accessible entrance shall be provided. Access shall be provided to all levels of a building or facility in compliance with 4.1 whenever practical.

(e) Displays and written information, documents, etc., should be located where they can be seen by a seated person. Exhibits and signage displayed horizontally (e.g., open books), should be no higher than 44 in (1120 mm) above the floor surface.

NOTE: The technical provisions of sections 4.2 through 4.35 are the same as those of the American National Standard Institute's document A117.1-1980, except as noted in the text.

4.2 Space Allowance and Reach Ranges.

4.2.1* Wheelchair Passage Width. The minimum clear width for single wheelchair passage shall be 32 in (815 mm) at a point and 36 in (915 mm) continuously (see Fig. 1 and 24(e)).

4.2.2 Width for Wheelchair Passing. The minimum width for two wheelchairs to pass is 60 in (1525 mm) (see Fig. 2).

4.2.3* Wheelchair Turning Space. The space required for a wheelchair to make a 180-degree turn is a clear space of 60 in (1525 mm)

diameter (see Fig. 3(a)) or a T-shaped space (see Fig. 3(b)).

4.2.4* Clear Floor or Ground Space for Wheelchairs.

4.2.4.1 Size and Approach. The minimum clear floor or ground space required to accommodate a single, stationary wheelchair and occupant is 30 in by 48 in (760 mm by 1220 mm) (see Fig. 4(a)). The minimum clear floor or ground space for wheelchairs may be positioned for forward or parallel approach to an object (see Fig. 4(b) and (c)). Clear floor or ground space for wheelchairs may be part of the knee space required under some objects.

4.2.4.2 Relationship of Maneuvering Clearance to Wheelchair Spaces. One full unobstructed side of the clear floor or ground space for a wheelchair shall adjoin or overlap an accessible route or adjoin another wheelchair clear floor space. If a clear floor space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearances shall be provided as shown in Fig. 4(d) and (e).

4.2.4.3 Surfaces for Wheelchair Spaces. Clear floor or ground spaces for wheelchairs shall comply with 4.5.

4.2.5* Forward Reach. If the clear floor space only allows forward approach to an object, the maximum high forward reach allowed shall be 48 in (1220 mm) (see Fig. 5(a)). *The minimum low forward reach is 15 in (380 mm).* If the high forward reach is over an obstruction, reach and clearances shall be as shown in Fig. 5(b).

4.2.6* Side Reach. If the clear floor space allows parallel approach by a person in a wheelchair, the maximum high side reach allowed shall be 54 in (1370 mm) and the low side reach shall be no less than 9 in (230 mm) above the floor (Fig. 6(a) and (b)). If the side reach is over an obstruction, the reach and clearances shall be as shown in Fig 6(c).

4.3 Accessible Route.

4.3.1* General. All walks, halls, corridors, aisles, *skywalks, tunnels,* and other spaces

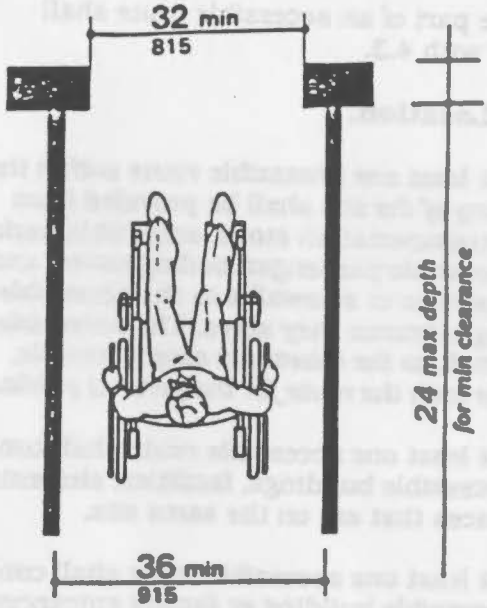


Fig. 1
Minimum Clear Width
for Single Wheelchair

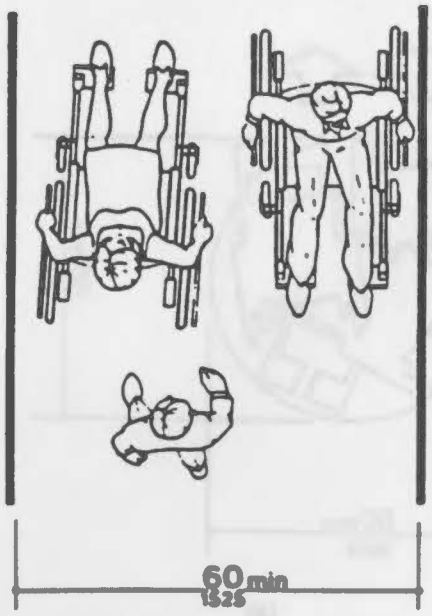


Fig. 2
Minimum Clear Width
for Two Wheelchairs

that are part of an accessible route shall comply with 4.3.

4.3.2 Location.

(1) At least one accessible route *within the boundary of the site* shall be provided from public transportation stops, accessible parking, and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance they serve. *The accessible route shall, to the maximum extent feasible, coincide with the route for the general public.*

(2) At least one accessible route shall connect accessible buildings, facilities, elements, and spaces that are on the same site.

(3) At least one accessible route shall connect accessible building or facility entrances with all accessible spaces and elements and with all accessible dwelling units within the building or facility.

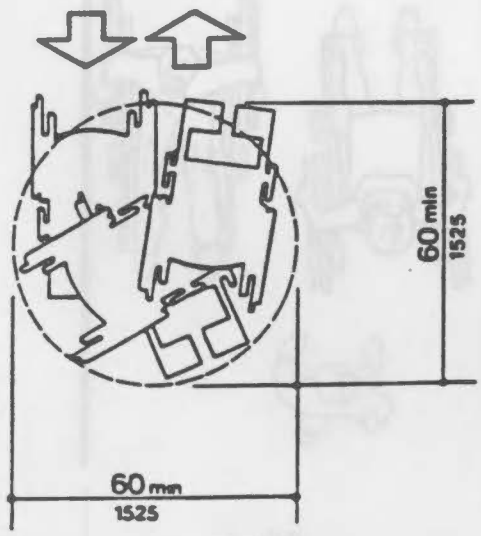
(4) An accessible route shall connect at least one accessible entrance of each accessible dwelling unit with those exterior and interior spaces and facilities that serve the accessible dwelling unit.

4.3.3 Width. The minimum clear width of an accessible route shall be 36 in (915 mm) except at doors (see 4.13.5 and 4.13.6). If a person in a wheelchair must make a turn around an obstruction, the minimum clear width of the accessible route shall be as shown in Fig. 7(a) and (b).

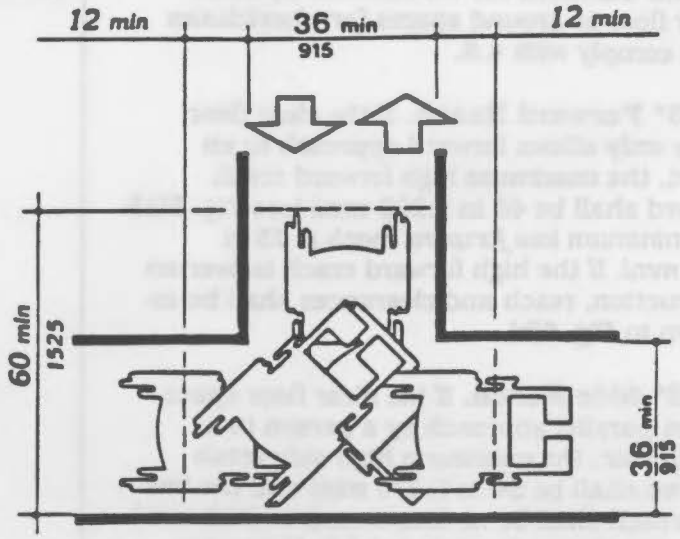
4.3.4 Passing Space. If an accessible route has less than 60 in (1525 mm) clear width, then passing spaces at least 60 in by 60 in (1525 mm by 1525 mm) shall be located at reasonable intervals not to exceed 200 ft (61 m). A T-intersection of two corridors or walks is an acceptable passing place.

4.3.5 Head Room. Accessible routes shall comply with 4.4.2.

4.3.6 Surface Textures. The surface of an accessible route shall comply with 4.5.

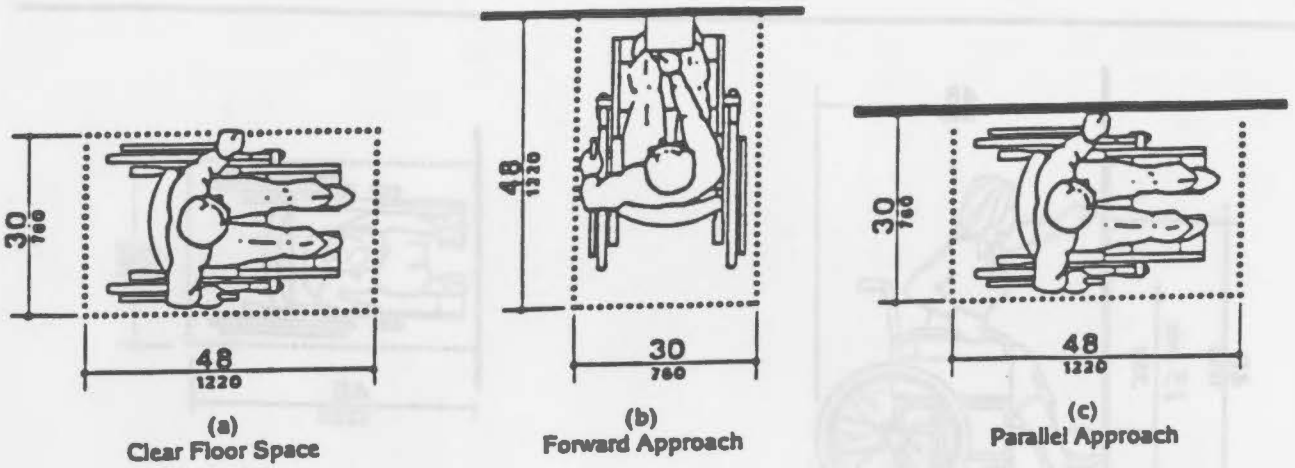


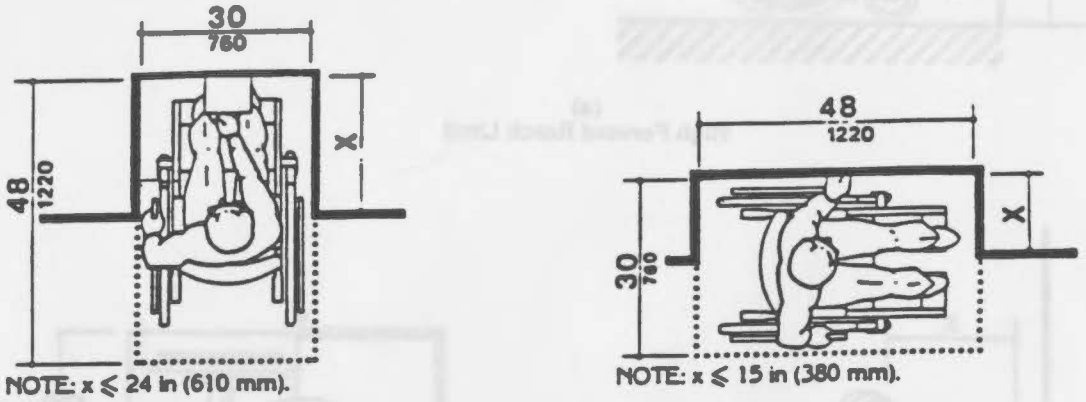
(a)
60-in (1525-mm)-Diameter Space



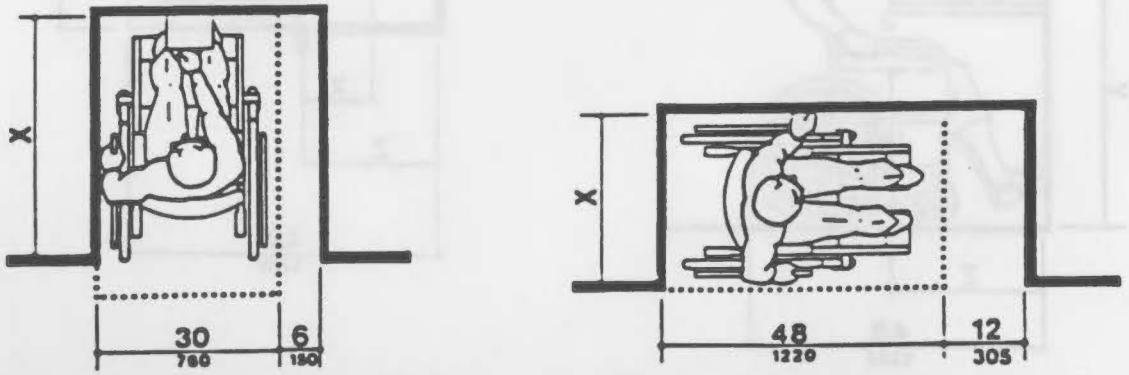
(b)
T-Shaped Space for 180° Turns

Fig. 3
Wheelchair Turning Space



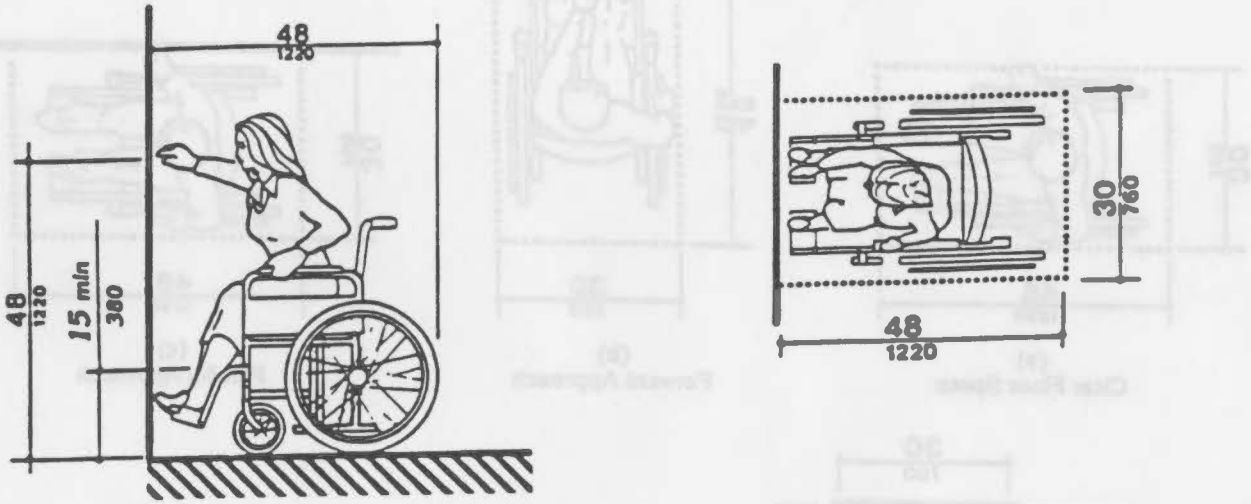


(d)
Clear Floor Space in Alcoves

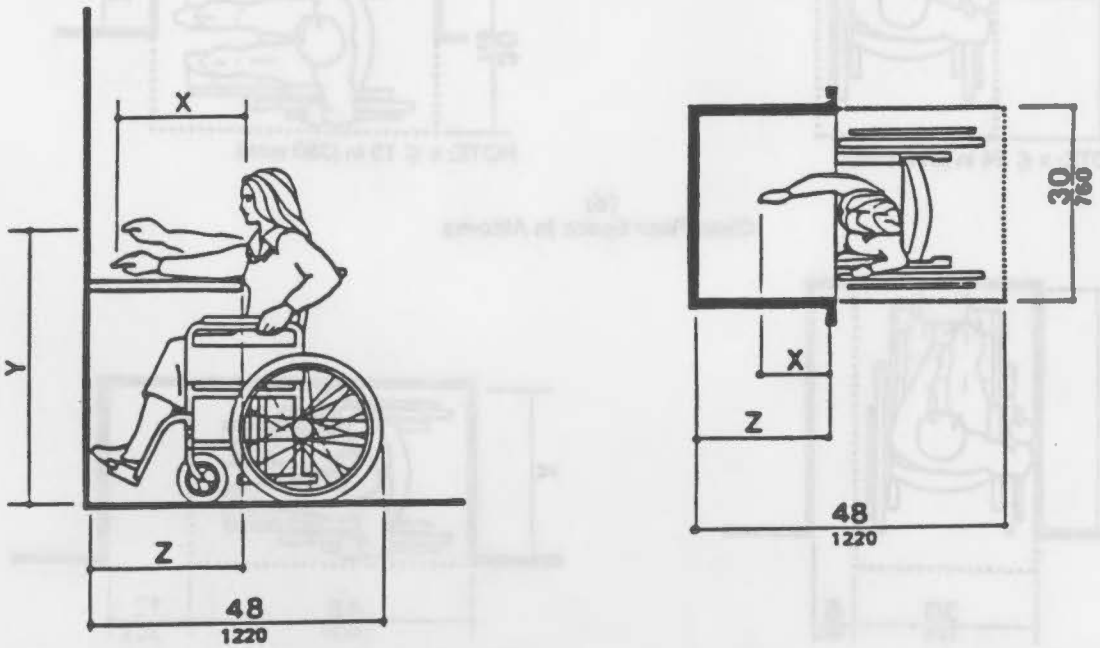


(e)
Additional Maneuvering Clearances for Alcoves

Fig. 4
Minimum Clear Floor Space for Wheelchairs



(a)
High Forward Reach Limit



NOTE: x shall be ≤ 25 in (635 mm); z shall be ≥ x. When x < 20 in (510 mm), then y shall be 48 in (1220 mm) maximum. When x is 20 to 25 in (510 to 635 mm), then y shall be 44 in (1120 mm) maximum.

(b)
Maximum Forward Reach over an Obstruction

Fig. 5
Forward Reach

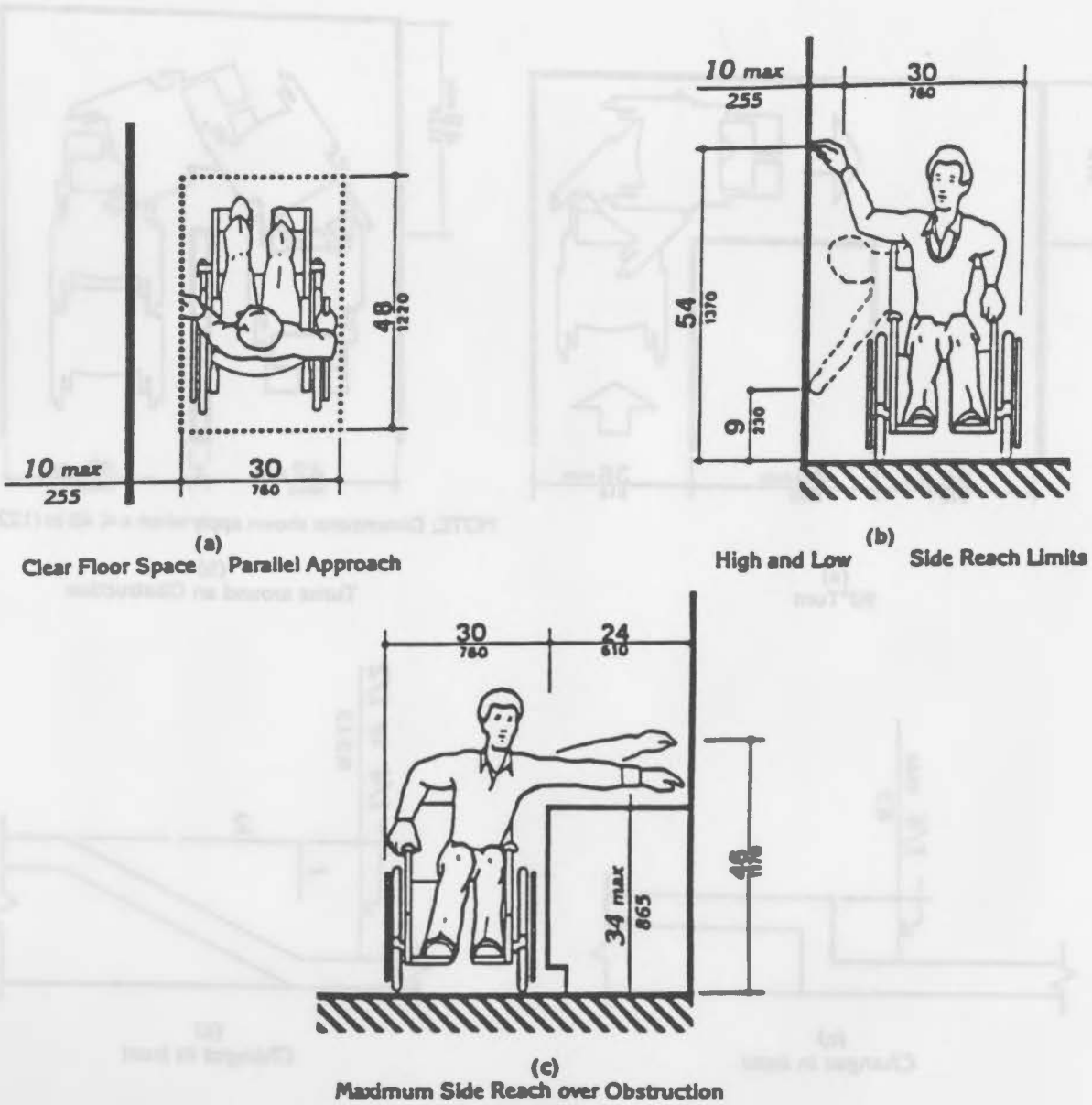
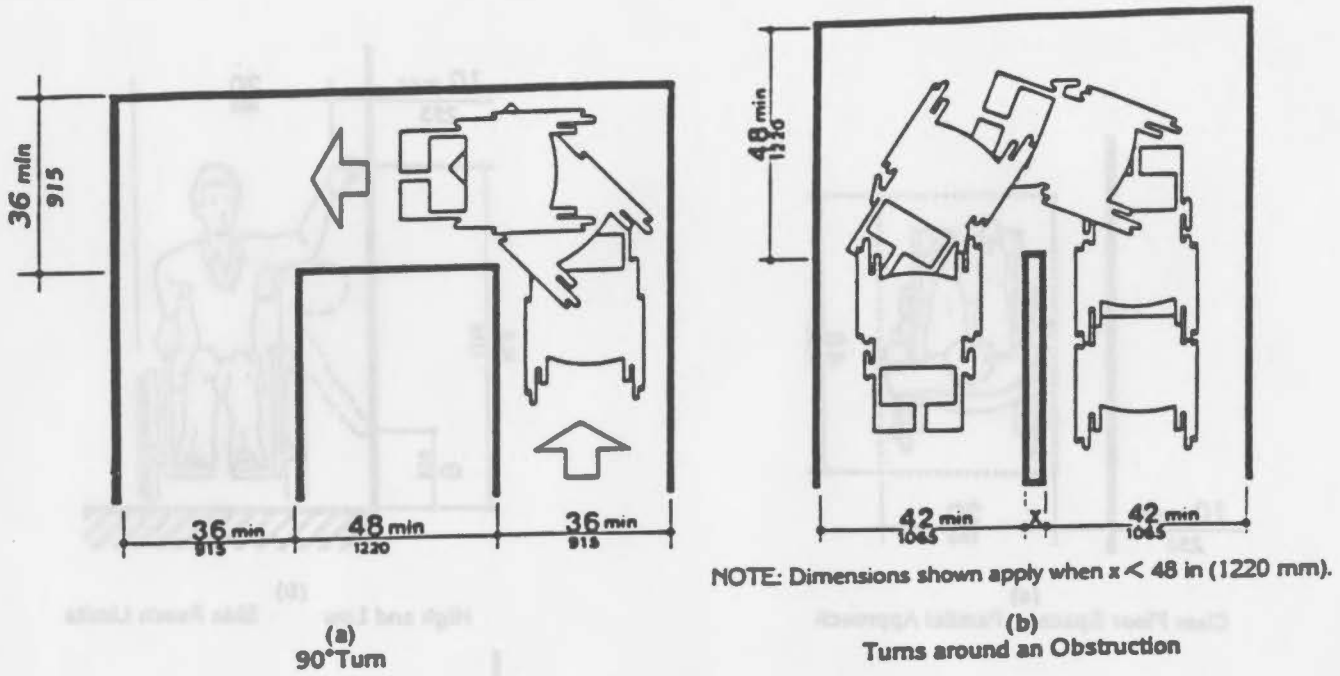


Fig. 6
Side Reach

4.3.7 Slope. An accessible route with a running slope greater than 1:20 is a ramp and shall comply with 4.8. Nowhere shall the cross slope of an accessible route exceed 1:50.

4.3.8 Changes in Levels. Changes in levels along an accessible route shall comply with 4.5.2. If an accessible route has changes in level greater than 1/2 in (13 mm), then a curb ramp, ramp, elevator, or platform lift *(as permitted in 4.1.3 and 4.1.6)* shall be provided that complies with 4.7, 4.8, 4.10, or 4.11, respectively. An accessible route does not include stairs, steps, or escalators. See definition of "egress, means of" in 3.5.

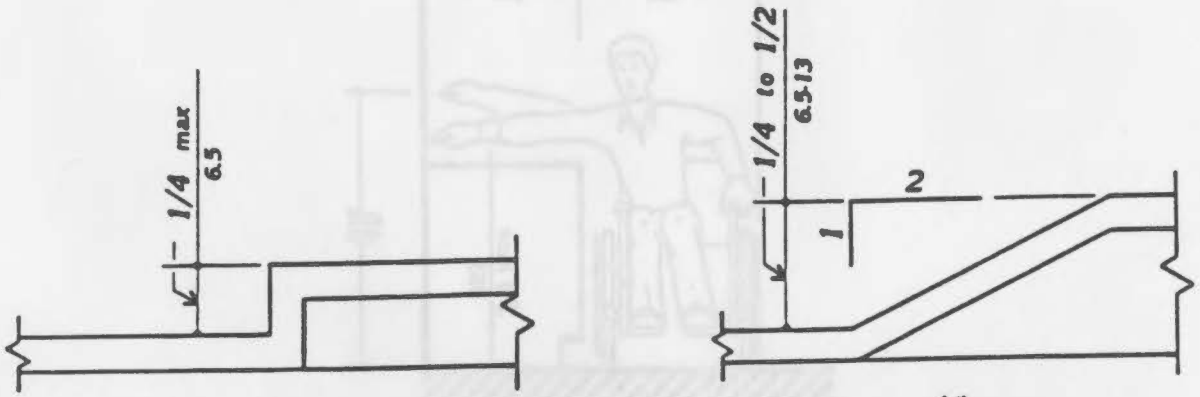
4.3.9 Doors. Doors along an accessible route shall comply with 4.13.



(a)
90° Turn

NOTE: Dimensions shown apply when x < 48 in (1220 mm).

(b)
Turns around an Obstruction



(c)
Changes in level

(d)
Changes in level

Fig. 7
Accessible Route

4.3.10* Egress. Accessible routes serving any accessible space or element shall also serve as a means of egress for emergencies or connect to an accessible area of rescue assistance.

4.3.11 Areas of Rescue Assistance.

4.3.11.1 Location and Construction. *An area of rescue assistance shall be one of the following:*

(1) A portion of a stairway landing within a smokeproof enclosure (complying with local requirements).

(2) A portion of an exterior exit balcony located immediately adjacent to an exit stairway when the balcony complies with local requirements for exterior exit balconies. Openings to the interior of the building located within 20 feet (6 m) of the

area of rescue assistance shall be protected with fire assemblies having a three-fourths hour fire protection rating.

(3) A portion of a one-hour fire-resistive corridor (complying with local requirements for fire-resistive construction and for openings) located immediately adjacent to an exit enclosure.

(4) A vestibule located immediately adjacent to an exit enclosure and constructed to the same fire-resistive standards as required for corridors and openings.

(5) A portion of a stairway landing within an exit enclosure which is vented to the exterior and is separated from the interior of the building with not less than one-hour fire-resistive doors.

(6) When approved by the appropriate local authority, an area or a room which is separated from other portions of the building by a smoke barrier. Smoke barriers shall have a fire-resistive rating of not less than one hour and shall completely enclose the area or room. Doors in the smoke barrier shall be tight-fitting smoke- and draft-control assemblies having a fire-protection rating of not less than 20 minutes and shall be self-closing or automatic closing. The area or room shall be provided with an exit directly to an exit enclosure. Where the room or area exits into an exit enclosure which is required to be of more than one-hour fire-resistive construction, the room or area shall have the same fire-resistive construction, including the same opening protection, as required for the adjacent exit enclosure.

(7) An elevator lobby when elevator shafts and adjacent lobbies are pressurized as required for smokeproof enclosures by local regulations and when complying with requirements herein for size, communication, and signage. Such pressurization system shall be activated by smoke detectors on each floor located in a manner approved by the appropriate local authority. Pressurization equipment and its duct work within the building shall be separated from other portions of the building by a minimum two-hour fire-resistive construction.

***4.3.11.2 Size.** Each area of rescue assistance shall provide at least two accessible areas each being not less than 30 inches by 48 inches (760 mm by 1220 mm). The area of rescue assistance shall not encroach on any required exit width. The total number of such 30-inch by 48-inch (760 mm by 1220 mm) areas per story shall be not less than one for every 200 persons of calculated occupant load served by the area of rescue assistance.*

EXCEPTION: The appropriate local authority may reduce the minimum number of 30-inch by 48-inch (760 mm by 1220 mm) areas to one for each area of rescue assistance on floors where the occupant load is less than 200.

***4.3.11.3* Stairway Width.** Each stairway adjacent to an area of rescue assistance shall have a minimum clear width of 48 inches between handrails.*

***4.3.11.4* Two-way Communication.** A method of two-way communication, with both visible and audible signals, shall be provided between each area of rescue assistance and the primary entry. The fire department or appropriate local authority may approve a location other than the primary entry.*

***4.3.11.5 Identification.** Each area of rescue assistance shall be identified by a sign which states "AREA OF RESCUE ASSISTANCE" and displays the international symbol of accessibility. The sign shall be illuminated when exit sign illumination is required. Signage shall also be installed at all inaccessible exits and where otherwise necessary to clearly indicate the direction to areas of rescue assistance. In each area of rescue assistance, instructions on the use of the area under emergency conditions shall be posted adjoining the two-way communication system.*

4.4 Protruding Objects.

4.4.1* General. Objects projecting from walls (for example, telephones) with their leading edges between 27 in and 80 in (685 mm and 2030 mm) above the finished floor shall protrude no more than 4 in (100 mm) into walks, halls, corridors, passageways, or aisles (see Fig. 8(a)). Objects mounted with their leading edges at or below 27 in (685 mm) above the finished floor may protrude any amount (see Fig. 8(a) and (b)). Free-standing objects mounted on posts or pylons may overhang 12 in (305 mm) maximum from 27 in to 80 in (685 mm to 2030 mm) above the ground or

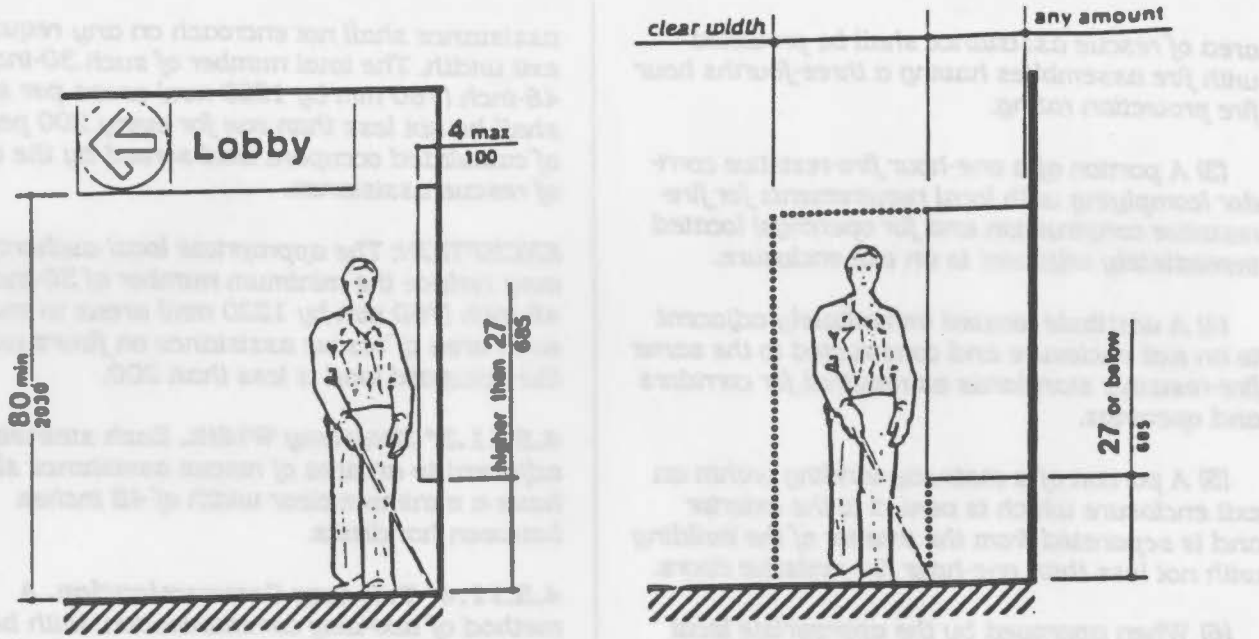


Fig. 8 (a)
Walking Parallel to a Wall

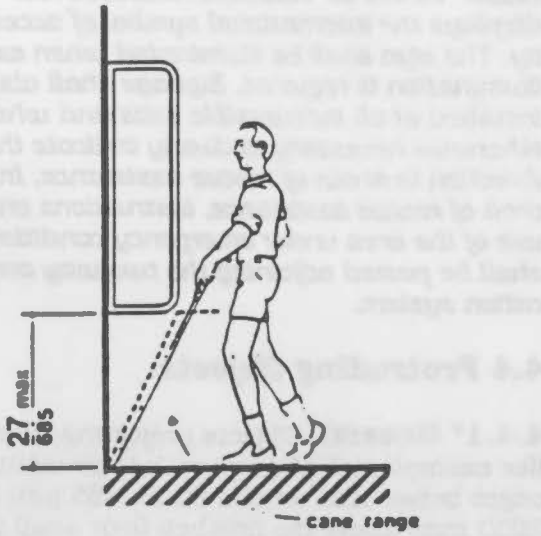


Fig. 8 (b)
Walking Perpendicular to a Wall

Fig. 8
Protruding Objects

finished floor (see Fig. 8(c) and (d)). Protruding objects shall not reduce the clear width of an accessible route or maneuvering space (see Fig. 8(e)).

4.4.2 Head Room. Walks, halls, corridors, passageways, aisles, or other circulation spaces shall have 80 in (2030 mm) minimum clear head room (see Fig. 8(a)). *If vertical clearance of an area adjoining an accessible route is reduced to less than 80 in (nominal dimension), a barrier to warn blind or visually-impaired persons shall be provided (see Fig. 8(c-1)).*

4.5 Ground and Floor Surfaces.

4.5.1* General. Ground and floor surfaces along accessible routes and in accessible rooms and spaces including floors, walks, ramps, stairs, and curb ramps, shall be stable, firm, slip-resistant, and shall comply with 4.5.

4.5.2 Changes in Level. Changes in level up to 1/4 in (6 mm) may be vertical and without edge treatment *(see Fig. 7(c))*. Changes in level between 1/4 in and 1/2 in (6 mm and 13 mm)

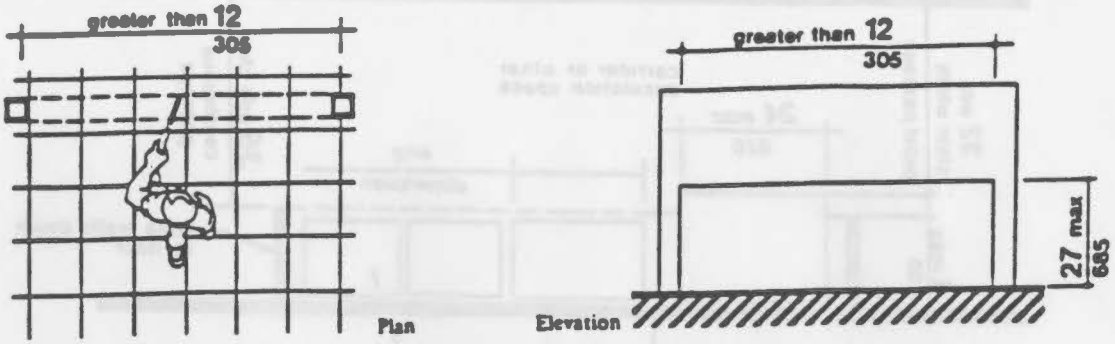


Fig. 8 (c) Free-Standing Overhanging Objects

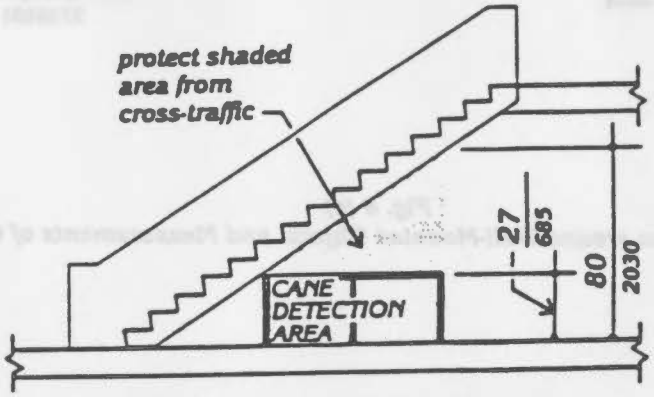


Fig. 8 (c-1) Overhead Hazards

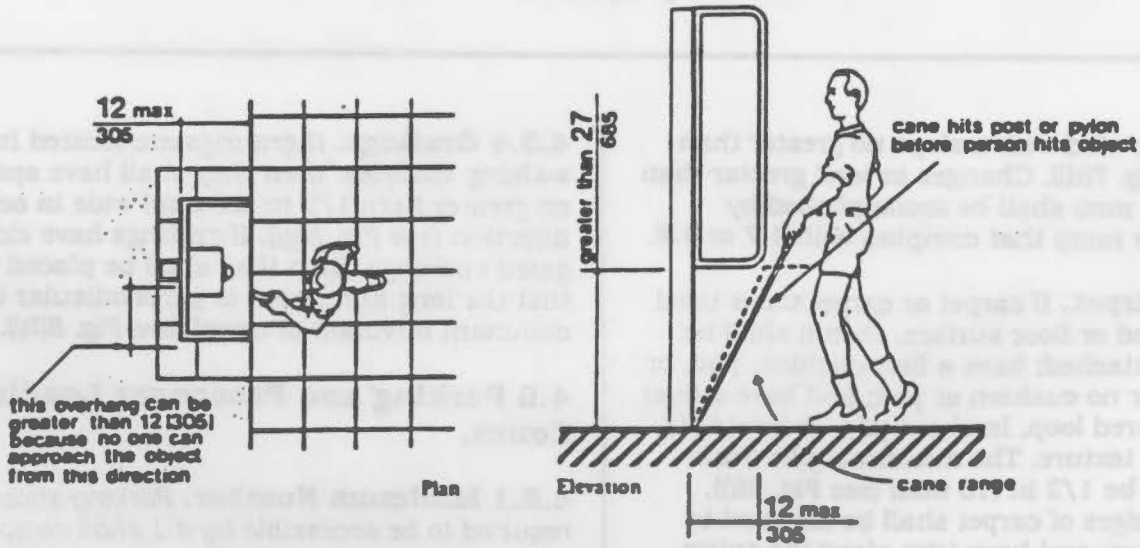


Fig. 8 (d)
Objects Mounted on Posts or Pylons

Fig. 8
Protruding Objects *(Continued)*

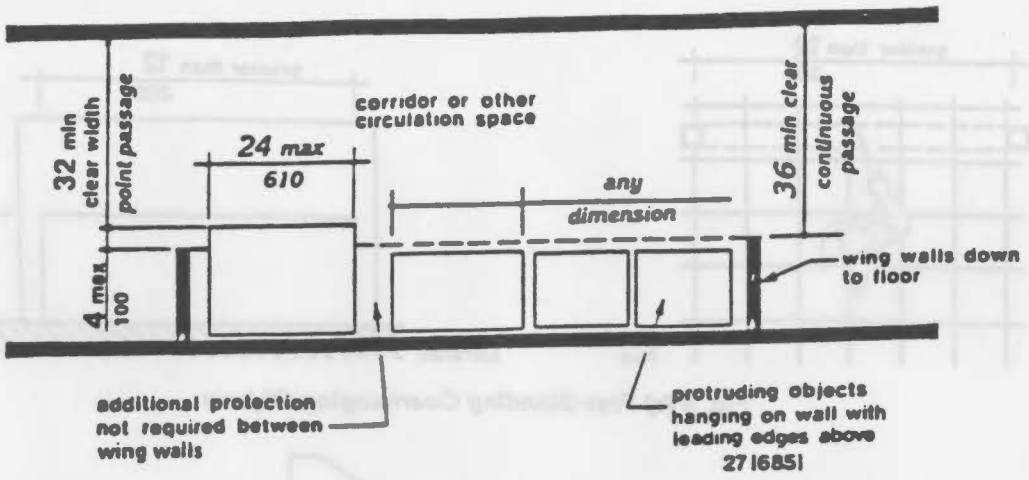


Fig. 8 (e)
Example of Protection around Wall-Mounted Objects and Measurements of Clear Widths

Fig. 8
Protruding Objects *(Continued)*

shall be beveled with a slope no greater than 1:2 *(see Fig. 7(d))*. Changes in level greater than 1/2 in (13 mm) shall be accomplished by means of a ramp that complies with 4.7 or 4.8.

4.5.3* Carpet. If carpet or carpet tile is used on a ground or floor surface, then it shall be securely attached; have a firm cushion, pad, or backing, or no cushion or pad; and have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. The maximum pile *thickness* shall be 1/2 in (13 mm) (see Fig. 8(f)). Exposed edges of carpet shall be fastened to floor surfaces and have trim along the entire length of the exposed edge. Carpet edge trim shall comply with 4.5.2.

4.5.4 Gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2 in (13 mm) wide in one direction *(see Fig. 8(g))*. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel *(see Fig. 8(h))*.

4.6 Parking and Passenger Loading Zones.

4.6.1 Minimum Number. *Parking spaces required to be accessible by 4.1 shall comply with 4.6.2 through 4.6.5. Passenger loading zones required to be accessible by 4.1 shall comply with 4.6.5 and 4.6.6.*

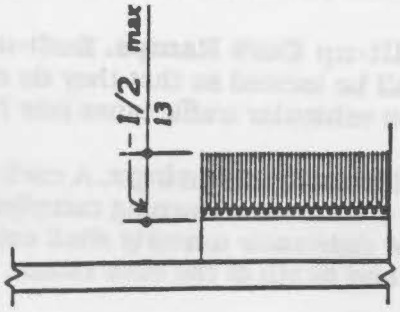


Fig. 8 (f)
Carpet Pile Thickness

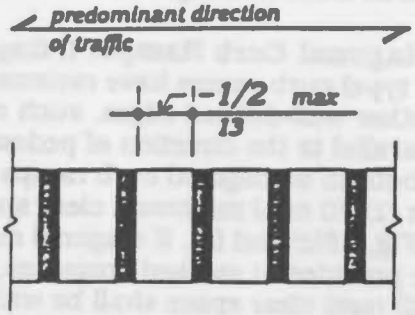


Fig. 8 (g)
Gratings

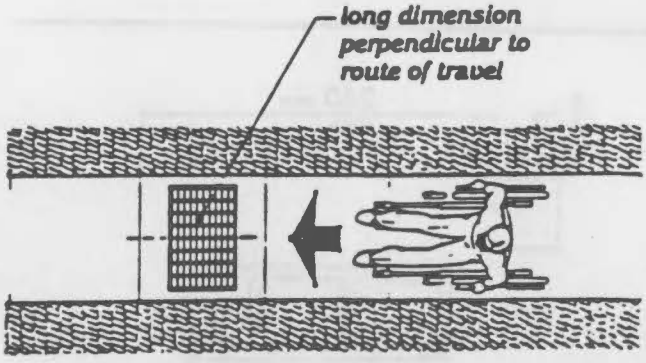


Fig. 8 (h)
Grating Orientation

4.6.2 Location. *Accessible parking spaces serving* a particular building shall be located on the shortest accessible route of travel *from adjacent parking* to an accessible entrance. *In parking facilities* that do not serve a particular building, *accessible parking* shall be located on the shortest accessible route *of travel* to an accessible pedestrian entrance of the parking facility. *In buildings with multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located closest to the accessible entrances.*

4.6.3* Parking Spaces. *Accessible* parking spaces shall be at least 96 in (2440 mm) wide. Parking access aisles shall be part of an accessible route to the building or facility entrance and shall comply with 4.3. Two accessible parking spaces may share a common access aisle (see Fig. 9). Parked vehicle overhangs shall not reduce the clear width of an accessible route. *Parking spaces and access aisles shall be level with surface slopes not exceeding 1:50 (2%) in all directions.*

4.6.4* Signage. Accessible parking spaces shall be designated as reserved by a sign showing the symbol of accessibility (see 4.30.7). *Spaces complying with 4.1.2(5)(b) shall have an additional sign "Van-Accessible" mounted below the symbol of accessibility.* Such signs shall *be located so they cannot* be obscured by a vehicle parked in the space.

4.6.5* *Vertical Clearance.* *Provide minimum vertical clearance of 114 in (2895 mm) at accessible passenger loading zones and along at least one vehicle access route to such areas from site entrance(s) and exit(s). At parking spaces complying with 4.1.2(5)(b), provide minimum vertical clearance of 98 in (2490 mm) at the parking space and along at least one vehicle access route to such spaces from site entrance(s) and exit(s).*

4.6.6 Passenger Loading Zones. Passenger loading zones shall provide an access aisle at least *60* in *(1525 mm)* wide and 20 ft *(240 in) (6100 mm)* long adjacent and parallel to the vehicle pull-up space (see Fig. 10). If there are curbs between the access aisle and the vehicle pull-up space, then a curb ramp complying with 4.7 shall be provided. *Vehicle standing spaces and access aisles shall be level with*

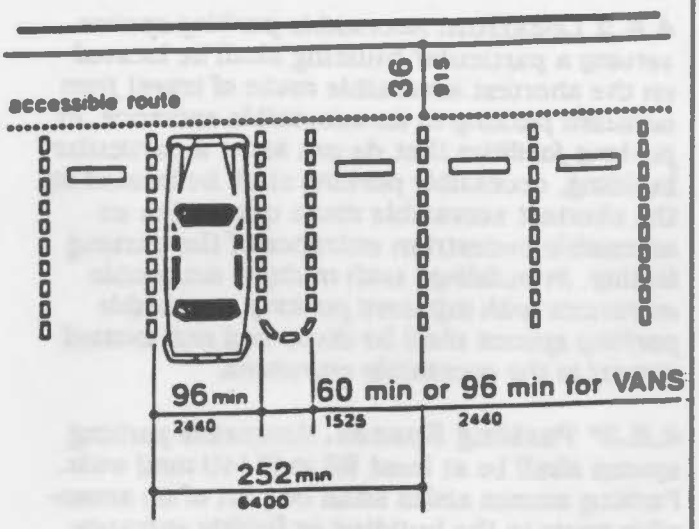


Fig. 9
Dimensions of Parking Spaces

surface slopes not exceeding 1:50 (2%) in all directions.

4.7 Curb Ramps.

4.7.1 Location. Curb ramps complying with 4.7 shall be provided wherever an accessible route crosses a curb.

4.7.2 Slope. Slopes of curb ramps shall comply with 4.8.2. The slope shall be measured as shown in Fig. 11. *Transitions from ramps to walks, gutters, or streets shall be flush and free of abrupt changes. Maximum slopes of adjoining gutters, road surface immediately adjacent to the curb ramp, or accessible route shall not exceed 1:20.*

4.7.3 Width. The minimum width of a curb ramp shall be 36 in (915 mm), exclusive of flared sides.

4.7.4 Surface. Surfaces of curb ramps shall comply with 4.5.

4.7.5 Sides of Curb Ramps. If a curb ramp is located where pedestrians must walk across the ramp, *or where it is not protected by handrails or guardrails,* it shall have flared sides; the maximum slope of the flare shall be 1:10 (see Fig. 12(a)). Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp (see Fig. 12(b)).

4.7.6 Built-up Curb Ramps. Built-up curb ramps shall be located so that they do not project into vehicular traffic lanes (see Fig. 13).

4.7.7 *Detectable Warnings.* A curb ramp shall have a *detectable* warning complying with 4.29.2. *The detectable warning shall extend* the full width and depth of the curb ramp.

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

4.7.9 Location at Marked Crossings. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides (see Fig. 15).

4.7.10 Diagonal Curb Ramps. If diagonal (or corner type) curb ramps have returned curbs or other well-defined edges, such edges shall be parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have 48 in (1220 mm) minimum clear space as shown in Fig. 15(c) and (d). If diagonal curb ramps are provided at marked crossings, the 48 in (1220 mm) clear space shall be within the markings (see Fig. 15(c) and (d)). If diagonal curb ramps have flared sides, they shall also have at least a 24 in (610 mm) long segment of straight curb located on each side of the curb ramp and within the marked crossing (see Fig. 15(c)).

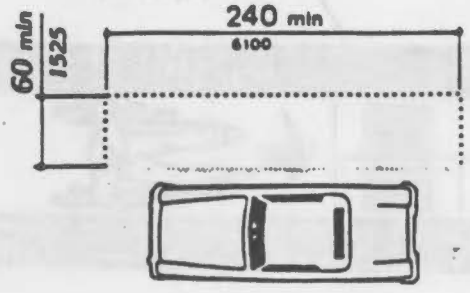


Fig. 10
Access Aisle at Passenger Loading Zones

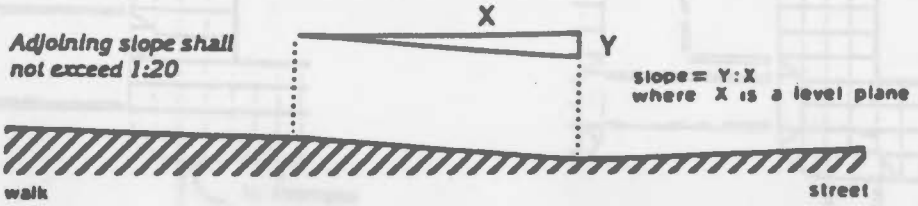
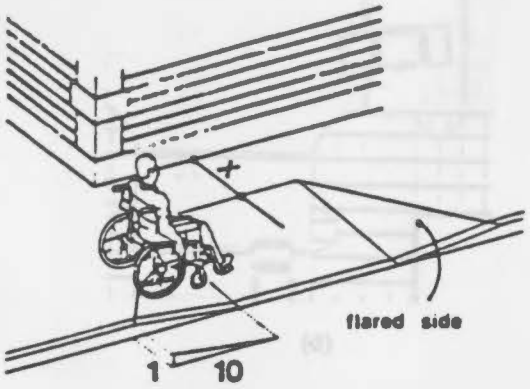
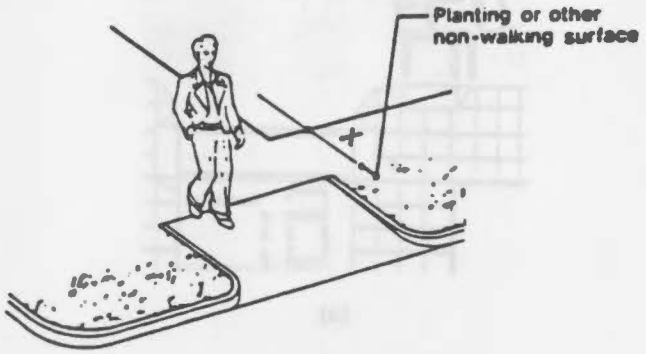


Fig. 11
Measurement of Curb Ramp Slopes



(a)
Flared Sides



(b)
Returned Curb

If X is less than 48 in, then the slope of the flared side shall not exceed 1:12.

Fig. 12
Sides of Curb Ramps

4.7.11 Islands. Any raised islands in crossings shall be cut through level with the street or have curb ramps at both sides and a level area at least 48 in (1220 mm) long between the curb ramps in the part of the island intersected by the crossings (see Fig. 15(a) and (b)).

4.8 Ramps.

4.8.1* General. Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp and shall comply with 4.8.

4.8.2* Slope and Rise. The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12. The maximum rise for any run shall be 30 in (760 mm) (see Fig. 16). Curb ramps

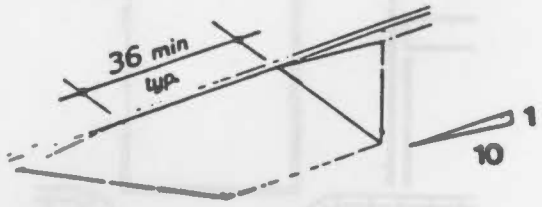


Fig. 13
Built-Up Curb Ramp

and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as *allowed in 4.1.6(3)(a)* if space limitations prohibit the use of a 1:12 slope or less.

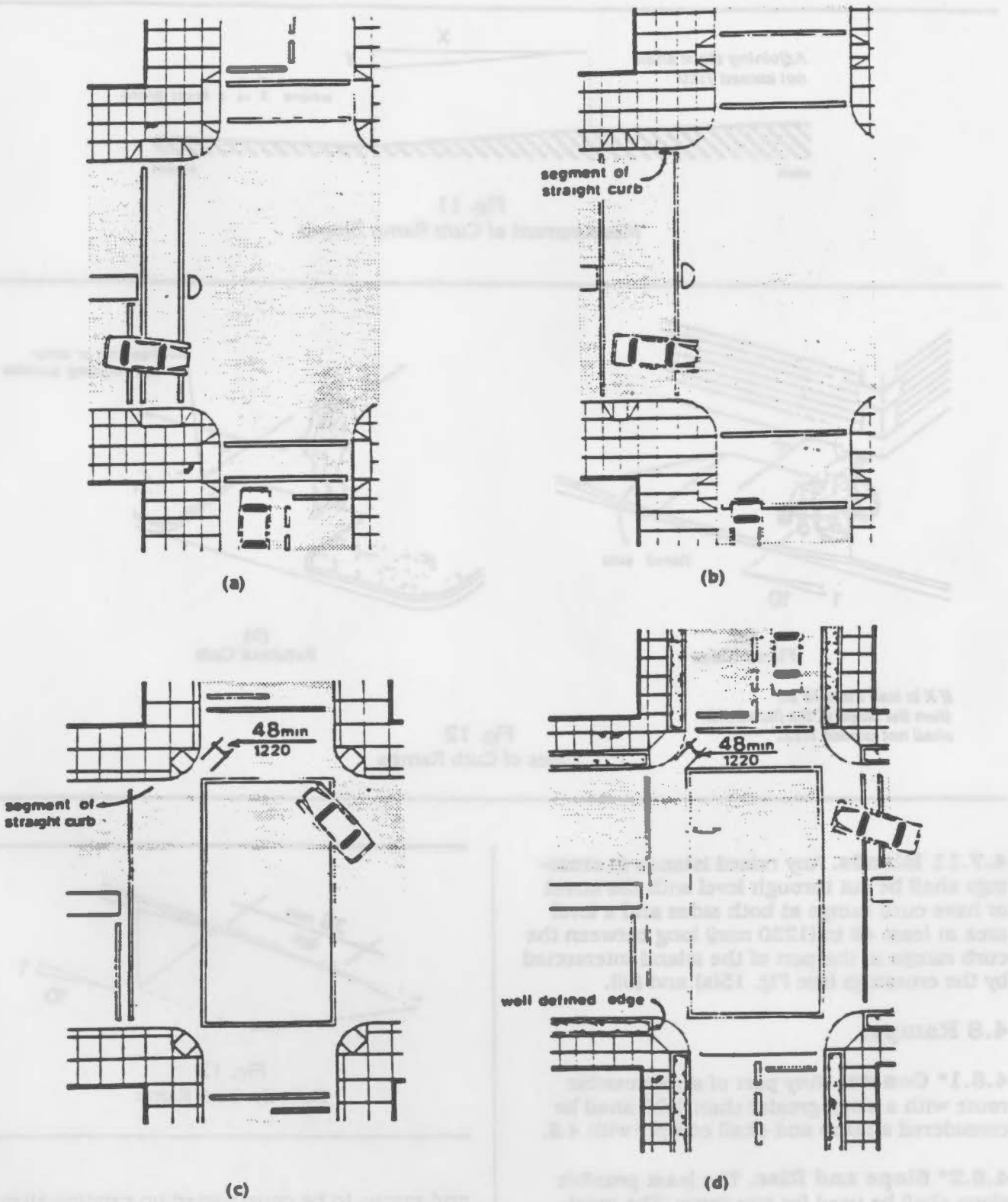


Fig. 15
Curb Ramps at Marked Crossings

4.8.7 Edge Protection. Ramps and landings with drop-offs shall have curbs, walls, railings, or projecting surfaces that prevent people from slipping off the ramp. Curbs shall be a minimum of 2 in (50 mm) high (see Fig. 17).

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

4.9 Stairs.

4.9.1* Minimum Number. *Stairs required to be accessible by 4.1 shall comply with 4.9.*

4.9.2 Treads and Risers. On any given flight of stairs, all steps shall have uniform riser heights and uniform tread widths. Stair treads shall be no less than 11 in (280 mm) wide, measured from riser to riser (see Fig. 18(a)). *Open risers are not permitted.*

4.9.3 Nosings. The undersides of nosings shall not be abrupt. The radius of curvature at the leading edge of the tread shall be no greater than 1/2 in (13 mm). Risers shall be sloped or the underside of the nosing shall have an angle not less than 60 degrees from the horizontal. Nosings shall project no more than 1-1/2 in (38 mm) (see Fig. 18).

4.9.4 Handrails. Stairways shall have handrails at both sides of all stairs. Handrails shall comply with 4.26 and shall have the following features:

(1) Handrails shall be continuous along both sides of stairs. The inside handrail on switchback or dogleg stairs shall always be continuous (see Fig. 19(a) and (b)).

(2) If handrails are not continuous, they shall extend at least 12 in (305 mm) beyond the top riser and at least 12 in (305 mm) plus the width of one tread beyond the bottom riser. At the top, the extension shall be parallel with the floor or ground surface. At the bottom, the handrail shall continue to slope for a distance of the width of one tread from the bottom riser; the remainder of the extension shall be horizontal (see Fig. 19(c) and (d)). Handrail extensions shall comply with 4.4.

(3) The clear space between handrails and wall shall be 1-1/2 in (38 mm).

(4) Gripping surfaces shall be uninterrupted by newel posts, other construction elements, or obstructions.

(5) Top of handrail gripping surface shall be mounted between 34 in and 38 in (865 mm and 965 mm) above stair nosings.

(6) Ends of handrails shall be either rounded or returned smoothly to floor, wall or post.

(7) Handrails shall not rotate within their fittings.

4.9.5 *Detectable* Warnings at Stairs. *(Reserved).*

4.9.6 Outdoor Conditions. Outdoor stairs and their approaches shall be designed so that water will not accumulate on walking surfaces.

4.10 Elevators.

4.10.1 General. *Accessible* elevators shall be on an accessible route and shall comply with 4.10 and with the *ASME A17.1-1990*, Safety Code for Elevators and Escalators. *Freight elevators shall not be considered as meeting the requirements of this section unless the only elevators provided are used as combination passenger and freight elevators for the public and employees.*

4.10.2 Automatic Operation. Elevator operation shall be automatic. Each car shall be equipped with a self-leveling feature that will automatically bring the car to floor landings within a tolerance of 1/2 in (13 mm) under rated loading to zero loading conditions. This self-leveling feature shall be automatic and independent of the operating device and shall correct the overtravel or undertravel.

4.10.3 Hall Call Buttons. Call buttons in elevator lobbies and halls shall be centered at 42 in (1065 mm) above the floor. Such call buttons shall have visual signals to indicate when each call is registered and when each call is answered. Call buttons shall be a minimum of 3/4 in (19 mm) in the smallest dimension. The button designating the up direction shall be on top. (See Fig. 20.) *Buttons shall be raised or flush. Objects mounted beneath hall call buttons shall not project into the elevator lobby more than 4 in (100 mm).*

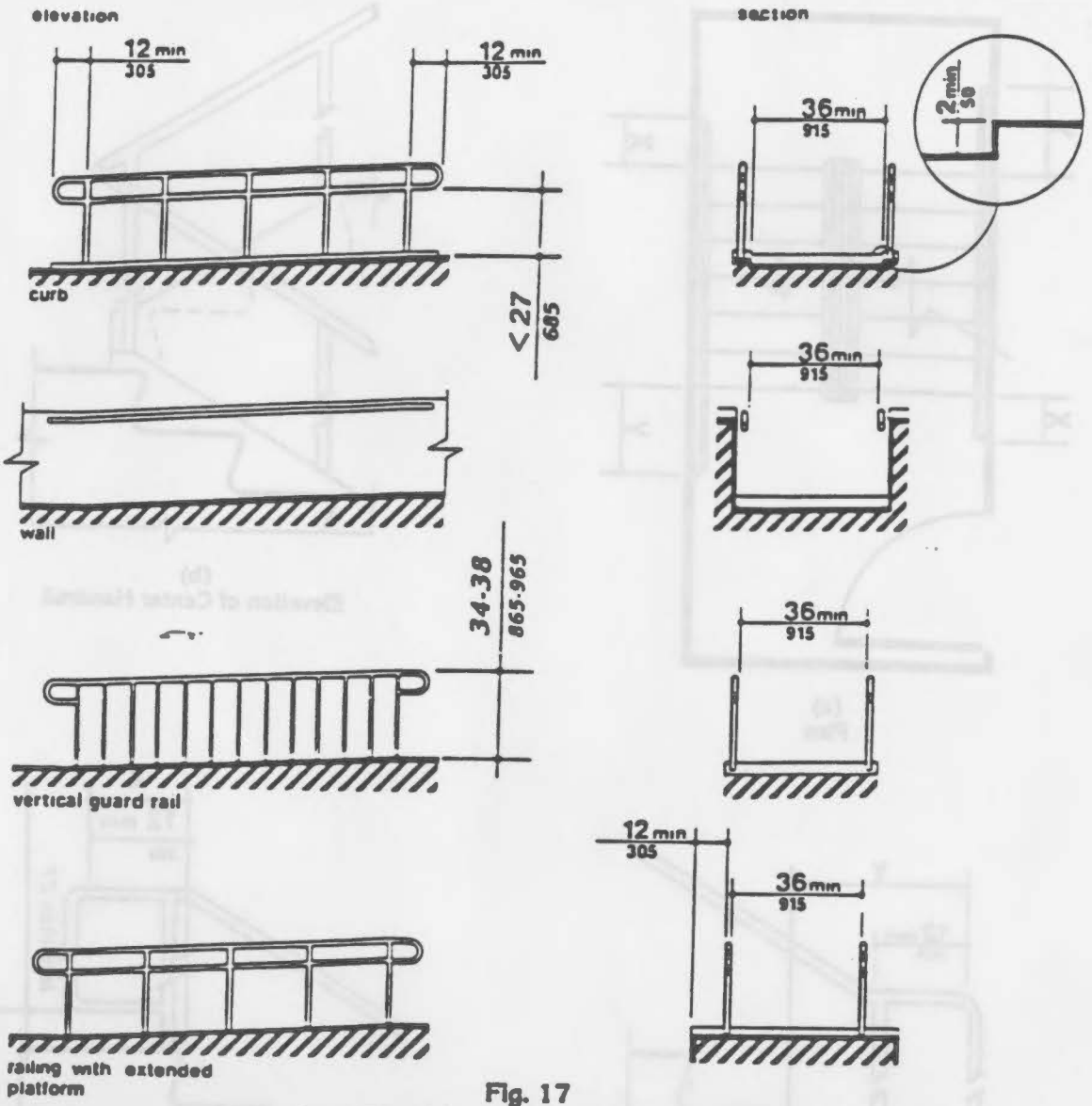


Fig. 17
Examples of Edge Protection and Handrail Extensions

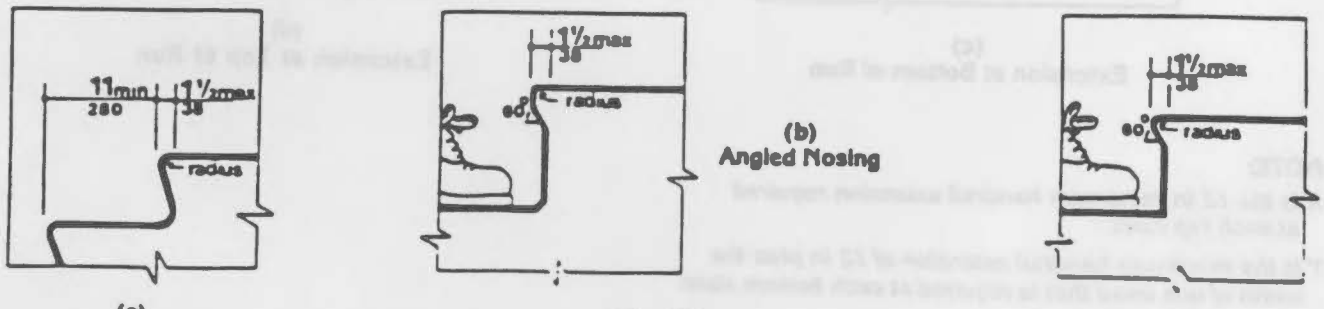
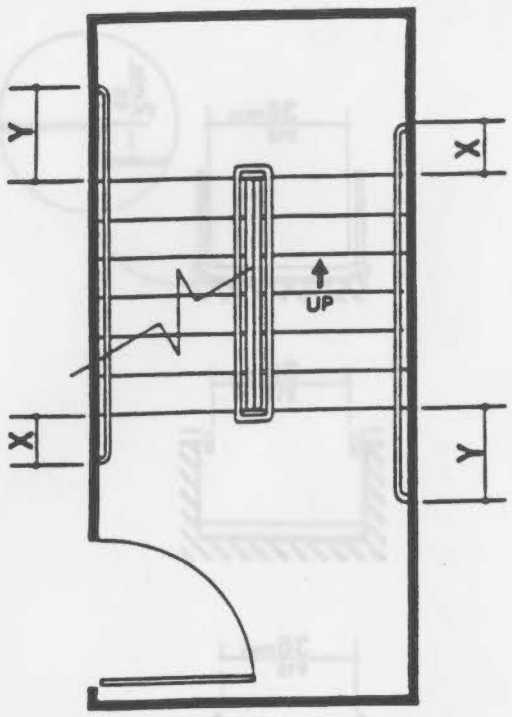
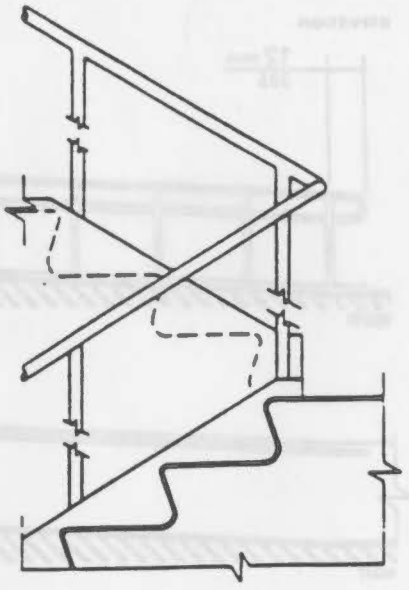


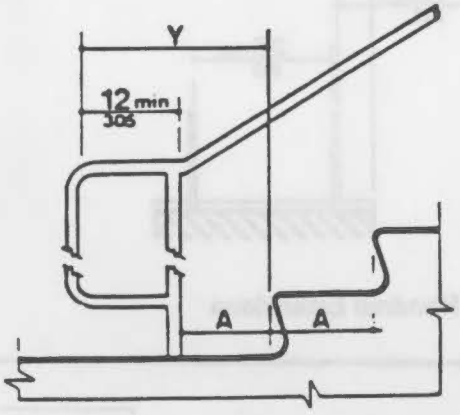
Fig. 18
Usable Tread Width and Examples of Acceptable Nosings



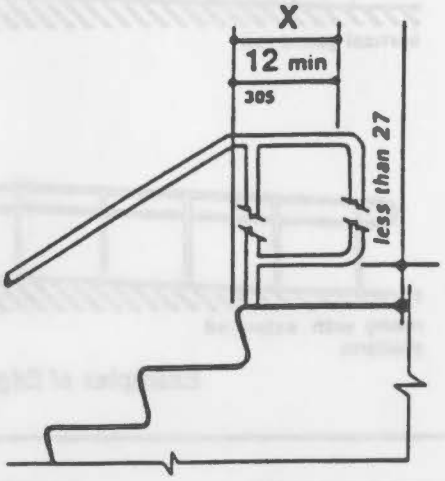
(a)
Plan



(b)
Elevation of Center Handrail



(c)
Extension at Bottom of Run



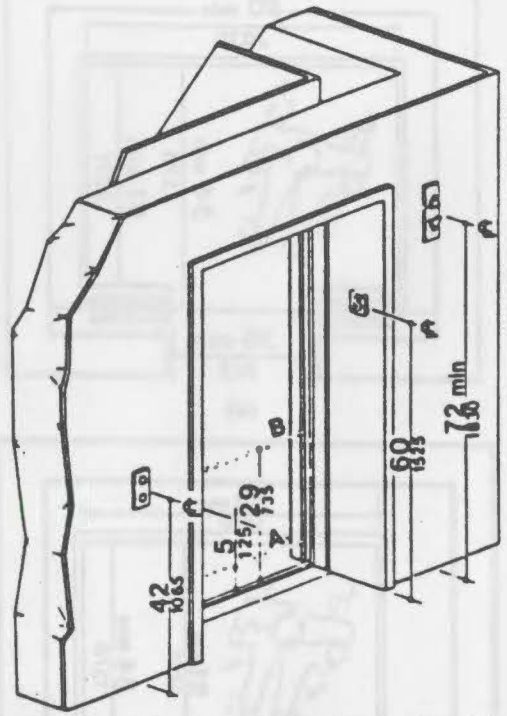
(d)
Extension at Top of Run

NOTE:

X is the 12 in minimum handrail extension required at each top riser.

Y is the minimum handrail extension of 12 in plus the width of one tread that is required at each bottom riser.

Fig. 19
Stair Handrails



NOTE: The automatic door reopening device is activated if an object passes through either line A or line B. Line A and line B represent the vertical locations of the door reopening device not requiring contact.

Fig. 20
Hoistway and Elevator Entrances

4.10.4 Hall Lanterns. A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call. Audible signals shall sound once for the up direction and twice for the down direction or shall have verbal annunciators that say "up" or "down." Visible signals shall have the following features:

(1) Hall lantern fixtures shall be mounted so that their centerline is at least 72 in (1830 mm) above the lobby floor. (See Fig. 20.)

(2) Visual elements shall be at least 2-1/2 in (64 mm) in the smallest dimension.

(3) Signals shall be visible from the vicinity of the hall call button (see Fig. 20). In-car lanterns located in cars, visible from the vicinity of hall call buttons, and conforming to the above requirements, shall be acceptable.

4.10.5 *Raised and Braille* Characters on Hoistway Entrances. All elevator hoistway entrances shall have *raised and Braille* floor designations provided on both jambs. The centerline of the characters shall be 60 in (1525 mm) *above finish* floor. Such characters shall be 2 in (50 mm) high and shall comply with 4.30.4. Permanently applied plates are acceptable if they are permanently fixed to the jambs. (See Fig. 20).

4.10.6* Door Protective and Reopening Device. Elevator doors shall open and close automatically. They shall be provided with a reopening device that will stop and reopen a car door and hoistway door automatically if the door becomes obstructed by an object or person. The device shall be capable of completing these operations without requiring contact for an obstruction passing through the opening at heights of 5 in and 29 in (125 mm and 735 mm) above finish floor (see Fig. 20). Door reopening devices shall remain effective for at least 20 seconds. After such an interval, doors may close in accordance with the requirements of *ASME A17.1-1990*.

4.10.7* Door and Signal Timing for Hall Calls. The minimum acceptable time from notification that a car is answering a call until the doors of that car start to close shall be calculated from the following equation:

$$T = D/(1.5 \text{ ft/s}) \text{ or } T = D/(445 \text{ mm/s})$$

where T total time in seconds and D distance (in feet or millimeters) from a point in the lobby or corridor 60 in (1525 mm) directly in front of the farthest call button controlling that car to the centerline of its hoistway door (see Fig. 21). For cars with in-car lanterns, T begins when the lantern is visible from the vicinity of hall call buttons and an audible signal is sounded. *The minimum acceptable notification time shall be 5 seconds.*

4.10.8 Door Delay for Car Calls. The minimum time for elevator doors to remain fully open in response to a car call shall be 3 seconds.

4.10.9 Floor Plan of Elevator Cars. The floor area of elevator cars shall provide space for wheelchair users to enter the car, maneuver

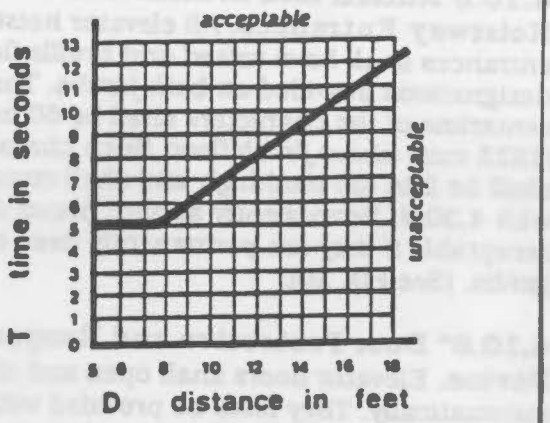


Fig. 21
Graph of Timing Equation

within reach of controls, and exit from the car. Acceptable door opening and inside dimensions shall be as shown in Fig. 22. The clearance between the car platform sill and the edge of any hoistway landing shall be no greater than 1-1/4 in (32 mm).

4.10.10 Floor Surfaces. Floor surfaces shall comply with 4.5.

4.10.11 Illumination Levels. The level of illumination at the car controls, platform, and car threshold and landing sill shall be at least 5 footcandles (53.8 lux).

4.10.12* Car Controls. Elevator control panels shall have the following features:

(1) Buttons. All control buttons shall be at least 3/4 in (19 mm) in their smallest dimension. They *shall* be *raised* or flush.

(2) Tactile, *Braille*, and Visual Control Indicators. All control buttons shall be designated by *Braille and by raised* standard alphabet characters for letters, arabic characters for numerals, or standard symbols as shown in Fig. 23(a), and as required in *ASME A17.1-1990. Raised and Braille* characters and symbols shall comply with 4.30. The call button for the main entry floor shall be designated by a *raised* star at the left of the floor designation (see Fig. 23(a)). All raised designations for control buttons shall be placed immediately to the left of the button to which they apply. Applied plates,

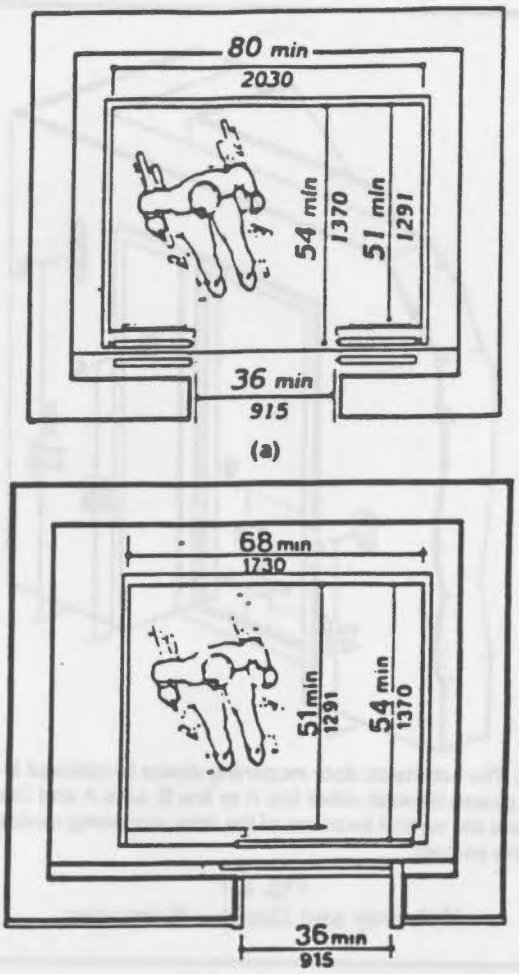
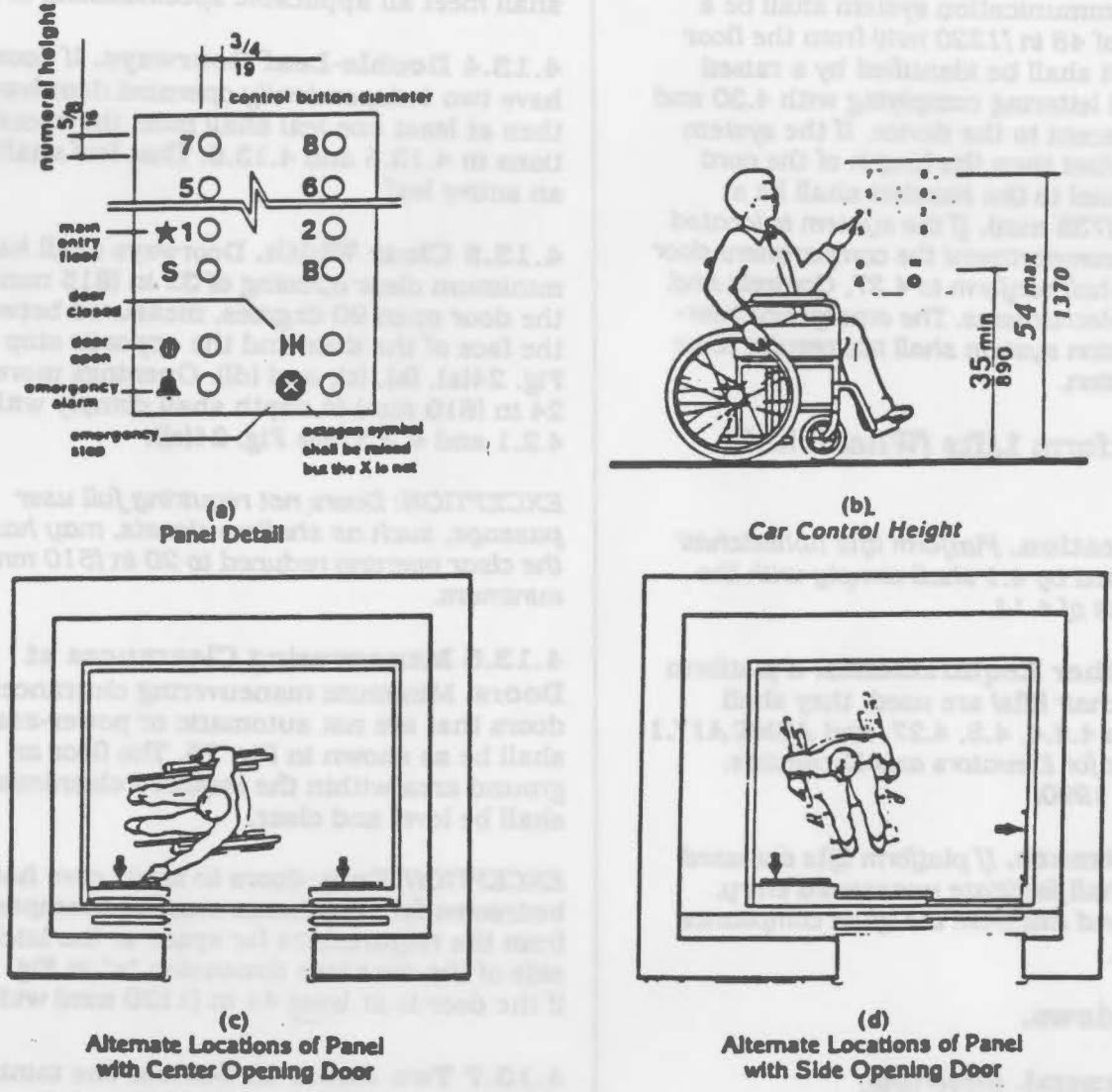


Fig. 22
Minimum Dimensions of Elevator Cars

permanently attached, are an acceptable means to provide raised control designations. Floor buttons shall be provided with visual indicators to show when each call is registered. The visual indicators shall be extinguished when each call is answered.

(3) Height. All floor buttons shall be no higher than 54 in (1370 mm) above the *finish* floor *for side approach and 48 in (1220 mm) for front approach*. Emergency controls, including the emergency alarm and emergency stop, shall be grouped at the bottom of the panel and shall have their centerlines no less than 35 in (890 mm) above the finish floor (see Fig. 23(a) and (b)).



(a) Panel Detail

(b) Car Control Height

(c) Alternate Locations of Panel with Center Opening Door

(d) Alternate Locations of Panel with Side Opening Door

Fig. 23
Car Controls

(4) Location. Controls shall be located on a front wall if cars have center opening doors, and at the side wall or at the front wall next to the door if cars have side opening doors (see Fig. 23(c) and (d)).

4.10.13* Car Position Indicators. In elevator cars, a visual car position indicator shall be provided above the car control panel or over the door to show the position of the elevator in the hoistway. As the car passes or stops at a floor served by the elevators, the corresponding numerals shall illuminate, and an audible signal shall sound. Numerals shall be a minimum of 1/2 in (13 mm) high. The audible signal shall be no less than 20 decibels with a frequency no higher than 1500 Hz. An automatic verbal announcement of the floor number at which a car stops or which a car passes may be substituted for the audible signal.

4.10.14* Emergency Communications. If provided, emergency two-way communication systems between the elevator and a point outside the hoistway shall comply with *ASME*

A17.1-1990. The highest operable part of a two-way communication system shall be a maximum of *48 in (1220 mm)* from the floor of the car. It shall be identified by a raised symbol and lettering complying with 4.30 and located adjacent to the device. If the system uses a handset then the length of the cord from the panel to the handset shall be at least 29 in (735 mm). *If the system is located in a closed compartment the compartment door hardware shall conform to 4.27, Controls and Operating Mechanisms. The emergency intercommunication system shall not require voice communication.*

4.11 Platform Lifts (Wheelchair Lifts).

4.11.1 Location. *Platform lifts (wheelchair lifts) permitted by 4.1 shall comply with the requirements of 4.11.*

4.11.2° Other Requirements. If platform lifts *(wheelchair lifts)* are used, they shall comply with 4.2.4, 4.5, 4.27, and *ASME A17.1 Safety Code for Elevators and Escalators, Section XX, 1990.*

4.11.3 Entrance. *If platform lifts are used then they shall facilitate unassisted entry, operation, and exit from the lift in compliance with 4.11.2.*

4.12 Windows.

4.12.1° General. *(Reserved).*

4.12.2° Window Hardware. *(Reserved).*

4.13 Doors.

4.13.1 General. *Doors required to be accessible by 4.1* shall comply with the requirements of 4.13.

4.13.2 Revolving Doors and Turnstiles. Revolving doors or turnstiles shall not be the only means of passage at an accessible entrance or along an accessible route. *An accessible gate or door shall be provided adjacent to the turnstile or revolving door and shall be so designed as to facilitate the same use pattern.*

4.13.3 Gates. Gates, including ticket gates, shall meet all applicable specifications of 4.13.

4.13.4 Double-Leaf Doorways. If doorways have two *independently operated* door leaves, then at least one leaf shall meet the specifications in 4.13.5 and 4.13.6. That leaf shall be an active leaf.

4.13.5 Clear Width. Doorways shall have a minimum clear opening of 32 in (815 mm) with the door open 90 degrees, measured between the face of the door and the *opposite* stop (see Fig. 24(a), (b), (c), and (d)). Openings more than 24 in (610 mm) in depth shall comply with 4.2.1 and 4.3.3 (see Fig. 24(e)).

EXCEPTION: Doors not requiring full user passage, such as shallow closets, may have the clear opening reduced to 20 in (510 mm) minimum.

4.13.6 Maneuvering Clearances at Doors. Minimum maneuvering clearances at doors that are not automatic or power-assisted shall be as shown in Fig. 25. The floor or ground area within the required clearances shall be level and clear.

EXCEPTION: Entry doors to acute care hospital bedrooms for in-patients shall be exempted from the requirement for space at the latch side of the door (see dimension "x" in Fig. 25) if the door is at least 44 in (1120 mm) wide.

4.13.7 Two Doors in Series. The minimum space between two hinged or pivoted doors in series shall be 48 in (1220 mm) plus the width of any door swinging into the space. Doors in series shall swing either in the same direction or away from the space between the doors (see Fig. 26).

4.13.8° Thresholds at Doorways. Thresholds at doorways shall not exceed 3/4 in (19 mm) in height for exterior sliding doors or 1/2 in (13 mm) for other types of doors. Raised thresholds and floor level changes at accessible doorways shall be beveled with a slope no greater than 1:2 (see 4.5.2).

4.13.9° Door Hardware. Handles, pulls, latches, locks, and other operating devices on accessible doors shall have a shape that is easy

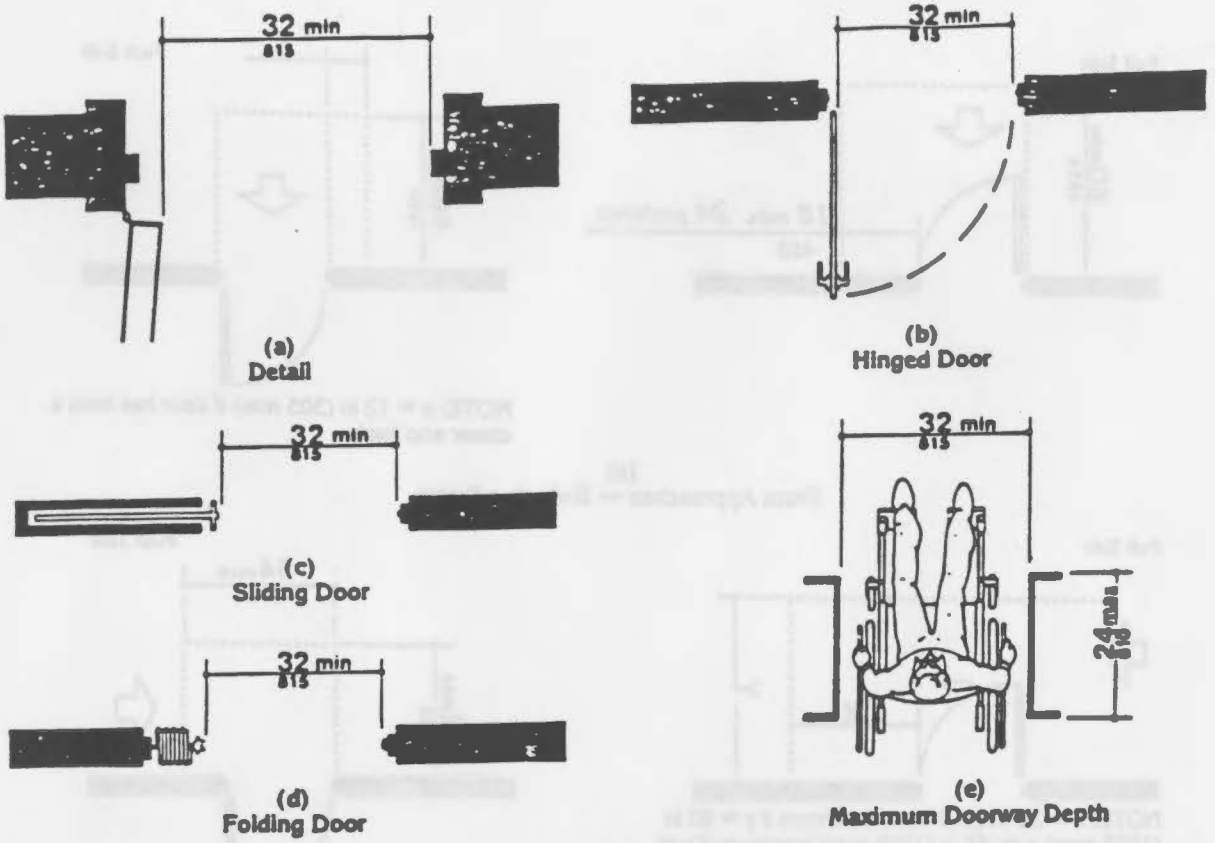


Fig. 24
Clear Doorway Width and Depth

to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. Lever-operated mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs. When sliding doors are fully open, operating hardware shall be exposed and usable from both sides. *Hardware required for accessible door passage shall be mounted no higher than 48 in (1220 mm) above finished floor.*

4.13.10* Door Closers. If a door has a closer, then the sweep period of the closer shall be adjusted so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 in (75 mm) from the latch, measured to the leading edge of the door.

4.13.11* Door Opening Force. The maximum force for pushing or pulling open a door shall be as follows:

(1) Fire doors shall have the minimum opening force allowable by the appropriate administrative authority.

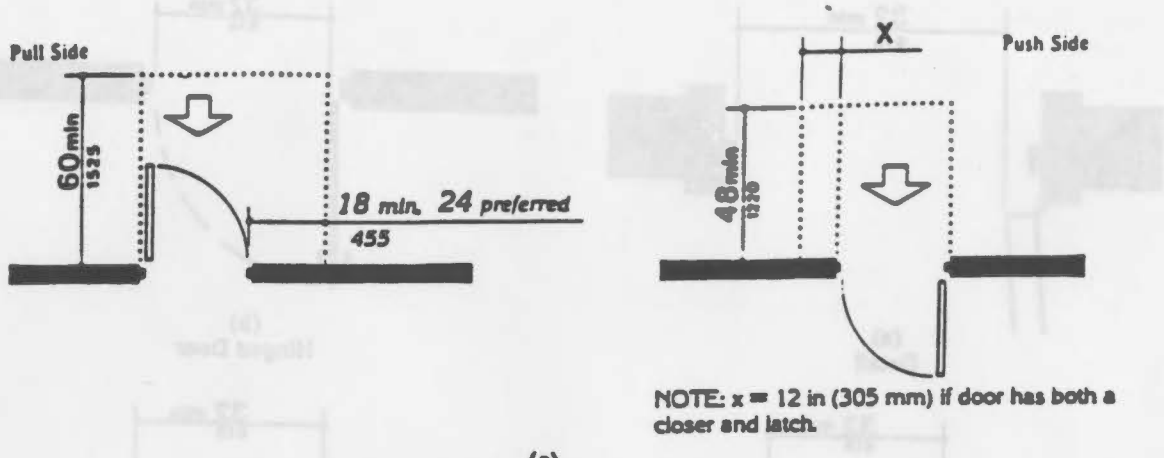
(2) Other doors.

(a) exterior hinged doors: *(Reserved).*

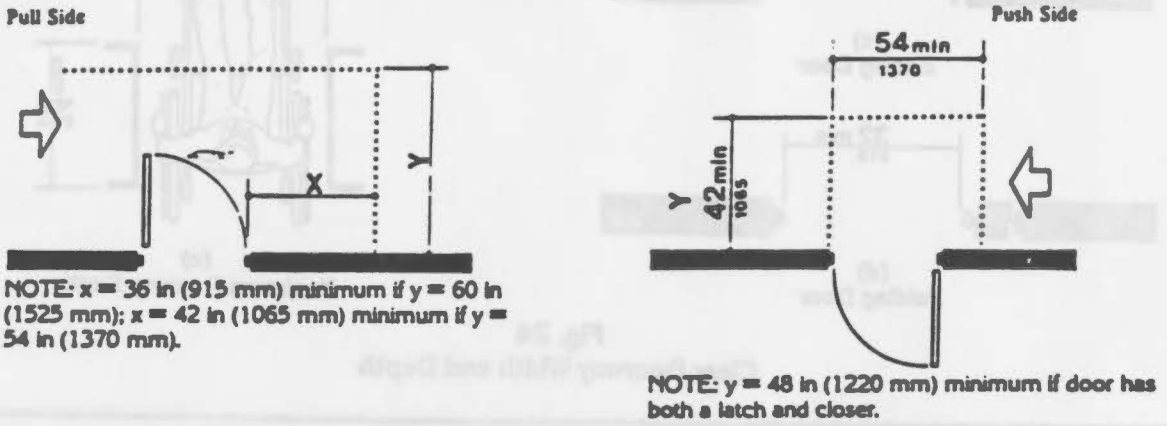
(b) interior hinged doors: 5 lbf (22.2N)

(c) sliding or folding doors: 5 lbf (22.2N)

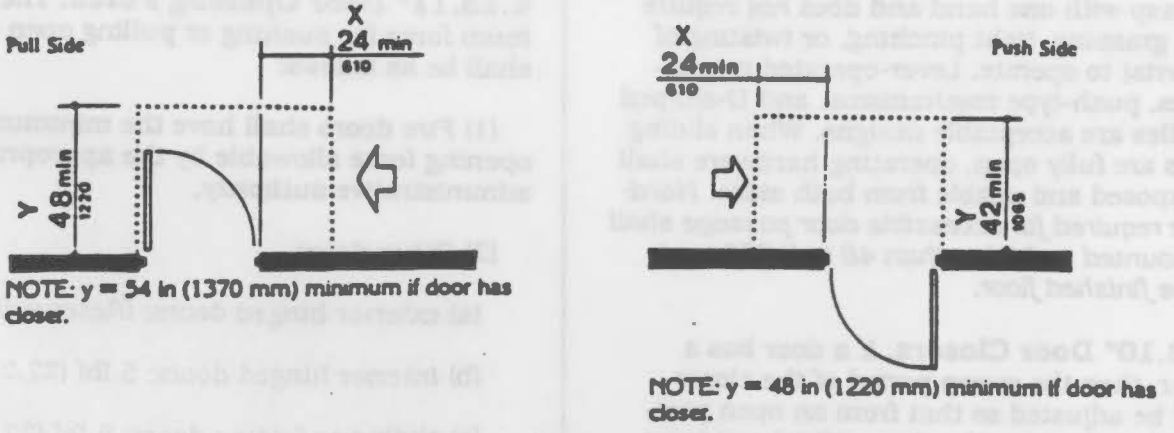
These forces do not apply to the force required to retract latch bolts or disengage other devices that may hold the door in a closed position.



(a)
Front Approaches — Swinging Doors



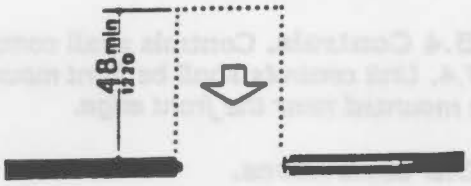
(b)
Hinge Side Approaches — Swinging Doors



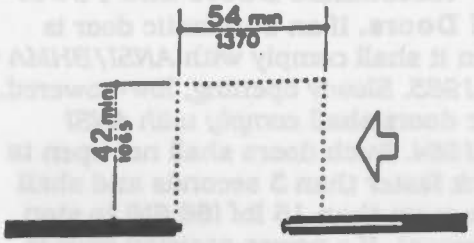
(c)
Latch Side Approaches — Swinging Doors

NOTE: All doors in alcoves shall comply with the clearances for front approaches.

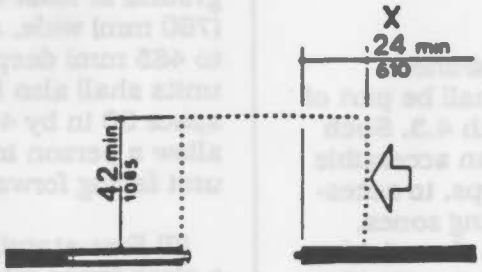
Fig. 25
Maneuvering Clearances at Doors



(d)
Front Approach — Sliding Doors *and Folding Doors*



(e)
Slide Side Approach — Sliding Doors *and Folding Doors*



(f)
Latch Side Approach — Sliding Doors *and Folding Doors*

NOTE: All doors in alcoves shall comply with the clearances for front approaches.

Fig. 25
Maneuvering Clearances at Doors *(Continued)*

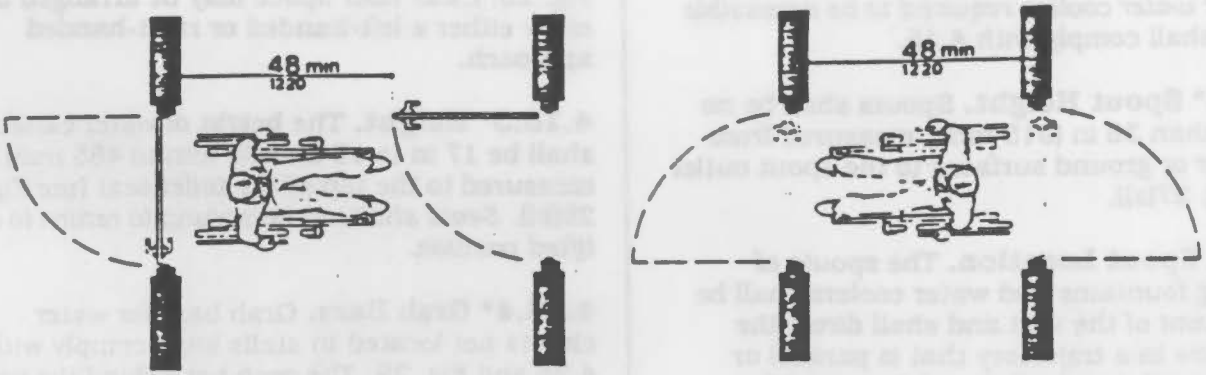


Fig. 26
Two Hinged Doors in Series

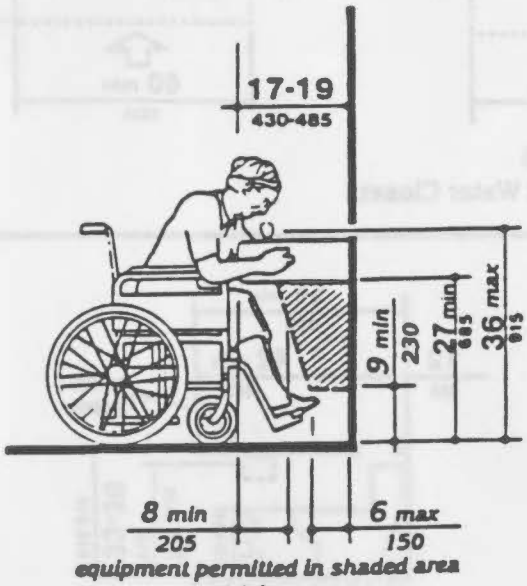
shall be mounted on the wide side of toilet areas no more than 44 in (1120 mm) above the floor.

4.16.6 Dispensers. Toilet paper dispensers shall be installed within reach, as shown in Fig. 29(b). *Dispensers that control delivery, or that do not permit continuous paper flow, shall not be used.*

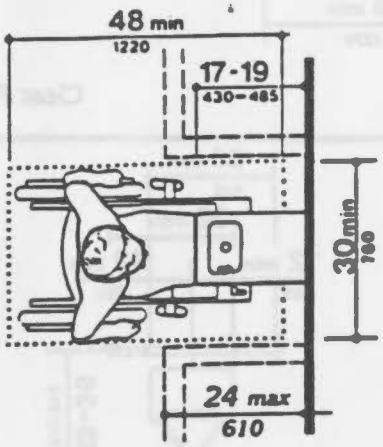
4.17 Toilet Stalls.

4.17.1 Location. Accessible toilet stalls shall be on an accessible route and shall meet the requirements of 4.17.

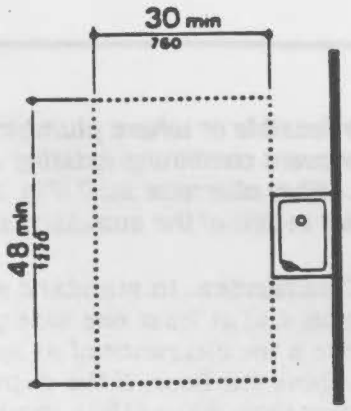
4.17.2 Water Closets. Water closets in accessible stalls shall comply with 4.16.



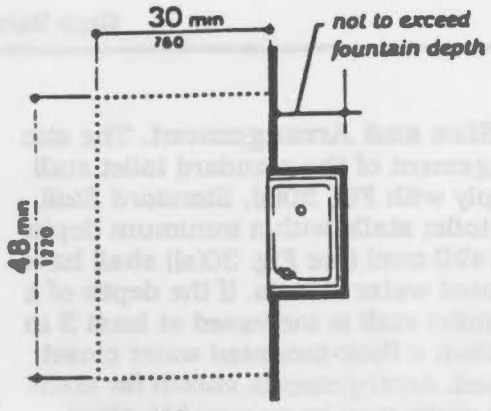
(a)
Spout Height and
Knee Clearance



(b)
Clear Floor Space



(c)
Free-Standing
Fountain or Cooler



(d)
Built-In
Fountain or Cooler

Fig. 27
Drinking Fountains and Water Coolers

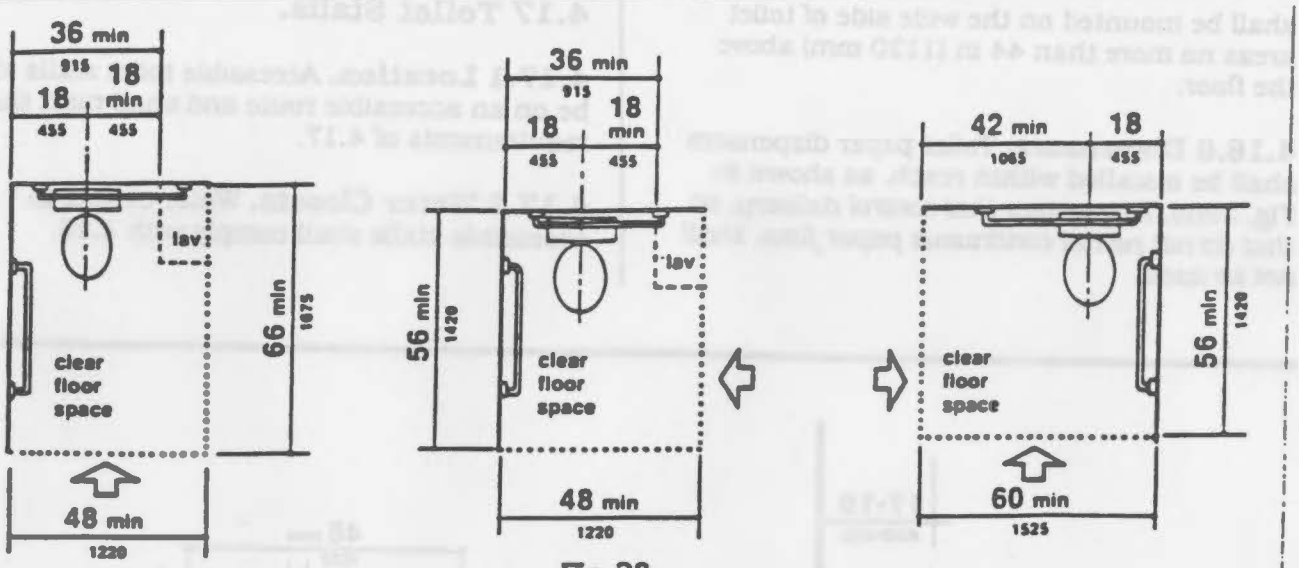


Fig. 28
Clear Floor Space at Water Closets

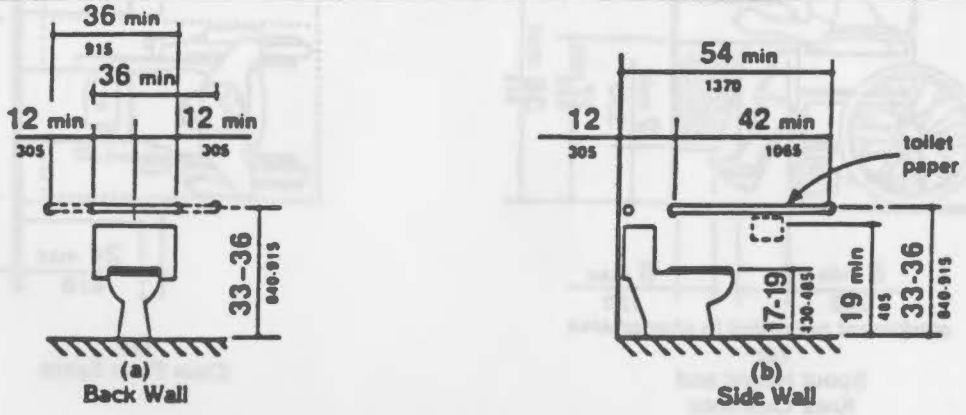


Fig. 29
Grab Bars at Water Closets

4.17.3° Size and Arrangement. The size and arrangement of the standard toilet stall shall comply with Fig. 30(a), *Standard Stall.* Standard toilet stalls with a minimum depth of 56 in (1420 mm) (see Fig. 30(a)) shall have wall-mounted water closets. If the depth of a standard toilet stall is increased at least 3 in (75 mm), then a floor-mounted water closet may be used. Arrangements shown for standard toilet stalls may be reversed to allow either a left- or right-hand approach. Additional stalls shall be provided in conformance with 4.22.4.

EXCEPTION: In instances of alteration work where provision of a standard stall (Fig. 30(a)) is technically infeasible or where plumbing code requirements prevent combining existing stalls to provide space, either alternate stall (Fig. 30(b)) may be provided in lieu of the standard stall.

4.17.4 Toe Clearances. In standard stalls, the front partition and at least one side partition shall provide a toe clearance of at least 9 in (230 mm) above the floor. If the depth of the stall is greater than 60 in (1525 mm), then the toe clearance is not required.

4.17.5° Doors. Toilet stall doors, *including door hardware,* shall comply with 4.13. *If toilet stall approach is from the latch side of the stall door, clearance between the door side of the*

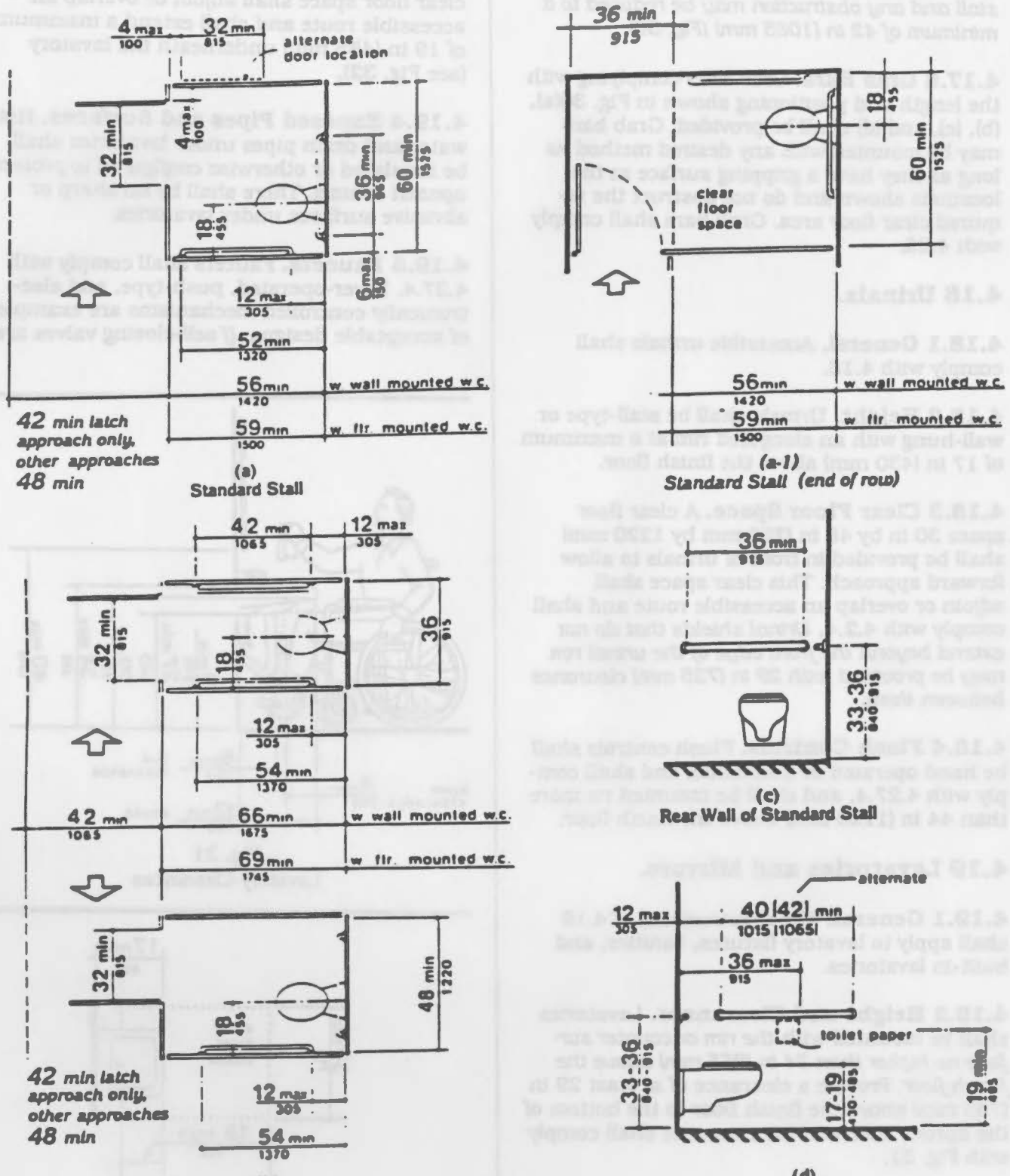


Fig. 30
Toilet Stalls

stall and any obstruction may be reduced to a minimum of 42 in (1065 mm) (Fig. 30).

4.17.6 Grab Bars. Grab bars complying with the length and positioning shown in Fig. 30(a), (b), (c), and (d) shall be provided. Grab bars may be mounted with any desired method as long as they have a gripping surface at the locations shown and do not obstruct the required clear floor area. Grab bars shall comply with 4.26.

4.18 Urinals.

4.18.1 General. Accessible urinals shall comply with 4.18.

4.18.2 Height. Urinals shall be stall-type or wall-hung with an elongated rim at a maximum of 17 in (430 mm) above the finish floor.

4.18.3 Clear Floor Space. A clear floor space 30 in by 48 in (760 mm by 1220 mm) shall be provided in front of urinals to allow forward approach. This clear space shall adjoin or overlap an accessible route and shall comply with 4.2.4. *Urinal shields that do not extend beyond the front edge of the urinal rim may be provided with 29 in (735 mm) clearance between them.*

4.18.4 Flush Controls. Flush controls shall be hand operated or automatic, and shall comply with 4.27.4, and shall be mounted no more than 44 in (1120 mm) above the finish floor.

4.19 Lavatories and Mirrors.

4.19.1 General. The requirements of 4.19 shall apply to lavatory fixtures, vanities, and built-in lavatories.

4.19.2 Height and Clearances. Lavatories shall be mounted with *the rim or counter surface no higher than 34 in (865 mm) above the finish floor.* Provide a clearance of at least 29 in (735 mm) above the finish floor to the bottom of the apron. Knee and toe clearance shall comply with Fig. 31.

4.19.3 Clear Floor Space. A clear floor space 30 in by 48 in (760 mm by 1220 mm) complying with 4.2.4 shall be provided in front of a lavatory to allow forward approach. Such clear floor space shall adjoin or overlap an accessible route and shall extend a maximum of 19 in (485 mm) underneath the lavatory (see Fig. 32).

4.19.4 Exposed Pipes and Surfaces. Hot water and drain pipes under lavatories shall be insulated or otherwise *configured to protect against contact.* There shall be no sharp or abrasive surfaces under lavatories.

4.19.5 Faucets. Faucets shall comply with 4.27.4. Lever-operated, push-type, and electronically controlled mechanisms are examples of acceptable designs. *If* self-closing valves are

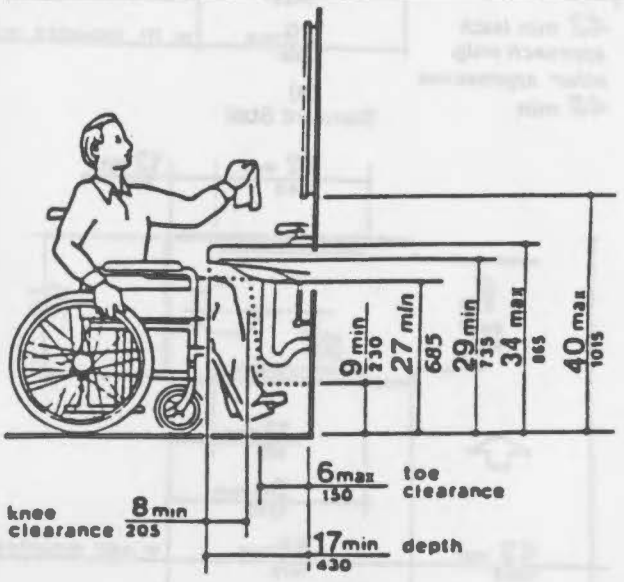


Fig. 31
Lavatory Clearances

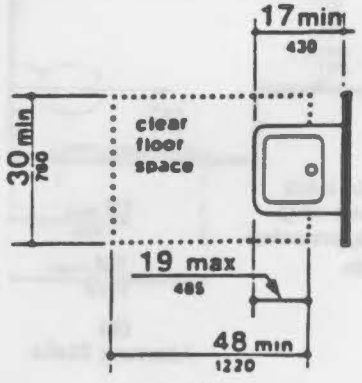


Fig. 32
Clear Floor Space at Lavatories

used the faucet *shall remain* open for at least 10 seconds.

4.19.6* Mirrors. Mirrors shall be mounted with the bottom edge *of the reflecting surface* no higher than 40 in (1015 mm) *above the finish* floor (see Fig. 31).

4.20 Bathtubs.

4.20.1 General. Accessible bathtubs shall comply with 4.20.

4.20.2 Floor Space. Clear floor space in front of bathtubs shall be as shown in Fig. 33.

4.20.3 Seat. An in-tub seat or a seat at the head end of the tub shall be provided as shown in Fig. 33 and 34. The structural strength of seats and their attachments shall comply with 4.26.3. Seats shall be mounted securely and shall not slip during use.

4.20.4 Grab Bars. Grab bars complying with 4.26 shall be provided as shown in Fig. 33 and 34.

4.20.5 Controls. Faucets and other controls complying with 4.27.4 shall be located as shown in Fig. 34.

4.20.6 Shower Unit. A shower spray unit with a hose at least 60 in (1525 mm) long that can be used *both* as a fixed shower head *and* as a hand-held shower shall be provided.

4.20.7 Bathtub Enclosures. If provided, enclosures for bathtubs shall not obstruct controls or transfer from wheelchairs onto bathtub seats or into tubs. Enclosures on bathtubs shall not have tracks mounted on their rims.

4.21 Shower Stalls.

4.21.1* General. Accessible shower stalls shall comply with 4.21.

4.21.2 Size and Clearances. Except as specified in 9.1.2, shower stall size and clear floor space shall comply with Fig. 35(a) or (b). The shower stall in Fig. 35(a) shall be 36 in by 36 in (915 mm by 915 mm). Shower stalls required by 9.1.2 shall comply with Fig. 57(a) or (b). The shower stall in Fig. 35(b) will fit into the space required for a bathtub.

4.21.3 Seat. A seat shall be provided in shower stalls 36 in by 36 in (915 mm by 915 mm) and shall be as shown in Fig. 36. The seat shall be mounted 17 in to 19 in (430 mm to 485 mm) from the bathroom floor and shall extend the full depth of the stall. In a 36 in by 36 in (915 mm by 915 mm) shower stall, the seat shall be on the wall opposite the controls. *Where a fixed seat is provided in a 30 in by 60 in minimum (760 mm by 1525 mm) shower stall, it shall be a folding type and shall be mounted on the wall adjacent to the controls as shown in Fig. 57.* The structural strength of seats and their attachments shall comply with 4.26.3.

4.21.4 Grab Bars. Grab bars complying with 4.26 shall be provided as shown in Fig. 37.

4.21.5 Controls. Faucets and other controls complying with 4.27.4 shall be located as shown in Fig. 37. In shower stalls 36 in by 36 in (915 mm by 915 mm), all controls, faucets, and the shower unit shall be mounted on the side wall opposite the seat.

4.21.6 Shower Unit. A shower spray unit with a hose at least 60 in (1525 mm) long that can be used *both* as a fixed shower head *and* as a hand-held shower shall be provided.

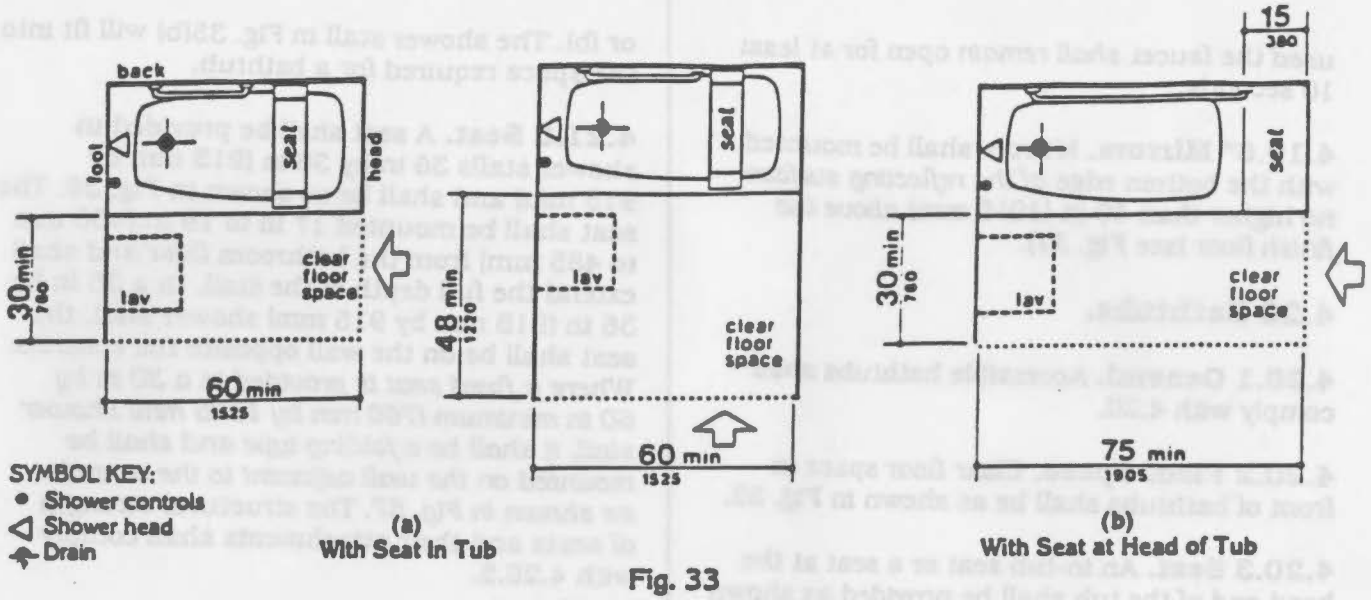
EXCEPTION: In unmonitored facilities where vandalism is a consideration, a fixed shower head mounted at 48 in (1220 mm) above the shower floor may be used in lieu of a hand-held shower head.

4.21.7 Curbs. If provided, curbs in shower stalls 36 in by 36 in (915 mm by 915 mm) shall be no higher than *1/2 in (13 mm)*. Shower stalls that are 30 in by 60 in (760 mm by 1525 mm) minimum shall not have curbs.

4.21.8 Shower Enclosures. If provided, enclosures for shower stalls shall not obstruct controls or obstruct transfer from wheelchairs onto shower seats.

4.22 Toilet Rooms.

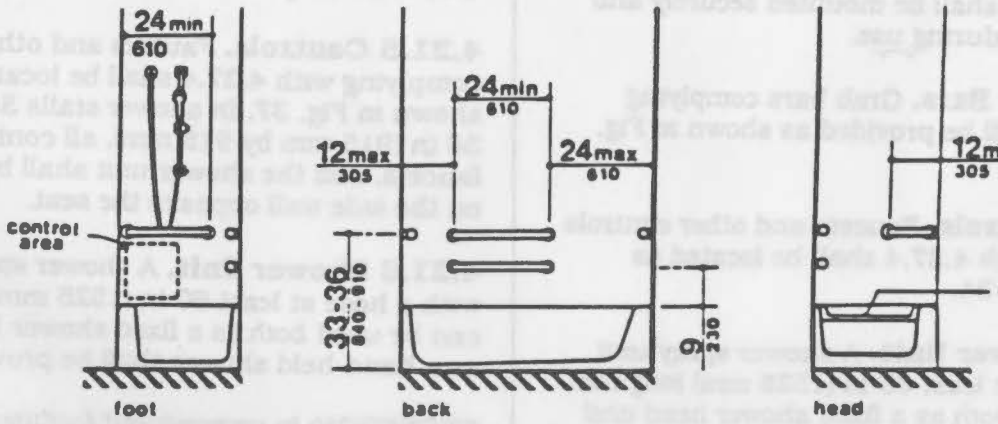
4.22.1 Minimum Number. *Toilet facilities required to be accessible by 4.1 shall comply*



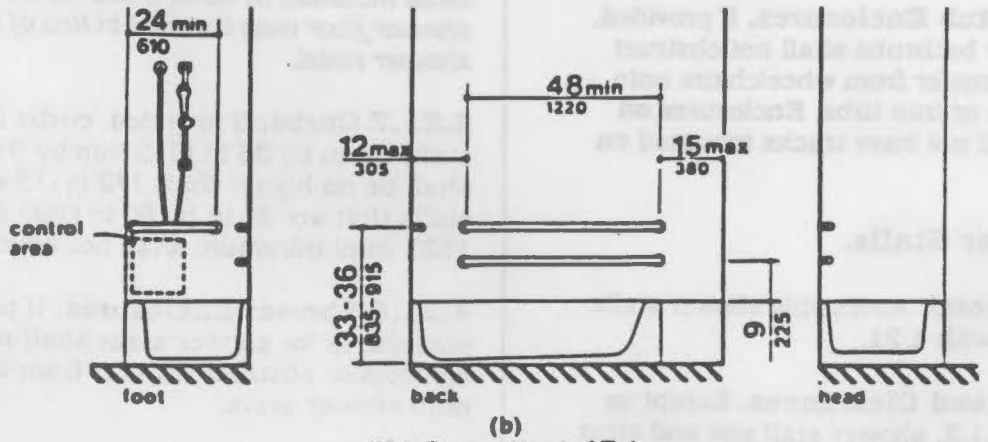
(a) With Seat in Tub

(b) With Seat at Head of Tub

Fig. 33
Clear Floor Space at Bathtubs



(a) With Seat in Tub



(b) With Seat at Head of Tub

Fig. 34
Grab Bars at Bathtubs

with 4.22. Accessible toilet rooms shall be on an accessible route.

4.22.2 Doors. All doors to accessible toilet rooms shall comply with 4.13. Doors shall not swing into the clear floor space required for any fixture.

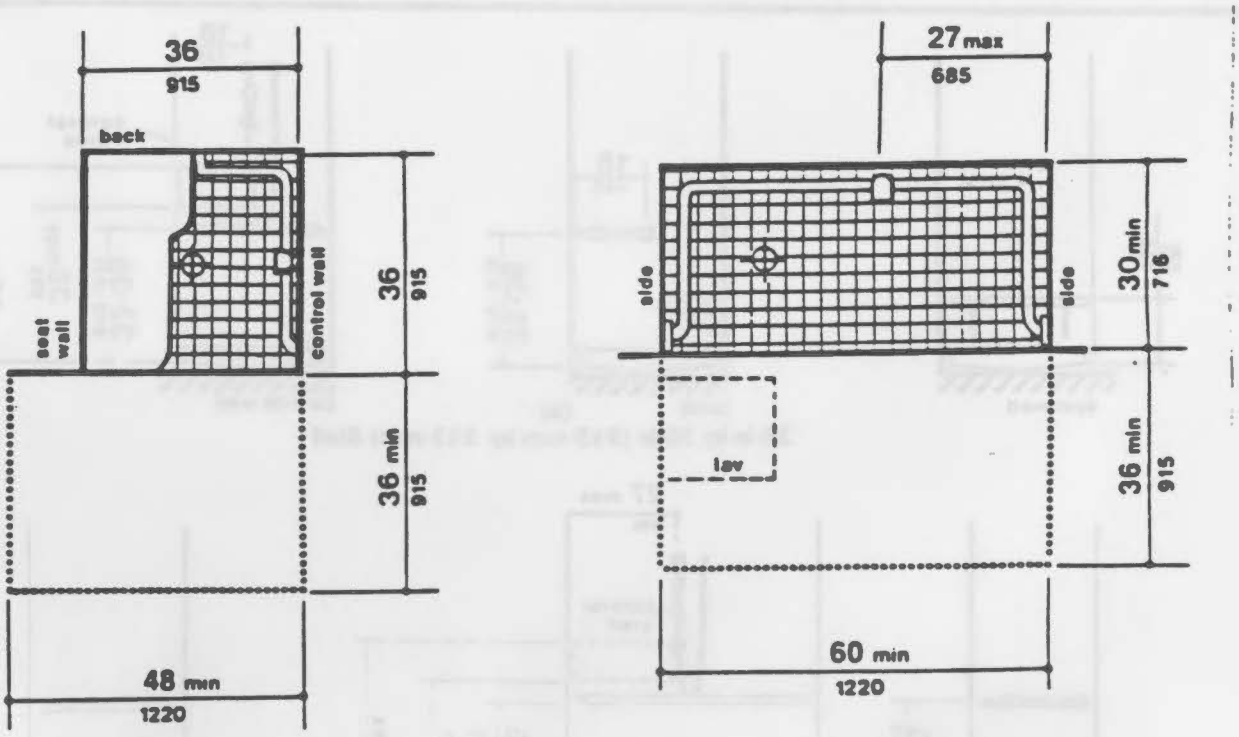
4.22.3* Clear Floor Space. The accessible fixtures and controls required in 4.22.4, 4.22.5, 4.22.6, and 4.22.7 shall be on an accessible route. An unobstructed turning space complying with 4.2.3 shall be provided within an accessible toilet room. The clear floor space at fixtures and controls, the accessible route, and the turning space may overlap.

4.22.4 Water Closets. If toilet stalls are provided, then at least one shall be a standard toilet stall complying with 4.17; *where 6 or more stalls are provided, in addition to the stall complying with 4.17.3, at least one stall 36 in (915 mm) wide with an outward swinging, self-closing door and parallel grab bars complying with Fig. 30(d) and 4.26 shall be provided. Water closets in such stalls* shall comply with 4.16. If water closets are not in stalls, then at least one shall comply with 4.16.

4.22.5 Urinals. If urinals are provided, *then* at least one shall comply with 4.18.

4.22.6 Lavatories and Mirrors. If lavatories and mirrors are provided, *then* at least one of each shall comply with 4.19.

4.22.7 Controls and Dispensers. If controls, dispensers, receptacles, or other



(a)
36-in by 36-in
(915-mm by 915-mm) Stall

(b)
30-in by 60-in
(760-mm by 1525-mm) Stall

Fig. 35
Shower Size and Clearances

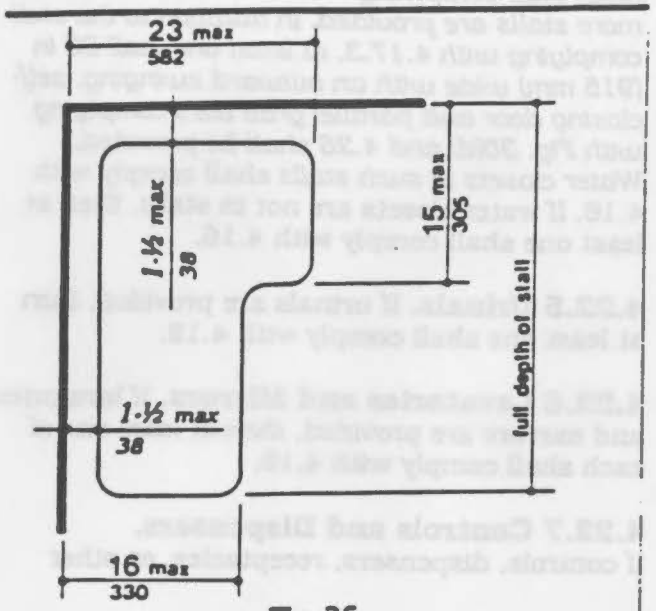


Fig. 36
Shower Seat Design

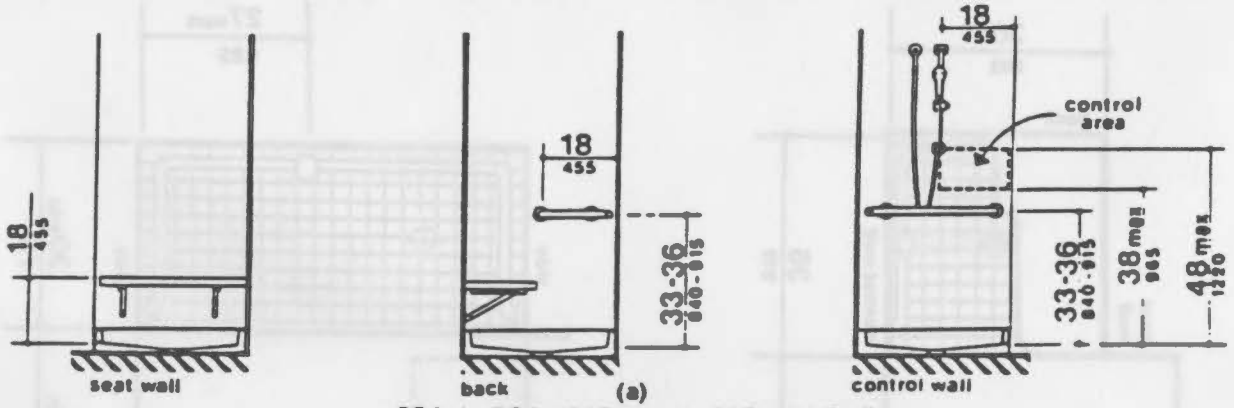
equipment are provided, *then* at least one of each shall be on an accessible route and shall comply with 4.27.

4.23 Bathrooms, Bathing Facilities, and Shower Rooms.

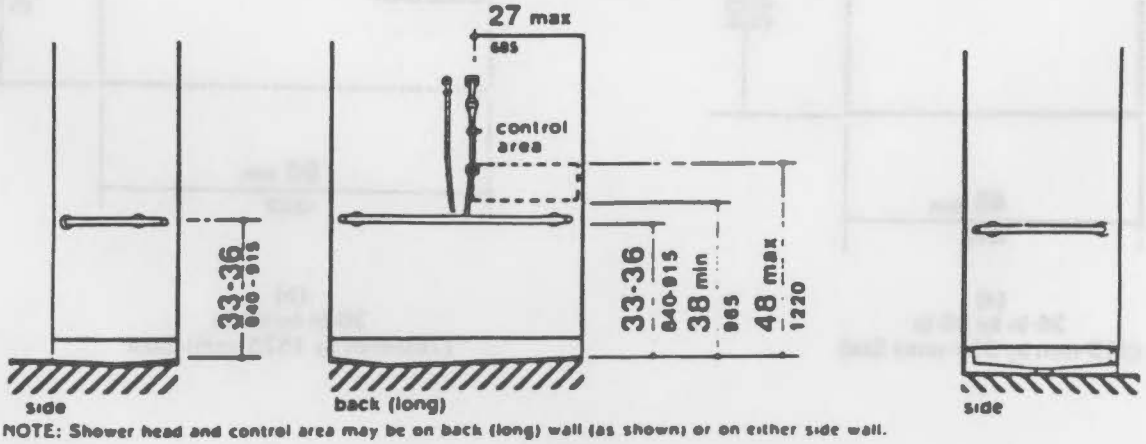
4.23.1 Minimum Number. Bathrooms, bathing facilities, or shower rooms *required to be accessible by 4.1* shall comply with 4.23 and shall be on an accessible route.

4.23.2 Doors. Doors to accessible bathrooms shall comply with 4.13. Doors shall not swing into the floor space required for any fixture.

4.23.3* Clear Floor Space. The accessible fixtures and controls required in 4.23.4, 4.23.5, 4.23.6, 4.23.7, 4.23.8, and 4.23.9 shall be on an accessible route. An unobstructed turning



36-in by 36-in (915-mm by 915-mm) Stall



NOTE: Shower head and control area may be on back (long) wall (as shown) or on either side wall.

(b)
30-in by 60-in (760-mm by 1525-mm) Stall

Fig. 37
Grab Bars at Shower Stalls

space complying with 4.2.3 shall be provided within an accessible bathroom. The clear floor spaces at fixtures and controls, the accessible route, and the turning space may overlap.

4.23.4 Water Closets. If toilet stalls are provided, then at least one shall be a standard toilet stall complying with 4.17; *where 6 or more stalls are provided, in addition to the stall complying with 4.17.3, at least one stall 36 in (915 mm) wide with an outward swinging, self-closing door and parallel grab bars complying with Fig. 30(d) and 4.26 shall be provided. Water closets in such stalls* shall comply with 4.16. If water closets are not in stalls, then at least one shall comply with 4.16.

4.23.5 Urinals. If urinals are provided, then at least one shall comply with 4.18.

4.23.6 Lavatories and Mirrors. If lavatories and mirrors are provided, then at least one of each shall comply with 4.19.

4.23.7 Controls and Dispensers. If controls, dispensers, receptacles, or other equipment *are* provided, *then* at least one of each shall be on an accessible route and shall comply with 4.27.

4.23.8 Bathing and Shower Facilities. If tubs or showers are provided, then at least one accessible tub that complies with 4.20 or at least one accessible shower that complies with 4.21 shall be provided.

4.23.9* Medicine Cabinets. If medicine cabinets are provided, at least one shall be located with a usable shelf no higher than 44 in (1120 mm) above the floor space. The floor space shall comply with 4.2.4.

4.24 Sinks.

4.24.1 General. Sinks *required to be accessible by 4.1* shall comply with 4.24.

4.24.2 Height. Sinks shall be mounted with the counter or rim no higher than 34 in (865 mm) *above the finish* floor.

4.24.3 Knee Clearance. Knee clearance that is at least 27 in (685 mm) high, 30 in (760 mm) wide, and 19 in (485 mm) deep shall be provided underneath sinks.

4.24.4 Depth. Each sink shall be a maximum of 6-1/2 in (165 mm) deep.

4.24.5 Clear Floor Space. A clear floor space at least 30 in by 48 in (760 mm by 1220 mm) complying with 4.2.4 shall be provided in front of a sink to allow forward approach. The clear floor space shall be on an accessible route and shall extend a maximum of 19 in (485 mm) underneath the sink (see Fig. 32).

4.24.6 Exposed Pipes and Surfaces. Hot water and drain pipes exposed under sinks shall be insulated or otherwise *configured so as to protect against contact.* There shall be no sharp or abrasive surfaces under sinks.

4.24.7 Faucets. Faucets shall comply with 4.27.4. Lever-operated, push-type, touch-type, or electronically controlled mechanisms are acceptable designs.

4.25 Storage.

4.25.1 General. *Fixed* storage facilities such as cabinets, shelves, closets, and drawers *required to be accessible by 4.1* shall comply with 4.25.

4.25.2 Clear Floor Space. A clear floor space at least 30 in by 48 in (760 mm by 1220 mm) complying with 4.2.4 that allows either a forward or parallel approach by a person using a wheelchair shall be provided at accessible storage facilities.

4.25.3 Height. Accessible storage spaces shall be within at least one of the reach ranges specified in 4.2.5 and 4.2.6 *(see Fig. 5 and Fig. 6).* Clothes rods or shelves shall be a maximum of 54 in (1370 mm) *above the finish floor for a side approach. Where the distance from the wheelchair to the clothes rod or shelf exceeds 10 in (255 mm) (as in closets without accessible doors) the height and depth to the rod or shelf shall comply with Fig. 38(a) and Fig. 38(b).*

4.25.4 Hardware. Hardware for accessible storage facilities shall comply with 4.27.4. Touch latches and U-shaped pulls are acceptable.

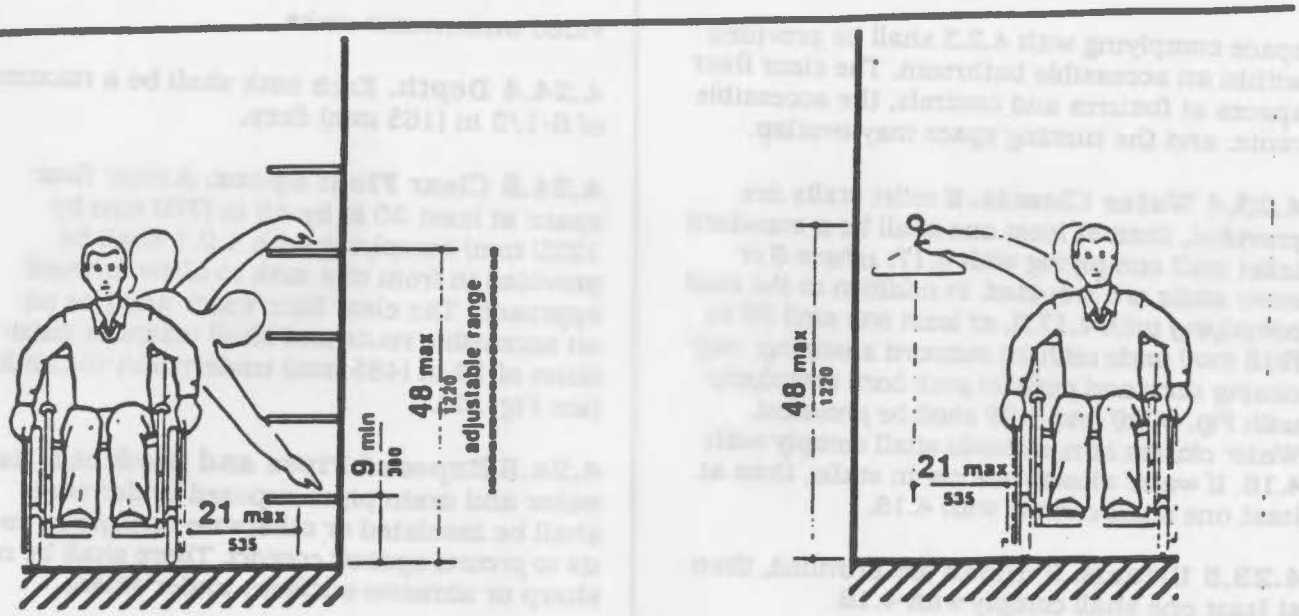


Fig. 38
Storage Shelves and Closets

4.26 Handrails, Grab Bars, and Tub and Shower Seats.

4.26.1* General. All handrails, grab bars, and tub and shower seats *required to be accessible by 4.1, 4.8, 4.9, 4.16, 4.17, 4.20 or 4.21* shall comply with 4.26.

4.26.2* Size and Spacing of Grab Bars and Handrails. The diameter or width of the gripping surfaces of a handrail or grab bar shall be 1-1/4 in to 1-1/2 in (32 mm to 38 mm), or the shape shall provide an equivalent gripping surface. If handrails or grab bars are mounted adjacent to a wall, the space between the wall and the grab bar shall be 1-1/2 in (38 mm) (see Fig. 39(a), (b), (c), and *(e)*). Handrails may be located in a recess if the recess is a maximum of 3 in (75 mm) deep and extends at least 18 in (455 mm) above the top of the rail (see Fig. 39(d)).

4.26.3 Structural Strength. The structural strength of grab bars, tub and shower seats, fasteners, and mounting devices shall meet the following specification:

(1) Bending stress in a grab bar or seat induced by the maximum bending moment from the application of 250 lbf (1112N) shall be less than the allowable stress for the material of the grab bar or seat.

(2) Shear stress induced in a grab bar or seat by the application of 250 lbf (1112N) shall be less than the allowable shear stress for the material of the grab bar or seat. If the connection between the grab bar or seat and its mounting bracket or other support is considered to be fully restrained, then direct and torsional shear stresses shall be totaled for the combined shear stress, which shall not exceed the allowable shear stress.

(3) Shear force induced in a fastener or mounting device from the application of 250 lbf (1112N) shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.

(4) Tensile force induced in a fastener by a direct tension force of 250 lbf (1112N) plus the maximum moment from the application of 250 lbf (1112N) shall be less than the allowable withdrawal load between the fastener and the supporting structure.

(5) Grab bars shall not rotate within their fittings.

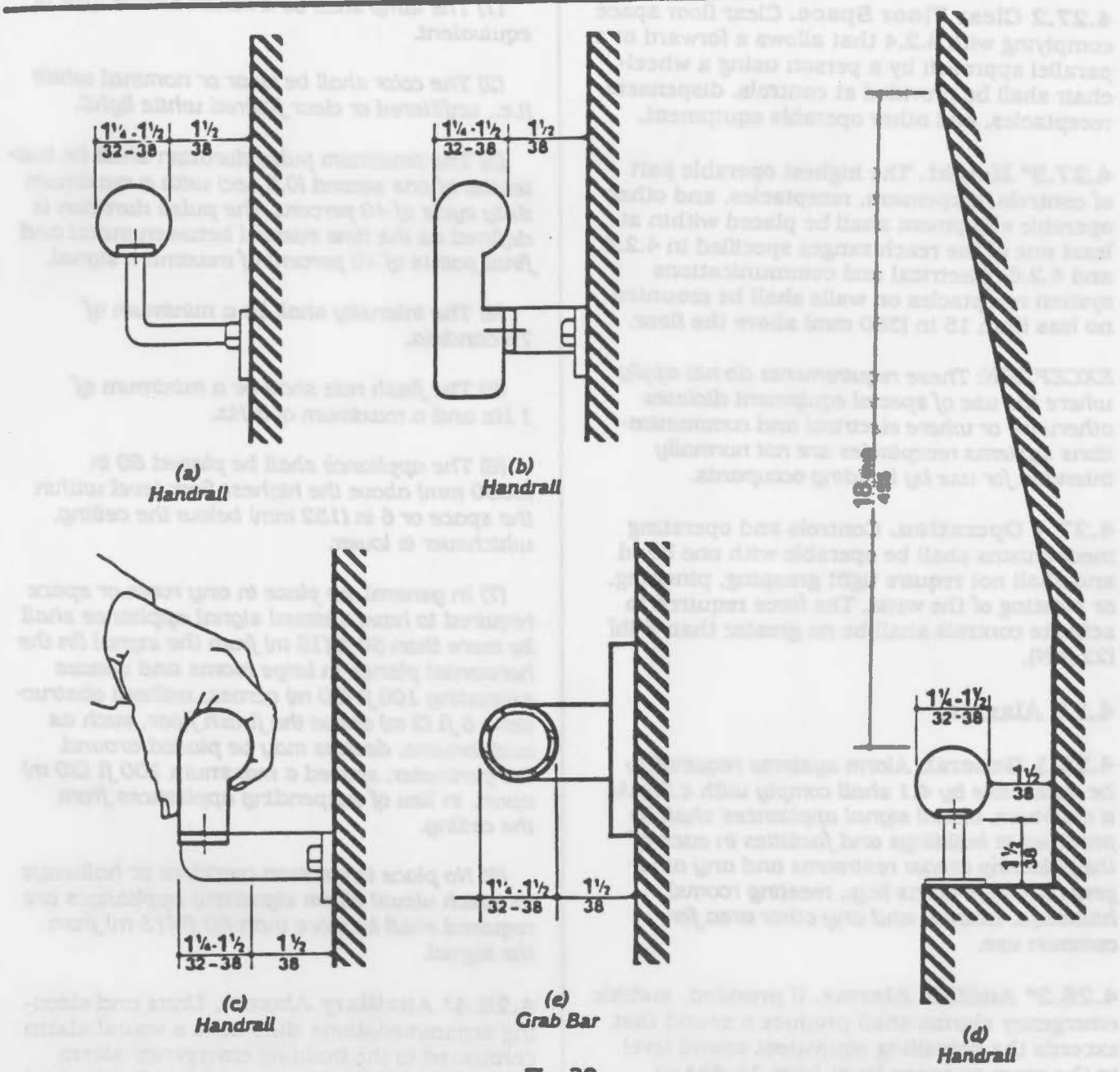


Fig. 39
Size and Spacing of Handrails and Grab Bars

4.26.4 Eliminating Hazards. A handrail or grab bar and any wall or other surface adjacent to it shall be free of any sharp or abrasive elements. Edges shall have a minimum radius of 1/8 in (3.2 mm).

4.27 Controls and Operating Mechanisms.

4.27.1 General. Controls and operating mechanisms *required to be accessible by 4.1* shall comply with 4.27.

4.27.2 Clear Floor Space. Clear floor space complying with 4.2.4 that allows a forward or a parallel approach by a person using a wheelchair shall be provided at controls, dispensers, receptacles, and other operable equipment.

4.27.3* Height. The highest operable part of controls, dispensers, receptacles, and other operable equipment shall be placed within at least one of the reach ranges specified in 4.2.5 and 4.2.6. Electrical and communications system receptacles on walls shall be mounted no less than 15 in (380 mm) above the floor.

EXCEPTION: These requirements do not apply where the use of special equipment dictates otherwise or where electrical and communications systems receptacles are not normally intended for use by building occupants.

4.27.4 Operation. Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 5 lbf (22.2 N).

4.28 Alarms.

4.28.1 General. *Alarm systems required to be accessible by 4.1 shall comply with 4.28. At a minimum, visual signal appliances shall be provided in buildings and facilities in each of the following areas: restrooms and any other general usage areas (e.g., meeting rooms), hallways, lobbies, and any other area for common use.*

4.28.2* Audible Alarms. If provided, audible emergency alarms shall produce a sound that exceeds the prevailing equivalent 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. Sound levels for alarm signals shall not exceed 120 *dbA*.

4.28.3* Visual Alarms. *Visual alarm signal appliances shall be integrated into the building or facility alarm system. If single station audible alarms are provided then single station visual alarm signals shall be provided. Visual alarm signals shall have the following minimum photometric and location features:*

(1) The lamp shall be a xenon strobe type or equivalent.

(2) The color shall be clear or nominal white (i.e., unfiltered or clear filtered white light).

(3) The maximum pulse duration shall be two-tenths of one second (0.2 sec) 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.

(4) The intensity shall be a minimum of 75 candela.

(5) The flash rate shall be a minimum of 1 Hz and a maximum of 3 Hz.

(6) The appliance shall be placed 80 in (2030 mm) above the highest floor level within the space or 6 in (152 mm) below the ceiling, whichever is lower.

(7) In general, no place in any room or space required to have a visual signal appliance shall be more than 50 ft (15 m) from the signal (in the horizontal plane). In large rooms and spaces exceeding 100 ft (30 m) across, without obstructions 6 ft (2 m) above the finish floor, such as auditoriums, devices may be placed around the perimeter, spaced a maximum 100 ft (30 m) apart, in lieu of suspending appliances from the ceiling.

(8) No place in common corridors or hallways in which visual alarm signalling appliances are required shall be more than 50 ft (15 m) from the signal.

4.28.4* Auxiliary Alarms. *Units and* sleeping accommodations shall have a visual alarm connected to the building emergency alarm system or shall have a standard 110-volt electrical receptacle into which such an alarm can be connected *and a means by which a signal from the building emergency alarm system can trigger such an auxiliary alarm. When visual alarms are in place the signal shall be visible in all areas of the unit or room.* Instructions for use of the auxiliary alarm or receptacle shall be provided.

4.29 Detectable Warnings.

4.29.1 General. Detectable warnings required by 4.1 and 4.7 shall comply with 4.29.

4.29.2* Detectable Warnings on Walking Surfaces. Detectable warnings shall consist of raised truncated domes with a diameter of nominal 0.9 in (23 mm), a height of nominal 0.2 in (5 mm) and a center-to-center spacing of nominal 2.35 in (60 mm) and 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 walking surface. Detectable warnings used on interior surfaces shall differ from adjoining walking surfaces in resiliency or sound-on-cane contact.

4.29.3 Detectable Warnings on Doors To Hazardous Areas. (Reserved).

4.29.4 Detectable Warnings at Stairs. (Reserved).

4.29.5 Detectable Warnings at Hazardous Vehicular Areas. If a walk crosses or adjoins a vehicular way, and the walking surfaces are not separated by curbs, railings, or other elements between the pedestrian areas and vehicular areas, the boundary between the areas shall be defined by a continuous detectable warning which is 36 in (915 mm) wide, complying with 4.29.2.

4.29.6 Detectable Warnings at Reflecting Pools. The edges of reflecting pools shall be protected by railings, walls, curbs, or detectable warnings complying with 4.29.2.

4.29.7 Standardization. (Reserved).

4.30 Signage.

4.30.1* General. Signage required to be accessible by 4.1 shall comply with the applicable provisions of 4.30.

4.30.2* Character Proportion. Letters and numbers on signs shall have a width-to-height ratio between 3:5 and 1:1 and a stroke-width-to-height ratio between 1:5 and 1:10.

4.30.3 Character Height. Characters and numbers on signs shall be sized according to the viewing distance from which they are to be read. The minimum height is measured using an upper case X. Lower case characters are permitted.

Height Above Finished Floor	Minimum Character Height
Suspended or Projected Overhead in compliance with 4.4.2	3 in. (75 mm) minimum

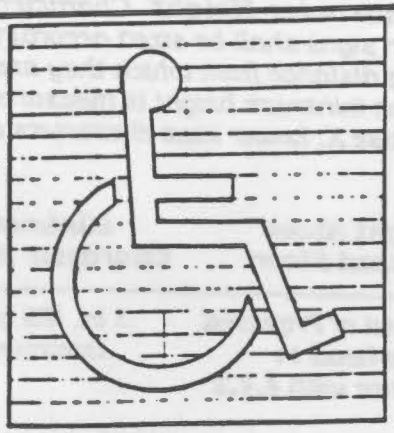
4.30.4* Raised and Brailled Characters and Pictorial Symbol Signs (Pictograms). Letters and numerals shall be raised 1/32 in, upper case, sans serif or simple serif type and shall be accompanied with Grade 2 Braille. Raised characters shall be at least 5/8 in (16 mm) high, but no higher than 2 in (50 mm). Pictograms shall be accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram shall be 6 in (152 mm) minimum in height.

4.30.5* Finish and Contrast. The characters and background of signs shall be eggshell, matte, or other non-glare finish. Characters and symbols shall contrast with their background — either light characters on a dark background or dark characters on a light background.

4.30.6 Mounting Location and Height. Where permanent identification is provided for rooms and spaces, signs shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 in (1525 mm) above the finish floor to the centerline of the sign. Mounting location for such signage shall be so that a person may approach within 3 in (76 mm) of signage without encountering protruding objects or standing within the swing of a door.

4.30.7* Symbols of Accessibility.

(1) Facilities and elements required to be identified as accessible by 4.1 shall use the international symbol of accessibility. The



(a)
Proportions
International Symbol of Accessibility

(b)
Display Conditions
International Symbol of Accessibility

(c)
International TDD Symbol

(d)
International Symbol of Access for Hearing Loss

Fig. 43
International Symbols

symbol shall be displayed as shown in Fig. 43(a) and (b).

(2) Volume Control Telephones. Telephones required to have a volume control by 4.1.3(17)(b) shall be identified by a sign containing a depiction of a telephone handset with radiating sound waves.

(3) Text Telephones. Text telephones required by 4.1.3 (17)(c) shall be identified by the international TDD symbol (Fig 43(c)). In addition, if a facility has a public text telephone, directional signage indicating the location of the nearest text telephone shall be placed adjacent to all banks of telephones which do not contain a text telephone. Such directional signage shall include the international TDD symbol. If a facility has no banks of telephones, the directional signage shall be provided at the entrance (e.g., in a building directory).

(4) Assistive Listening Systems. In assembly areas where permanently installed assistive listening systems are required by 4.1.3(19)(b) the availability of such systems shall be identified with signage that includes the international symbol of access for hearing loss (Fig 43(d)).

4.30.8* *Illumination Levels.* *(Reserved).*

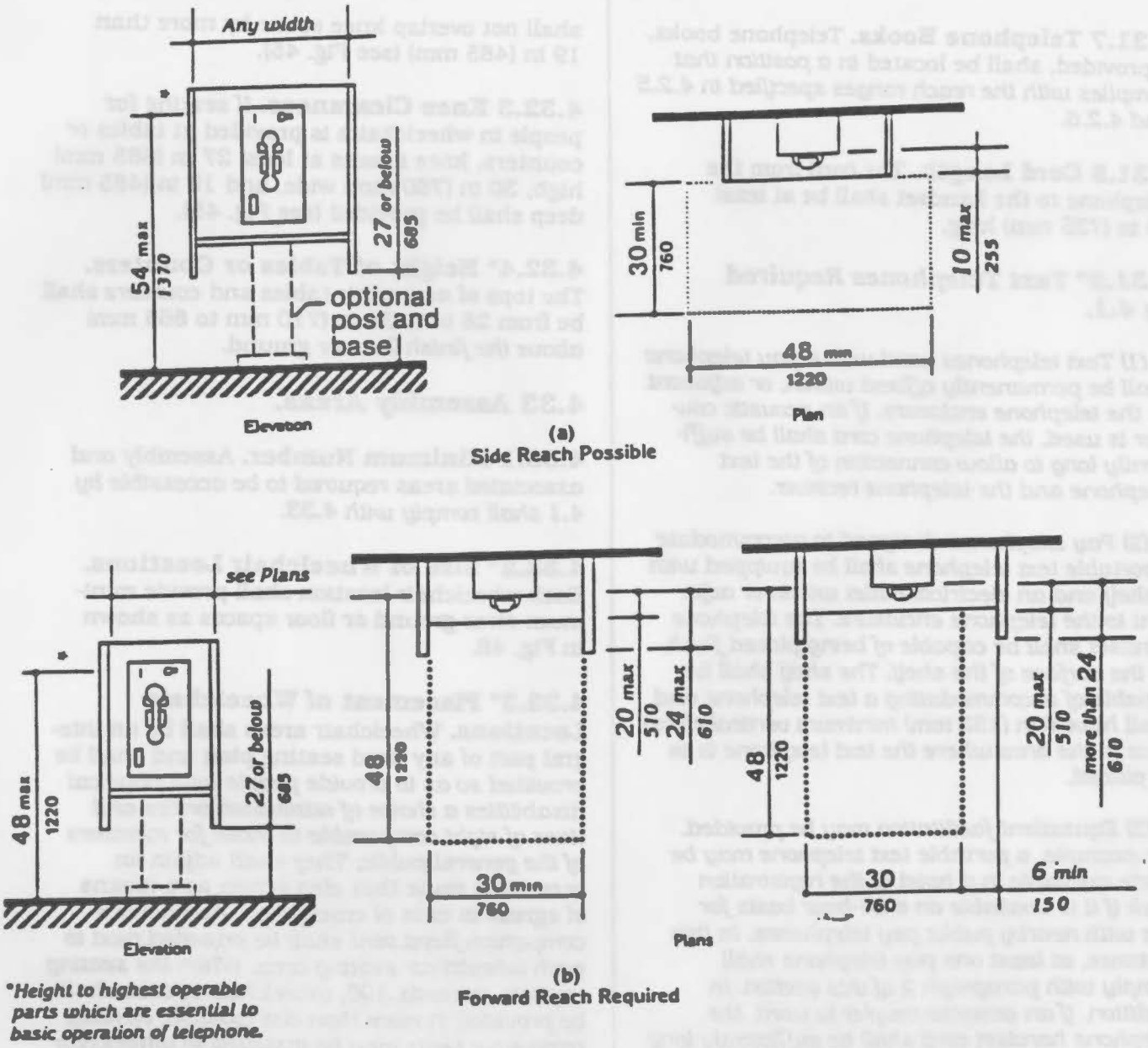
4.31 Telephones.

4.31.1 General. Public telephones required to be accessible by 4.1 shall comply with 4.31.

4.31.2 Clear Floor or Ground Space. A clear floor or ground space at least 30 in by 48 in (760 mm by 1220 mm) that allows either a forward or parallel approach by a person using a wheelchair shall be provided at telephones (see Fig. 44). The clear floor or ground space shall comply with 4.2.4. Bases, enclosures, and fixed seats shall not impede approaches to telephones by people who use wheelchairs.

4.31.3* Mounting Height. The highest operable part of the telephone shall be within the reach ranges specified in 4.2.5 or 4.2.6.

4.31.4 *Protruding Objects.* *Telephones shall comply with 4.4.*



*Height to highest operable parts which are essential to basic operation of telephone.

Fig. 44
Mounting Heights and Clearances for Telephones

4.31.5 *Hearing Aid Compatible and Volume Control Telephones Required by 4.1.*

(1) Telephones shall be hearing aid compatible.

(2) Volume controls. *capable of a minimum of 12 dbA and a maximum of 18 dbA above normal, shall be provided in accordance with 4.1.3. If an automatic reset is provided then 18 dbA may be exceeded.*

4.31.6 Controls. Telephones shall have pushbutton controls where service for such equipment is available.

4.31.7 Telephone Books. Telephone books, if provided, shall be located *in a position that complies with the reach ranges specified in 4.2.5 and 4.2.6.*

4.31.8 Cord Length. The cord from the telephone to the handset shall be at least 29 in (735 mm) long.

4.31.9* Text Telephones Required by 4.1.

(1) Text telephones used with a pay telephone 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 text telephone and the telephone receiver.

(2) Pay telephones designed to accommodate a portable text telephone 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 text telephone and shall have 6 in (152 mm) minimum vertical clearance in the area where the text telephone is to be placed.

(3) Equivalent facilitation may be provided. For example, a portable text telephone may be made available in a hotel at the registration desk if it is available on a 24-hour basis for use with nearby public pay telephones. In this instance, at least one pay telephone shall comply with paragraph 2 of this section. In addition, if an acoustic coupler is used, the telephone handset cord shall be sufficiently long so as to allow connection of the text telephone and the telephone receiver. Directional signage shall be provided and shall comply with 4.30.7.

4.32 Fixed or Built-in Seating and Tables.

4.32.1 Minimum Number. Fixed or built-in seating or tables *required to be accessible by 4.1* shall comply with 4.32.

4.32.2 Seating. If seating spaces for people in wheelchairs are provided at *fixed* tables or counters, clear floor space complying with 4.2.4 shall be provided. Such clear floor space shall not overlap knee space by more than 19 in (485 mm) (see Fig. 45).

4.32.3 Knee Clearances. If seating for people in wheelchairs is provided at tables or counters, knee spaces at least 27 in (685 mm) high, 30 in (760 mm) wide, and 19 in (485 mm) deep shall be provided (see Fig. 45).

4.32.4* Height of Tables or Counters. The tops of *accessible* tables and *counters* shall be from 28 in to 34 in (710 mm to 865 mm) *above the finish* floor or ground.

4.33 Assembly Areas.

4.33.1 Minimum Number. Assembly *and associated* areas *required to be accessible by 4.1 shall comply with* 4.33.

4.33.2* Size of Wheelchair Locations. Each wheelchair location shall provide minimum clear ground or floor spaces as shown in Fig. 46.

4.33.3* Placement of Wheelchair Locations. Wheelchair areas shall be an integral part of any fixed seating plan and shall be *provided so as to provide people with physical disabilities a choice of admission prices and lines of sight comparable to those for members of the general public.* They shall adjoin an accessible route that also serves as a means of egress in case of emergency. *At least one companion fixed seat shall be provided next to each wheelchair seating area. When the seating capacity exceeds 300, wheelchair spaces shall be provided in more than one location. Readily removable seats may be installed in wheelchair spaces when the spaces are not required to accommodate wheelchair users.*

EXCEPTION: Accessible viewing positions may be clustered for bleachers, balconies, and other areas having sight lines that require slopes of greater than 5 percent. Equivalent accessible viewing positions may be located on levels having accessible egress.

4.33.4 Surfaces. The ground or floor at wheelchair locations shall be level and shall comply with 4.5.

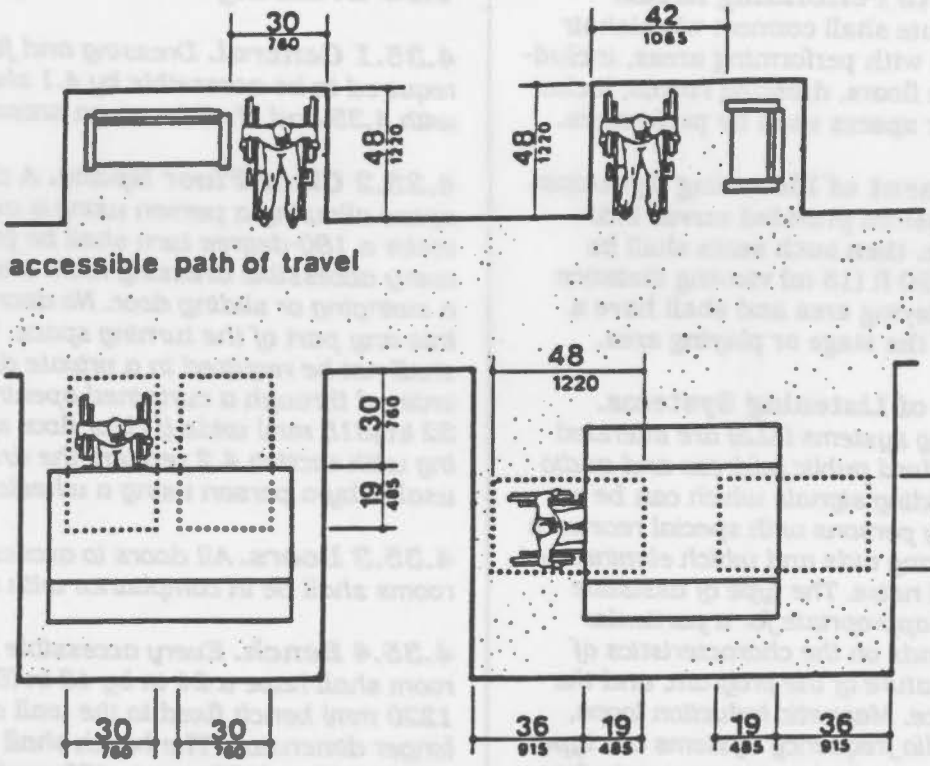
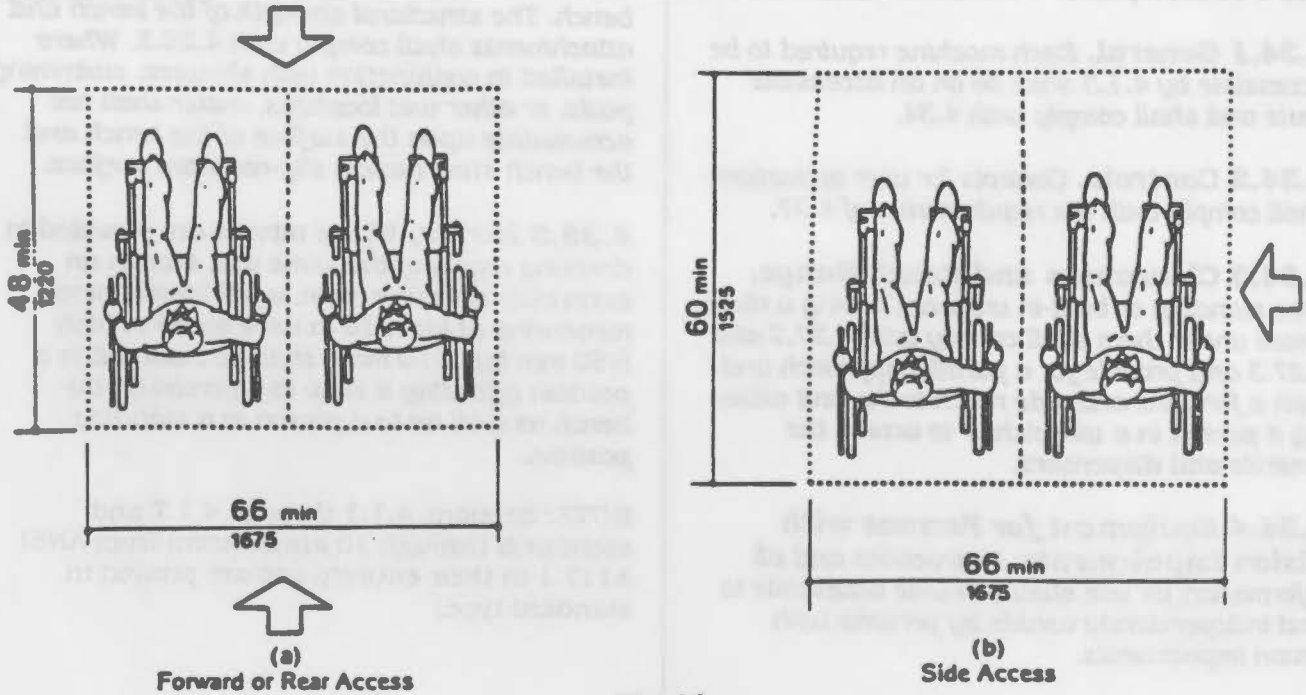


Fig. 45
Minimum Clearances for Seating and Tables



(a)
Forward or Rear Access

(b)
Side Access

Fig. 46
Space Requirements for Wheelchair
Seating Spaces in Series

4.33.5 Access to Performing Areas. An accessible route shall connect wheelchair seating locations with performing areas, including stages, arena floors, dressing rooms, locker rooms, and other spaces used by performers.

4.33.6* Placement of Listening Systems. If the listening system provided serves individual fixed seats, then such seats shall be located within a 50 ft (15 m) viewing distance of the stage or playing area and shall have a complete view of the stage or playing area.

4.33.7* Types of Listening Systems. *Assistive listening systems (ALS) are intended to augment standard public address and audio systems by providing signals which can be received directly by persons with special receivers or their own hearing aids and which eliminate or filter background noise. The type of assistive listening system appropriate for a particular application depends on the characteristics of the setting, the nature of the program, and the intended audience. Magnetic induction loops, infra-red and radio frequency systems are types of listening systems which are appropriate for various applications.*

4.34 Automated Teller Machines.

4.34.1 General. *Each machine required to be accessible by 4.1.3 shall be on an accessible route and shall comply with 4.34.*

4.34.2 Controls. *Controls for user activation shall comply with the requirements of 4.27.*

4.34.3 Clearances and Reach Range. *Free standing or built-in units not having a clear space under them shall comply with 4.27.2 and 4.27.3 and provide for a parallel approach and both a forward and side reach to the unit allowing a person in a wheelchair to access the controls and dispensers.*

4.34.4 Equipment for Persons with Vision Impairments. *Instructions and all information for use shall be made accessible to and independently usable by persons with vision impairments.*

4.35 Dressing and Fitting Rooms.

4.35.1 General. *Dressing and fitting rooms required to be accessible by 4.1 shall comply with 4.35 and shall be on an accessible route.*

4.35.2 Clear Floor Space. *A clear floor space allowing a person using a wheelchair to make a 180-degree turn shall be provided in every accessible dressing room entered through a swinging or sliding door. No door shall swing into any part of the turning space. Turning space shall not be required in a private dressing room entered through a curtained opening at least 32 in (815 mm) wide if clear floor space complying with section 4.2 renders the dressing room usable by a person using a wheelchair.*

4.35.3 Doors. *All doors to accessible dressing rooms shall be in compliance with section 4.13.*

4.35.4 Bench. *Every accessible dressing room shall have a 24 in by 48 in (610 mm by 1220 mm) bench fixed to the wall along the longer dimension. The bench shall be mounted 17 in to 19 in (430 mm to 485 mm) above the finish floor. Clear floor space shall be provided alongside the bench to allow a person using a wheelchair to make a parallel transfer onto the bench. The structural strength of the bench and attachments shall comply with 4.26.3. Where installed in conjunction with showers, swimming pools, or other wet locations, water shall not accumulate upon the surface of the bench and the bench shall have a slip-resistant surface.*

4.35.5 Mirror. *Where mirrors are provided in dressing rooms of the same use, then in an accessible dressing room, a full-length mirror, measuring at least 18 in wide by 54 in high (460 mm by 1370 mm), shall be mounted in a position affording a view to a person on the bench as well as to a person in a standing position.*

NOTE: Sections 4.1.1 through 4.1.7 and sections 5 through 10 are different from ANSI A117.1 in their entirety and are printed in standard type.

5. RESTAURANTS AND CAFETERIAS.

5.1* General. Except as specified or modified in this section, restaurants and cafeterias shall comply with the requirements of 4.1 to 4.35. Where fixed tables (or dining counters where food is consumed but there is no service) are provided, at least 5 percent, but not less than one, of the fixed tables (or a portion of the dining counter) shall be accessible and shall comply with 4.32 as required in 4.1.3(18). In establishments where separate areas are designated for smoking and non-smoking patrons, the required number of accessible fixed tables (or counters) shall be proportionally distributed between the smoking and non-smoking areas. In new construction, and where practicable in alterations, accessible fixed tables (or counters) shall be distributed throughout the space or facility.

5.2 Counters and Bars. Where food or drink is served at counters exceeding 34 in (865 mm) in height for consumption by customers seated on stools or standing at the counter, a portion of the main counter which is 60 in (1525 mm) in length minimum shall be provided in compliance with 4.32 or service shall be available at accessible tables within the same area.

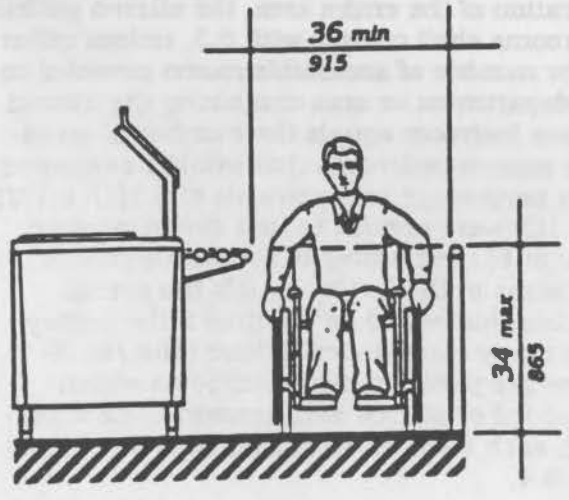


Fig. 53
Food Service Lines

5.3 Access Aisles. All accessible fixed tables shall be accessible by means of an access aisle at least 36 in (915 mm) clear between parallel edges of tables or between a wall and the table edges.

5.4 Dining Areas. In new construction, all dining areas, including raised or sunken dining areas, loggias, and outdoor seating areas, shall be accessible. In non-elevator buildings, an accessible means of vertical access to the mezzanine is not required under the following conditions: 1) the area of mezzanine seating measures no more than 33 percent of the area of the total accessible seating area; 2) the same services and decor are provided in an accessible space usable by the general public; and, 3) the accessible areas are not restricted to use by people with disabilities. In alterations, accessibility to raised or sunken dining areas, or to all parts of outdoor seating areas is not required provided that the same services and decor are provided in an accessible space usable by the general public and are not restricted to use by people with disabilities.

5.5 Food Service Lines. Food service lines shall have a minimum clear width of 36 in (915 mm), with a preferred clear width of 42 in (1065 mm) to allow passage around a person using a wheelchair. Tray slides shall be mounted no higher than 34 in (865 mm) above the floor (see Fig. 53). If self-service shelves

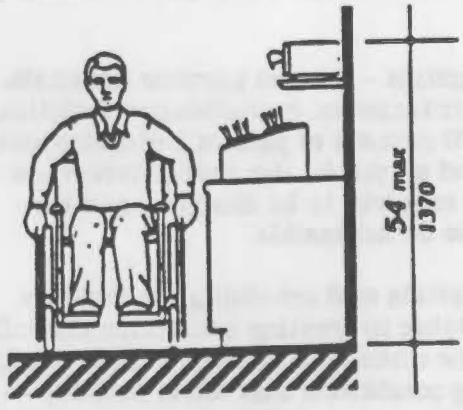


Fig. 54
Tableware Areas

are provided, at least 50 percent of each type must be within reach ranges specified in 4.2.5 and 4.2.6.

5.6 Tableware and Condiment Areas. Self-service shelves and dispensing devices for tableware, dishware, condiments, food and beverages shall be installed to comply with 4.2 (see Fig. 54).

5.7 Raised Platforms. In banquet rooms or spaces where a head table or speaker's lectern is located on a raised platform, the platform shall be accessible in compliance with 4.8 or 4.11. Open edges of a raised platform shall be protected by placement of tables or by a curb.

5.8 Vending Machines and Other Equipment. Spaces for vending machines and other equipment shall comply with 4.2 and shall be located on an accessible route.

5.9 Quiet Areas. (Reserved).

6. MEDICAL CARE FACILITIES.

6.1 General. Medical care facilities included in this section are those in which people receive physical or medical treatment or care and where persons may need assistance in responding to an emergency and where the period of stay may exceed twenty-four hours. In addition to the requirements of 4.1 through 4.35, medical care facilities and buildings shall comply with 6.

(1) Hospitals - general purpose hospitals, psychiatric facilities, detoxification facilities — At least 10 percent of patient bedrooms and toilets, and all public use and common use areas are required to be designed and constructed to be accessible.

(2) Hospitals and rehabilitation facilities that specialize in treating conditions that affect mobility, or units within either that specialize in treating conditions that affect mobility — All patient bedrooms and toilets, and all public use and common use areas are required to be designed and constructed to be accessible.

(3) Long term care facilities, nursing homes — At least 50 percent of patient bedrooms and toilets, and all public use and common use areas are required to be designed and constructed to be accessible.

(4) Alterations to patient bedrooms.

(a) When patient bedrooms are being added or altered as part of a planned renovation of an entire wing, a department, or other discrete area of an existing medical facility, a percentage of the patient bedrooms that are being added or altered shall comply with 6.3. The percentage of accessible rooms provided shall be consistent with the percentage of rooms required to be accessible by the applicable requirements of 6.1(1), 6.1(2), or 6.1(3), until the number of accessible patient bedrooms in the facility equals the overall number that would be required if the facility were newly constructed. (For example, if 20 patient bedrooms are being altered in the obstetrics department of a hospital, 2 of the altered rooms must be made accessible. If, within the same hospital, 20 patient bedrooms are being altered in a unit that specializes in treating mobility impairments, all of the altered rooms must be made accessible.) Where toilet/bath rooms are part of patient bedrooms which are added or altered and required to be accessible, each such patient toilet/bathroom shall comply with 6.4.

(b) When patient bedrooms are being added or altered individually, and not as part of an alteration of the entire area, the altered patient bedrooms shall comply with 6.3, unless either: a) the number of accessible rooms provided in the department or area containing the altered patient bedroom equals the number of accessible patient bedrooms that would be required if the percentage requirements of 6.1(1), 6.1(2), or 6.1(3) were applied to that department or area; or b) the number of accessible patient bedrooms in the facility equals the overall number that would be required if the facility were newly constructed. Where toilet/bathrooms are part of patient bedrooms which are added or altered and required to be accessible, each such toilet/bathroom shall comply with 6.4.

6.2 Entrances. At least one accessible entrance that complies with 4.14 shall be protected from the weather by canopy or roof overhang. Such entrances shall incorporate a passenger loading zone that complies with 4.6.6.

6.3 Patient Bedrooms. Provide accessible patient bedrooms in compliance with 4.1 through 4.35. Accessible patient bedrooms shall comply with the following:

(1) Each bedroom shall have a door that complies with 4.13.

EXCEPTION: Entry doors to acute care hospital bedrooms for in-patients shall be exempted from the requirement in 4.13.6 for maneuvering space at the latch side of the door if the door is at least 44 in (1120 mm) wide.

(2) Each bedroom shall have adequate space to provide a maneuvering space that complies with 4.2.3. In rooms with 2 beds, it is preferable that this space be located between beds.

(3) Each bedroom shall have adequate space to provide a minimum clear floor space of 36 in (915 mm) along each side of the bed and to provide an accessible route complying with 4.3.3 to each side of each bed.

6.4 Patient Toilet Rooms. Where toilet/bath rooms are provided as a part of a patient bedroom, each patient bedroom that is required to be accessible shall have an accessible toilet/bath room that complies with 4.22 or 4.23 and shall be on an accessible route.

7. BUSINESS AND MERCANTILE.

7.1 General. In addition to the requirements of 4.1 to 4.35, the design of all areas used for business transactions with the public shall comply with 7.

7.2 Sales and Service Counters, Teller Windows, Information Counters.

(1) In department stores and miscellaneous retail stores where counters have cash registers and are provided for sales or distribution of goods or services to the public, at least one of each type shall have a portion of the counter which is at least 36 in (915 mm) in length with a maximum height of 36 in (915 mm) above the finish floor. It shall be on an accessible route complying with 4.3. The accessible counters must be dispersed throughout the building or facility. In alterations where it is technically infeasible to provide an accessible counter, an auxiliary counter meeting these requirements may be provided.

(2) At ticketing counters, teller stations in a bank, registration counters in hotels and motels, box office ticket counters, and other counters that may not have a cash register but at which goods or services are sold or distributed, either:

(i) a portion of the main counter which is a minimum of 36 in (915 mm) in length shall be provided with a maximum height of 36 in (915 mm); or

(ii) an auxiliary counter with a maximum height of 36 in (915 mm) in close proximity to the main counter shall be provided; or

(iii) equivalent facilitation shall be provided (e.g., at a hotel registration counter, equivalent facilitation might consist of: (1) provision of a folding shelf attached to the main counter on which an individual with disabilities can write, and (2) use of the space on the side of the counter or at the concierge desk, for handing materials back and forth).

All accessible sales and service counters shall be on an accessible route complying with 4.3.

(3)* Assistive Listening Devices. (Reserved)

7.3* Check-out Aisles.

(1) In new construction, accessible check-out aisles shall be provided in conformance with the table below:

Total Check-out Aisles of Each Design	Minimum Number of Accessible Check-out Aisles (of each design)
1 – 4	1
5 – 8	2
8 – 15	3
over 15	3, plus 20% of additional aisles

EXCEPTION: In new construction, where the selling space is under 5000 square feet, only one check-out aisle is required to be accessible.

EXCEPTION: In alterations, at least one check-out aisle shall be accessible in facilities under 5000 square feet of selling space. In facilities of 5000 or more square feet of selling space, at least one of each design of check-out aisle shall be made accessible when altered until the number of accessible check-out aisles of each design equals the number required in new construction.

Examples of check-out aisles of different "design" include those which are specifically designed to serve different functions. Different "design" includes but is not limited to the following features - length of belt or no belt; or permanent signage designating the aisle as an express lane.

(2) Clear aisle width for accessible check-out aisles shall comply with 4.2.1 and maximum adjoining counter height shall not exceed 38 in (965 mm) above the finish floor. The top of the lip shall not exceed 40 in (1015 mm) above the finish floor.

(3) Signage identifying accessible check-out aisles shall comply with 4.30.7 and shall be mounted above the check-out aisle in the same location where the check-out number or type of check-out is displayed.

7.4 Security Bollards. Any device used to prevent the removal of shopping carts from store premises shall not prevent access or egress to people in wheelchairs. An alternate entry that is equally convenient to that provided for the ambulatory population is acceptable.

8. LIBRARIES.

8.1 General. In addition to the requirements of 4.1 to 4.35, the design of all public areas of a library shall comply with 8, including reading and study areas, stacks, reference rooms, reserve areas, and special facilities or collections.

8.2 Reading and Study Areas. At least 5 percent or a minimum of one of each element of fixed seating, tables, or study carrels shall comply with 4.2 and 4.32. Clearances between fixed accessible tables and between study carrels shall comply with 4.3.

8.3 Check-Out Areas. At least one lane at each check-out area shall comply with 7.2(1). Any traffic control or book security gates or turnstiles shall comply with 4.13.

8.4 Card Catalogs and Magazine Displays. Minimum clear aisle space at card catalogs and magazine displays shall comply with Fig. 55. Maximum reach height shall comply with 4.2, with a height of 48 in (1220 mm) preferred irrespective of approach allowed.

8.5 Stacks. Minimum clear aisle width between stacks shall comply with 4.3, with a minimum clear aisle width of 42 in (1065 mm) preferred where possible. Shelf height in stack areas is unrestricted (see Fig. 56).

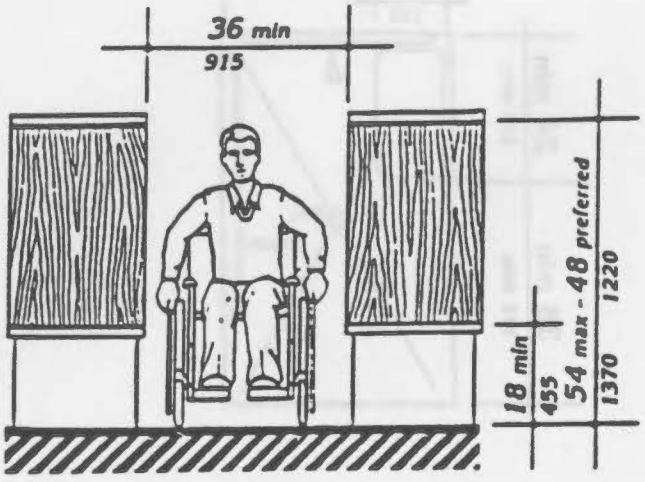


Fig. 55
Card Catalog

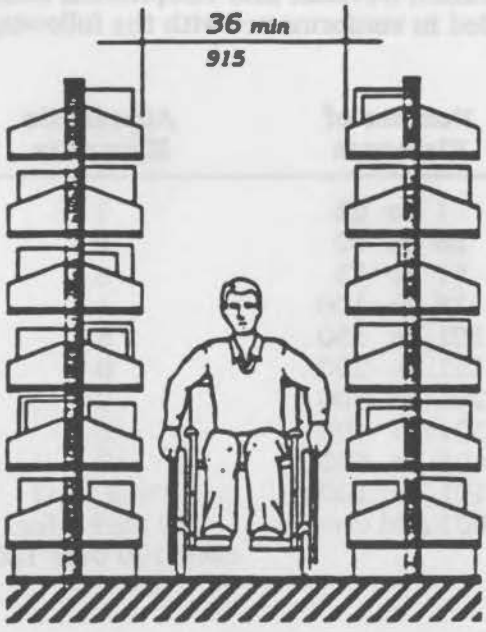


Fig. 56
Stacks

9. ACCESSIBLE TRANSIENT LODGING.

(1) Except as specified in the special technical provisions of this section, accessible transient lodging shall comply with the applicable requirements of 4.1 through 4.35. Transient lodging includes facilities or portions thereof used for sleeping accommodations, when not classed as a medical care facility.

9.1 Hotels, Motels, Inns, Boarding Houses, Dormitories, Resorts and Other Similar Places of Transient Lodging.

9.1.1 General. All public use and common use areas are required to be designed and constructed to comply with section 4 (Accessible Elements and Spaces: Scope and Technical Requirements).

EXCEPTION: Sections 9.1 through 9.4 do not apply to an establishment located within a building that contains not more than five rooms for rent or hire and that is actually occupied by the proprietor of such establishment as the residence of such proprietor.

9.1.2 Accessible Units, Sleeping Rooms, and Suites. Accessible sleeping rooms or suites that comply with the requirements of 9.2 (Requirements for Accessible Units, Sleeping Rooms, and Suites) shall be provided in conformance with the table below. In addition, in hotels, of 50 or more sleeping rooms or suites, additional accessible sleeping rooms or suites that include a roll-in shower shall also be provided in conformance with the table below. Such accommodations shall comply with the requirements of 9.2, 4.21, and Figure 57(a) or (b).

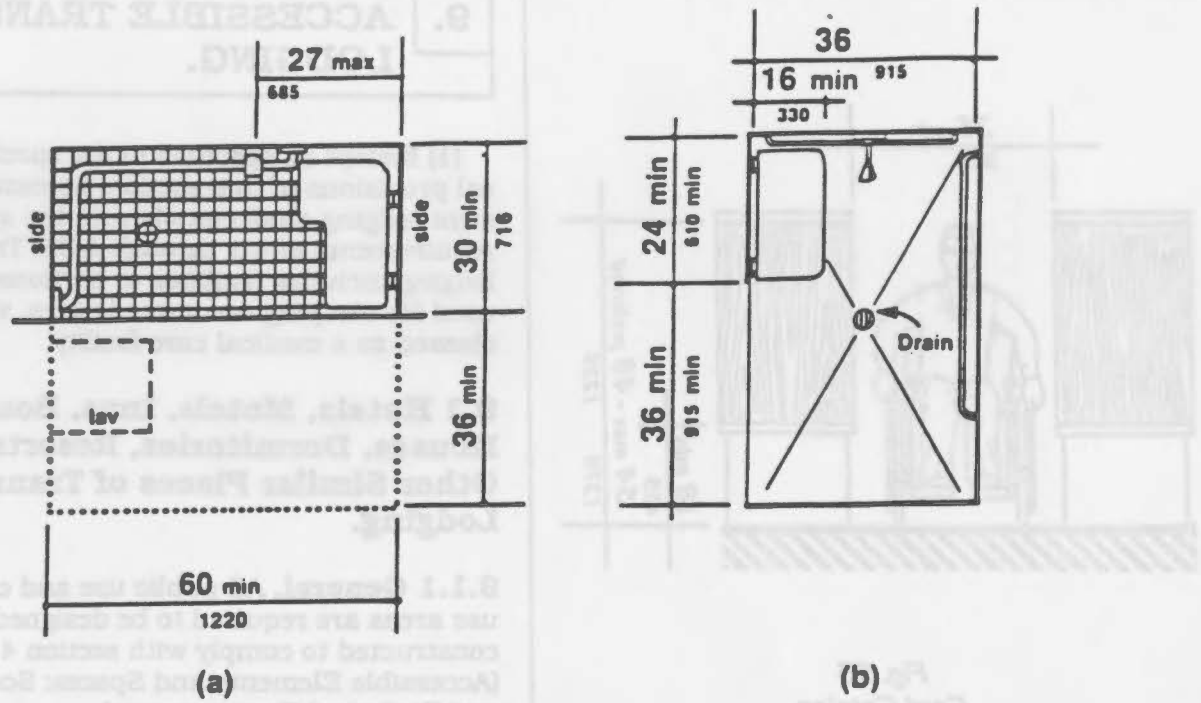


Fig. 57
Roll-in Shower with Folding Seat

Number of Rooms	Accessible Rooms	Rooms with Roll-in Showers
1 to 25	1	
26 to 50	2	
51 to 75	3	1
76 to 100	4	1
101 to 150	5	2
151 to 200	6	2
201 to 300	7	3
301 to 400	8	4
401 to 500	9	4 plus one for each additional 100 over 400
501 to 1000	2% of total	
1001 and over	20 plus 1 for each 100 over 1000	

9.1.3 Sleeping Accommodations for Persons with Hearing Impairments. In addition to those accessible sleeping rooms and suites required by 9.1.2, sleeping rooms and suites that comply with 9.3 (Visual Alarms, Notification Devices, and Telephones) shall be provided in conformance with the following table:

Number of Elements	Accessible Elements
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2% of total
1001 and over	20 plus 1 for each 100 over 1000

9.1.4 Classes of Sleeping Accommodations.

(1) In order to provide persons with disabilities a range of options equivalent to those available to other persons served by the facility, sleeping rooms and suites required to be accessible by 9.1.2 shall be dispersed among the various classes of sleeping accommodations available to patrons of the place of transient lodging. Factors to be considered include room size, cost, amenities provided, and the number of beds provided.

(2) Equivalent Facilitation. For purposes of this section, it shall be deemed equivalent facilitation if the operator of a facility elects to limit construction of accessible rooms to those intended for multiple occupancy, provided that such rooms are made available at the cost of a single-occupancy room to an individual with disabilities who requests a single-occupancy room.

9.1.5. Alterations to Accessible Units, Sleeping Rooms, and Suites. When sleeping rooms are being altered in an existing facility, or portion thereof, subject to the requirements of this section, at least one sleeping room or suite that complies with the requirements of 9.2 (Requirements for Accessible Units, Sleeping Rooms, and Suites) shall be provided for each 25 sleeping rooms, or fraction thereof, of rooms being altered until the number of such rooms provided equals the number required to be accessible with 9.1.2. In addition, at least one sleeping room or suite that complies with the requirements of 9.3 (Visual Alarms, Notification Devices, and Telephones) shall be provided for each 25 sleeping rooms, or fraction thereof, of rooms being altered until the number of such rooms equals the number required to be accessible by 9.1.3.

9.2 Requirements for Accessible Units, Sleeping Rooms and Suites.

9.2.1 General. Units, sleeping rooms, and suites required to be accessible by 9.1 shall comply with 9.2.

9.2.2 Minimum Requirements. An accessible unit, sleeping room or suite shall be on an accessible route complying with 4.3 and have the following accessible elements and spaces.

(1) Accessible sleeping rooms shall have a 36 in (915 mm) clear width maneuvering space located along both sides of a bed, except that where two beds are provided, this requirement can be met by providing a 36 in (915 mm) wide maneuvering space located between the two beds.

(2) An accessible route complying with 4.3 shall connect all accessible spaces and elements, including telephones, within the unit, sleeping room, or suite. This is not intended to require an elevator in multi-story units as long as the spaces identified in 9.2.2(6) and (7) are on accessible levels and the accessible sleeping area is suitable for dual occupancy.

(3) Doors and doorways designed to allow passage into and within all sleeping rooms, suites or other covered units shall comply with 4.13.

(4) If fixed or built-in storage facilities such as cabinets, shelves, closets, and drawers are provided in accessible spaces, at least one of each type provided shall contain storage space complying with 4.25. Additional storage may be provided outside of the dimensions required by 4.25.

(5) All controls in accessible units, sleeping rooms, and suites shall comply with 4.27.

(6) Where provided as part of an accessible unit, sleeping room, or suite, the following spaces shall be accessible and shall be on an accessible route:

(a) the living area.

(b) the dining area.

(c) at least one sleeping area.

(d) patios, terraces, or balconies.

EXCEPTION: The requirements of 4.13.8 and 4.3.8 do not apply where it is necessary to utilize a higher door threshold or a change in level to protect the integrity of the unit from wind/water damage. Where this exception results in patios, terraces or balconies that are not at an accessible level, equivalent facilitation

shall be provided. (E.g., equivalent facilitation at a hotel patio or balcony might consist of providing raised decking or a ramp to provide accessibility.)

(e) at least one full bathroom (i.e., one with a water closet, a lavatory, and a bathtub or shower).

(f) if only half baths are provided, at least one half bath.

(g) carports, garages or parking spaces.

(7) Kitchens, Kitchenettes, or Wet Bars. When provided as accessory to a sleeping room or suite, kitchens, kitchenettes, wet bars, or similar amenities shall be accessible. Clear floor space for a front or parallel approach to cabinets, counters, sinks, and appliances shall be provided to comply with 4.2.4. Countertops and sinks shall be mounted at a maximum height of 34 in (865 mm) above the floor. At least fifty percent of shelf space in cabinets or refrigerator/freezers shall be within the reach ranges of 4.2.5 or 4.2.6 and space shall be designed to allow for the operation of cabinet and/or appliance doors so that all cabinets and appliances are accessible and usable. Controls and operating mechanisms shall comply with 4.27.

(8) Sleeping room accommodations for persons with hearing impairments required by 9.1 and complying with 9.3 shall be provided in the accessible sleeping room or suite.

9.3 Visual Alarms, Notification Devices and Telephones.

9.3.1 General. In sleeping rooms required to comply with this section, auxiliary visual alarms shall be provided and shall comply with 4.28.4. Visual notification devices shall also be provided in units, sleeping rooms and suites to alert room occupants of incoming telephone calls and a door knock or bell. Notification devices shall not be connected to auxiliary visual alarm signal appliances. Permanently installed telephones shall have volume controls complying with 4.31.5; an accessible electrical outlet within 4 ft (1220 mm) of a telephone connection shall be provided to facilitate the use of a text telephone.

9.3.2 Equivalent Facilitation. For purposes of this section, equivalent facilitation shall include the installation of electrical outlets (including outlets connected to a facility's central alarm system) and telephone wiring in sleeping rooms and suites to enable persons with hearing impairments to utilize portable visual alarms and communication devices provided by the operator of the facility.

9.4 Other Sleeping Rooms and Suites.

Doors and doorways designed to allow passage into and within all sleeping units or other covered units shall comply with 4.13.5.

9.5 Transient Lodging in Homeless Shelters, Halfway Houses, Transient Group Homes, and Other Social Service Establishments.

9.5.1 New Construction. In new construction all public use and common use areas are required to be designed and constructed to comply with section 4. At least one of each type of amenity (such as washers, dryers and similar equipment installed for the use of occupants) in each common area shall be accessible and shall be located on an accessible route to any accessible unit or sleeping accommodation.

EXCEPTION: Where elevators are not provided as allowed in 4.1.3(5), accessible amenities are not required on inaccessible floors as long as one of each type is provided in common areas on accessible floors.

9.5.2 Alterations.

(1) Social service establishments which are not homeless shelters:

(a) The provisions of 9.5.3 and 9.1.5 shall apply to sleeping rooms and beds.

(b) Alteration of other areas shall be consistent with the new construction provisions of 9.5.1.

(2) Homeless shelters. If the following elements are altered, the following requirements apply:

(a) at least one public entrance shall allow a person with mobility impairments to approach, enter and exit including a minimum clear door width of 32 in (815 mm).

(b) sleeping space for homeless persons as provided in the scoping provisions of 9.1.2 shall include doors to the sleeping area with a minimum clear width of 32 in (815 mm) and maneuvering space around the beds for persons with mobility impairments complying with 9.2.2(1).

(c) at least one toilet room for each gender or one unisex toilet room shall have a minimum clear door width of 32 in (815 mm), minimum turning space complying with 4.2.3, one water closet complying with 4.16, one lavatory complying with 4.19 and the door shall have a privacy latch; and, if provided, at least one tub or shower shall comply with 4.20 or 4.21, respectively.

(d) at least one common area which a person with mobility impairments can approach, enter and exit including a minimum clear door width of 32 in (815 mm).

(e) at least one route connecting elements (a), (b), (c) and (d) which a person with mobility impairments can use including minimum clear width of 36 in (915 mm), passing space complying with 4.3.4, turning space complying with 4.2.3 and changes in levels complying with 4.3.8.

(f) homeless shelters can comply with the provisions of (a)-(e) by providing the above elements on one accessible floor.

9.5.3. Accessible Sleeping Accommodations in New Construction. Accessible sleeping rooms shall be provided in conformance with the table in 9.1.2 and shall comply with 9.2 Accessible Units, Sleeping Rooms and Suites (where the items are provided). Additional sleeping rooms that comply with 9.3 Sleeping Accommodations for Persons with Hearing Impairments shall be provided in conformance with the table provided in 9.1.3.

In facilities with multi-bed rooms or spaces, a percentage of the beds equal to the table provided in 9.1.2 shall comply with 9.2.2(1).

10. TRANSPORTATION FACILITIES. (Reserved).

APPENDIX

This appendix contains *materials of an advisory nature* and provides additional information that should help the reader to understand the minimum requirements of the *guidelines* or to design buildings or facilities for greater accessibility. The paragraph numbers correspond to the sections or paragraphs of the *guideline* to which the material relates and are therefore not consecutive (for example, A4.2.1 contains additional information relevant to 4.2.1). Sections *of the guidelines* for which additional material appears in this appendix have been indicated by an asterisk. *Nothing in this appendix shall in any way obviate any obligation to comply with the requirements of the guidelines itself.*

A2.2 Equivalent Facilitation. *Specific examples of equivalent facilitation are found in the following sections:*

4.1.6(3)(c)	*Elevators in Alterations*
4.31.9	*Text Telephones*
7.2	*Sales and Service Counters, Teller Windows, Information Counters*
9.1.4	*Classes of Sleeping Accommodations*
9.2.2(6)(d)	*Requirements for Accessible Units, Sleeping Rooms, and Suites*

A4.1.1 Application.

A4.1.1(3) Areas Used Only by Employees as Work Areas. *Where there are a series of individual work stations of the same type (e.g., laboratories, service counters, ticket booths), 5%, but not less than one, of each type of work station should be constructed so that an individual with disabilities can maneuver within the work stations. Rooms housing individual offices in a typical office building must meet the requirements of the guidelines concerning doors, accessible routes, etc. but do not need to allow for maneuvering space around individual desks. Modifications required to permit maneuvering within the work area may be accomplished as a reasonable accommodation to individual employees with disabilities under Title I of the ADA. Consideration should also be given to placing shelves in employee work areas at a convenient height for accessibility or installing commercially-available shelving that is adjustable so that reasonable accommodations can be made in the future.*

If work stations are made accessible they should comply with the applicable provisions of 4.2 through 4.35.

A4.1.2 Accessible Sites and Exterior Facilities: New Construction.

A4.1.2(5)(e) Valet Parking. *Valet parking is not always usable by individuals with disabilities. For instance, an individual may use a type of vehicle controls that render the regular controls inoperable or the driver's seat in a van may be removed. In these situations, another person cannot park the vehicle. It is recommended that some self-parking spaces be provided at valet parking facilities for individuals whose vehicles cannot be parked by another person and that such spaces be located on an accessible route to the entrance of the facility.*

A4.1.3 Accessible Buildings: New Construction.

A4.1.3(5) *Only full passenger elevators are covered by the accessibility provisions of 4.10. Materials and equipment hoists, freight elevators not intended for passenger use, dumbwaiters, and construction elevators are not covered by these guidelines. If a building is exempt from the elevator requirement, it is not necessary to provide a platform lift or other means of vertical access in lieu of an elevator.*

Under Exception 4, platform lifts are allowed where existing conditions make it impractical to install a ramp or elevator. Such conditions generally occur where it is essential to provide access to small raised or lowered areas where space may not be available for a ramp. Examples include, but are not limited to, raised pharmacy platforms, commercial offices raised above a sales floor, or radio and news booths.

A4.1.3(9) *Supervised automatic sprinkler systems have built in signals for monitoring features of the system such as the opening and closing of water control valves, the power supplies for needed pumps, water tank levels, and for indicating conditions that will impair the satisfactory operation of the sprinkler system.*

Because of these monitoring features, supervised automatic sprinkler systems have a high level of satisfactory performance and response to fire conditions.

A4.1.3(10) *If an odd number of drinking fountains is provided on a floor, the requirement in 4.1.3(10)(b) may be met by rounding down the odd number to an even number and calculating 50% of the even number. When more than one drinking fountain on a floor is required to comply with 4.15, those fountains should be dispersed to allow wheelchair users convenient access. For example, in a large facility such as a convention center that has water fountains at several locations on a floor, the accessible water fountains should be located so that wheelchair users do not have to travel a greater distance than other people to use a drinking fountain.*

A4.1.3(17)(b) *In addition to the requirements of section 4.1.3(17)(b), the installation of additional volume controls is encouraged. Volume controls may be installed on any telephone.*

A4.1.3(19)(a) *Readily removable or folding seating units may be installed in lieu of providing an open space for wheelchair users. Folding seating units are usually two fixed seats that can be easily folded into a fixed center bar to allow for one or two open spaces for wheelchair users when necessary. These units are more easily adapted than removable seats which generally require the seat to be removed in advance by the facility management.*

Either a sign or a marker placed on seating with removable or folding arm rests is required by this section. Consideration should be given for ensuring identification of such seats in a darkened theater. For example, a marker which contrasts (light on dark or dark on light) and which also reflects light could be placed on the side of such seating so as to be visible in a lighted auditorium and also to reflect light from a flashlight.

A4.1.6 Accessible Buildings: Alterations.

A4.1.6(1)(h) *When an entrance is being altered, it is preferable that those entrances being altered be made accessible to the extent feasible.*

A4.2 Space Allowances and Reach Ranges.

A4.2.1 Wheelchair Passage Width.

(1) Space Requirements for Wheelchairs. Many persons who use wheelchairs need a 30 in (760 mm) clear opening width for doorways, gates, and the like, when the latter are entered head-on. If the *person* is unfamiliar with a building, if competing traffic is heavy, if sudden or frequent movements are needed, or if the wheelchair must be turned at an opening, then greater clear widths are needed. For most situations, the addition of an inch of leeway on either side is sufficient. Thus, a minimum clear width of 32 in (815 mm) will provide adequate clearance. However, when an opening or a restriction in a passageway is more than 24 in (610 mm) long, it is essentially a passageway and must be at least 36 in (915 mm) wide.

(2) Space Requirements for Use of Walking Aids. Although people who use walking aids can maneuver through clear width openings of 32 in (815 mm), they need 36 in (915 mm) wide passageways and walks for comfortable gaits. Crutch tips, often extending down at a wide angle, are a hazard in narrow passageways where they might not be seen by other pedestrians. Thus, the 36 in (915 mm) width provides a safety allowance both for the person *with a disability* and for others.

(3) Space Requirements for Passing. Able-bodied *persons* in winter clothing, walking

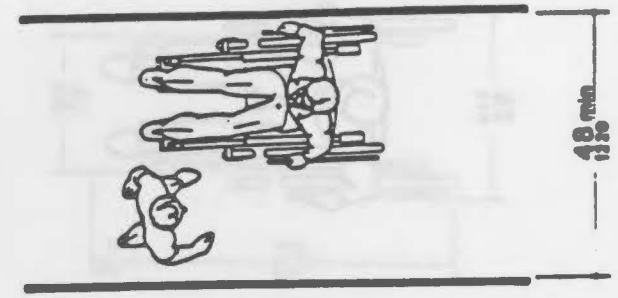


Fig. A1
Minimum Passage Width for One Wheelchair and One Ambulatory Person

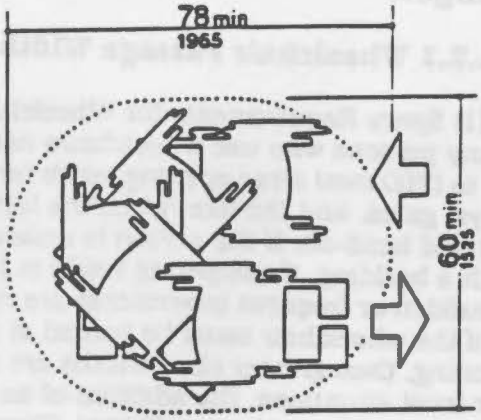
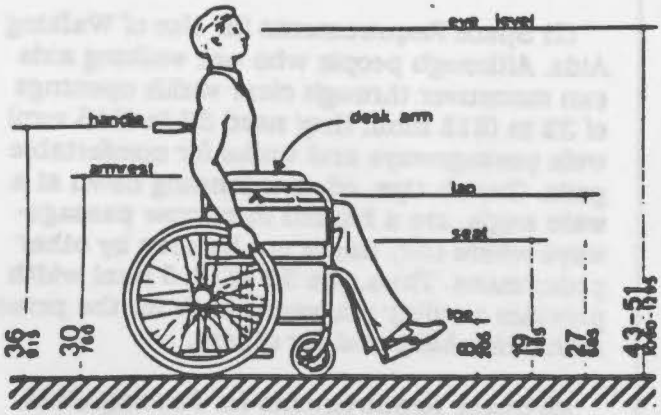
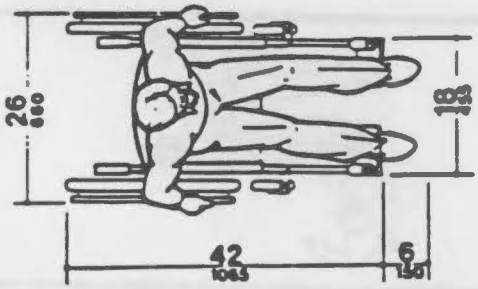


Fig. A2
Space Needed for Smooth U-Turn in a Wheelchair





NOTE: Footrests may extend further for tall people

Fig. A3
Dimensions of Adult-Sized Wheelchairs

straight ahead with arms swinging, need 32 in (815 mm) of width, which includes 2 in (50 mm) on either side for sway, and another 1 in (25 mm) tolerance on either side for clearing nearby objects or other pedestrians. Almost all wheelchair users and those who use walking aids can also manage within this 32 in (815 mm) width for short distances. Thus, two streams of traffic can pass in 64 in (1625 mm) in a comfortable flow. Sixty inches (1525 mm) provides a minimum width for a somewhat more restricted flow. If the clear width is less than 60 in (1525 mm), two wheelchair users will not be able to pass but will have to seek a wider place for passing. Forty-eight inches (1220 mm) is the minimum width needed for an ambulatory person to pass a nonambulatory or semi-ambulatory person. Within this 48 in (1220 mm) width, the ambulatory person will have to twist to pass a wheelchair user, a person with a *service animal*, or a

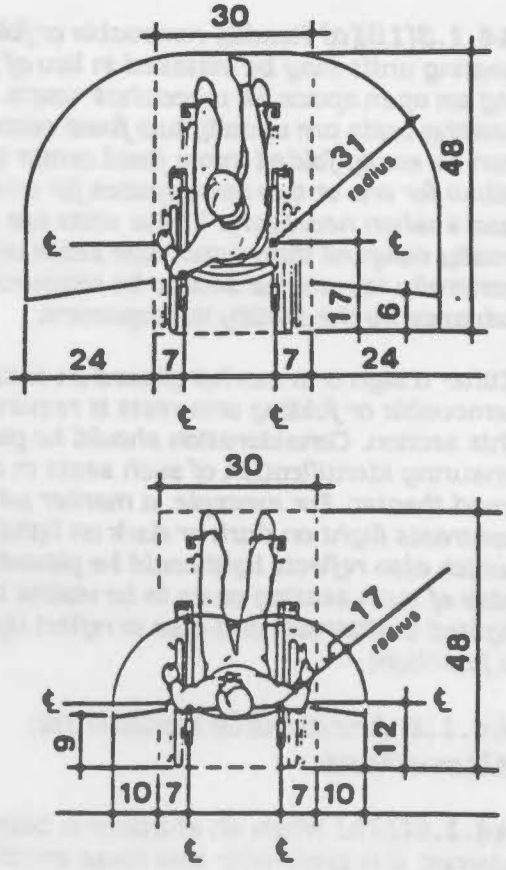


Fig. A3 (a)

semi-ambulatory person. There will be little leeway for swaying or missteps (see Fig. A1).

A4.2.3 Wheelchair Turning Space. *These guidelines specify* a minimum space of 60 in (1525 mm) diameter *or a 60 in by 60 in (1525 mm by 1525 mm) T-shaped space* for a pivoting 180-degree turn of a wheelchair. This space is usually satisfactory for turning around, but many people will not be able to turn without repeated tries and bumping into surrounding objects. The space shown in Fig. A2 will allow most wheelchair users to complete U-turns without difficulty.

A4.2.4 Clear Floor or Ground Space for Wheelchairs. The wheelchair and user shown in Fig. A3 represent typical dimensions for a large adult male. The space requirements in this *guideline* are based upon maneuvering clearances that will accommodate most wheelchairs. Fig. A3 provides a uniform reference for design not covered by this *guideline.*

A4.2.5 & A4.2.6 Reach. *Reach ranges for persons seated in wheelchairs may be further clarified by Fig. A3(a). These drawings approximate in the plan view the information shown in Fig. 4, 5, and 6.*

A4.3 Accessible Route.

A4.3.1 General.

(1) Travel Distances. Many people with mobility impairments can move at only very slow speeds; for many, traveling 200 ft (61 m) could take about 2 minutes. This assumes a rate of about 1.5 ft/s (455 mm/s) on level ground. It also assumes that the traveler would move continuously. However, on trips over 100 ft (30 m), disabled people are apt to rest frequently, which substantially increases their trip times. Resting periods of 2 minutes for every 100 ft (30 m) can be used to estimate travel times for people with severely limited stamina. In inclement weather, slow progress and resting can greatly increase a disabled person's exposure to the elements.

(2) Sites. Level, indirect routes or those with running slopes lower than 1:20 can sometimes provide more convenience than direct routes with maximum allowable slopes or with ramps.

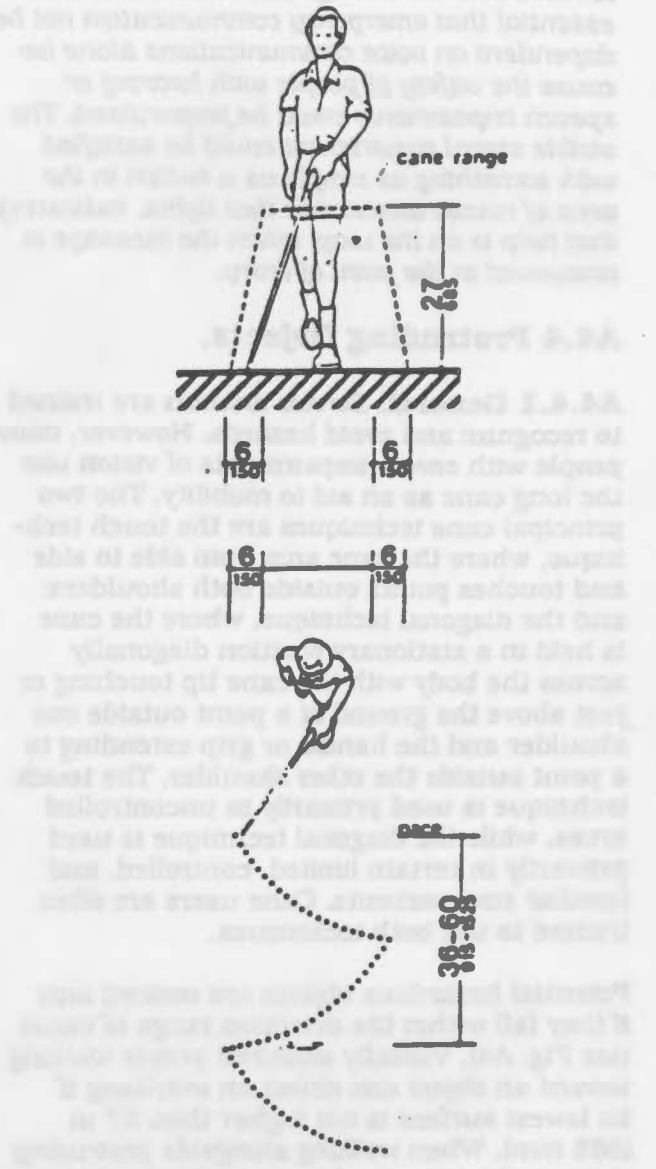


Fig. A4
Cane Technique

A4.3.10 Egress. Because people with disabilities may visit, be employed or be a resident in any building, emergency management plans with specific provisions to ensure their safe evacuation also play an essential role in fire safety and life safety.

A4.3.11.3 Stairway Width. *A 48 inch (1220 mm) wide exit stairway is needed to allow assisted evacuation (e.g., carrying a person in a wheelchair) without encroaching on the exit path for ambulatory persons.*

A4.3.11.4 Two-way Communication. *It is essential that emergency communication not be dependent on voice communications alone because the safety of people with hearing or speech impairments could be jeopardized. The visible signal requirement could be satisfied with something as simple as a button in the area of rescue assistance that lights, indicating that help is on the way, when the message is answered at the point of entry.*

A4.4 Protruding Objects.

A4.4.1 General. *Service animals* are trained to recognize and avoid hazards. However, most people with severe impairments of vision use the long cane as an aid to mobility. The two principal cane techniques are the touch technique, where the cane arcs from side to side and touches points outside both shoulders; and the diagonal technique, where the cane is held in a stationary position diagonally across the body with the cane tip touching or just above the ground at a point outside one shoulder and the handle or grip extending to a point outside the other shoulder. The touch technique is used primarily in uncontrolled areas, while the diagonal technique is used primarily in certain limited, controlled, and familiar environments. Cane users are often trained to use both techniques.

Potential hazardous objects are noticed only if they fall within the detection range of canes (see Fig. A4). Visually impaired people walking toward an object can detect an overhang if its lowest surface is not higher than 27 in (685 mm). When walking alongside *protruding* objects, they cannot detect overhangs. Since proper cane and *service animal* techniques keep people away from the edge of a path or from walls, a slight overhang of no more than 4 in (100 mm) is not hazardous.

A4.5 Ground and Floor Surfaces.

A4.5.1 General. *People who have difficulty walking or* maintaining balance *or who use crutches, canes, or walkers,* and those with restricted gaits are particularly sensitive to slipping and tripping hazards. For such people, a stable and regular surface is necessary for safe walking, particularly on stairs. Wheelchairs can be propelled most easily on surfaces that are hard, stable, and regular. Soft loose surfaces such as shag carpet, loose sand or gravel, wet clay, and irregular surfaces such as cobblestones can significantly impede wheelchair movement.

Slip resistance is based on the frictional force necessary to keep a shoe heel or crutch tip from slipping on a walking surface under conditions likely to be found on the surface. *While the dynamic coefficient of friction during walking varies in a complex and non-uniform way, the static coefficient of friction, which can be measured in several ways, provides a close approximation of the slip resistance of a surface. Contrary to popular belief, some slippage is necessary to walking, especially for persons with restricted gaits; a truly "non-slip" surface could not be negotiated.*

The Occupational Safety and Health Administration recommends that walking surfaces have a static coefficient of friction of 0.5. A research project sponsored by the Architectural and Transportation Barriers Compliance Board (Access Board) conducted tests with persons with disabilities and concluded that a higher coefficient of friction was needed by such persons. A static coefficient of friction of 0.6 is recommended for accessible routes and 0.8 for ramps.

It is recognized that the coefficient of friction varies considerably due to the presence of contaminants, water, floor finishes, and other factors not under the control of the designer or builder and not subject to design and construction guidelines and that compliance would be difficult to measure on the building site. Nevertheless, many common building materials suitable for flooring are now labeled with information on the static coefficient of friction. While it may not be possible to compare one product directly with another, or to guarantee a constant measure, builders and designers are encouraged to specify materials with appropriate values. As more products include information on slip resistance, improved uniformity in measurement and specification is likely. The Access Board's advisory guidelines on Slip Resistant Surfaces provides additional information on this subject.

Cross slopes on walks and ground or floor surfaces can cause considerable difficulty in propelling a wheelchair in a straight line.

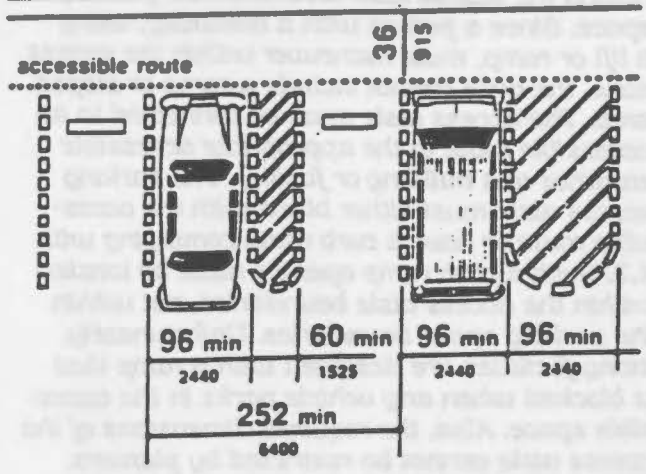
A4.5.3 Carpet. Much more needs to be done in developing both quantitative and qualitative criteria for carpeting *(i.e., problems associated with texture and weave need to be studied).* However, certain functional characteristics are well established. When both carpet and padding are used, it is desirable to have minimum movement (preferably none) between the floor and the pad and the pad and the carpet which would allow the carpet to hump or warp. In heavily trafficked areas, a thick, soft (plush) pad or cushion, particularly in combination with long carpet pile, makes it difficult for individuals in wheelchairs and those with other ambulatory disabilities to get about. Firm carpeting can be achieved through proper selection and combination of pad and carpet, sometimes with the elimination of the pad or cushion, and with proper installation. *Carpeting designed with a weave that causes a zig-zag effect when wheeled across is strongly discouraged.*

A4.6 Parking and Passenger Loading Zones.

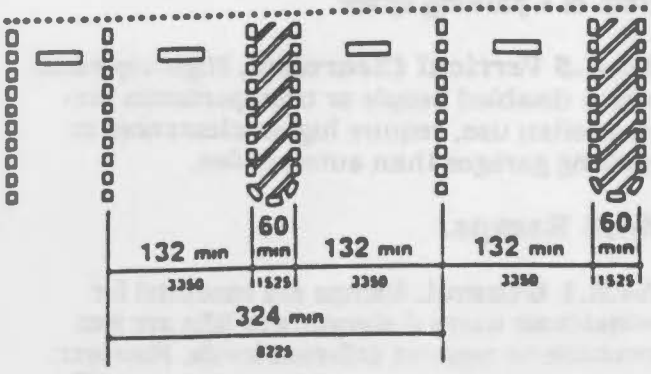
A4.6.3 Parking Spaces. *The increasing use of vans with side-mounted lifts or ramps by persons with disabilities has necessitated some revisions in specifications for parking spaces and adjacent access aisles. The typical accessible parking space is 96 in (2440 mm) wide with an adjacent 60 in (1525 mm) access aisle. However, this aisle does not permit lifts or ramps to be deployed and still leave room for a person using a wheelchair or other mobility aid to exit the lift platform or ramp. In tests conducted with actual lift/van/wheelchair combinations, (under a Board-sponsored Accessible Parking and Loading Zones Project) researchers found that a space and aisle totaling almost 204 in (5180 mm) wide was needed to deploy a lift and exit conveniently. The "van accessible" parking space required by these guidelines provides a 96 in (2440 mm) wide space with a 96 in (2440 mm) adjacent access aisle which is just wide enough to maneuver and exit from a side mounted lift. If a 96 in (2440 mm) access aisle is placed between two spaces, two "van accessible" spaces are created. Alternatively, if the wide access aisle is provided at the end of a row (an area often unused), it may be possible to provide the wide access aisle without additional space (see Fig. A5(a)).*

A sign is needed to alert van users to the presence of the wider aisle, but the space is not intended to be restricted only to vans.

"Universal" Parking Space Design. An alternative to the provision of a percentage of spaces with a wide aisle, and the associated need to include additional signage, is the use of what has been called the "universal" parking space design. Under this design, all accessible spaces are 132 in (3350 mm) wide with a 60 in (1525 mm) access aisle (see Fig. A5(b)). One



(a)
Van Accessible Space at End Row



(b)
Universal Parking Space Design

Fig. A5
Parking Space Alternatives

advantage to this design is that no additional signage is needed because all spaces can accommodate a van with a side-mounted lift or ramp. Also, there is no competition between cars and vans for spaces since all spaces can accommodate either. Furthermore, the wider space permits vehicles to park to one side or the other within the 132 in (3350 mm) space to allow persons to exit and enter the vehicle on either the driver or passenger side, although, in some cases, this would require exiting or entering without a marked access aisle.

An essential consideration for any design is having the access aisle level with the parking space. Since a person with a disability, using a lift or ramp, must maneuver within the access aisle, the aisle cannot include a ramp or sloped area. The access aisle must be connected to an accessible route to the appropriate accessible entrance of a building or facility. The parking access aisle must either blend with the accessible route or have a curb ramp complying with 4.7. Such a curb ramp opening must be located within the access aisle boundaries, not within the parking space boundaries. Unfortunately, many facilities are designed with a ramp that is blocked when any vehicle parks in the accessible space. Also, the required dimensions of the access aisle cannot be restricted by planters, curbs or wheel stops.

A4.6.4 Signage. Signs designating parking places for disabled people can be seen from a driver's seat if the signs are mounted high enough above the ground and located at the front of a parking space.

A4.6.5 Vertical Clearance. High-top vans, which disabled people or transportation services often use, require higher clearances in parking garages than automobiles.

A4.8 Ramps.

A4.8.1 General. Ramps are essential for wheelchair users if elevators or lifts are not available to connect different levels. However, some people who use walking aids have difficulty with ramps and prefer stairs.

A4.8.2 Slope and Rise. *Ramp slopes between 1:16 and 1:20 are preferred.* The ability to manage an incline is related to both its slope and its length. Wheelchair users with disabilities affecting their arms or with low stamina have serious difficulty using inclines. Most ambulatory people and most people who use wheelchairs can manage a slope of 1:16. Many people cannot manage a slope of 1:12 for 30 ft (9 m).

A4.8.4 Landings. *Level landings are essential toward maintaining an aggregate slope that complies with these guidelines. A ramp landing that is not level causes individuals using wheelchairs to tip backward or bottom out when the ramp is approached.*

A4.8.5 Handrails. The requirements for stair and ramp handrails in this *guideline* are for adults. When children are principal users in a building or facility, a second set of handrails at an appropriate height can assist them and aid in preventing accidents.

A4.9 Stairs.

A4.9.1 Minimum Number. *Only interior and exterior stairs connecting levels that are not connected by an elevator, ramp, or other accessible means of vertical access have to comply with 4.9.*

A4.10 Elevators.

A4.10.6 Door Protective and Reopening Device. The required door reopening device would hold the door open for 20 seconds if the doorway remains obstructed. After 20 seconds, the door may begin to close. However, if designed in accordance with *ASME A17.1-1990*, the door closing movement could still be stopped if a person or object exerts sufficient force at any point on the door edge.

A4.10.7 Door and Signal Timing for Hall Calls. This paragraph allows variation in the location of call buttons, advance time for warning signals, and the door-holding period used to meet the time requirement.

A4.10.12 Car Controls. Industry-wide standardization of elevator control panel design would make all elevators significantly more convenient for use by people with severe visual impairments. In many cases, it will be possible to locate the highest control on elevator panels within 48 in (1220 mm) from the floor.

A4.10.13 Car Position Indicators. A special button may be provided that would activate the audible signal within the given elevator only for the desired trip, rather than maintaining the audible signal in constant operation.

A4.10.14 Emergency Communications. A device that requires no handset is easier to use by people who have difficulty reaching. *Also, small handles on handset compartment doors are not usable by people who have difficulty grasping.*

Ideally, emergency two-way communication systems should provide both voice and visual display intercommunication so that persons with hearing impairments and persons with vision impairments can receive information regarding the status of a rescue. A voice intercommunication system cannot be the only means of communication because it is not accessible to people with speech and hearing impairments. While a voice intercommunication system is not required, at a minimum, the system should provide both an audio and visual indication that a rescue is on the way.

A4.11 Platform Lifts (Wheelchair Lifts).

A4.11.2 Other Requirements. *Inclined stairway chairlifts, and inclined and vertical platform lifts (wheelchair lifts) are available* for short-distance, vertical transportation of people with disabilities. Care should be taken in selecting lifts *as some lifts are not equally suitable for use by both wheelchair users and semi-ambulatory individuals.*

A4.12 Windows.

A4.12.1 General. *Windows intended to be operated by occupants in accessible spaces should comply with 4.12.*

A4.12.2 Window Hardware. *Windows requiring pushing, pulling, or lifting to open (for example, double-hung, sliding, or casement and awning units without cranks) should require no more than 5 lbf (22.2 N) to open or close. Locks, cranks, and other window hardware should comply with 4.27.*

A4.13 Doors.

A4.13.8 Thresholds at Doorways. Thresholds and surface height changes in doorways are particularly inconvenient for wheelchair users who also have low stamina or restrictions in arm movement because complex maneuvering is required to get over the level change while operating the door.

A4.13.9 Door Hardware. Some disabled persons must push against a door with their chair or walker to open it. Applied kickplates on doors with closers can reduce required maintenance by withstanding abuse from wheelchairs and canes. To be effective, they should cover the door width, less approximately 2 in (51 mm), up to a height of 16 in (405 mm) from its bottom edge and be centered across the *width of the door.*

A4.13.10 Door Closers. Closers with delayed action features give a person more time to maneuver through doorways. They are particularly useful on frequently used interior doors such as entrances to toilet rooms.

A4.13.11 Door Opening Force. Although most people with disabilities can exert at least 5 lbf (22.2N), both pushing and pulling from a stationary position, a few people with severe disabilities cannot exert 3 lbf (13.13N). Although some people cannot manage the allowable forces in this guideline and many others have difficulty, door closers must have certain minimum closing forces to close doors satisfactorily. Forces for pushing or pulling doors open are measured with a push-pull scale under the following conditions:

(1) Hinged doors: Force applied perpendicular to the door at the door opener or 30 in (760 mm) from the hinged side, whichever is farther from the hinge.

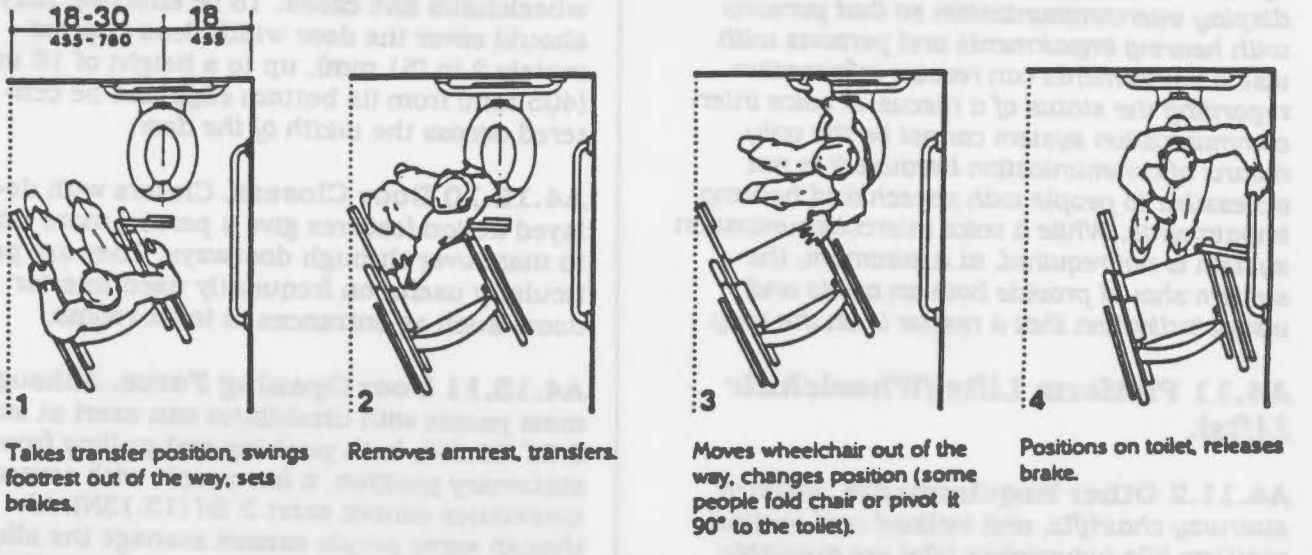
(2) Sliding or folding doors: Force applied parallel to the door at the door pull or latch.

(3) Application of force: Apply force gradually so that the applied force does not exceed the resistance of the door. In high-rise buildings, air-pressure differentials may require a modification of this specification in order to meet the functional intent.

A4.13.12 Automatic Doors and Power-Assisted Doors. Sliding automatic doors do not need guard rails and are more convenient for wheelchair users and visually impaired people to use. If slowly opening automatic doors can be reactivated before their closing cycle is completed, they will be more convenient in busy doorways.

A4.15 Drinking Fountains and Water Coolers.

A4.15.2 Spout Height. *Two drinking fountains, mounted side by side or on a single post, are usable by people with disabilities and people who find it difficult to bend over.*



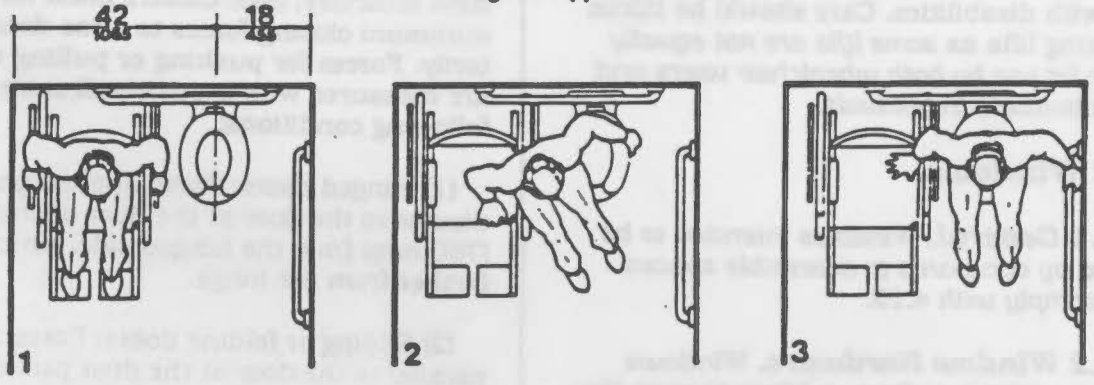
1 Takes transfer position, swings footrest out of the way, sets brakes.

2 Removes armrest, transfers.

3 Moves wheelchair out of the way, changes position (some people fold chair or pivot it 90° to the toilet).

4 Positions on toilet, releases brake.

(a)
Diagonal Approach



1 Takes transfer position, removes armrest, sets brakes.

2 Transfers.

3 Positions on toilet.

(b)
Side Approach

Fig. A6
Wheelchair Transfers

A4.16 Water Closets.

A4.16.3 Height. Height preferences for toilet seats vary considerably among disabled people. Higher seat heights may be an advantage to some ambulatory disabled people, but are often a disadvantage for wheelchair users and others. Toilet seats 18 in (455 mm) high seem to be a reasonable compromise. Thick seats and filler rings are available to adapt standard fixtures to these requirements.

A4.16.4 Grab Bars. Fig. A6(a) and (b) show the diagonal and side approaches most commonly used to transfer from a wheelchair to a water closet. Some wheelchair users can transfer from the front of the toilet while others use a 90-degree approach. Most people who use the two additional approaches can also use either the diagonal approach or the side approach.

A4.16.5 Flush Controls. Flush valves and related plumbing can be located behind walls or to the side of the toilet, or a toilet seat lid can be provided if plumbing fittings are directly behind the toilet seat. Such designs reduce the chance of injury and imbalance caused by leaning back against the fittings. Flush controls for tank-type toilets have a standardized mounting location on the left side of the tank (facing the tank). Tanks can be obtained by special order with controls mounted on the right side. If administrative authorities require flush controls for flush valves to be located in a position that conflicts with the location of the rear grab bar, then that bar may be split or shifted toward the wide side of the toilet area.

A4.17 Toilet Stalls.

A4.17.3 Size and Arrangement. *This section requires use of the 60 in (1525 mm) standard stall (Figure 30(a)) and permits the 36 in (915 mm) or 48 in (1220 mm) wide alternate stall (Figure 30(b)) only in alterations where provision of the standard stall is technically infeasible or where local plumbing codes prohibit reduction in the number of fixtures. A standard stall provides a clear space on one side of the water closet to enable persons who use wheelchairs to perform a side or diagonal transfer from the wheelchair to the water closet. However, some persons with disabilities who use mobility aids such as walkers, canes or crutches are better able to use the two parallel grab bars in the 36 in (915 mm) wide alternate stall to achieve a standing position.*

In large toilet rooms, where six or more toilet stalls are provided, it is therefore required that a 36 in (915 mm) wide stall with parallel grab bars be provided in addition to the standard stall required in new construction. The 36 in (915 mm) width is necessary to achieve proper use of the grab bars; wider stalls would position the grab bars too far apart to be easily used and narrower stalls would position the grab bars too close to the water closet. Since the stall is primarily intended for use by persons using canes, crutches and walkers, rather than wheelchairs, the length of the stall could be conventional. The door, however, must swing outward to ensure a usable space for people who use crutches or walkers.

A4.17.5 Doors. To make it easier for wheelchair users to close toilet stall doors, doors can be provided with closers, spring hinges, or a pull bar mounted on the inside surface of the door near the hinge side.

A4.19 Lavatories and Mirrors.

A4.19.6 Mirrors. If mirrors are to be used by both ambulatory people and wheelchair users, then they must be at least 74 in (1880 mm) high at their topmost edge. A single full length mirror can accommodate all people, including children.

A4.21 Shower Stalls.

A4.21.1 General. Shower stalls that are 36 in by 36 in (915 mm by 915 mm) wide provide additional safety to people who have difficulty maintaining balance because all grab bars and walls are within easy reach. Seated people use the walls of 36 in by 36 in (915 mm by 915 mm) showers for back support. Shower stalls that are 60 in (1525 mm) wide and have no curb may increase usability of a bathroom by wheelchair users because the shower area provides additional maneuvering space.

A4.22 Toilet Rooms.

A4.22.3 Clear Floor Space. *In many small facilities, single-user restrooms may be the only*

facilities provided for all building users. In addition, the guidelines allow the use of "unisex" or "family" accessible toilet rooms in alterations when technical infeasibility can be demonstrated. Experience has shown that the provision of accessible "unisex" or single-user restrooms is a reasonable way to provide access for wheelchair users and any attendants, especially when attendants are of the opposite sex. Since these facilities have proven so useful, it is often considered advantageous to install a "unisex" toilet room in new facilities in addition to making the multi-stall restrooms accessible, especially in shopping malls, large auditoriums, and convention centers.

Figure 28 (section 4.16) provides minimum clear floor space dimensions for toilets in accessible "unisex" toilet rooms. The dotted lines designate the minimum clear floor space, depending on the direction of approach, required for wheelchair users to transfer onto the water closet. The dimensions of 48 in (1220 mm) and 60 in (1525 mm), respectively, correspond to the space required for the two common transfer approaches utilized by wheelchair users (see Fig. A6). It is important to keep in mind that the placement of the lavatory to the immediate side of the water closet will preclude the side approach transfer illustrated in Figure A6(b).

To accommodate the side transfer, the space adjacent to the water closet must remain clear of obstruction for 42 in (1065 mm) from the centerline of the toilet (Figure 28) and the lavatory must not be located within this clear space. A turning circle or T-turn, the clear floor space at the lavatory, and maneuvering space at the door must be considered when determining the possible wall locations. A privacy latch or other accessible means of ensuring privacy during use should be provided at the door.

RECOMMENDATIONS:

1. In new construction, accessible single-user restrooms may be desirable in some situations because they can accommodate a wide variety of building users. However, they cannot be used in lieu of making the multi-stall toilet rooms accessible as required.

2. Where strict compliance to the guidelines for accessible toilet facilities is technically infeasible in the alteration of existing facilities, accessible "unisex" toilets are a reasonable alternative.

3. In designing accessible single-user restrooms, the provisions of adequate space to allow a side transfer will provide accommodation to the largest number of wheelchair users.

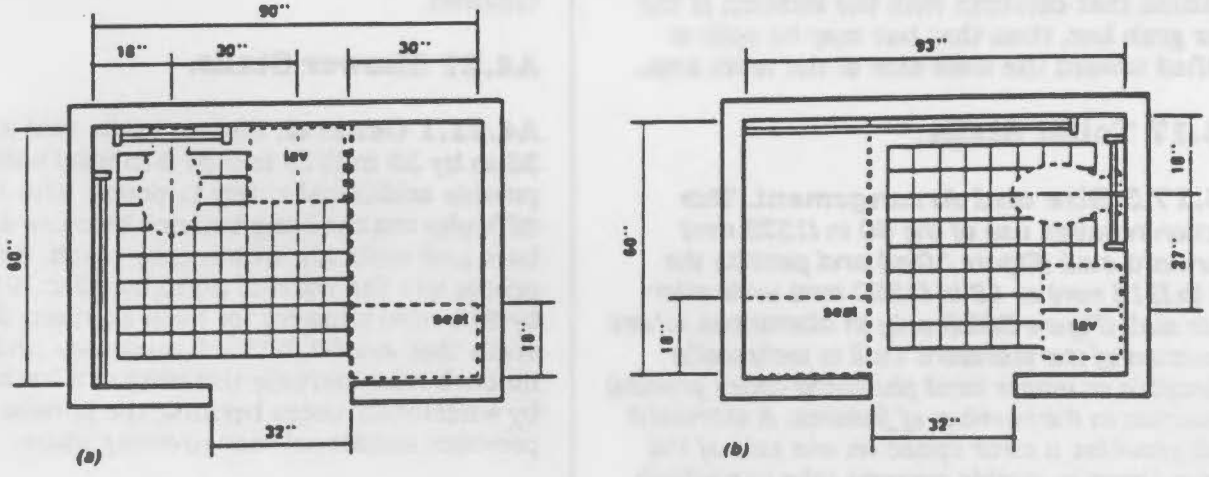


Fig. A7

A4.23 Bathrooms, Bathing Facilities, and Shower Rooms.

A4.23.3 Clear Floor Space. *Figure A7 shows two possible configurations of a toilet room with a roll-in shower. The specific shower shown is designed to fit exactly within the dimensions of a standard bathtub. Since the shower does not have a lip, the floor space can be used for required maneuvering space. This would permit a toilet room to be smaller than would be permitted with a bathtub and still provide enough floor space to be considered accessible. This design can provide accessibility in facilities where space is at a premium (i.e., hotels and medical care facilities). The alternate roll-in shower (Fig. 57b) also provides sufficient room for the "T-turn" and does not require plumbing to be on more than one wall.*

A4.23.9 Medicine Cabinets. Other alternatives for storing medical and personal care items are very useful to disabled people. Shelves, drawers, and floor-mounted cabinets can be provided within the reach ranges of disabled people.

A4.26 Handrails, Grab Bars, and Tub and Shower Seats.

A4.26.1 General. Many disabled people rely heavily upon grab bars and handrails to maintain balance and prevent serious falls. Many people brace their forearms between supports and walls to give them more leverage and stability in maintaining balance or for lifting. The grab bar clearance of 1-1/2 in (38 mm) required in this guideline is a safety clearance to prevent injuries resulting from arms slipping through the openings. It also provides adequate gripping room.

A4.26.2 Size and Spacing of Grab Bars and Handrails. This specification allows for alternate shapes of handrails as long as they allow an opposing grip similar to that provided by a circular section of 1-1/4 in to 1-1/2 in (32 mm to 38 mm).

A4.27 Controls and Operating Mechanisms.

A4.27.3 Height. *Fig. A8 further illustrates*

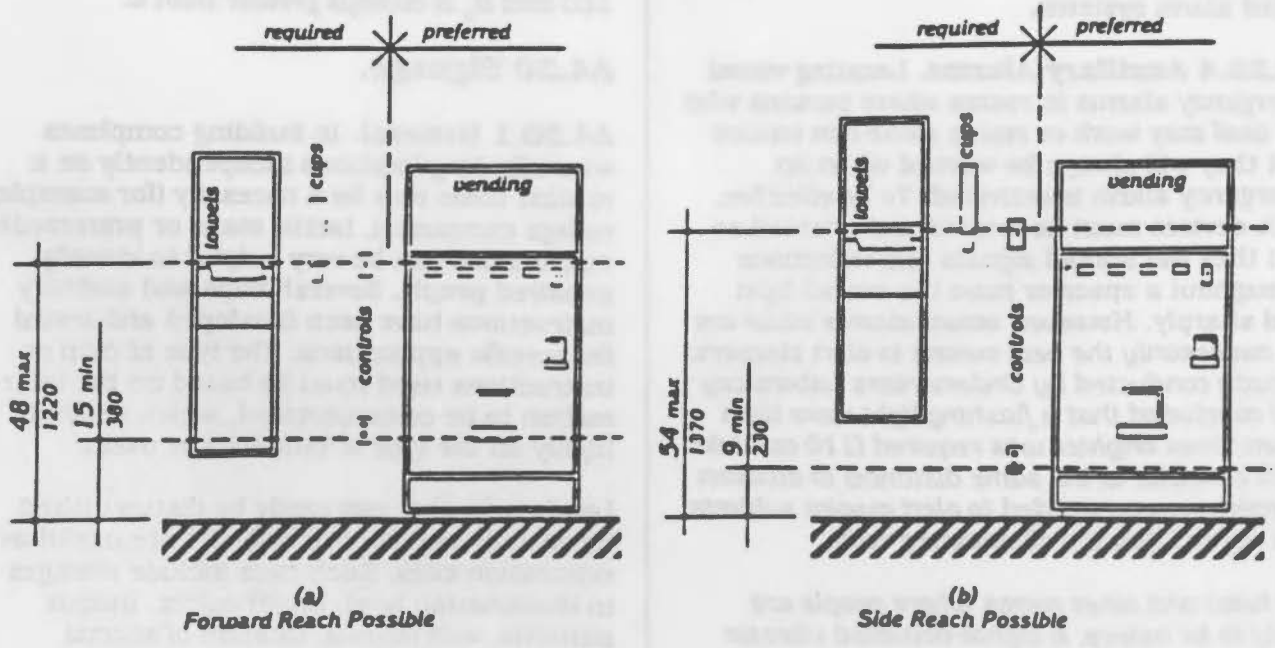


Fig. A8
Control Reach Limitations

mandatory and advisory control mounting height provisions for typical equipment.

Electrical receptacles installed to serve individual appliances and not intended for regular or frequent use by building occupants are not required to be mounted within the specified reach ranges. Examples would be receptacles installed specifically for wall-mounted clocks, refrigerators, and microwave ovens.

A4.28 Alarms.

A4.28.2 Audible Alarms. Audible emergency signals must have an intensity and frequency that can attract the attention of individuals who have partial hearing loss. People over 60 years of age generally have difficulty perceiving frequencies higher than 10,000 Hz. *An alarm signal which has a periodic element to its signal, such as single stroke bells (clang-pause-clang-pause), hi-low (up-down-up-down) and fast whoop (on-off-on-off) are best. Avoid continuous or reverberating tones. Select a signal which has a sound characterized by three or four clear tones without a great deal of "noise" in between.*

A4.28.3 Visual Alarms. The specifications in this section do not preclude the use of zoned or coded alarm systems.

A4.28.4 Auxiliary Alarms. Locating visual emergency alarms in rooms where persons who are deaf may work or reside alone can ensure that they will always be warned when an emergency alarm is activated. To be effective, such devices must be located and oriented so that they will spread signals and reflections throughout a space or raise the overall light level sharply. *However, visual alarms alone are not necessarily the best means to alert sleepers. A study conducted by Underwriters Laboratory (UL) concluded that a flashing light more than seven times brighter was required (110 candela v. 15 candela, at the same distance) to awaken sleepers as was needed to alert awake subjects in a normal daytime illuminated room.*

For hotel and other rooms where people are likely to be asleep, a signal-activated vibrator placed between mattress and box spring or under a pillow was found by UL to be much more effective in alerting sleepers. Many readily available devices are sound-activated so that they could respond to an alarm clock, clock radio, wake-up telephone call or room smoke detector. Activation by a building alarm system can either be accomplished by a separate circuit activating an auditory alarm which would, in turn, trigger the vibrator or by a signal transmitted through the ordinary 110-volt outlet. Transmission of signals through the power line is relatively simple and is the basis of common, inexpensive remote light control systems sold in many department and electronic stores for home use. So-called "wireless" intercoms operate on the same principal.

A4.29 Detectable Warnings.

A4.29.2 Detectable Warnings on Walking Surfaces. *The material used to provide contrast should contrast by at least 70%. Contrast in percent is determined by:*

$$Contrast = [(B_1 - B_2)/B_1] \times 100$$

where B_1 = light reflectance value (LRV) of the lighter area
and B_2 = light reflectance value (LRV) of the darker area.

Note that in any application both white and black are never absolute; thus, B_1 never equals 100 and B_2 is always greater than 0.

A4.30 Signage.

A4.30.1 General. In building complexes where finding locations independently on a routine basis may be a necessity (for example, college campuses), tactile maps or prerecorded instructions can be very helpful to visually impaired people. Several maps and auditory instructions have been developed and tested for specific applications. The type of map or instructions used must be based on the information to be communicated, which depends highly on the type of buildings or users.

Landmarks that can easily be distinguished by visually impaired individuals are useful as orientation cues. Such cues include changes in illumination level, bright colors, unique patterns, wall murals, location of special equipment or other architectural features.

Many people with disabilities have limitations in movement of their heads and reduced peripheral vision. Thus, signage positioned

perpendicular to the path of travel is easiest for them to notice. People can generally distinguish signage within an angle of 30 degrees to either side of the centerlines of their faces without moving their heads.

A4.30.2 Character Proportion. The legibility of printed characters is a function of the viewing distance, character height, the ratio of the stroke width to the height of the character, the contrast of color between character and background, and print font. The size of characters must be based upon the intended viewing distance. A severely nearsighted person may have to be much closer to recognize a character of a given size than a person with normal visual acuity.

A4.30.4 Raised and Brailled Characters and Pictorial Symbol Signs (Pictograms). *The standard dimensions for literary Braille are as follows:*

Dot diameter	*.059 in.*
Inter-dot spacing	*.090 in.*
Horizontal separation between cells	*.241 in.*
Vertical separation between cells	*.395 in.*

Raised borders around *signs containing* raised characters may make them confusing to read unless the border is set far away from the characters. *Accessible signage with descriptive materials about public buildings, monuments, and objects of cultural interest may not provide sufficiently detailed and meaningful information. Interpretive guides, audio tape devices, or other methods may be more effective in presenting such information.*

A4.30.5 Finish and Contrast. *An eggshell finish (11 to 19 degree gloss on 60 degree glossimeter) is recommended. Research indicates that signs are more legible for persons with low vision when characters contrast with their background by at least 70 percent. Contrast in percent shall be determined by:*

$$Contrast = [(B_1 - B_2)/B_1] \times 100$$

where B_1 = light reflectance value (LRV) of the lighter area
and B_2 = light reflectance value (LRV) of the darker area.

Note that in any application both white and black are never absolute: thus, B_1 never equals 100 and B_2 is always greater than 0.

The greatest readability is usually achieved through the use of light-colored characters or symbols on a dark background.

A4.30.7 Symbols of Accessibility for Different Types of Listening Systems. *Paragraph 4 of this section requires signage indicating the availability of an assistive listening system. An appropriate message should be displayed with the international symbol of access for hearing loss since this symbol conveys general accessibility for people with hearing loss. Some suggestions are:*

INFRARED
ASSISTIVE LISTENING SYSTEM
AVAILABLE
——PLEASE ASK——

AUDIO LOOP IN USE
TURN T-SWITCH FOR
BETTER HEARING
——OR ASK FOR HELP——

FM
ASSISTIVE LISTENING
SYSTEM AVAILABLE
——PLEASE ASK——

The symbol may be used to notify persons of the availability of other auxiliary aids and services such as: real time captioning, captioned note taking, sign language interpreters, and oral interpreters.

A4.30.8 Illumination Levels. *Illumination levels on the sign surface shall be in the 100 to 300 lux range (10 to 30 footcandles) and shall be uniform over the sign surface. Signs shall be located such that the illumination level on the surface of the sign is not significantly exceeded by the ambient light or visible bright lighting source behind or in front of the sign.*

A4.31 Telephones.

A4.31.3 Mounting Height. In localities where the dial-tone first system is in operation, calls can be placed at a coin telephone through the operator without inserting coins. The operator button is located at a height of 46 in (1170 mm) if the coin slot of the telephone is at 54 in (1370 mm). A generally available public telephone with a coin slot mounted lower on the equipment would allow universal installation of telephones at a height of 48 in (1220 mm) or less to all operable parts.

A4.31.9 Text Telephones. *A public text telephone may be an integrated text telephone pay phone unit or a conventional portable text telephone that is permanently affixed within, or adjacent to, the telephone enclosure. In order to be usable with a pay phone, a text telephone which is not a single integrated text telephone pay phone unit will require a shelf large enough (10 in (255mm) wide by 10 in (255 mm) deep with a 6 in (150 mm) vertical clearance minimum) to accommodate the device, an electrical outlet, and a power cord. Movable or portable text telephones may be used to provide equivalent facilitation. A text telephone should be readily available so that a person using it may access the text telephone easily and conveniently. As currently designed pocket-type text telephones for personal use do not accommodate a wide range of users. Such devices would not be considered substantially equivalent to conventional text telephones. However, in the future as technology develops this could change.*

A4.32 *Fixed or Built-in* Seating and Tables.

A4.32.4 Height of *Tables or Counters*. Different types of work require different *table or counter* heights for comfort and optimal performance. Light detailed work such as writing requires a *table or counter* close to elbow height for a standing person. Heavy manual work such as rolling dough requires a *counter or table* height about 10 in (255 mm) below elbow height for a standing person. This principle of *high/low table or counter heights* also applies for seated persons; however, the limiting condition for seated manual work is clearance under the *table or counter*.

Table A1 shows convenient *counter heights* for seated persons. The great variety of heights for comfort and optimal performance indicates a need for alternatives or a compromise in height if people who stand and people who sit will be using the same counter area.

Table A1
Convenient Heights of Tables and Counters for Seated People[1]

Conditions of Use	Short Women in mm		Tall Men in mm	
Seated in a wheelchair:				
Manual work–				
Desk or removable armrests	26	660	30	760
Fixed, full-size armrests[2]	32[3]	815	32[3]	815
Light detailed work:				
Desk or removable armrests	29	735	34	865
Fixed, full-size armrests[2]	32[3]	815	34	865
Seated in a 16-in. (405-mm)				
High chair:				
Manual work	26	660	27	685
Light detailed work	28	710	31	785

[1] All dimensions are based on a work-surface thickness of 1 1/2 in (38 mm) and a clearance of 1 1/2 in (38 mm) between legs and the underside of a work surface.

[2] This type of wheelchair arm does not interfere with the positioning of a wheelchair under a work surface.

[3] This dimension is limited by the height of the armrests: a lower height would be preferable. Some people in this group prefer lower work surfaces, which require positioning the wheelchair back from the edge of the counter.

A4.33 Assembly Areas.

A4.33.2 Size of Wheelchair Locations. Spaces large enough for two wheelchairs allow people who are coming to a performance together to sit together.

A4.33.3 Placement of Wheelchair Locations. The location of wheelchair areas can be planned so that a variety of positions

within the seating area are provided. This will allow choice in viewing and price categories.

Building/life safety codes set minimum distances between rows of fixed seats with consideration of the number of seats in a row, the exit aisle width and arrangement, and the location of exit doors. "Continental" seating, with a greater number of seats per row and a commensurate increase in row spacing and exit doors, facilitates emergency egress for all people and increases ease of access to mid-row seats especially for people who walk with difficulty. Consideration of this positive attribute of "continental" seating should be included along with all other factors in the design of fixed seating areas.

Table A2. Summary of Assistive Listening Devices

System	Advantages	Disadvantages	Typical Applications
Induction Loop Transmitter: Transducer wired to induction loop around listening area. Receiver: Self-contained induction receiver or personal hearing aid with telecoil.	Cost-Effective Low Maintenance Easy to use Unobtrusive May be possible to integrate into existing public address system. Some hearing aids can function as receivers.	Signal spills over to adjacent rooms. Susceptible to electrical interference. Limited portability Inconsistent signal strength. Head position affects signal strength. Lack of standards for induction coil performance.	Meeting areas Theaters Churches and Temples Conference rooms Classrooms TV viewing
FM Transmitter: Flashlight-sized worn by speaker. Receiver: With personal hearing aid via DAI or induction neck-loop and telecoil; or self-contained with earphone(s).	Highly portable Different channels allow use by different groups within the same room. High user mobility Variable for large range of hearing losses.	High cost of receivers Equipment fragile Equipment obtrusive High maintenance Expensive to maintain Custom fitting to individual user may be required.	Classrooms Tour groups Meeting areas Outdoor events One-on-one
Infrared Transmitter: Emitter in line-of-sight with receiver. Receiver: Self-contained. Or with personal hearing aid via DAI or induction neckloop and telecoil.	Easy to use Insures privacy or confidentiality Moderate cost Can often be integrated into existing public address system.	Line-of-sight required between emitter and receiver. Ineffective outdoors Limited portability Requires installation	Theaters Churches and Temples Auditoriums Meetings requiring confidentiality TV viewing

Source: Rehab Brief, National Institute on Disability and Rehabilitation Research, Washington, DC, Vol. XII, No. 10, (1990).

A4.33.6 Placement of Listening Systems. A distance of 50 ft (15 m) allows a person to distinguish performers' facial expressions.

A4.33.7 Types of Listening Systems. *An assistive listening system appropriate for an assembly area for a group of persons or where the specific individuals are not known in advance, such as a playhouse, lecture hall or movie theater, may be different from the system appropriate for a particular individual provided as an auxiliary aid or as part of a reasonable accommodation. The appropriate device for an individual is the type that individual can use, whereas the appropriate system for an assembly area will necessarily be geared toward the "average" or aggregate needs of various individuals.* A listening system that can be used from any seat in a seating area is the most flexible way to meet this specification. Earphone jacks with variable volume controls can benefit only people who have slight hearing loss and do not help people who use hearing aids. At the present time, *magnetic induction* loops are the most feasible type of listening system for people who use hearing aids *equipped with "T-coils,"* but people without hearing aids or those with hearing aids not equipped with inductive pick-ups cannot use them *without special receivers.* Radio frequency systems can be extremely effective and inexpensive. People without hearing aids can use them, but people with hearing aids need a special receiver to use them as they are presently designed. If hearing aids had a jack to allow a by-pass of microphones, then radio frequency systems would be suitable for people with and without hearing aids. Some listening systems may be subject to interference from other equipment and feedback from hearing aids of people who are using the systems. Such interference can be controlled by careful engineering design that anticipates feedback sources in the surrounding area.

Table A2, reprinted from a National Institute of Disability and Rehabilitation Research "Rehab Brief," shows some of the advantages and disadvantages of different types of assistive listening systems. In addition, the Architectural and Transportation Barriers Compliance Board (Access Board) has published a pamphlet on Assistive Listening Systems which lists demonstration centers across the country where technical assistance can be obtained in selecting and installing appropriate systems. The state of New York has also adopted a detailed technical specification which may be useful.

A5.0 Restaurants and Cafeterias.

A5.1 General. *Dining counters (where there is no service) are typically found in small carry-out restaurants, bakeries, or coffee shops and may only be a narrow eating surface attached to a wall. This section requires that where such a dining counter is provided, a portion of the counter shall be at the required accessible height.*

A7.0 Business and Mercantile.

A7.2(3) Assistive Listening Devices. *At all sales and service counters, teller windows, box offices, and information kiosks where a physical barrier separates service personnel and customers, it is recommended that at least one permanently installed assistive listening device complying with 4.33 be provided at each location or series. Where assistive listening devices are installed, signage should be provided identifying those stations which are so equipped.*

A7.3 Check-out Aisles. *Section 7.2 refers to counters without aisles; section 7.3 concerns check-out aisles. A counter without an aisle (7.2) can be approached from more than one direction such as in a convenience store. In order to use a check-out aisle (7.3), customers must enter a defined area (an aisle) at a particular point, pay for goods, and exit at a particular point.*

SENSITIVITY AND COMMUNICATION TRAINING FOR PERSONNEL

ELEANOR M. STROMBERG, PH.D.

ABC's of the ADA, Washington, D.C., May 1-3, 1992

The make-or-break component of ADA consultation.

What potential clients ask for in disability awareness training.

The Harris Poll and the element of discomfort.

- Beyond the stereotypes
- Comfortizing the public

Who are <u>people</u> with disabilities?

- Real life stories
  - Show 'n tell or .....
    - Take along real clients with real disabilities
- Populations
- Demographics
  - National
  - Local

What happens in hearing, speech or language disabilities?

Articulating the obvious (to us)

Nature and effects of communication disabilities

Range of severity

Variety of needs

What are the problems?

General barriers to communication

Communication barriers specific to training site

How to identify a potential problem or a problem in progress.

How can you help?

General accessibility to communication

Communication access specific to training site

What auxiliary aids are available?

General applications

Applications at training site

Capabilities and limitations of auxiliary aids

Costs of auxiliary aids and where available

Importance of maintenance program for auxiliary aids

Community resources and materials.

Working with Consumers in Advocacy

Robert Williams

STATE LISTINGS OF CENTERS FOR INDEPENDENT LIVING

Listed below are many Centers for Independent Living around the country. This list, however, is not exhaustive. To locate additional centers, consult a local telephone directory or contact the following two organizations: The National Council on Independent Living, 4th and Broadway, Troy Atrium, Troy, NY, 12180, (518) 274-1979 (Voice) or (518) 274-0701 (TDD); (2) Independent Living Research Utilization, 2323 S. Shepherd, Suite 1000, Houston, TX, 77019, (713) 520-5136 (Voice) or (713) 520-5136 (TDD).

ALABAMA

Independent Living Center
3421 Fifth Ave., South, Birmingham, AL 35222
(205) 251-2223 (Voice) or (205) 251-0605 (TDD)

ALASKA

Alaska Division of Vocational Rehabilitation -- Independent Living Service
3600 Bragaw St., Anchorage, AK 99508
(907) 561-4466 (Voice) or (907) 563-1992 (TDD)

Access Alaska, Inc.
3710 Woodland Dr., Suite 900, Anchorage, AK 99517
(907) 248-4777 (Voice) or (907) 248-0638 (TDD)

Hope Cottages, Inc.
540 West Int'l Airport Rd., #100, Anchorage, AK 99518-1110
(907) 561-5335 (Voice) or (907) 564-7445 (TDD)

Access Alaska--Outreach Office
3550 Airport Way #3, Fairbanks AK 99709
(907) 479-7940 (Voice/TDD)

The Community Mental Health Center
P.O. Box 2474, Homer, AK 99603
(907) 235-7911 (Voice/TDD)

Southeast Alaska Independent Living
9085 Glacier Hwy., #203, Juneau, AK 99801
(907) 789-9665 (Voice) or (907) 789-9597 (TDD)

ARIZONA

Arizona Bridge to Independent Living
1229 East Washington St., Phoenix, AZ 85034
(602) 256-2245 (Voice/TDD)

Community Outreach Program
268 West Adams St., Tucson, AZ 85705

(602) 792-1906 (Voice/TDD)

Disability Resource Center/Tucson
1023 North Tyndall Ave., Tucson, AZ 85719
(602) 624-6452 (Voice/TDD)

Services to Advance Independent Living
1700 South First Ave., Suite 100, Yuma, AZ 85364
(602) 783-3308 (Voice/TDD)

ARKANSAS

Mainstream Living
1501 South Main, Suite 111, Little Rock, AR 72202
(501) 371-0012 (Voice) or (501) 371-0012 (TDD)

Our Way, Inc.
10434 West 36th St., Little Rock, AR 72204
(501) 225-5030 (Voice) or (501) 225-5190 (TDD)

Twin River Community Living Facility
201 Dodd Creek Rd., Mountain Home, AR 72653
(501) 425-4515

CALIFORNIA

Alternative Training & Learning Center
10070 South Gilbert St., Anaheim, CA 92804
(714) 991-3662

Dayle McIntosh Center
150 West Cerritos, Bldg. 4, Anaheim, CA 92805
(714) 772-8285 (Voice) or (714) 772-8366 (TDD)

Independent Living Center of Southern California
14 South Chester, Bakersfield, CA 93304
(805) 325-1063 (Voice) or (805) 325-3092 (TDD)

Center for Independence of the Disabled
875 O'Neill Ave., Belmont, CA 94002
(415) 595-0783 (Voice) or (415) 595-0787 (TDD)

Center for Independent Living
2539 Telegraph Ave., Berkeley, CA 94704
(510) 841-4776 (Voice) or (510) 848-3101 (TDD)

Independent Living Services of Northern California
555 Rio Lindo Ave., Suite B, Chico, CA 95926
(916) 893-8527 (Voice/TDD)

Center for Independent Living
623 West Foothill Blvd., Glendora, CA 91740
(818) 335-7880 (Voice) or (818) 335-8616 (TDD)

Southeast Center for Independent Living (SECIL)
12458 Rizes Ave., Downey, CA 90242
(213) 862-6531

Humboldt Access Project, Inc.
2107 3rd St., Eureka, CA 95501
(707) 445-8404 (Voice/TDD)

California Association of the Physically Handicapped
1617 East Saginaw Way #109, Fresno, CA 93704
(209) 222-2274 (Voice) or (209) 222-2396 (TDD)

Foundation of Resources for Equal Employment for the Disabled
154 Hughes Rd. #1, Grass Valley, CA 95945
(916) 272-1732 (Voice) or (916) 272-1733 (TDD)

Community Resources for Independent Living
439 A St., Hayward, CA 94541
(415) 881-5743 (Voice/TDD)

Independent Living Center of Southern California, Inc.
356-B East Ave. K4, Lancaster, CA 93535
(805) 945-6602 (Voice) or (805) 945-6604 (TDD)

Disabled Resources Center, Inc.
2750 East Spring St., Suite 100, Long Beach, CA 90806
(213) 427-1000 (Voice) (213) 427-1366 (TDD)

Social and Independent Living Skills Program
11301 Mailcode 691-B117A, Wilshire Blvd., Los Angeles, CA 90073
(213) 824-3277

Community Rehabilitation Services
4716 Brooklyn Ave., Bldg B, Rm 15, Los Angeles, CA 90022
(213) 266-0453 (Voice) (213) 266-0545 (TDD)

Westside Center for Independent Living
12901 Venice Blvd., Los Angeles, CA 90066
(213) 390-3611 (Voice) (213) 398-9204 (TDD)

Modesto Independent Living Center
1207 13th St., Suite 2, Modesto, CA 95354
(209) 521-7260

Independent Living Resource
2637 Pleasant Hill Rd., Pleasant Hill, CA 94523
(415) 935-4571 (Voice) (415) 935-5126 (TDD)

Riverside Center for Independent Living
6974 Brockton Ave., Suite 101, Riverside, CA 92506
(714) 682-0230 (Voice/TDD)

Resources for Independent Living
1211 H St. #B, Sacramento, CA 95814
(916) 446-3074 (Voice/TDD)

Community Resources for the Disabled
234 Capitol St., Suite A, Salinas, CA 93901
(408) 757-2968 (Voice) or (408) 757-2968 (TDD)

Rolling Start, Inc.
536 West 11th. San Bernadino, CA 92410
(714) 884-2129 (Voice) or (714) 884-0937 (TDD)

Community Service Center for the Disabled
1295 University Ave. #10, San Diego, CA 92103-3333
(619) 293-3500 (Voice) or (619) 293-7757 (TDD)

Independent Living Resource Center - San Francisco
70 10th St., San Francisco, CA 94103
(415) 863-0581 (Voice) or (415) 863-1367 (TDD)

Marin Center for Independent Living
710 4th St., San Rafael, CA 94901
(415) 459-6245 (Voice/TDD)

Independent Living Resource Center
423 West Victoria, Santa Barbara, CA 93101
(805) 963-1359 (Voice/TDD)

Adult Independence Development Center
1190 Benton St., Santa Clara, CA 95050
(408) 985-1243 (Voice) or (408) 985-9243 (TDD)

Community Resources for the Disabled
340 Soquel Ave., Suite 115, Santa Cruz, CA 95062
(408) 429-9969 (Voice/TDD)

Community Resources for Independence
2999 Cleveland Ave., Suite D, Santa Rosa, CA 95403-2715
(707) 528-2745 (Voice) or (707) 528-2151 (TDD)

UCP Adult Activity Center
347 East Poplar, Stockton, CA 95202
(209) 464-4817

Independent Living Center of Southern California
14354 Haynes St., Van Nuys, CA 91401
(818) 988-9525 (Voice) or (818) 988-3533 (TDD)

COLORADO

San Luis Valley Comprehensive Community Mental Health Center
1015 4th St., Alamosa, CO 81101
(719) 589-3673

Center for People with Disabilities
948 North St., Suite 7, Boulder, CO 80304
(303) 442-8662 (Voice/TDD)

Atlantis Community, Inc.

1120 North Circle Drive, #16, Colorado Springs, CO 80909-3101
(719) 520-9511 (Voice) or (719) 520-9514 (TDD)

Colorado Springs Independence Center
405 East Colorado Ave., Suite 101, Colorado Springs, CO 80903
(719) 471-8181 (Voice/TDD)

Atlantis Community, Inc.
12 Broadway, Denver, CO 80203-3195
(303) 733-9324

Mental Health Corporation of Denver
4353 East Colfax Ave., Denver, CO 80220
(303) 320-5701 (Voice/TDD)

Denver Center for Independent Living
455 Sherman St., Suite 140, Denver, CO 80203
(303) 698-1900 (Voice) or (303) 698-2859 (TDD)

The Center on Deafness
1900 Grant St., Suite 1010, Denver, CO 80203
(303) 839-8022 (Voice/TDD)

Southwest Center for Independence
3101 North Main Ave., Durango, CO 81301
(303) 259-1672

Disabled Resource Services
424 Pine, Suite 101, Ft. Collins, CO 80524
(303) 482-2700 (Voice) or (303) 482-2723 (TDD)

Center for Independence
835 Colorado Ave., Grand Junction, CO 81501
(303) 241-0315 (Voice/TDD)

Choices for Independent Living
1020 9th St., Suite 206, Greeley, CO 80631
(303) 356-3326

Greeley Center for Independence
1734 8th Ave., Greeley, CO 80631
(303) 352-8484

Northern Colorado Center on Deafness
800 Eighth Ave., Suite 323, Greeley, CO 80631
(303) 352-8682 (Voice/TDD)

The Sangre De Christo Independent Living Center
3238 Knuckolls Ave., Pueblo, CO 81005
(303) 564-1133

CONNECTICUT

Independence Unlimited, Inc.
900 Asylum Ave., #490, Hartford, CT 06105

(203) 549-1330 (Voice) or (203) 549-3915 (TDD)

Center for Independence & Access
105 Court St., Rm. 302, New Haven, CT 06511
(203) 562-3924 (Voice/TDD)

Chapel Haven, Inc.
1040 Whalley Ave., New Haven, CT 06515
(203) 397-1714

Center for Independent Living of Southwestern Connecticut
959 Main St., Stratford, CT 06497
(203) 378-6977

New Horizons, Inc.
37 Bliss Memorial Rd., Unionville, CT 06085
(203) 675-4711

Independence Northwest
581 Wolcott St., Waterbury, CT 06705
(203) 573-1080 (Voice/TDD)

DELAWARE

Easter Seal Center for Independent Living,
61 Corporate Circle, New Castle Corp. Commons, New Castle, DE 19720
(302) 324-4444 (Voice)

Independent Living, Inc.
818 South Broom St., Wilmington, DE 19805
(302) 429-6693

FLORIDA

Pinellas Center for the Visually Impaired
1610 North Myrtle Ave., Clearwater, FL 34615
(813) 461-4006

Briarwood Center for Independent Living
1023 S.E. 4th Ave., Gainesville, FL 32601
(904) 378-7474 (Voice) or (904) 376-1237 (TDD)

Cathedral Center for Independent Living/Memorial Regional Rehab.
3599 University Blvd., Jacksonville, FL 32216
(904) 354-3378

Opportunity Development Inc., Center for Independent Living
3967 University Blvd., South, Jacksonville, FL 32216
(904) 731-3020 (Voice/TDD)

Center for Survival & Independent Living
1335 N.W. 14th St., Miami, FL 33125
(305) 547-5444 (Voice) or (305) 547-4917 (TDD)

Center for Independent Living of Northwest Florida, Inc.
513 East Fairfield Dr., Pensacola, FL 32503
(904) 435-9343 (Voice) or (904) 435-9328 (TDD)

Alternative Rehabilitation Approaches
P.O. Box 5010, Pompano Beach, FL 33074-5010
(305) 786-1744

Space Coast Assn. for the Physically Handicapped Inc.
1825A Cogswell, Rockledge, FL 32955-3210
(407) 633-6182 (Voice/TDD) or (407) 633-6282 (TDD Relay)

Center for Independent Living of North Florida
1380 Ocala Rd., Bldg. 4, Tallahassee, FL 32304
(904) 575-9621 (Voice/TDD)

Independence for the Blind
1278 Taul Russel Rd., Tallahasse, FL 32301
(904) 942-3658 (Voice) or (904) 942-4518 (TDD)

Self-Reliance, Inc., Center for Independent Living
12310 North Nebraska Ave., #F, Tampa, FL 33612
(813) 975-6560 (Voice/TDD)

Tampa Lighthouse for the Blind
1106 West Platt St., Tampa, FL 33606
(813) 251-2407

Coalition for Independent Living Options
2326 South Congress Ave., 1-F, Winter Park, FL 33406-7652
(407) 966-4288

Center for Independent Living in Central Fla., Inc.
720 North Denning Dr., Winter Park, FL 32789
(407) 623-1070 (Voice) or (407) 623-1185 (TDD)

GEORGIA

Independent Living Program (ILP; SW District)
P.O. Box 1606, Albany, GA 31702
(912) 430-4945 (Voice) or (912) 430-4926 (TDD)

Atlanta Center for Independent Living
1201 Glenwood Ave., Southeast, Atlanta, GA 30316-1939
(404) 656-2952 (Voice) or (404) 656-5911 (TDD)

Division of Rehabilitation Services
878 Peachtree St., Northeast, Rm. 702, Atlanta, GA 30309-3997
(404) 894-7553 (Voice) or (404) 894-7555 (TDD)

Western District Independent Living Services
Division of Rehabilitation Services
233 12th St., Suite 700, Columbus, GA 31901
(404) 649-7400 (Voice/TDD)

Northern District Independent Living Services
Division of Rehabilitation Services
P.O. Box 658, Gainesville, GA 30503
(404) 535-5468 (Voice/TDD)

Eastern District Independent Living Services
Division of Rehabilitation Services
1727 Wrightsboro Rd., P.O. Box 12007, Augusta, GA 30914-2007
(404) 737-1808 (Voice/TDD)

Division of Rehabilitation Independent Living Program
707 Pine St., P.O. Box 6117, Macon, GA 31208
(912) 751-6270 (Voice/TDD)

Southeastern District Independent Living Program
P.O. Box 13427, Savannah, GA 31416-0427
(912) 356-2124 (Voice) or (912) 356-2226 (TDD)

Independent Living Program
Roosevelt Warm Springs Institute for Rehabilitation
P.O. Box 1000, Warm Springs, GA 31830
(404) 655-2000

HAWAII

Big Island Center for Independent Living
1190 Waianuenue Ave., Hilo, HI 96720
(808) 935-3777 (Voice/TDD)

Hawaii Center for Independent Living
677 Ala Moana Blvd., #118, Honolulu, HI 96813
(808) 537-1941 (Voice) or (808) 521-4400 (TDD)

Kona Center for Independent Living
75-159 Lunapule Rd., Unit #5, Kailua-Kona, HI 96740
(808) 329-6611 (Voice/TDD)

Kauai Center for Independent Living
P.O. Box 3529, Lihue, HI 96766
(808) 245-4034 (Voice/TDD)

Maui Center for Independent Living
1464-D Lower Main St., Suite 105, Wailuku, HI 96793
(808) 242-4966 (Voice) or (808) 242-4968 (TDD)

IDAHO

Dawn Enterprises, Inc.
P.O. Box 388, Blackfoot, ID 83221
(208) 785-5890

Idaho Commission for the Blind
341 West Washington St., Boise, ID 83702-6000

(208) 334-3220

Idaho Division of Vocational Rehabilitation--Independent Living Service
650 West State, Boise, ID 83720-3650
(208) 334-3390 (Voice/TDD)

Living Independence Network Corp.
708 West Franklin St., Boise, ID 83702
(208) 336-3335 (Voice/TDD)

North Idaho Center for Independent Living
124 East 3rd St., Moscow, ID 83843
(208) 883-0523 (Voice/TDD)

Housing Southwestern Cooperative Housing Authority
1108 West Finch Dr., Nampa, ID 83651
(208) 467-7461 (Voice/TDD)

Access for Idaho
P.O. Box 4185, Pocatello, ID 83205
(208) 232-2747 (Voice/TDD)

Living Independence Network Corp.
1002 Shoshone St., East Twin Falls, ID 83301,
(208) 733-1712 (Voice/TDD)

ILLINOIS

Impact Center for Independent Living
2735 East Broadway, Alton, IL 62002-1859
(618) 462-1411 (Voice/TDD)

Living Independently Now, Center for Independent Living, Inc.
10 East Washington, Belleville, IL 62220
(618) 235-9988 (Voice) or (618) 235-0451 (TDD)

Living Independence for Everyone Center for Independent Living
1328 East Empire, Bloomington, IL 61701
(309) 663-5433 (Voice/TDD)

Center for Comprehensive Services, Inc.
P.O. Box 2825, Carbondale, IL 62902
(618) 529-3060

Southern Illinois Center for Independent Living
780 East Grand Ave., Carbondale, IL 62901
(618) 457-3318 (Voice/TDD)

Access Living of Metro Chicago
310 South Peoria, Suite 201, Chicago, IL 60607
(312) 226-5900 (Voice) or (312) 226-1687 (TDD)

Fox River Valley Center for Independent Living
730-B West Chicago, Elgin, IL 60123
(708) 695-5818 (Voice/TDD)

Will-Grundy Center for Independent Living
2415A West Jefferson St., Joliet, IL 60435
(815) 729-0162 (Voice) or (815) 729-2085 (TDD)

OPTIONS Center for Independent Living
53 Meadowview Ctr., Kankakee, IL 60901
(815) 936-0100 (Voice) or (815) 936-0132 (TDD)

Opportunities for Access
3300 Broadway, Suite 5, Mt. Vernon, IL 62864
(618) 244-9212 (Voice) or (618) 224-9575 (TDD)

Illinois Independent Living Center
1141 Iroquois Ave., #205, Naperville, IL 60563-9376
(708) 357-0077

Progress Center for Independent Living
320 Lake St., Oak Park, IL 60302
(708) 524-0600 (Voice) or (708) 524-0690 (TDD)

Central Illinois Center for Independent Living
4806 North Sheridan Rd., Peoria, IL 61614
(309) 682-3500 (Voice) or (309) 682-3567 (TDD)

Illinois/Iowa Independent Living Center
PO Box 6156, Rock Island, IL 61204-6156
(319) 324-1460 (Voice/TDD)

RAMP
1040 North 2nd St., Lower Level, Rockford, IL, 61107
(815) 968-7467 (Voice/TDD)

Illinois Department of Rehabilitation Services
623 East Adams St., P.O. Box 19429, Springfield, IL 62794-9429
(217) 782-2093

Springfield Center for Independent Living
426 West Jefferson, Springfield, IL 62702
(217) 523-2587 (Voice/TDD)

Northwestern Illinois Center for Independent Living
205 2nd Ave., Sterling, IL 61081
(815) 625-7860 (Voice) or (815) 625-7863 (TDD)

P.A.C.E., Inc.
1717 Philo Rd., Suite 27, Urbana, IL 61801
(217) 344-5433 (Voice) or (217) 344-5024 (TDD)

INDIANA

Damar Homes, Inc.
P.O. Box 41, Camby, IN 46113
(317) 856-5201

Allen County League for the Blind

5800 Fairfield, Suite 210, Fort Wayne, IN 46807
(219) 745-5491

Indianapolis Resource Center for Independent Living
2511 East 46th St., Suite V4, Indianapolis, IN 46205-2452
(317) 541-0611 (Voice/TDD)

IOWA

Central Iowa Center/Independence
67 Meadow Ln., Cumming, IA 50061
(515) 285-7145

Center for Independent Living
Vocational Rehabilitation Services
State Commission for the Blind
524 4th St., Des Moines, IA 50309
(515) 281-7999 (Voice) or (515) 281-1355 (TDD)

Independent Living, Inc.
26 East Market, Iowa City, IA 52245
(319) 338-3870

Hope Haven, Inc.
1800 19th St., Rock Valley, IA 51247
(712) 476-2737

KANSAS

Cowley County Developmental Services
P.O. Box 133, Arkansas City, KS 67005
(316) 442-3575

LINK, Inc.
P.O. Box 1016, Hays, KS 67601
(913) 625-6942 (Voice/TDD)

Independence, Inc.
1910 Haskell, Lawrence, KS 66046
(913) 841-0333 (Voice) or (913) 841-1046 (TDD)

Resource Center for Independent Living
122 South Sixth, Osage City, KS 66523
(913) 528-3105 (Voice) or (913) 528-3106 (TDD)

Independent Connection
1710 W. Schilling Rd., Salina, KS 67401
(913) 827-9383 (Voice/TDD)

Independent Living Program (667/117A)
2200 Gage Blvd. VA Medical Center, Topeka, KS 66622
(913) 272-3111

Kansas Rehabilitation Center for the Blind
2516 West 6th St., Topeka, KS 66606
(913) 296-3311

Topeka Independent Living Resource Center
3258 South Topeka, Topeka, KS 66611-2240
(913) 267-7100 (Voice/TDD)

Three Rivers Independent Living Resource Center
810 4th St., Wamego, KS 66547
(913) 456-9915 (Voice/TDD)

Independent Living Center of Southcentral Kansas, Inc.
1900 North Amidon, Suite 101, Wichita, KS 67203
(316) 838-3500 (Voice/TDD)

KENTUCKY

Contact, Inc.
101 St. Clair, Frankfort, KY 40601
(502) 875-5777

Center for Accessible Living
981 South 3rd St., Suite 102, Louisville, KY 40203
(502) 589-6620 (Voice) (502) 589-3980 (TDD)

Department for the Blind
1900 Brownsboro Rd., Louisville, KY 40206
(502) 893-0211

Center for Independent Living (Murray Office)
104 North 5th St., Suite 203, Murray, KY 42071
(502) 759-9227

LOUISIANA

Southwest Louisiana Independence Center
3104 Enterprise Blvd., Lake Charles, LA 70601-8722
(318) 477-7194 (Voice) or (318) 477-7196 (TDD)

Volunteers of America of Greater New Orleans -- Independent Living
3900 North Causeway Blvd, Suite 750, Metairie, LA 70002
(504) 836-5225

Independent Living Center, Inc.
320 North Carrollton Ave., Suite 2C, New Orleans, LA 70119
(504) 484-6400 (Voice/TDD)

New Orleans Resources for Independent Living
1001 Howard Ave., Suite 300, New Orleans, LA 70113
(504) 522-1955 (Voice/TDD)

New Horizons, Inc.

4030 Wallace Ave., Shreveport, LA 71108
(318) 635-3652 (Voice) or (318) 635-3488 (TDD)

New Horizons Monroe
1616 Arkansas Rd., Apt. 161, West Monroe, LA 71291
(318) 396-8929

New Horizons Alexandria
P.O. Box 169, Alexandria, LA 71309
(318) 442-7631

MAINE

Alpha One Center for Independent Living
71 State St., Augusta, ME 04330
(207) 623-1115 (Voice/TDD)

Maine Independent Living Services
74 Winthrop St., Augusta, ME 04330
(207) 622-5434 (Voice) (207) 622-5434 (TDD)

Motivational Services, Inc.
114 State St., Augusta, ME 04330
(207) 626-3465

The Together Place
Union St., Bangor, ME 04401
(207) 941-2907

Alpha One
41 Acme Rd., Brewer, ME 04412
(207) 989-6016 (Voice/TDD)

Shalom House, Inc.
Administrative Offices, 1 Pleasant St., Portland, ME 04101
(207) 874-1080 (Voice) or (207) 874-1087 (TDD)

Alpha One
373 Main St. (Rear), Presque Isle, ME 04769
(207) 764-6466 (Voice/TDD)

Alpha One
85 E St., Suite 1, S. Portland, ME 04106
(207) 767-2189 (Voice/TDD)

MARYLAND

Maryland Center for Independent Living, Inc.
6305-A Sherwood Rd., Baltimore, MD 21239-1540
(301) 377-5900 (Voice) or (301) 377-4591 (TDD)

Adult Living Internship--Center for Unique Learners
5705 Arundel Ave., Rockville, MD 20852

(301) 231-0115

MASSACHUSETTS

D.E.A.F., Inc.
215 Brighton Ave., Allston, MA 02134
(617) 254-4041 (Voice/TDD)

Stavros Center for Independent Living
691 South East St., Amherst, MA 01002
(413) 256-0473 (Voice/TDD)

Boston Center for Independent Living
95 Berkeley St., Suite 206, Boston, MA 02116
(617) 338-6665 (Voice) or (617) 338-6662 (TDD)

Center for Independent Living at Mass. Commission for the Blind
88 Kingston St., Boston, MA 02111-2227
(617) 727-5550 (Voice) or (800) 392-6556 (Voice/TDD)

Independence Associates, Inc.
55 City Hall Plaza, Brockton, MA 02401
(508) 559-9091 (Voice/TDD)

Student Independent Living Experience
Massachusetts Hospital School
5 Randolph St., Canton, MA 02021
(617) 828-2440

Carninal Medeiros Towers
P.O. Box 989, Fall River, MA 02722
(508) 675-3553

Southeast Center for Independent Living
170 Pleasant St., 3rd Floor East, Fall River, MA 02721
(508) 679-9210 (Voice/TDD)

Greater Framingham Association Independent Living Program
869 Concord St., Framingham, MA 01701
(508) 875-7853 (Voice/TDD)

CORD
P.O. Box 964, Hyannis, MA 02601
(508) 775-8300 (Voice/TDD)

ARC--Independent Living Program
101 Grove St., Hyannis, MA 02601
(508) 771-6595 (Voice/TDD)

The Northeast Independent Living Program, Inc.
130 Parker St., Lower Level, Lawrence, MA 01843
(508) 687-4288 (Voice/TDD)

Renaissance Club, Inc.
21 Branch St., Lowell, MA 01851

(508) 454-7944

Independent Living Center of the North Shore
583 Chestnut St., Suite 9, Lynn, MA 01904
(617) 593-7500 (Voice/TDD)

AD LIB, Inc.
442 North St., Pittsfield, MA 01201
(413) 442-7047 (Voice) or (413) 442-7158 (TDD)

Vision Foundation, Inc.
818 Mt. Auburn St., Watertown, MA 02172
(617) 926-4232

Center for Living and Working, Inc.
484 Main St., #345, Worcester, MA 01608
(508) 798-0350 (Voice/TDD)

MICHIGAN

Ann Arbor Center for Independent Living
2568 Packard, Georgetown Mall, Ann Arbor, MI 48104
(313) 971-0277 (Voice) or (313) 971-0310 (TDD)

Family Resource Center--ARC
51 West Hancock, Detroit, MI 48201
(313) 831-0202

Great Lakes Rehab Corp., Center for Independent Living
4 East Alexandrine, Suite 104, Detroit, MI 48201
(313) 832-3371 (Voice) or (313) 832-3372 (TDD)

Commission for the Blind
1200 6th Ave., 15th Floor, S. Tower, Detroit, MI 48226
(313) 256-1524

Upper Penninsula Community for Independent Living Inc.
1919 1/2 14th Ave., North, Escanaba, MI 49829
(906) 789-0155 (Voice/TDD)

Participants Advocate Group--Center for Independent Living
200 South Court St., P.O. Box 3087, Gaylord, MI 49735
(517) 732-1078

Grand Rapids Center for Independent Living
3375 South Division, Grand Rapids, MI 49508
(616) 243-0846 (Voice/TDD)

Lakeshore Center for Independent Living
246 South River, Office #65, Holland, MI 49423
(616) 396-5326 (Voice) or (616) 396-3774 (TDD)

Association for Retarded Citizens -- Ottawa County
246 South River, Office # 65, Holland, MI 49423
(616) 396-1201 (Voice) or (616) 396-3774 (TDD)

Kalamazoo Center for Independent Living
4026 South Westnedge, Kalamazoo, MI 49008
(616) 345-1516 (Voice) or (616) 345-8022 (TDD)

Life Skills Services
1608 Lake St., Kalamazoo, MI 49001
(616) 344-0202

Center of Handicapper Affairs
918 Southland St., Lansing, MI 48910
(517) 393-0305 (Voice) or (517) 393-0326 (TDD)

Cristo Rey Hispanic Handicapped Program
1717 North High St., Lansing, MI 48906
(517) 372-4700 (Voice/TDD)

Michigan Commission of the Blind
201 North Washington, Second Floor, Lansing, MI 48933
(517) 373-9415 (Voice/TDD)

Midland Center for Independent Living
1015 Ashman, Midland, MI 48640-4910
(517) 835-4041 (Voice/TDD)

ARC/Muskegon--Independent Living Program
1145 East Wesley Ave., Muskegon, MI 49442
(616) 777-2006

Blue Water Center for Independent Living
804 Huron Ave., Port Huron, MI 48060
(313) 987-9337 (Voice/TDD)

Independent Living Rehabilitation Program
411-G East Genesee, Saginaw, MI 48607
(517) 771-1765

Grand Traverse Area Community Living Center
935 Barlow, Traverse City, MI 49684
(616) 941-7150

Oakland/Macomb Center for Independent Living
6044 Rochester Rd., Troy, MI 48098
(313) 828-3500 (Voice) or (313) 828-3310 (TDD)

MINNESOTA

Center for Independent Living of Northeastern Minnesota -- Cloquet
1219 14th St., #B, Cloquet, MN 55720
(218) 879-0873 (Voice/TDD)

Center for Independent Living of Northeastern Minnesota -- Duluth
205 West Second St., #442, Duluth, MN 55802
(218) 722-8911 (Voice/TDD)

OPTIONS, Interstate Resource Center for Independent Living

318 3rd St., N.W., East Grand Forks, MN 56721
(218) 773-6100 (Voice/TDD)

Center for Independent Living of Northeastern Minnesota, Inc.
2310 First Ave., Hibbing, MN 55746
(218) 262-6675 (Voice/TDD)

Vinland National Center
P.O. Box 308, Loretto, MN 55357
(612) 479-3555 (Voice/TDD)

Southern Minnesota Independent Living Enterprises & Services (SMILES)
709 South Front St., Mankato, MN 56001
(507) 345-7139 (Voice/TDD)

Southwestern Center for Independent Living
109 S. Fifth St., Marshall, MN 56258
(507) 532-2221 (Voice) or (507) 532-2222 (TDD)

Courage Center
3915 Golden Valley Rd., Golden Valley, MN 55422
(612) 588-0811 (Voice) or (612) 520-0410 (TDD)

Independence Crossroads, Inc.
1073 Tenth Ave., SE, Minneapolis, MN 55414
(612) 378-0027 (Voice/TDD)

Freedom Resource Center for Independent Living
725 Center Ave., Moorhead, MN 56560
(218) 236-0459

Southeastern Minnesota Center for Independent Living, Inc.
1306 7th St., N.W., Rochester, MN 55901
(507) 285-1815 (Voice/TDD)

Central Minnesota Center for Independent Living
600 25th Ave., South, Suite 110, St. Cloud, MN 56301
(612) 255-1882 (Voice/TDD)

Accessible Space, Inc.
2550 University Ave., West #301N, St. Paul, MN 55114
(612) 645-7271

Minnesota Housing Finance Agency - Homeownership Opportunity Program
400 Sibley #300, St. Paul, MN 55101
(612) 296-7613 (Voice) or (612) 297-2361 (TDD)

Metropolitan Center for Independent Living, Inc.
1619 Dayton Ave., Suite 303, St. Paul, MN 55104
(612) 646-8342 (Voice/TDD)

Minnesota State Services for the Blind and the Visually Handicapped
1745 University Ave. W., St. Paul, MN 55104
(612) 642-0500 (Voice/TDD)

MISSISSIPPI

Alpha Home/Royal Maid Association for the Blind
P.O. Drawer 30, Hazlehurst, MS 39083
(601) 894-1771

Jackson Independent Living Center
300 Capers Ave., Jackson, MS 39203
(601) 961-4140 (Voice/TDD)

Gulf Coast Independent Living Center
P.O. Box 377, Long Beach, MS 39560-0377
(601) 864-3786 (Voice/TDD)

Starkville Center for Independent Living
Mississippi State University, P.O. Drawer 6321, MS 39762
(601) 325-8511

MISSOURI

Services for Independent Living
1301 Vandiver Dr., Suite Q, Columbia, MO 65202
(314) 874-1646 (Voice) or (314) 874-4121 (TDD)

Rehabilitation Institute
3011 Baltimore, Kansas City, MO 64108
(816) 756-2250 (Voice/TDD)

The WHOLE PERSON, Inc.
6301 Rockhill Rd., Suite 305E, Kansas City, MO 64131
(816) 361-0304 (Voice) or (816) 361-7749 (TDD)

Southwest Center for Independent Living
1856 East Cinderella, Springfield, MO 65804
(417) 886-1188 (Voice/TDD)

Independence Center
4380 West Pine Blvd., St. Louis, MO 63108
(314) 533-6511

Life Skills Foundation
609 North & South, St. Louis, MO 63130
(314) 863-3913 (Voice/TDD)

Paraquad
4475 Castleman, St. Louis, MO 63110
(314) 776-4475 (Voice) or (314) 776-4415 (TDD)

Places for People, Inc.
4120 Lindell Blvd., St. Louis, MO 63108
(314) 535-5600

Disabled Citizens Alliance for Independence
Box 675, Viburnum, MO 65566

(314) 244-3315 (Voice/TDD)

MONTANA

Yellowstone Valley Center for Independent Living
1925 Grand Ave. Suite 104, Billings, MT 59102
(406) 259-5181 (Voice/TDD)

North Central Independent Living Services, Inc.
104 Second St., South, Suite 101, Great Falls, MT 59405
(406) 452-9834 (Voice/TDD)

Montana Independent Living Project
38 South Last Chance Gulch, Helena, MT 59601
(406) 442-5755 (Voice) (406) 442-5756 (TDD)

Summit Independent Living Center
1280 South Third St., West, Missoula, MT 59801
(406) 728-1630 (Voice/TDD)

NEBRASKA

Goodwill Center for Independent Living
1804 South Eddy, Grand Island, NE 68801
(308) 384-7896 (Voice/TDD)

League of Human Dignity, Mobility Options, Inc.
1701 P St., Lincoln, NE 68508-1741
(402) 471-7871 (Voice/TDD)

League of Human Dignity Independent Living Center
604 West Benjamin, Norfolk, NE 68701
(402) 371-4475 (Voice/TDD)

League of Human Dignity Independent Living Center
5017 Leavenworth, Omaha, NE 68106
(402) 558-3411 (Voice or TDD)

NEVADA

Nevada Association for the Handicapped
6200 West Oakey, Las Vegas, NV 89102
(702) 870-7050 (Voice/TDD)

Northern Nevada Center for Independent Living
624 East 4th St., Reno, NV 89512-3401
(702) 328-8000 (Voice) (702) 328-8006 (TDD)

NEW HAMPSHIRE

Granite State Independent Living Foundation
172 Pembroke Rd., Concord, NH 03301
(603) 228-9680 (Voice/TDD)

NEW JERSEY

Success Through Independent Living Experience
1501 Park Ave., Asbury Park, NJ 07712
(908) 774-4737

D.I.A.L. for Independent Living
66 Mt. Prospect Ave., Bldg. C, Clifton, NJ 07013-1918
(201) 470-8090

East Brunswick Adult Program
380 Cranbury Rd., East Brunswick, NJ 08816
(908) 613-6983

Alliance for Disabled in Action
2050 Oak Tree Rd., Edison, NJ 08820
(908) 321-1600 (Voice/TDD)

Total Living Center, Inc.
231 Philadelphia Ave., Egg Harbor City, NJ 08215
(609) 965-3734 (Voice/TDD)

HIP-Heightened Independence and Progress
44 Armory St., Englewood, NJ 07631
(201) 568-0906 (Voice) or (201) 568-6191 (TDD)

Monmouth/Ocean Independent Living Center
279 Broadway, Long Branch, NJ 07740
(908) 571-4884 (Voice) (908) 571-4878 (TDD)

D.I.A.L., Inc. (Newark/Union)
32 Park Place, Newark, NJ 07102
(201) 824-4009 (Voice) or (201) 824-3614 (TDD)

New Jersey Commission for the Blind and Visually Impaired
153 Halsey St., P.O. Box 47017, Newark, NJ 17101
(201) 648-3333 (Voice) or (201) 648-4559 (TDD)

DIAL, Inc. Northwest Branch
#7 Boardwalk, Sparta, NJ 07861
(201) 729-7155 (Voice) or (201) 729-3396 (TDD)

Project Freedom, Inc.
P.O. Box 8898, Trenton, NJ 08650
(609) 584-8857 (Voice/TDD)

Center for Independent Living of South Jersey, Inc.
800 North Delsea Dr., Westville, NJ 08093
(609) 853-6490 (Voice) or (609) 853-7602 (TDD)

NEW MEXICO

C.A.S.A, Inc.-Creative Alternative for Special Adults
P.O. Box 36916, Albuquerque, NM 87176
(505) 298-7609

Independent Living Resource Center
2520 Virginia NE, Suite 200, Albuquerque, NM 87110
(505) 271-1565 (Voice/TDD)

Disability Resource Center
205 West Boutz, Bldg. 4, Suite 4, Las Cruces, NM 88005
(505) 526-5016 (Voice/TDD)

New Vistas--Independent Living Center
2025 South Pacheco St., Ark Plaza, Suite 105-A, Santa Fe, NM 87501
(505) 471-1001 (Voice)
(800) 659-8331 (Relay Number/TDD) and (800) 659-1779 (Relay Number/Voice)

NEW YORK

Capital District Center for Independence
845 Central Ave., Albany, NY 12206-1504
(518) 459-6422 (Voice/TDD)

Independent Living Center of Amsterdam, Inc.
12 Chestnut St., Amsterdam, NY 12010
(518) 842-3561 (Voice) or (518) 842-3593 (TDD)

Options for Independence
55 Market St., Auburn, NY 13021
(315) 255-3447 (Voice/TDD)

Batavia Center for Independent Living
61 Swan St., Batavia, NY 14020
(716) 343-4524 (Voice/TDD)

Southern Tier Independence Center
107 Chenango St., Binghamton, NY 13901
(607) 724-2111 (Voice/TDD)

Bronx Independent Living Services
3525 Decatur Ave., Bronx, NY 10467
(212) 515-2800 (Voice) or (212) 515-2803 (TDD)

Brooklyn Center for Independence of the Disabled
408 Jay St., Rm. 401, Brooklyn, NY 11201
(718) 625-7500 (Voice) or (718) 625-7712 (TDD)

Western N.Y. Independent Living Center
3108 Main St., Buffalo, NY 14214
(716) 836-0822 (Voice/TDD)

SILO (Satellite Office) - Self Initiated Living Options

3180 Express Dr., South, Central Islip, NY 11722
(516) 348-0207 (Voice) or (516) 348-7655 (TDD)

Access to Independence and Mobility
271 East First St., Corning, NY 14830-2924
(607) 962-8225 (Voice/TDD)

Long Island Center for Independent Living/SUNY
Administration Bldg., #115, Farmingdale, NY 11735
(516) 420-2000

Glens Falls Independent Living Center
25 Sherman Ave., P.O. Box 453, Glens Falls, NY 12801
(518) 792-3537 (Voice) or (518) 792-0505 (TDD)

Suffolk County Office of Handicapped Services
395 Oser Ave., Hauppauge, NY 11788-3631
(516) 853-3712 (Voice) (516) 582-6616 (TDD)

Finger Lakes Independence Center
609 West Clinton St., Suite 112, Ithaca, NY 14850
(607) 272-2433 (Voice) or (800) 662-1220 (TDD-NY Relay)

Queens Independent Living Center
140-40 Queens Blvd., Jamaica, NY 11437
(718) 658-2526 (Voice) or (718) 658-4720 (TDD)

Southwestern Independent Living Center
878 North Main St., Rear Entrance, Jamestown, NY 14701
(716) 661-3010 (Voice) or (716) 661-3012 (TDD)

Resource Center for Accessible Living
602 Albany Ave., Kingston, NY 12401
(914) 331-0541 (Voice) or (914) 331-8680 (TDD)

Long Island Center for Independent Living
3601 Hempstead Turnpike, Rm. 312, Levittown, NY 11756
(516) 796-0144 (Voice) or (516) 796-0135 (TDD)

Massena Independent Living Center
1 North Main St., Massena, NY 13662
(315) 764-9442 (Voice/TDD)

Self Initiated Living Options, Inc.
3241 Route 112, Bldg. 7, Medford, NY 11763-1411
(516) 698-1310 (Voice) or (516) 698-1392 (TDD)

Office Executive Services for the Physically Challenged
1550 Franklin Ave., Rm. 112, Mineola, NY 11501
(516) 535-3147 (Voice) or (516) 535-3108 (TDD)

Barrier Free Living
270 East Second St., New York, NY 10009
(212) 677-6668 (Voice/TDD)

Center for Independence of the Disabled in New York

841 Broadway, Rm. 205, New York, NY 10003
(212) 674-2300 (Voice/TDD)

Visions
817 Broadway, 11th Fl., New York, NY 10003
(212) 477-3800

Eastern Orange County Center for Independent Living
200 Lake St., Newburgh, NY 12550
(914) 565-1162

Niagara Frontier Center for Independent Living, Inc.
1522 Main St., Niagara Falls, NY 14305
(716) 284-2452 (Voice/TDD)

Directions in Independent Living
180 North Union, Olean, NY 14760
(716) 373-4602 (Voice/TDD)

Catskill Center for Independence
P.O. Box 1247, Oneonta, NY 13820
(607) 432-8000 (Voice) or (607) 432-8000 (TDD)

North Country Center for Independence
159 Margaret St., Suite 202, Plattsburgh, NY 12901
(518) 563-9058 (Voice/TDD)

Taconic Resources for Independence
80 Washington St., Suite 201, Poughkeepsie, NY 12601-2305
(914) 452-3913 (Voice) or (914) 485-8110 (TDD)

Rochester Center for Independent Living
758 South Ave., Rochester, NY 14620-2237
(716) 442-6470 (Voice/TDD)

Independent Living in the Capital District, Inc.
2660 Albany St., Schenectady, NY 12304
(518) 393-2412

Western Orange County Center for Independent Living, Inc.
RD1, Box 144C, Route 6, Slate Hill, NY 10973
(914) 355-2030 (Voice) or (914) 355-2060 (TDD)

Rockland Independent Living Center
235 North Main St., Suite 13, Spring Valley, NY 10977
(914) 426-0707 (Voice) or (914) 426-1180 (TDD)

Staten Island Center for Independent Living, Inc.
150 Walker St., Staten Island, NY 10302
(718) 720-9016 (Voice) or (718) 720-9870 (TDD)

ARISE, Inc., Center for Independent Living
501 East Fayette St., Syracuse, NY 13202
(315) 472-3171 (Voice/TDD)

Troy Resource Center for Independent Living

Troy Atrium, Broadway & 4th St., Troy, NY 12180
(518) 274-0701 (Voice/TDD)

Resource Center for Independent Living
409 Columbia St., Utica, NY 13502
(315) 797-4642 (Voice) or (315) 797-5837 (TDD)

Northern Regional Center for Independent Living
Woolworth Bldg., Suite 400, Watertown, NY 13601
(315) 785-8703 (Voice/TDD)

Long Island Association for Children
265 Post Ave., Westbury, NY 11590
(516) 334-4965

Westchester Independent Living Center
297 Knollwood Rd., White Plains, NY, 10607
(914) 682-3926 (Voice) or (914) 682-0926 (TDD)

Westchester Disabled on the Move
984 North Broadway, Suite 509, Yonkers, NY 10701
(914) 968-4717 (Voice/TDD)

NORTH CAROLINA

Programs for Accessible Living
1012 South Kings Dr., Doctor's Bldg., G-2, Charlotte, NC 28283
(704) 375-3977 (Voice/TDD)

Live Independently Networking Ctr.
P.O. Box 389, Newton, NC 28658
(704) 465-8484 (Voice) (704) 465-8369 (TDD)

NORTH DAKOTA

Fraser Limited
711 South University Dr., Fargo, ND 58103
(701) 232-3301

Center for Independent Living
1007 N.W. l8th, Mandan, ND 58554
(701) 663-0376

OHIO

Tri-County Independent Living Center, Inc.
680 East Market St., Suite 205, Akron, OH 44304
(216) 762-0007 (Voice) or (216) 762-7429 (TDD)

Access Center for Independent Living, Inc.
7946 Clyo Rd., Suite A, Centerville, OH 45459
(513) 439-0071 (Voice) or (513) 439-0072 (TDD)

Independent Living Options, Inc.
2433 Harrison Ave., Cincinnati, OH 45211-7927
(513) 661-2600 (Voice) or (513) 661-2750 (TDD)

HELP Six Chimneys, Inc.
3907 Prospect Ave., Cleveland, OH 44115
(216) 361-3907

Services for Independent Living
25100 Euclid Ave., Suite 105, Cleveland, OH 44117
(216) 731-1529 (Voice/TDD)

Mid-Ohio Board Independent Living
1393 East Broad St., Columbus, OH 43205
(614) 252-1661 (Voice) or (614) 252-2668 (TDD)

United Cerebral Palsy of Columbus & Franklin County
440 Industrial Mile Rd., Columbus, OH 43228
(614) 279-0109

Rehabilitation Services of North Central Ohio
270 Sterkel Blvd., Mansfield, OH 44907
(419) 756-1133 (Voice/TDD)

Ability Center of Greater Toledo
5605 Monroe, Sylvania, OH 43560
(419) 885-5733 (Voice) or (419) 882-2387 (TDD)

OKLAHOMA

Caddo County Independent Living Center
132 East Broadway St., #208, Anadarko, OK 73005-2837
(405) 247-7331 (Voice/TDD)

Green Country IL Resource Center
310 South Osage, P.O. Box 2295, Bartlesville, OK 74005
(918) 336-0700 (Voice/TDD)

Northwest Oklahoma Independent Living Center
705 South Oakwood, Suite B-1, Enid, OK 73703
(405) 237-8508 (Voice/TDD)

Oklahoma Independent Living Resource Center
321 S. Third, Suite 2, McAlester, OK 74501
(918) 426-6220 (Voice/TDD)

Progressive Independence, Inc.
121 North Porter, Norman, OK 73071
(405) 321-3203 (Voice/TDD)

Ability Resources
1724 East 8th St., Tulsa, OK 74104
(918) 592-1235 (Voice/TDD)

OREGON

Disabilities Advisory Coalition
P.O. Box 10864, Eugene, OR 97440
(503) 689-8675

Laurel Hill Center--Independent Living Program
2145 Centennial Plaza, Eugene, OR 97401
(503) 485-6340

HASL, Independent Abilities Center
290 Northeast "C" St., Grants Pass, OR 97526
(503) 479-4275

Columbia Gorge Rehab. Center
2940 Thomsen Rd., Hood River, OR 97031
(503) 386-3520

Columbia Gorge Rehab. Center Reside
1306 Taylor St., Hood River, OR 97031
(503) 386-2544

SPOKES Unlimited
P.O. Box 7896, Klamath Falls, OR 97602
(503) 883-7547 (Voice/TDD)

Living Opportunities Inc.
P.O. Box 1072, Medford, OR 97501
(503) 772-1503

Access Oregon
2600 Southeast Belmont, Suite A, Portland, OR 97214
(503) 230-1225 (Voice/TDD)

Commission for the Blind
535 Southeast 12th Ave., Portland, OR 97214
(503) 238-8375 (Voice/TDD)

Volunteer Braille Services, Inc.
4001 Northeast Halsey, Portland, OR, 97232
(503) 284-3339 (Voice/TDD)

Vocational Rehabilitation Division--Independent Living Services
2045 Silverton Rd., NE, Salem, OR 97310
(503) 378-3830 (Voice/TDD)

PENNSYLVANIA

Lehigh Valley Center for Independent Living
1501 Lehigh St., Allentown, PA 18103-3813
(215) 791-7870 (Voice) or (215) 791-7875 (TDD)

Center for Independent Living of Southcentral PA
1501 11th Ave., Mezzanine Level, Altoona, PA 16601

(814) 949-1905 (Voice/TDD)

Center for Independent Living of Central Pennsylvania
2331 Market St., Camp Hill, PA 17012
(717) 731-1900 (Voice) or (717) 731-1077 (TDD)

Erie Independence House/Center for Independent Living
2222 Filmore Ave., Erie, PA 16506-2943
(814) 838-7222 (Voice) or (814) 838-8115 (TDD)

Anthracite Region Center for Independent Living
40 North Church St., City Hall, Hazleton, PA 18201
(717) 455-9800

Susquehanna Independent Living Center
1851 Charter Ln., P.O. Box 10396, Lancaster, PA 17605-0396
(717) 397-2168 (Voice) or (717) 397-4193 (TDD)

North Central Center for Independent Living
1722 West Market St., Lewisburg, PA 17837
(717) 524-9695 (Voice/TDD)

Center for Independent Living--Associated Services for the Blind
919 Walnut St., Philadelphia, PA 19107
(215) 627-0600 (Voice/TDD)

Resources for Living Independently
One Winding Way, Suite 108, Philadelphia, PA 19131
(215) 581-0666 (Voice) or (215) 581-0664 (TDD)

Three Rivers Center for Independent Living
7110 Penn Ave., Pittsburgh, PA 15208
(412) 371-7700 (Voice/TDD)

Allied Services for the Handicapped
475 Morgan Highway, Scranton, PA 18508
(717) 348-2221

Northeastern Pennsylvania Center for Independent Living
431 Wyoming Ave., Lower Level, Scranton, PA 18503
(717) 344-7211 (Voice/TDD)

Berks County Center for Independent Living
899 Penn Ave., Sinking Spring, PA 19608
(215) 670-0734 (Voice) or (215) 670-0753 (TDD)

Tri-County Partnership for Independent Living
120 East Hallam Ave., Rm. 120, Washington, PA 15301-3404
(412) 223-5115 (Voice/TDD)

Brian's House, Inc.
1300 South Concord Rd., West Chester, PA, 19382
(215) 399-1175

RHODE ISLAND

Blackstone Valley Center Independent Living Program
115 Manton St., Pawtucket, RI 02861
(401) 727-0150

People Activity Reaching Independent-ARI Independent Living Center
500 Prospect St., Pawtucket, RI 02860
(401) 725-1966 (Voice/TDD)

IN-SIGHT Independent Living
43 Jefferson Blvd., Warwick, RI 02888
(401) 941-3322

Ocean State Center for Independent Living
59 West Shore Rd., Warwick, RI 02889-1140
(401) 738-1013 (Voice) (401) 738-1015 (TDD)

SOUTH CAROLINA

South Carolina Vocational Rehabilitation Independent Living Program
1410 C-Boston Ave., P.O. Box 15, West Columbia, SC 29169-0015
(803) 822-5314

SOUTH DAKOTA

Opportunities for Independent Living-(O.I.L.)
P.O. Box 1571, Aberdeen, SD 57402-1571
(605) 622-2298

Adjustment Training Center
607 Northforth St., Southeast, Aberdeen, SD 57401
(605) 229-0263

Black Hills Workshop & Training Center
Box 2104; 3603 Range Rd., Rapid City, SD 57702
(605) 343-4550

Western Resources for Disabled Independence
36 East Chicago, Box 9, Rapid City, SD 57701
(605) 394-1930 (Voice/TDD)

Communication Service for the Deaf
3520 Gateway Ln., Sioux Falls, SD 57106
(605) 339-6718 (Voice/TDD)

Prairie Freedom Center for Disabled Independents
301 South Garfield Ave., Suite 8, Sioux Falls, SD 57104
(605) 339-6558 (Voice/TDD)

TENNESSEE

Memphis Center for Independent Living
163 North Angelus, Memphis, TN 38104

(901) 726-6404 (Voice/TDD)

TEXAS

Panhandle Action Center for Independent Living Skills
3608 South Washington, Amarillo, TX 79110
(806) 352-1500 (Voice) or (806) 352-8630 (TDD)

Educational Support Services Office
University of Texas at Arlington, Box 19028, Arlington, TX 76019

Provence Center for Independent Living
600 New York Ave., Arlington, TX 76010
(817) 275-3369

Austin Resource Center for Independent Living
5555 North Lamar, Suite J-125, Austin, TX 78751
(512) 467-0744 (Voice/TDD)

Independent Living Program for Blind & Blind-Multi-Handicapped
4800 North Lamar, Suite 220, Austin, TX 78756
(512) 459-2500 and (800) 459-2606

Texas Rehabilitation Commission
4900 North Lamar Blvd., Austin, TX 78751-2316
(512) 483-4000

Independent Living Rehabilitation Program--Texas Commission for the Blind
410 South Padre Island Dr., Suite 103, Corpus Christi, TX 78405
(512) 289-1128

Tri-County Awareness Association--Independent Living Center
P.O. Box 875, Crockett, TX 75835
(409) 544-2811 (Voice) or (409) 544-7315 (TDD)

Disabled Ability Resource Environment
8929 Viscount, Suite 101, El Paso, TX 79925
(915) 591-0800 (Voice/TDD)

Reach Independent Living Center
617 Seventh Ave., Suite 304, Ft. Worth, TX 76104
(817) 870-9082 (Voice) or (817) 870-9086 (TDD)

Center for the Retarded, Inc.--Independent Living Program
P.O. Box 13403, Houston, TX 77219
(713) 528-6371

Deville Independent Living Program--Lighthouse of Houston
4039 Bellefontaine, Houston, TX 77025
(713) 666-4641

Houston Center for Independent Living
7000 Regency Square Blvd., #160, Houston, TX 77036
(713) 974-4621 (Voice/TDD)

Texas Commission for the Blind
427 West 20th, Suite 407, Houston, TX 77008
(713) 880-0721

Independent Life Styles, Inc.
P.O. Box 571874, Houston, TX 77257
(303) 790-7002

LIFE Independent Living Center
4514 Englewood Ave., Lubbock, TX 79414-1227
(806) 795-5433 (Voice/TDD)

Valley Association for Independent Living
105-C Expressway 83, Fharr, TX 78577
(512) 781-7733 (Voice/TDD)

San Antonio Independent Living Services
5101 San Pedro, San Antonio, TX 78212-1400
(512) 734-9971 (Voice/TDD)

OBS/ILR--Texas Commission for the Blind
1101 E S.E. Loop 323 #640, Tyler, TX 75701-9638
(903) 581-9945 (Voice/TDD)

UTAH

OPTIONS for Independence
1095 North Main, Logan, UT 84321
(801) 753-5353 (Voice/TDD)

Active Re-Entry
451 South Carbon Ave., P.O. Box 931, Price, UT 84501
(801) 637-4950 (Voice/TDD)

Utah Independent Living Center, Inc
764 South 200 West, Salt Lake City, UT 84101-2700
(801) 359-2457 (Voice/TDD)

Southern Utah Independent Living Center
764 South, 200 West, Salt Lake City, UT 84101-2700
(801) 673-7579

VERMONT

Vermont Association for the Blind
37 Elmwood Ave., Burlington, VT 05401
(802) 863-1358 (Voice/TDD)

Vermont Center for Independent Living
174 River St., Montpelier, VT 05602
(802) 229-0501 (Voice/TDD)

VIRGINIA

Appalachian Independence Center
230 Charwood Drive, Abingdon, VA 24210
(703) 628-2969 (Voice) (703) 628-4931 (TDD)

Virginia Department for the Visually Handicapped
205 South Whiting St., Suite 505, Alexandria, VA 22304
(703) 823-2234 (Voice/TDD)

ENDependence Center of N. Virginia
2111 Wilson Blvd., Suite 400, Arlington, VA 22201
(703) 525-3268 (Voice/TDD)

Independence Resource Center
201 West Main St., Suite 8, Charlottesville, VA 22901
(804) 971-9629 (Voice/TDD)

Woodrow Wilson Center for Independent Living
Box W37 Fishersville, VA 24401
(703) 332-7103 (Voice/TDD)

Peninsula Center for Independent Living -- Insight Enterprises
11832 Canon Blvd., Suite F, Newport News, VA 23606
(804) 827-0275 (Voice) or (804) 873-0817 (TDD)

Endependence Center, Inc.
Janaf Office Bldg., Suite 601, Norfolk, VA 23502
(804) 461-8007 (Voice) (804) 461-7527 (TDD)

Central Virginia Independent Living Center, Inc.
2900 West Broad St., Richmond, VA 23230-1049
(804) 353-6503 (Voice) or (804) 353-6583 (TDD)

Independence Living Program Veterans Adminstration Med. Ctr.--VAMC Richmond
1201 Broad Rock Rd.-VAMC, Richmond, VA 23249
(804) 230-0001

Independent Living Center Network--Department for the Visually Handicapped
1809 Staples Mill Rd., Suite 101, Richmond, VA 23230
(804) 257-0030

Center for Independence for the Disabled
1502-D Williamson Rd., N.E., Roanoke, VA 24012
(703) 342-1231 (Voice) or (703) 342-1939 (TDD)

Roanoke Independent Living Center--Department for the Visually Handicapped
210 Church Ave., Southwest #B-50, Roanoke, VA 24011
(703) 982-7122 (Voice/TDD)

Shenandoah Valley Independent Living Center
21 South Kent St., Winchester, VA 22601
(703) 662-4452 (Voice/TDD)

WASHINGTON

Vision and Independent Living Services
2400 Queen St., Bellingham, WA 98226
(206) 647-0309

Kitsap Community Action Program
1201 Park Ave., Bremerton, WA 98310
(206) 377-0053

Independent Lifestyle Services
North 306 Maine St., Ellensburg, WA 98926
(509) 962-9620

Care Medical Equipment
1301 Hewitt, Everett, WA 98201
(206) 252-6456

Division of Vocational Rehabilitation--Independent Living Service
P.O. Box 45340, Olympia, WA 98504-5340
(206) 753-2756 (Voice) or (206) 753-5473 (TDD)

Center for Independence--Good Samaritan Hospital
407 14th Ave., Southeast, Puyallup, WA 98372
(206) 848-6661 (Voice/TDD)

Community Service Center for Deaf and Hard of Hearing
1609 19th Ave., Seattle, WA 98122
(206) 322-4996 (Voice/TDD)

Community Services for the Blind
9709 Third Ave. NE, Suite 100, Seattle, WA 98115
(206) 525-5556 (Voice/TDD)

Epilepsy Association Western Washington
8511 15th Ave. NE, Seattle, WA 98115
(206) 523-2551 (Voice/TDD) (800) 752-3509

Independent Living Center-Northwest
2600 South Walker, Seattle, WA 98144
(206) 328-1403 (Voice/TDD)

Resource Center for the Handicapped
20150-45th Ave., N.E., Seattle, WA 98155
(206) 362-2273 (Voice) (206) 368-3308 (TDD)

Washington Coalition of Citizens with Disabilities
3530 Stoneway, North, Seattle, WA 98103
(206) 461-4550 (Voice) or (206) 461-3766 (TDD)

Washington Department Services for the Blind
3411 South Alaska St., Seattle, WA 98118
(206) 721-4422 (Voice) or (206) 721-4056 (TDD)

Adventures in Independence Development
819 South Hatch, Spokane, WA 99202

(509) 535-9696

Coalition of Responsible Disabled
North 908 Howard, Suite 10, Spokane, WA 99201
(509) 326-6355 (Voice/TDD)

Lilac Blind Foundation, Independent Living Program
North 1212 Howard, Spokane, WA 99201
(509) 328-9116

Greater Lakes Mental Health Foundation
10510 Gravelly Lake Dr., Southwest, Suite 118, Tacoma, WA 98499
(206) 582-8820 (Voice/TDD)

Tacoma Area Coalition of Individuals with Disabilities-(TACID)
6315 South 19th St., Tacoma, WA 98466-6217
(206) 565-9000 (Voice/TDD)

Coalition Handicapped Organizations
P.O. Box 2129, Vancouver, WA 98668-2129
(206) 693-8819 (Voice) or (206) 693-8835 (TDD)

WEST VIRGINIA

Mountain State Center for Independent Living
329 Prince St., Beckley, WV 25801
(304) 255-0122 (Voice/TDD)

Appalachian Center for Independent Living
1023 Washington St. West, Charleston, WV 25302-1441
(304) 342-6328 (Voice/TDD)

Mountain State Center for Independent Living
914-1/2 Fifth Ave., Huntington, WV 25701
(304) 525-3324 (Voice/TDD)

NC West Virginia Center for Independent Living - Coordinating Council
1000 Elmer W. Prince Drive, Morgantown, WV 26505
(304) 599-3636 (Voice/TDD)

WISCONSIN

Milwaukee North Job Services
6087 Teutonia Ave., Milwaukee, WI 53209
(414) 438-2000

Visiting Nurse Corporation-Independent Living Services
11333 North National Ave., Milwaukee, WI 53227
(414) 327-2295

Veterans Adminstration Hospital
5000 West National Ave., Milwaukee, WI 53295
(414) 384-2000

Curative Workshop, Inc.
1506 South Oneida St., St. Elizabeth Hosp., Appleton, WI 54915
(414) 738-2644 (Voice) or (414) 738-2715 (TDD)

Independent Living Program-Curative Rehabilitation Center
2900 Curry Ln., P.O. Box 8027, Green Bay, WI 54308
(414) 468-1161 (Voice/TDD)

Access to Independence, Inc.
22 North Second St., Madison, WI 53704
(608) 251-7575 (Voice) or (608) 251-7731 (TDD)

Center for Independent Living
University of Wisconsin-Stout, Menomonie, WI 54751
(715) 232-2150 (Voice/TDD)

Southeast Wisconsin Center for Independent Living
6222 West Capitol Drive, Milwaukee, WI 53216
(414) 438-5622 (Voice) or (414) 438-5627 (TDD)

Society's Assets
1511 Washington Ave., Racine, WI 53403
(414) 637-9128 (Voice) (414) 552-9656 (TDD)

North Country Independent Living
P.O. Box 1245, Superior, WI 54880
(715) 392-9118 (Voice/TDD)

Christian League for the Handicapped
P.O. Box 948, Walworth, WI 53184
(414) 275-6131

Independent Living Services NC WI
1200 Lake View Dr., Suite 150, Wausau, WI 54401
(715) 848-4390 (Voice/TDD)

WYOMING

Wyoming Independent Living Rehabilitation
246 S. Center, Suite 16, Casper, WY 82601
(307) 266-6956 (Voice/TDD)

Rehabilitation Enterprises of Northeast Wyoming
245 Broadway, Sheridan, WY 82801
(307) 672-7481

DISTRICT OF COLUMBIA

D.C. Center for Independent Living
1400 Florida Ave., Northeast, #3, Washington, DC 20009
(202) 388-0033 (Voice) (202) 388-0033 (TDD)

Independent Living for the Handicapped

1301 Belmont St., Northwest, Washington, DC 20009
(202) 797-9803

VIRGIN ISLANDS

Virgin Islands Association for Independent Living
P.O. Box 3305, Charlotte Amalie, St Thomas, VI 00803-3305
(809) 775-9740

STATE TECHNOLOGY-RELATED ASSISTANCE PROGRAMS

ALASKA

Assistive Technology of Alaska
Division of Vocational Rehabilitation
400 D St., Suite 230
Anchorage, AK 99501
(907) 274-0138 (Voice)
(907) 274-0517 (TDD)

ARKANSAS

Department of Human Services
Division of Rehabilitation Services
Increasing Capabilities Access Network
2201 Brookwood Dr., Suite 117
Little Rock, AR 72202
(501) 666-8868 (Voice/TDD)
(800) 828-2799 (In State)

COLORADO

Rocky Mountain Resource and Training Institute
6355 Ward Rd., Suite 310
Arvada, CO 80004
(303) 420-2942 (Voice/TDD)

DELAWARE

University of Delaware
Center of Applied Science and Engineering
New Castle County
Newark, DE 19716
(302) 651-6830 (Voice)
(302) 651-6834 (TDD)

GEORGIA

Georgia Department of Human Resources
Georgia Division of Rehabilitation Services
878 Peachtree St., N.E., Rm. 702
Atlanta, GA 30309
(404) 853-9151

HAWAII

Department of Human Services
Vocational Rehabilitation and Services for the Blind Division
1000 Bishop St., Rm. 605
Honolulu, HI 96813
(808) 586-5368 (Voice)
(808) 586-5376 (TDD)

ILLINOIS

Illinois Assistive Technology Project
411 East Adams St.
Springfield, IL 62701-1404
(217) 522-7985 (Voice/TDD)

INDIANA

Family and Social Services Administration
Division of Aging and Rehabilitative Services
402 West Washington St., Rm. W-453
Indianapolis, IN 46207-7083
(317) 233-3394 (Voice)
(317) 232-1427 (TDD)

IOWA

Iowa Program for Assistive Technology
Iowa University Affiliated Program
University Hospital School
Iowa City, IA 52242
(319) 356-4391 (Voice/TDD)

KENTUCKY

Kentucky Assistive Technology Service (KATS) Network
KATS Network Coordinating Center
427 Versailles Rd.
Frankfort, KY 40601
(502) 564-4665 (Voice/TDD)

LOUISIANA

Louisiana State Planning Council on Developmental Disabilities
Department of Health and Hospitals
P.O. Box 3455
Baton Rouge, LA 70821-3455
(504) 342-6804

MAINE

Division of Special Education
Maine Department of Education
State House Station #23
Augusta, ME 04333
(207) 289-5950 (Voice)
(207) 289-2550 (TDD)

MARYLAND

Maryland Technology Assistance Project
Governor's Office for Handicapped Individuals
300 West Lexington St.
1 Market Center-Box 10
Baltimore, MD 21201-3435
(410) 333-4975

MASSACHUSETTS

Deputy Commissioner for Policy and Programs
Commission on the Deaf & Hard of Hearing
Central Office
600 Washington St., Rm. 600
Boston, MA 02111
(617) 727-5106 (Voice/TDD)

MINNESOTA

Minnesota Star Program
300 Centennial Bldg.
658 Cedar St.
St. Paul, MN 55155
(612) 297-1554 (Voice)
(612) 296-9962 (TDD)

MISSISSIPPI

Division of Rehabilitation Services
300 Capers Ave.
Jackson, MS 39203
(601) 354-6891 (Voice/TDD)

MISSOURI

University of Missouri- Kansas City
Institute for Human Development
University of Missouri-Kansas City
Kansas City, MO 64110
(816) 235-1770 (Voice)
(816) 235-1203 (TDD)

MONTANA

Montana Department of Social and
Rehabilitation Services
Rehabilitation Services Division
111 Sanders
P.O. Box 4210
Helena, MT 59604
(406) 444-2590 (Voice/TDD)

NEBRASKA

Assistive Technology Project
Nebraska Department of Education
Division of Rehabilitative Services
301 Centennial Mall South
P.O. Box 94987
Lincoln, NE 68509-4987
(402) 471-0735 (Voice/TDD)
(800) 742-7594 (Voice/TDD)

NEVADA

Program Development
Rehabilitation Division, PRPD
505 East King St., Rm. 502
Carson City, NV 89710
(702) 687-4452 (Voice/TDD)

NEW HAMPSHIRE

Department of Education
State of New Hampshire
Concord, NH 03824
(603) 362-4320

NEW MEXICO

New Mexico TAP
State Department of Education
Division of Vocational Rehabilitation
604 West San Mateo
Santa Fe, NM 87505
(505) 827-3533 (Voice)
(800) 866-ABLE (TDD)

NEW YORK

New York State Office of Advocate for
the Disabled
TRAID Project
One Empire State Plaza, 10th Fl.
Albany, NY 12223-0001
(518) 474-2825 (Voice)
(518) 473-4231 (TDD)

NORTH CAROLINA

North Carolina Assistive Technology
Project
Department of Human Resources
Division of Vocational Rehabilitation
Services
1110 Navaho Dr., Suite 101
Raleigh, NC 27609
(919) 850-2787

OREGON

Department of Human Resources
Oregon Vocational Rehabilitation Division
Technology Access for Life Needs
2045 Silverton Rd., N.E.
Salem, OR 97310
(503) 378-3850 (Voice/TDD)

SOUTH CAROLINA

South Carolina Vocational Rehabilitation Department
P.O. Box 15
West Columbia, SC 29171-0015
(803) 822-5303

TENNESSEE

Tennessee Technology Access Project
Department of Mental Health and Mental Retardation
3rd Fl., Doctor's Bldg.
706 Church St.
Nashville, TN 37243-0675
(615) 741-7441

UTAH

Utah Assistive Technology Program
Utah State University
Developmental Center for Persons with Disabilities
Logan, UT 84322-6855
(801) 750-1982

VERMONT

Assistive Technology Project
Department of Aging and Disabilities
Agency of Human Services
103 South Main St.
Waterbury, VT 05676
(802) 241-2186

VIRGINIA

Virginia Assistive Technology System
Department of Rehabilitative Services
4901 Fitzhugh Ave.
P.O. Box 11045
Richmond, VA 23230
(804) 367-0315 (Voice)
(804) 367-0315 (TDD))

WISCONSIN

WisTech
Division of Vocational Rehabilitation
1 West Wilson St., Rm. 950
P.O. Box 7852
Madison, WI 53702
(608) 266-1281 (Voice)
608) 266-9599 (TDD

Case Studies and Model Programs

Zenobia Bagli
Robert Gilmore
Roy Rowland
Eleanor Stromberg
McDonald's Representative

The ADA: An Evolutionary Force In Your Case Management

James Healey

TRAINING AND TECHNICAL SESSIONS

	Friday	Saturday
Assistive Listening Systems and the ADA - Making It All Work Robert Gilmore	1:30 - 3:00(A) 3:30 - 5:00(B) Chestnut	1:30 - 3:00(A) 3:30 - 5:00(B) Dogwood
Assistive Technology and Applications: Speech/Language Diane Bristow	None	1:30 - 3:00 Plaza B
Incorporating ADA Consultation Into Your Practice Eleanor Stromberg	2:30 - 3:00 Dogwood 3:30 - 4:00 Dogwood	1:30 - 2:00 Beech A
Individualized Assessments and Communication Profiles James Healey	4:00 - 5:00 Dogwood	2:00 - 3:00 Beech B
Keys to Forensic Preparation Roy Rowland	1:30 - 2:00 Dogwood	1:30 - 2:00 Beech B 3:30 - 4:00 Beech A
Marketing Tools and Strategies Helen Pollack, Cheryl Russell, Alexis Waters, Fred Whiting	3:30 - 5:00 Plaza B	3:30 - 5:00 Plaza B
Strategies for Assessing Facility Communication Accessibility Jo Williams	None	2:15 - 3:00 Beech A 4:15 - 5:00 Beech A
TDD Relay Systems: Personnel Training and Issues Pamela Ransom	2:15 - 3:00 Plaza B	None
Visual Communications in the '90's Judith Harkins	1:30 - 2:15 Plaza B	None

Assistive Listening Systems and the ADA - Making It All Work

Robert Gilmore

Assistive Listening Systems and the ADA - - Making It All Work

A training and technical session presented at:

The ABC's of the ADA: Conference on the Americans With Disabilities Act

May 1 - 3, 1992

Washington, DC

Presented by:

Robert A. Gilmore, M.S., CCC-A
President and Director of Research and Development
American Loop Systems
43 Davis Road, Suite 2
Belmont, Massachusetts 02178

Telephone: (617) 776-5667 (PRO-LOOP)
(800) 283-4601 (Voice)
(800) 955-7204 (TDD)
FAX: (617) 666-5228

INTRODUCTION:

I. General Overview of the Americans with Disabilities Act of 1990 (PL 101-336)

A. Assistive Listening Systems and the Americans with Disabilities Act

1. Some General Definitions:

a. Deaf vs. Hard-of-Hearing vs. Hearing-Impaired

b. Hearing Aids vs. Assistive Listening Devices vs. Assistive Listening Systems

2. Key ADA Words, Terms, and Definitions:

a. Title I -

b. Title II -

c. Title III -

d. Disability -

e. Essential Job Functions -

f. Undue Hardship -

g. Effective Communication -

h. Qualified Individual With a Disability -

i. Case-By-Case Determination -

j. Direct Threat -

k. Auxiliary Aids and Services -

l. Reasonable Accommodation -

m. Major Life Activities -

n. Alternative Methods -

B. ADA Requirements/Guidelines and Assistive Listening Systems Citations

1. ADA Accessibility Guidelines (ADAAG)

- 4.30 Signage.
- A4.30.7* Symbols of Accessibility.
- Assembly Areas.
- A4.33.6 Placement of Listening Systems.
- A4.33.7 Types of Listening Systems.
- Table A2. Summary of Assistive Listening Devices

2. Uniform Federal Accessibility Standards (UFAS)

- Minimum Requirements.
- 4.1.2 Accessible Buildings: New Construction.
- 4.1.2(18)(b) Assembly areas:
- 4.1.3 Accessible Buildings: New Construction.
- 4.1.3(19)(b)
- A4.33 Assembly Areas.
- A4.33.6 Placement of Listening Systems.
- A4.33.7 Types of Listening Systems.

II. Overview of Assistive Listening Systems

A. Why Are Assistive Listening Systems Needed?

B. Some Shared/Common Features of Assistive Listening Systems:

1. Microphones

2. Constantly changing/evolving

C. Creating "Effective Communication" Without Using Technology

D. FM Systems

E. Infrared Systems

F. Induction Loop Systems

G. Hard-wired Systems

H. Hybrid or Multi-Mode Assistive Listening Systems

III. Assistive Listening System Selection Criteria & Considerations

A. Goal #1:

B. Cost of the Assistive Listening System - Beware of hidden costs

C. Technical Considerations in Product Selection:

1. Start With Known Parameters Such As:

a. Type of Setting/Communication Environment

b. Size of the Space

c. Maximum Number of People

d. Budget

2. Identify the Anticipated and/or Desired Features:

a. Portability

b. User Mobility

c. User and Management Friendly

d. Fidelity

e. Power

f. Flexibility

g. Indoor/Outdoor Use

h. Durability and Reliability

i. Compatibility

j. Expansion

k. Is Technical/Manufacturer Support Available?

- Product Selection/Installation Services
- Repair Policy and Turn-Around-Time
- Service Contracts
- Equipment Loaner Policy
- Warranty Information
- Telephone Support
- Troubleshootability
- In-Service Training

l. Privacy

m. Single Use Disposable vs. Rechargeable Batteries

n. Multi-Purpose System Requirements

o. Architectural Modifications

p. Self-Monitoring and Environmental Pickup

q. Public Address System vs. Stand Alone System

r. Number of Receivers Needed? Required?

s. Identify Potential Sources of Interference:

- Are Adjacent Spaces Using Assistive Listening Systems?
- Avoid Using a Common Channel/Mode of Transmission
- Identify and Correct Sources of Interference:
  - Field Strength Meter -
  - Radio Scanner -
  - Infrared Meter -

D. Some Human Considerations in Product Selection:

1. Acceptability

2. Type and Degree of Hearing Loss

3. Life Style Considerations

4. Previous Experience

5. Expressed Preference.

6. Type of Receiver to be Used

- Hearing Aids:
  - In-the-Ear
  - In-the-Canal
  - Behind-the-Ear
  - Eyeglass-Type
  - Body-Worn
- Hearing Aid Features:
  - Direct-Audio-Input (DAI) -
  - Telecoil ("T" or "MT" Switch)
- Special Receiver With:
  - Headphones or Earphones
  - Earbuds or Insert-Type Headphones
  - Under-the-Chin or Stethoscope-Type Design
  - Neckloop and Hearing Aid with Telecoil
  - Neckloop with Hearing Aid with Telecoil via Silhouette Inductor
  - Hearing Aid with Direct-Audio-Input
  - Neckloop and In-the-Ear Telecoil Pickup Device
  - No Special Receiver Needed
- Vibrotactile Devices
- Cochlear Implant Systems
- Monaural vs. Stereo?
  - Multi-Modality Receivers

IV. Successful Implementation of Assistive Listening Systems: Characteristics of Effective Accommodation Solutions

A. A Clear Understanding of the Communication Needs of the People Who Will be Using the Assistive Technology.

B. A Budget.

C. An Implementation Plan.

D. A Communication Strategy.

E. A Feedback Loop.

F. An Appreciation for Keeping Things Simple and Understandable.

G. A Commitment to Make and Keep Their Institution Communication Accessible as Technology Changes and Systems Approach the End of Their Useful Life.

V. Assistive Listening System Case Studies: Brainstorming Accessibility Solutions

A. Theater - Five movie multiplex theater (each space has 450 fixed seats)

B. Concert Hall - (1500 fixed seats)

- Massachusetts
- New York

C. International Airport Terminal Used for Public Transportation -

- Passenger Waiting Areas
- Information Kiosks
- Ticket Counter With Hard-of-Hearing Ticket Agent

D. Local bank-teller window - - with glass partition. Bank teller is hard-of-hearing and wears an in-the-ear hearing aid but no one at the bank is aware of the hearing loss.

E. Hard-of-hearing accountant in large company. Has hearing aid with "T" coil.

VI. Questions & Answers

VII. Summary & Conclusions

Suggested Assistive Listening Systems and the ADA Resources

Assistive Listening Devices and Systems. (November, 1985) Rockville, MD: American Speech-Language-Hearing Association.

Compton, C. L. (1989). Assistive Devices: Doorways to Independence. (video cassette and book). Columbia, SC: The Academy of Dispensing Audiologists. Telephone: (800) 445-8629

Compton, C. L. (Guest Editor). (February, 1989). Seminars In Hearing: Assistive Devices. (Vol. 10, Num. 1). New York: Thieme Medical Publishers.

Gilmore, R. and Lederman, N. (July/August, 1988). The Missing Link: Large Area Listening Systems. The Voice, pp. 14-18.

Equal Employment Opportunity Commission and U.S. Department of Justice. (1991, October). Americans with Disabilities Act Handbook. (EEOC-BK-19). Washington, DC: U.S. Government Printing Office.

To obtain a copy of the "ADA Handbook", contact:

Equal Employment Opportunity Commission (EEOC)
1801 L Street NW
Washington, DC 20507
(800)-669-3362 (Voice) or (800) 669-3302 (TDD).

Civil Rights Division
Office of the Americans with Disabilities Act
Department of Justice (DOJ)
P.O. Box 66118
Washington, DC 20035-6118
(202) 514-0301 (Voice) or (202) 514-0383 (TDD).

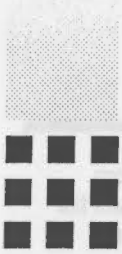
National Institute on Disability and Rehabilitation Research. (1990). Rehab Brief: Assistive Listening Devices in Education and Vocational Rehabilitation (ISSN: 0732-2623). Washington, DC: Department of Education.

To obtain a copy of "Rehab Brief - Assistive Listening Devices In Education and Vocational Rehabilitation", contact:

Rehab Brief
National Institute on Disability and Rehabilitation Research
U.S. Department of Education
400 Maryland Avenue SW
Washington, DC 20202-2572
(202) 732-1134 (Voice) or (202) 732-5079 (TDD).

To obtain a copy of the state of New York's "Assistive Listening System amendment which is now part of the New York State Uniform Fire Prevention and Building Code", contact:

New York State Office of Advocate for the Disabled
116 West 32nd Street
14th Floor
New York, NY 10001-3009
(212) 502-0877 (Voice) or (212) 502-0856 (TDD).



Short Course

Overviews and tutorials on important clinical and professional topics.

Assistive Devices in the Audiology Practice

Catherine V. Palmer
University of Pittsburgh

With the implementation of the Americans with Disabilities Act of 1990, audiologists have opportunities and responsibilities to better serve patients and to expand business with the evaluation, selection, and fitting of assistive devices. This paper provides a detailed description of the use of an interactive software program; a well-designed assistive device demonstration/evaluation center; and available literature describing evaluation methods to promote the evaluation, selection, and dispensing of assistive devices. The paper also includes an extensive suggested bibliography.

The Americans with Disabilities Act of 1990 (PL 101-336) (ADA) was signed by President Bush on July 26, 1990, and went into effect in January 1992. With the implementation of the ADA, the audiologist has an opportunity and responsibility to better serve patients and to expand business with the selection, evaluation, and fitting of assistive devices. The regulations summarized in the ADA ensure that individuals with disabilities have access to public accommodations, employment opportunities, transportation, and telecommunications. An estimated 24 million individuals with hearing impairments will benefit from the implementation of the ADA (ASHA, 1991).

Much of the "access" mentioned above will be provided through the acquisition of a variety of assistive devices. Assistive devices (also referred to as ALDs) are defined as "all systems designed to improve the communication ability of hearing-impaired persons or to alert them to the presence of environmental sound" (Kaplan, 1987). Assistive devices address a number of problems, such as the (a) inability to hear alerting devices; (b) inability to use the telephone for communication purposes; (c) inability to hear the television, radio, or stereo; and (d) inability to communicate in one-to-one or group settings because of intensity or signal-to-noise ratio problems. The role of assistive devices in complying with the new law is evident in several sections of the ADA description. The ADA requires that "[n]o individual shall be discriminated against on the basis of disability in the full and equal enjoyment of the goods, services, facilities, privileges, advantages and accommodations of any place of public accommodation . . ." (PL 101-336, § 302(a)). Under this act, discrimination would include both (a) failure to provide auxiliary aids and services unless it can be demonstrated that the change would alter the nature of the program or cause an undue hardship, and (b) failure to remove architectural and communication barriers in existing facilities unless it can be shown that the change is not readily achievable.

The ADA specifies that discrimination in employment includes "not making reasonable accommodations to the known . . . limitations of an otherwise qualified individual with a disability . . . unless [the employer] can demonstrate that the accommodation would impose an undue hardship . . ." (PL 101-336, § 102(b)(5)(A)). Undue hardship entails significant difficulty or expense for the size and nature of the business. Reasonable accommodations include making existing facilities accessible and acquisition or modification of equipment/devices (e.g., amplifiers, personal assistive listening devices, etc.). The employment regulations begin in July 1992 for most businesses; employers with 15-24 employees will not have to comply until July 1994. This act will not be enforced for employers of fewer than 15 people.

The audiologist should have several roles in the implementation of the ADA. These would include (a) educating the public about the needs of individuals with hearing impairments; (b) educating the public about the heterogeneous nature of hearing impairments; (c) educating the public about the type of assistance that is available and what results can be expected when using this assistance; (d) consulting with businesses in the selection of appropriate assistive devices for their respective environments; (e) selecting, purchasing, installing, and maintain-

ing devices in businesses; (f) selecting and fitting assistive devices for individual employees (e.g., an individual telephone amplifier); (g) educating consumers with hearing impairments, as well as advocacy groups, about available devices and the implications of the ADA; and (h) fitting hearing aids in a prospective manner that includes consideration of the compatibility of the hearing aid with the devices that will be available in businesses and public places because of the ADA.

Problems

Information

Historically, the majority of audiologists have not used their expertise in the area of assistive devices in the day-to-day clinical setting. Webster (1968) defines an expert as "a person who is very skillful or highly trained and informed in some special field." Many audiologists may not feel that they are experts in the area of assistive devices because of a lack of training in graduate programs and because of a perceived lack of resources related to assistive devices. ASHA (1991) reported the results of a survey conducted in 1989 that looked at practice trends. Of the respondents (N = 852-861), 60.4% evaluate clients with assistive devices, 63.3% dispense assistive listening devices, and only 44.2% dispense alerting devices. Whether dispensing automatically includes evaluating and what constitutes an evaluation were not reported. The survey does not indicate how many assistive devices were dispensed per year or how many evaluations occurred. In other words, if a clinician dispensed one assistive listening device per year it would be assumed that he/she was included in the 63.3%.

Cost/Profit

Audiologists claim they stay away from dispensing assistive devices because of an inability to make this area of their practice cost-effective. Most complain that ALDs actually lose money for the clinic. Gallagher (1988) listed the reasons audiologists do not dispense assistive devices and included slim profit margins and high up-front expenses needed to stock a wide variety of devices.

The profit problem may be attributed to fitting the dispensing of assistive devices into the hearing-aid-dispensing model. With hearing aids, cost covering and profit are generally built into the price of the device. The profit model works because hearing aids are rarely directly available to the public from the manufacturer. The public must go through a "distributor" (audiologist or hearing aid dispenser). This is not true of assistive devices. Consumers can buy directly from manufacturers and a variety of distributors that are not hearing or healthcare specialists (i.e., telephone companies, department stores). There are no FDA regulations for assistive devices and no licensing for the potential dispenser. Consumers do not perceive the assistive device as needing to be "fit" to the individual and, therefore, feel safe in a nonprofessional purchase.

If audiologists build a reasonable profit into the cost of each device, the device price becomes too expensive and is not competitive with other distributors. Also, many audiologists spend time and money educating people with hearing aids about assistive devices, only to see them purchase the devices from other sources. If one waits for the sale to build in profit, the opportunity may never materialize. Many audiologists recommend other sources for the device because they know the patient will save money. This is admirable, but the present model leaves the audiologist without an important role in assistive device dispensing, and leaves the patient without the use of the experts in the area of assistive device technology. A recommended fee schedule is described later in this paper.

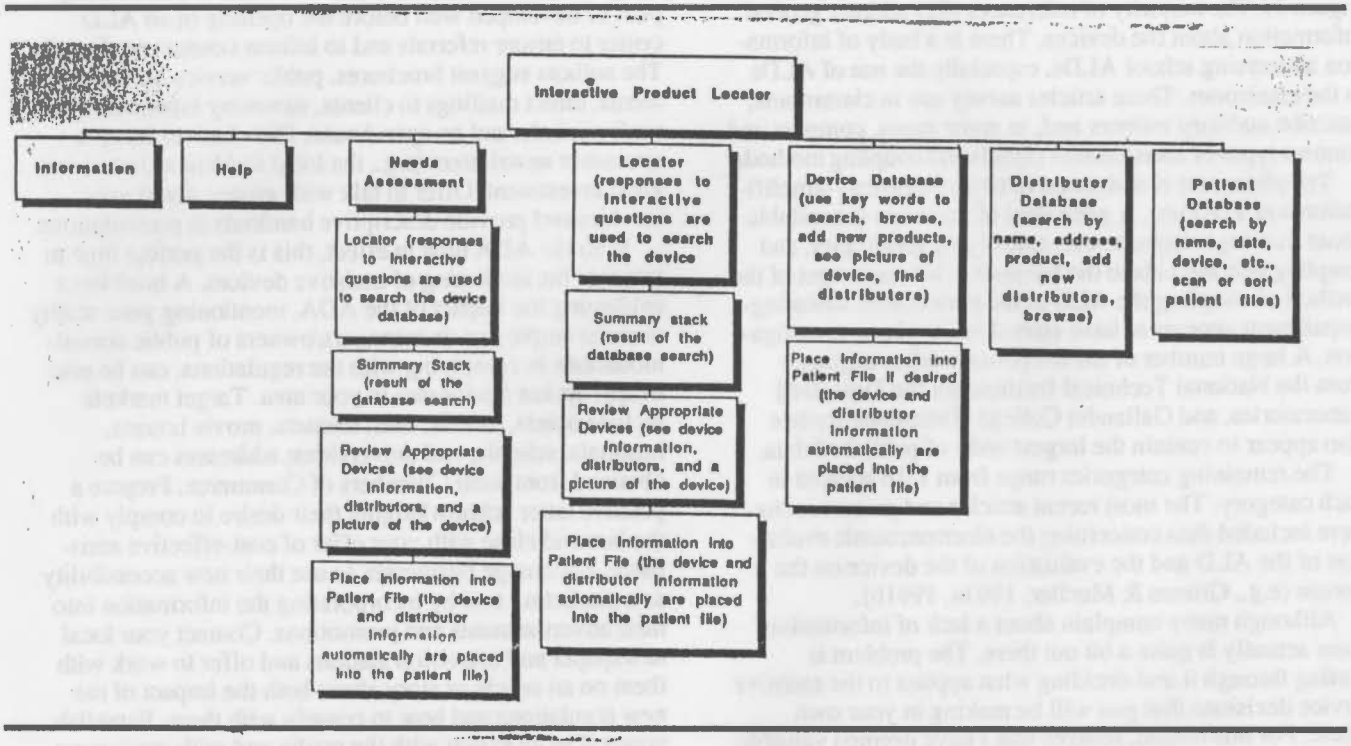
Competing With Yourself

Some authors have discussed the potential problem of assistive devices as competition to hearing aid sales (e.g., Bebout, 1988; Gallagher, 1988). Assistive devices generally alert individuals to important sounds (e.g., a smoke detector that might not be heard when the hearing aid is not worn at night), enhance very specific communication situations (e.g., a telephone amplifier), or enhance the performance of a hearing aid (e.g., in a noisy lecture hall). With the advent of the ADA, assistive devices also will provide mass access that cannot be achieved by a business with individual hearing aid fittings. As the name suggests, these devices are assistive in nature and therefore complement the use of a hearing aid. Because they may be used in conjunction with a hearing aid, it follows that the same individual who had the expertise to recommend the hearing aid should recommend the assistive device.

Solutions

The following description is offered as a solution to these problems. It is unique in that it covers all of the areas that I have identified as part of the process of successful assistive device dispensing. The solution is largely built around instant access to a wide knowledge base and an easy to follow path of individualized evaluations. Audiologists have expertise and clinical experiences that far surpass others selling assistive devices, but have lacked an organized way to approach a clinical model for assistive device evaluation and selection. The audiologist requires a new set of rules and tools because the present model has not promoted the routine evaluation and selection of assistive devices in the audiology clinic. A software program to aid in selection was developed by Palmer, Garstecki, and Rauterkus (1990) with the assistance of the American Speech-Language-Hearing Foundation and Apple Computer™. This software and a set of assistive devices that represent all of the selection variables are the tools that will be used to create an effective clinical assistive device program. Figure 1 provides a flowchart of the *Interactive Product Locator*. The software program provides a needs assessment, interactive questionnaire for specific device selection, complete device database, complete distributor database, and a patient database. Each feature of the program will be described throughout the presentation of this solution. [Ordering information for the *Interactive Product Locator* can be obtained by calling the Support Syndicate for Audiology, 800-869-0758, or

FIGURE 1. Flow chart of the Interactive Product Locator.



writing the Support Syndicate for Audiology, 1739 E. Carson Street, Pittsburgh, PA 15203.]

Information for the Student and the Professional

As part of the effort to present complete information about the selection and evaluation of assistive devices, a literature review, using reference database searches and a manual compilation of references and convention presentations, was completed. The list of references presented in the selected bibliography cannot be presented as exhaustive, but it is as complete as possible. Over 300 sources were identified (published and unpublished). The references were categorized in two ways (type of publication and topic) to more accurately profile available information.

First, the sources were sorted by "type of publication" (see Figure 2). "Association journals" are the largest source of ALD publications. This category generally addresses three areas, including (a) information specific to the schools, (b) general descriptions and information about ALDs, and (c) articles concerned with the investigation or description of telephone devices.

When the categories of presentations, proceedings, and "other" are combined, they form a substantial group that could be labeled "unpublished sources." Much of the information about needs assessment, evaluation of the device objectively and subjectively, and current trends is reported in these sources. Unfortunately, the profession as a whole is least likely to obtain these references. This large group of unpublished sources seems to indicate that a considerable amount of ALD investigation is still in the very earliest stage; this stage is often characterized by information being disseminated by "word of mouth."

FIGURE 2. Assistive device sources sorted by type of publication.

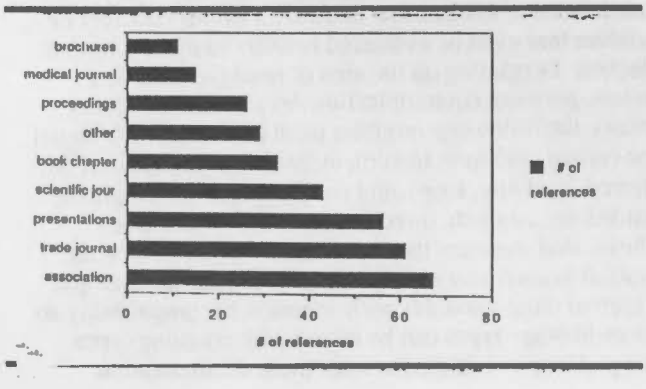
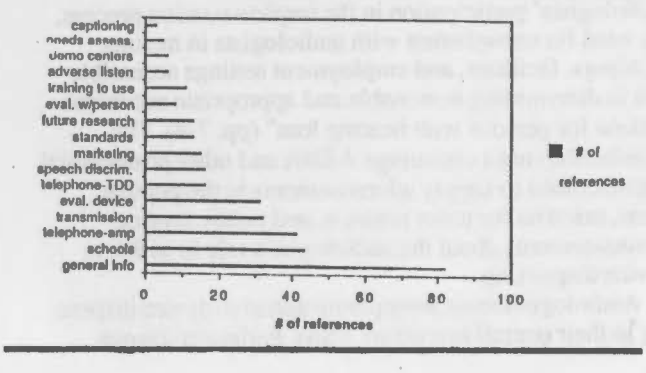


FIGURE 3. Assistive device sources sorted by topic.



The references were examined and sorted by topic (see Figure 3). The majority of references (82) address general information about the devices. There is a body of information addressing school ALDs, especially the use of ALDs in the classroom. These articles survey use in classrooms, describe auditory trainers and, in some cases, compare and contrast types of transmission signals and coupling methods.

Telephone use is addressed in two categories—amplification and TDD use. A great deal of literature is available about training telephone use, amplifying techniques, and coupling hearing aids to the telephone. Measurement of the method of coupling the ALD to the person with a hearing-impairment appears to have started in telephone investigation. A large number of the telephone studies originate from the National Technical Institute for the Deaf, Bell Laboratories, and Gallaudet College. Telephone studies also appear to contain the largest body of published data.

The remaining categories range from 1-16 sources in each category. The most recent articles and presentations have included data concerning the electroacoustic evaluation of the ALD and the evaluation of the device on the person (e.g., Grimes & Mueller, 1991a, 1991b).

Although many complain about a lack of information, there actually is quite a bit out there. The problem is sorting through it and deciding what applies to the assistive device decisions that you will be making in your own clinic. For this reason, sources that I have deemed valuable are referenced in each of the categories. There are most certainly other references that would have been just as valuable. The chosen references are only a reflection of my preferences. The entire bibliography is included so readers can make their own decisions.

Information about currently available assistive devices is valuable to the audiologist when answering consumer questions or designing systems. The *Interactive Product Locator* can be used to review available devices (see Figure 1).

Public Information/Marketing

Make your assistive device demonstration/evaluation center identified as the ultimate source for assistive devices. People with hearing impairments and institutions that are trying to comply with the ADA should use your services when selecting assistive devices. A great deal of public information can be provided by our professional organizations (e.g., ASHA). ASHA (1991) reports providing extensive comments on the proposed ADA regulations including "the importance and cost-effectiveness of audiologists' participation in the implementation process, the need for consultation with audiologists in making buildings, facilities, and employment settings accessible and in determining reasonable and appropriate accommodations for persons with hearing loss" (pp. 7-8). The membership must encourage ASHA and other professional organizations to supply advertisements in the popular press, material for news releases, and public service announcements about the audiologist's role in assistive device dispensing.

Audiologists must incorporate assistive device dispensing in their overall marketing plans. Parimeter-Jacobs, Kraemer, and Jared (1988) recommend that a marketing plan be developed well before the opening of an ALD center to ensure referrals and to inform consumers directly. The authors suggest brochures, public service announcements, direct mailings to clients, summary information to professionals, and an open house. Direct advertising in consumer newsletters (e.g., the local *Shhh* newsletter) is a good investment. Offer to talk with groups about your services and provide descriptive handouts at presentations.

With the ADA now in effect, this is the perfect time to increase the marketing of assistive devices. A brief letter explaining the impact of the ADA, mentioning your ability to assist employers or managers/owners of public accommodations in complying with the regulations, can be sent to appropriate businesses in your area. Target markets include hotels, motels, inns, theaters, movie houses, hospitals, schools, and universities; addresses can be obtained from local Chambers of Commerce. Prepare a positive letter acknowledging their desire to comply with the law and close with your offer of cost-effective assistance. Encourage businesses to use their new accessibility as a marketing tool by incorporating the information into their advertisements and promotions. Contact your local newspaper and television stations and offer to work with them on an article or story about both the impact of the new regulations and how to comply with them. Establish yourself as an expert with the media and with consumers (people with hearing impairments and business owners).

Materials Required for the Assistive Device Demonstration/Evaluation Center

Gallagher (1988) reported that there were approximately 40 centers across the country that allowed hands-on demonstration of devices. Some of these centers have published articles describing the devices available for demonstration and how the devices are organized (e.g., Parmiter-Jacobs, Kraemer, & Jared, 1988). These centers largely concentrate on the demonstration of particular devices as opposed to the evaluation of technology and coupling alternatives to use in making a final decision among a variety of devices.

The materials listed in Table 1 constitute a complete assistive device demonstration and evaluation center. The costs are approximate. These materials represent a straightforward way of looking at any device. After reviewing available literature and gaining extensive clinical experience, it became evident that there are a limited number of variables that must be evaluated in order to make a device selection. Depending on the area of need (i.e., alerting devices, personal communication devices, or a specialty device), the following variables must be determined: signal type (visual, auditory, tactile), technology type (none, FM, infrared, hardwire, loop), and coupling type (microphone/unaided ear, t-switch, direct input, earphone). If one believes that these are the finite set of variables, then the demonstration center simply needs to contain an example of each of these variables with attention to compatibility so that technology types can be mixed with coupling types. This philosophy is different from most demonstration

TABLE 1. Materials for the assistive device demonstration/evaluation center.

General Materials		
A.	Macintosh Classic™ (2 MB RAM, hard drive, keyboard, printer) (suggested retail, your price will be lower)	$2000.00
B.	Television (monitor)	$200.00
C.	VCR	$350.00
D.	Several closed captioned taped shows (cost of tapes)	$10.00
E.	Cassette tape player connected to two small speakers and multipspeaker babble tape (Radio Shack™)	$120.00
F.	Sound Pressure Level Meter (Radio Shack™)	$30.00
G.	Working telephone with telephone line (modular with jack, t-switch compatible)	available
H.	Second telephone in another area	available
I.	Lamp [device to allow it to flash (HARC™), light bulbs]	$40.00
J.	Electrical outlets	available
K.	Surge supressor (Radio Shack™)	$30.00
L.	Security kit for the computer	$50.00
M.	Comfortable chair	available
N.	Batteries (9 volt, AAA, AA)	$40.00
O.	Battery tester (HARC™)	$11.95
P.	Telephone T-connector (HARC™)	$1.75
Alerting Materials		
Q.	Signalman light flasher (HARC™)	$39.95
R.	Sonic Alert Silent Sentry (HARC™)	$45.25
S.	Low frequency, loud smoke detector with strobe (HARC™)	$138.50
T.	Bed vibrator connected to an alarm clock (HARC™)	$70.00
Personal Communication Materials		
Personal Communication - Telephone		
U.	TDD (HARC™)	$170.00
V.	Handset amplifier (HARC™)	$29.95
W.	In-line amplifier (HARC™)	$17.75
X.	Portable Strap-On AT&T (HARC™)	$23.95
Personal Communication - One-to-One, Small Group, Television, etc.		
Y.	Personal FM System Demo Kit (Williams Sound™) body pack transmitter mini lavalier microphone (032) personal receiver (PRM R7E) dual-mini earphone (EAR 014) button receiver with cord (EAR 012 WC) neckloop telecoil coupler (NKL 001) extended-capacity battery kits (BAT SYS A)	$365.00
Z.	Pocketalker II System Demo Kit (Williams Sound™) Pocketalker II amplifier (PKT B1) plug mount microphone (MIC 014) TV listening kit (WCA 007 WC) telelink telephone coupler (TEL 001) mini-earphone (EAR 013) lightweight headphones (HED 001) neckloop telecoil coupler (NKL 001)	$99.00
AA.	Infrared (HARC, SM-SI-SYS™) microphone and transmitter receiver/earphone combination - under chin	$324.95
	clip on receiver (SM-HD1407) (will go with other couplers)	$126.98
	plug in power regenerator with adapter	$20.00
AB.	Loop (OT-Loop SYS from HARC™)	$191.50
	TOTAL (with computer)	$4546.48
	TOTAL (without computer)	$2546.48

Note: A probe microphone measurement system was not included in these costs (approximately $11,000) but will be addressed as a valuable assessment tool. An investment in probe microphone equipment should be shared by the hearing aid dispensary.

HARC, 3130 Portage Road, PO Box 3055, Kalamazoo, MI 49003, 616-381-6930

Williams Sound Corporation, PO Box 444120, 6844 Washington Ave. South, Eden Prarie, MN 55344, 612-941-2896

centers that have an example of each device they dispense.

Once a solution in each variable has been selected, the dispenser chooses any number of devices that have the same characteristics without actually having those devices represented in the demonstration center. The sections below detail the suggested evaluation of each variable, using the listed materials. The goal in Table 1 was to find an inexpensive example of each of the variables. This creates an affordable demonstration center without limiting the patient to a particular manufacturer. The manufacturers used in setting up the demonstration center at the University of Pittsburgh are identified in Table 1. These listings are not meant to be an endorsement and most of these products could have been ordered from a variety of other sources. We made our decisions based on price and vendor availability. Purchasing from one or two distributors saves time. Both of these decisions saved time and money.

Time and energy should be spent setting up the assistive device center. One carpeted room with adequate electrical outlets is necessary. All of the devices should be ready to work without plugging and unplugging when conducting an evaluation. The speakers (item E in Table 1) should be fairly mobile so you can create a variety of communication environments. Real-ear probe-microphone equipment can be located in this room and used for both hearing aid and assistive device evaluations. This room also is appropriate for aural rehabilitation therapy or counseling.

There are several other materials that are useful for education and information that can be obtained for the demonstration/evaluation center without cost. These include addresses for closed-captioned listings, libraries that have closed captioned videos, a TDD phone book, *TV Guide* with examples of how to identify closed-captioned programs, local agencies that lend devices for trial use, information on the telephone relay system, and information on any state programs that purchase devices for individuals.

When Should the Assistive Device Evaluation Take Place?

Figure 4 illustrates what I believe is the typical time line for assistive device selection. The assistive device is not represented as an integral part of the evaluation. The word "retrofit" indicates that it is an afterthought. Often, ideal solutions are no longer possible because of a lack of up-front decisions in the hearing aid selection (e.g., t-switch, direct input, M/T-switch, BTE vs. ITE style). This is a failure model because the assistive device is considered after the individual realizes that the hearing aid is not solving all of the problems. This model virtually ignores alerting devices. No matter how well hearing aids work, people do not wear them to bed and therefore may need assistance with hearing alerting devices (telephone, alarm clock, smoke detector).

FIGURE 4. Common flow chart representing the nature of assistive device evaluation.

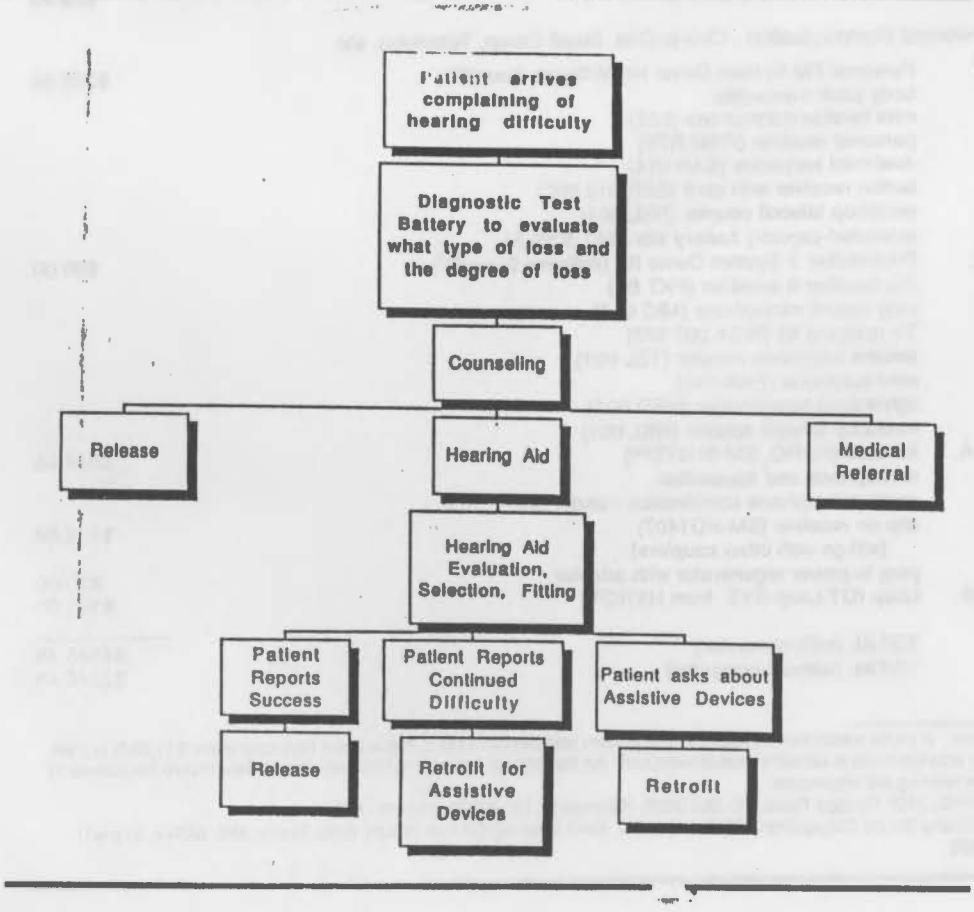


FIGURE 5. Suggested flow chart for the time line of assistive device evaluation.

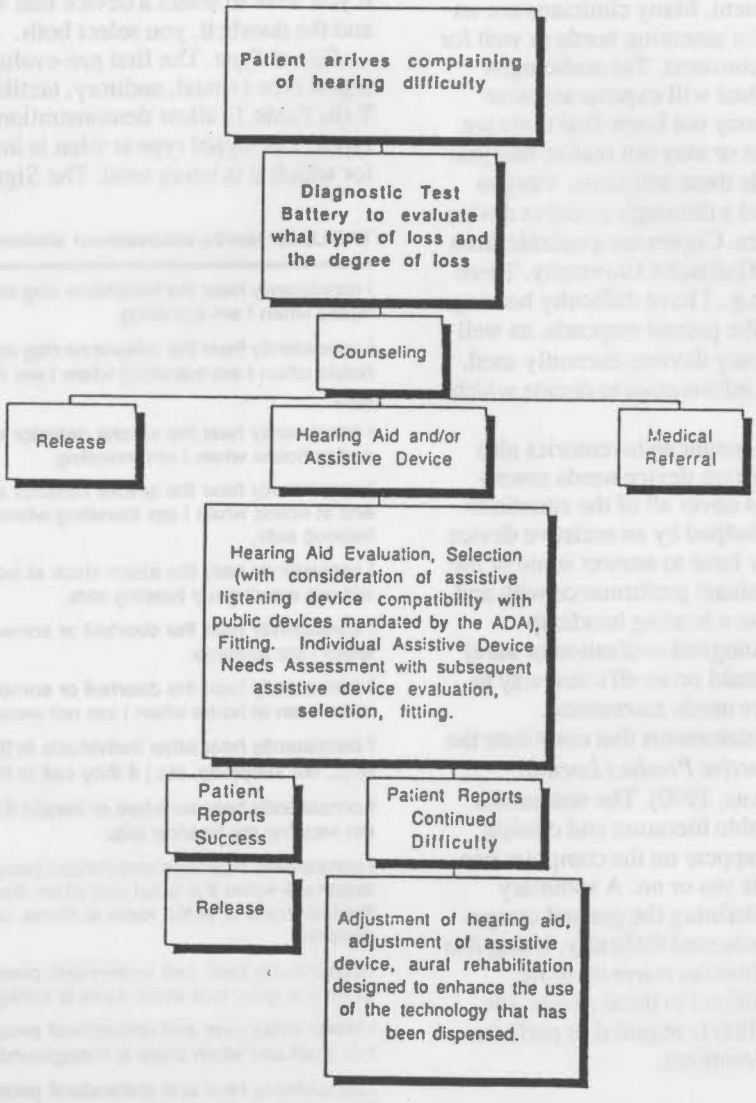


Figure 5 illustrates the model that I would recommend. There are two important features in this model. The first feature is the attention to hearing aid compatibility with assistive devices mandated by the ADA. Centra (1991) and Grimes and Mueller (1991a, 1991b) describe the necessity of including a t-switch, provide solutions for some of the problems with t-switches, and provide evaluation techniques. Hawkins and Van Tasell (1982) reported the adverse effects of using the M/T-switch position. The signal-to-noise ratio enhancement virtually disappeared under the setting. Recently, several hearing aid companies have claimed to boost the T-switch output over the microphone output. Data have not been reported using this configuration.

The second feature is the Assistive Device Needs Assessment. The only way to know if an individual could potentially benefit from an assistive device is to systematically evaluate the communication and alerting needs of that individual with consideration of the environment. The needs assessment is described below.

An individual may decide not to pursue assistive devices at the time of the hearing aid evaluation. If the plan is to couple the device to the person through the hearing aid, the clinician may want to postpone the assistive device evaluation until the personal hearing aid arrives. The assistive device evaluation will not be effective without the individual's hearing aid. The results of the needs assessment and the reason for waiting for the evaluation should be made clear. Each patient should be provided with a handout detailing the types of devices that are available. If you do not design your own, I highly recommend the brochure available from the Alexander Graham Bell Association and authored by Diane Castle.

Needs Assessment

Very little has been written in the area of assistive listening device needs assessment. Many clinicians use an informal interview approach for assessing needs or wait for patients to volunteer specific concerns. The audiologist cannot assume that the individual will express assistive device needs. The individual may not know that there are solutions for specific problems or may not realize that you are the person who can provide these solutions. Vaughn and Lightfoot (1984) presented a thorough assistive device needs assessment questionnaire. Copies are available from the Audiology Department at Gallaudet University. There are two pages of statements (e.g., I have difficulty hearing the telephone ring.) to which the patient responds, as well as a space to list and evaluate any devices currently used. The clinician uses the written information to decide which devices to pursue.

Some of the recent hearing handicap inventories also may serve as a systematic assistive device needs assessment. Make sure that the items cover all of the situations where an individual could be helped by an assistive device (see Table 2). The patient may have to answer some of the questions twice in order to evaluate performance with and without hearing aids. If you use a hearing handicap inventory as part of your audiological evaluation or aural rehabilitation program, this would be an efficient way to incorporate the assistive device needs assessment.

Table 2 contains the set of statements that constitute the needs assessment in the *Interactive Product Locator* (Palmer, Garstecki, & Rauterkus, 1990). The statements were compiled from the available literature and clinical experience. These statements appear on the computer one at a time and the patient selects yes or no. A summary report is generated at the end defining the general categories in which the patient has indicated difficulty. Using this information, the patient and clinician move on to the product locator to identify solutions to these needs. The computer (from the materials list) is required to perform this part of the evaluation as described.

Device Pre-evaluation

Armed with the needs assessment results, the clinician and patient must make specific choices for each of the variables that together form an assistive device. Some choices are based on patient preferences, some are user limited, and others can be determined by careful evaluation with the materials in the evaluation center. The computer (from the materials list) is required to use the product locator and ultimately identify appropriate devices.

Alerting Device Pre-evaluation

Figure 6 illustrates the decisions to be made if an alerting device is needed. This is a linear way of illustrating the choices contained in the *Interactive Product Locator*. The types of alerting devices are listed. The flow chart that originates at "telephone ring" also extends from each of the other alerting devices. To reduce clutter, this part of the flow chart was not included for every device in the figure. Based on the needs assessment, one or a combination of alerting problems are chosen. For instance, if you wish to select a device that will handle the telephone and the doorbell, you select both.

Signal Type. The first pre-evaluation decision is the signal type (visual, auditory, tactile). Materials I, Q, R, S, T (in Table 1) allow demonstration of each of the signal types. The signal type is what is important, not the problem for which it is being used. The Signalman light flasher and

TABLE 2. Needs assessment statements.

I consistently hear the telephone ring at home, in the office, and in hotels when I am travelling.
I consistently hear the telephone ring at home, in the office, and in hotels when I am travelling when I am not wearing my hearing aids.
I consistently hear the smoke detector alarm at home, in the office, and in hotels when I am travelling.
I consistently hear the smoke detector alarm at home, in the office, and in hotels when I am travelling when I am not wearing my hearing aids.
I consistently hear the alarm clock at home and when I travel without wearing my hearing aids.
I consistently hear the doorbell or someone knocking at the door when I am at home.
I consistently hear the doorbell or someone knocking at the door when I am at home when I am not wearing my hearing aids.
I consistently hear other individuals in the house or elsewhere (e.g., out shopping, etc.) if they call to try to get my attention.
I consistently hear an infant or invalid if they need me when I am not wearing my hearing aids.
I consistently hear and understand people speaking on the telephone when it is quiet and when there is background noise on the telephone or in the room at home, at work, and when I am travelling.
I consistently hear and understand people speaking on television when it is quiet and when there is background noise in the room.
I consistently hear and understand people speaking on radio when it is quiet and when there is background noise in the room.
I consistently hear and understand people speaking on the stereo (tape deck, compact disk, etc.) when it is quiet and when there is background noise in the room.
I consistently hear and understand conversations with one other person in a quiet room and in a noisy place at home and elsewhere (i.e., work, restaurants, etc.).
I consistently hear and understand when I am communicating with a group of people at home and elsewhere (i.e., meetings, social gatherings, restaurants, etc.).
I consistently hear and understand when I am listening in a lecture hall, theatre, or religious hall.
I am able to telephone and give a clear message to the police, ambulance, or fire department in the case of an emergency. After starting the message, I can hear and understand any response.
I must use a stethoscope and am able to hear sufficiently with a standard device.
I am able to monitor my voice intensity appropriately.
I consistently hear or see my turn signal in the car in order to know to turn it off.
I consistently hear emergency vehicle sirens in time to take appropriate action.

Sonic Alert Silent Sentry are examples of visual signals and can be activated by the telephone ring. If you cannot have someone call to make the telephone ring, call your local telephone company and ask for the code number that can be dialed on a telephone to make it ring. (They use this method to verify repairs.) If you explain how the number is going to be used, they should give it to you. The smoke detector (S) demonstrates both auditory and visual signals and can be activated using the test switch on the device. Put the bed vibrator under the chair cushion so the patient can get an idea of how it would feel under a pillow or attached to a bed.

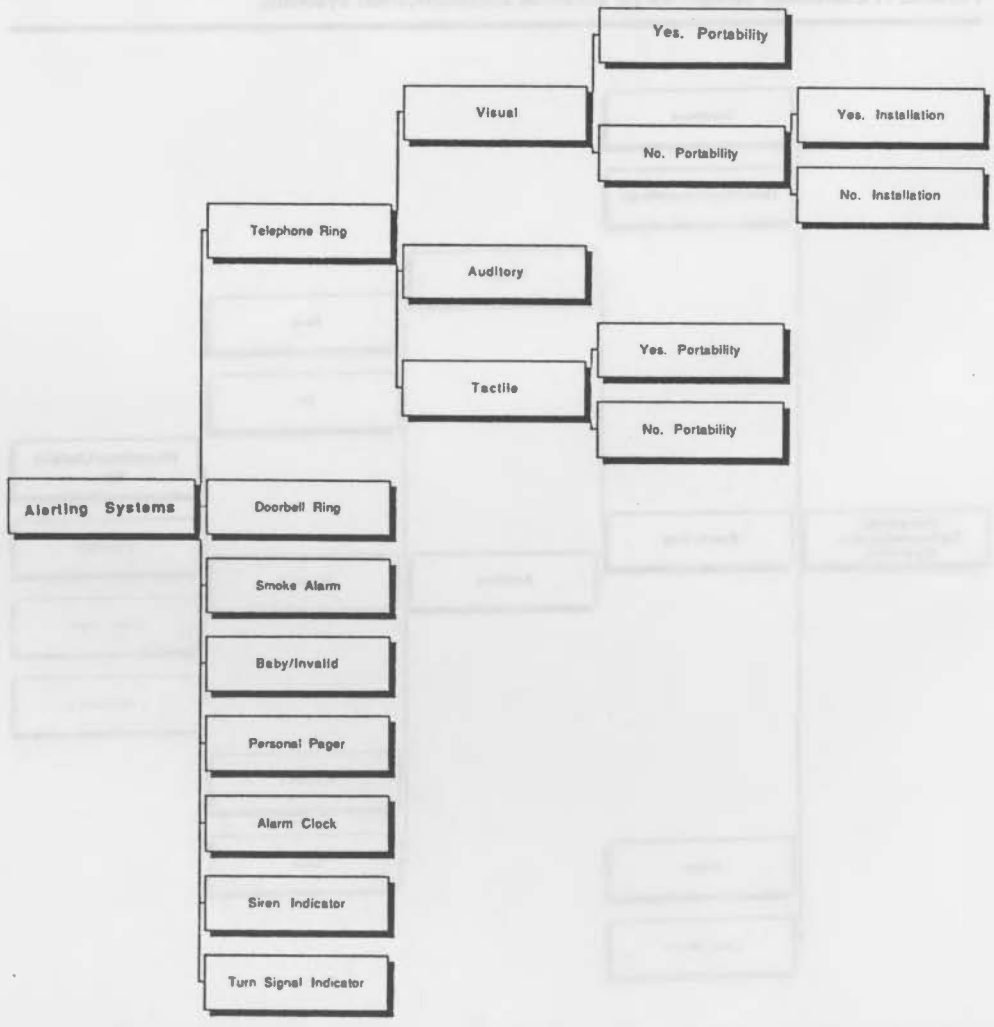
Based on the individual's audiogram, you may know whether they will hear the auditory signal. If you are not sure, simply try it with the patient facing away from the signal. You may want to create a noisy room to make sure the signal will still be heard (material E and a multispeaker babble tape from Table 1).

It is not realistic to attempt to evaluate the ability of a particular signal to wake up a patient. If you have a good return policy, select the signal type that is the patient's preference and make certain patients know the device can be returned if it does not wake them up. You might allow a one night trial of the device. Loaning devices can become cumbersome if repairs are required or if the device is not returned. You also should have a deposit arrangement.

Part of the evaluation requires the clinician to interview the patient about the environment in which the device will be used. Will flashing lights be required all over the house to alert the individual if the telephone rings? Will members of the family find loud sounds bothersome? Will flashing lights be seen in the day? The questions and answers vary depending on the environment. By being familiar with available devices (the database portion of the *Interactive Product Locator*), audiologists will ask appropriate questions based on available device configurations.

Portability and Installation. Portability and installation are important issues for the consumer. The needs assessment should indicate whether the individual requires a portable device. If the device does not need to be portable,

FIGURE 6. Evaluation categories for alerting devices.



it is important to find out if some installation is manageable. For some people, installation may be a problem.

Personal Communication Systems Pre-evaluation

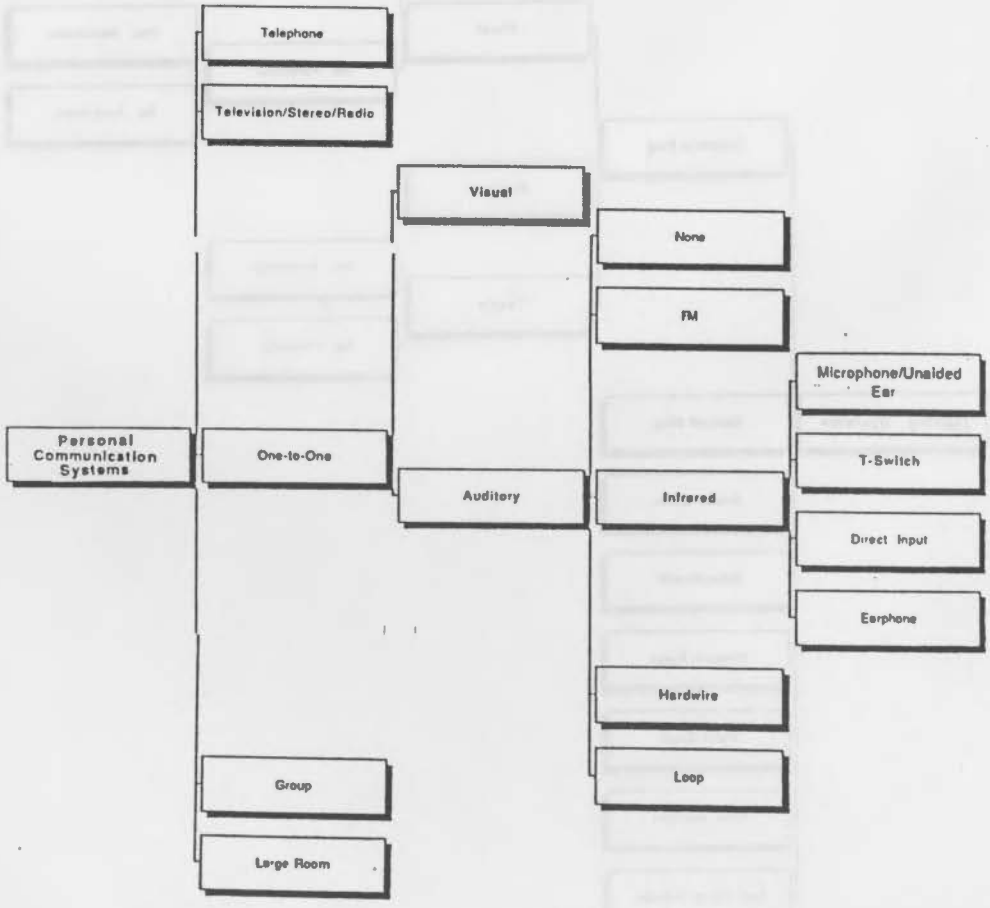
Figure 7 illustrates the decisions to be made if a personal communication system is needed. This is a linear way of illustrating the choices that are contained in the *Interactive Product Locator*. The types of personal communication systems are listed. The flow chart that originates at "one-to-one" also extends from each of the other personal communication devices. Based on the needs assessment, one or a combination of personal communication systems are chosen. For instance, if you wish to select a device that will work with the television and in a one-to-one conversation, you select both.

At some point during the pre-evaluation (before the device is received), a questionnaire about the individual's present communication function should be administered. If you have already used a hearing handicap inventory for your needs assessment, this measure will suffice. This questionnaire should be readministered after a trial period with the new personal communication device to identify benefit and possible areas of continued difficulty. The Profile of Hearing Aid Performance (PHAP) designed by Cox and Gilmore (1990) is appropriate for this type of evaluation.

Type of Signal. A visual or auditory signal type must be selected. Tactile aids have not been included because they represent a very specialized area. It is assumed that someone dispensing these devices is familiar with the few devices that are available and pursues a complete "hearing aid-type" evaluation.

The visual signal is appropriate for the telephone (TTY, TDD, or TT) and television (closed captioning). Text telephone (TT) is now the preferred term for these devices. If the patient is unable to make use of the auditory signal from the telephone, a telecommunication device should be considered. A telecommunication device could be a TT, a computer with a modem, or the use of a FAX machine. Time must be spent evaluating the individual's telecommunication experience, needs, and desires. Providing information is the largest part of this evaluation. Many states now

FIGURE 7. Evaluation categories for personal communication systems.



supply TTs free of charge to residents with hearing impairments. You can do the paper work with the individual. The relay system (where TT calls are interpreted for voice telephones and vice versa) that exists across the country should be explained. A listing of public telephones that are equipped with TTs as well as any businesses/services that have TTs would be useful as well. As with the alerting devices, a general understanding of what is available is very helpful. The patient needs information about the types of TTs available (screens, hard copy output, answering machines, etc.). All of this information is contained in the database of devices. For evaluation/demonstration purposes you will need to have an outside TT to call to demonstrate how the device works. Therefore, you will need to develop a relationship with a local TT user (an individual, a university, or a relay operator).

The general philosophy is that if the person can make use of an auditory signal, use the auditory signal. "Making use" is a vague term and for patients with severe hearing loss it would be worth demonstrating closed captioning and having them use amplification devices with the television so they can make informed choices. Closed captioning is demonstrated by using items B, C, and D from Table 1. The actual closed-captioning device is not included because it is not needed for demonstration purposes. Captioning is demonstrated using video tapes. Real caption decoding is not recommended because you cannot count on decent reception or a program being captioned at the time of the evaluation. A video allows you to use a less than perfect television because you need it only for the screen. The only reason to have a closed-captioning device would be to show patients how to hook it up, and you can do that when the device you order for them arrives. New regulations require that all televisions manufactured after January 1993 have built in decoders.

If captioning is new to the patient, it will be hard to decide if she/he will benefit from it by watching for a few minutes in your clinic. Find out if you have a community organization that lends closed-captioning devices. For instance, clinicians in the Chicago area can recommend that their patients borrow a closed-captioning decoder from the Skokie Public Library. In Pittsburgh, people can borrow closed-captioning devices from the Catholic Office on Deafness. The patient can use the device for a week and make a final decision.

Technology and Coupling. The technology for the transmission of the signal applies to the auditory type of signal (Figure 8). The choice labelled "none" applies to many of the telephone amplification devices. There is no transmission technology associated with the signal. Three types of telephone amplifiers are included on the materials list (V, W, X) because they are the most common. The patient can compare ease of use and sound quality. If you do not have another employee to call and talk with, use the weather or time-of-day recordings in your area. This will allow the patient to practice turning the volume wheel and listening to sound quality while the recorded message repeats. This, of course, is a gross evaluation and would not reveal the amplifier that would provide the most benefit.

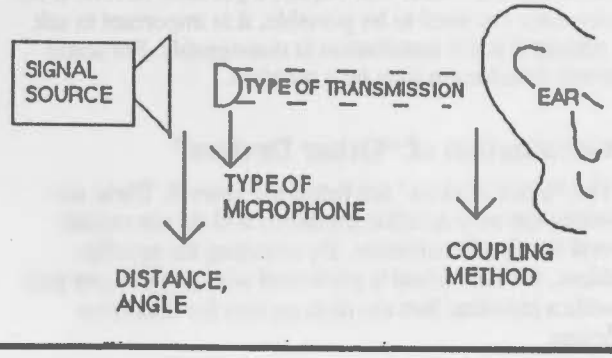
The coupling methods (microphone/unaided ear, T-switch, direct input, and earphone) apply to all the technologies although they are only listed for "infrared." The technology and coupling methods should be evaluated in combination. It would be useful to create a worksheet listing the various combinations. You may decide, a priori, which combinations are not worthwhile, but a detailed worksheet will allow you to keep track of your evaluation.

The personal devices lend themselves to more formal evaluation as compared with the alerting devices. Figure 8 illustrates all of the possible areas of evaluation and selection when considering a personal communication device. A certain number of up-front decisions can be made. For instance, if the person does not wear a hearing aid, you do not need to consider the T-switch or direct input coupling. If the individual needs to use the device out of doors, you can eliminate the evaluation of infrared systems. You will save a great deal of time if you understand the pros and cons of the technologies and coupling methods. Kaplan (1985a, 1985b) and Vaughn and Lightfoot (1987a, 1987b) provide valuable reviews of these technologies.

Subjective Evaluation. A subjective evaluation allows the patient to listen through the various combinations of devices. Provide the patient with a rating sheet so she/he can keep track of her/his impressions. The television signal, a live talker, or a cassette tape can be used for this type of comparison. You need to determine if you want the signal to be auditory-visual or auditory only. The patient should be encouraged to evaluate both the intelligibility and the quality of the signal. The Speech Intelligibility Rating test (SIR) by Cox and McDaniel (1989) is ideal for this type of evaluation. It provides numerous continuous discourse passages with multispeaker babble. The passages are similar, which provides a more appropriate comparison between device configurations. This also affords the patient the opportunity to get used to handling the various instruments. The patient may report being more comfortable with particular combinations.

Objective Evaluation. There are two types of articles available about the objective evaluation of assistive devices. One group provides factual information about coupling or technology and the other group provides

FIGURE 8. Schematic of the areas of evaluation associated with personal communication systems.



methods for clinical measurement. Reviewing the studies that have examined specific coupling and technology methods is worthwhile and may assist in certain up-front decisions excluding the need for evaluation. There is a fairly large body of literature dealing with the comparison of coupling methods (Calvert, Reddell, Donaldson, & Pew, 1965; Hawkins, 1984; Hawkins & Schum, 1985; Hawkins & Van Tasell, 1982; Hodgson & Sung, 1972; Matkin & Olsen, 1970; Sung & Hodgson, 1971; Sung, Sung, & Hodgson, 1973; Tannahill, 1983; Van Tasell & Landin, 1980; Vargo, Taylor, Tannahill, & Plummer, 1970). Some general guidelines for microphone placement and type can be found in Matkin and Olsen (1970) and Turner and Holte (1985). If control of the maximum output of the device is important, review Hawkins and Schum (1985) and Palmer and Garstecki (1989). These articles describe which coupling choices produce the most predictable and controllable results.

A standard word recognition evaluation can be employed with the telephone or a one-to-one personal device. Keep in mind that the same clinical restrictions apply to this test in this setting as when used in the diagnostic clinic. It takes large word lists to identify differences among devices (Thornton & Raffin, 1978). Repeating words is not representative of the type of communication that will be required with the devices.

The demonstration/evaluation center presented in this article includes representative technology and coupling methods, but not necessarily the actual product that will be dispensed to the patient. Individual objective assessment does not seem prudent when you would not be testing the device that the individual actually will be using. Therefore, individual objective measures are part of the validation procedure, as opposed to the pre-evaluation procedure.

If patients have received a telecoil with their hearing aids, the clinician has the responsibility to evaluate its functioning. Grimes and Mueller (1991a, 1991b) provide an excellent description of possible assessment strategies. This should be part of the hearing aid evaluation or the assistive device pre-evaluation. If you find the telecoil is not functioning adequately, it should be repaired for optimum assistive device use. If you cannot get the amount of power needed from the telecoil, you should consider other coupling methods.

Portability and Installation. As with alerting devices, portability and installation are important issues for the consumer. The needs assessment should have identified whether the individual will require a portable device. If the device does not need to be portable, it is important to ask the patient if some installation is manageable. For some patients, installation may be a problem.

Pre-evaluation of "Other Devices"

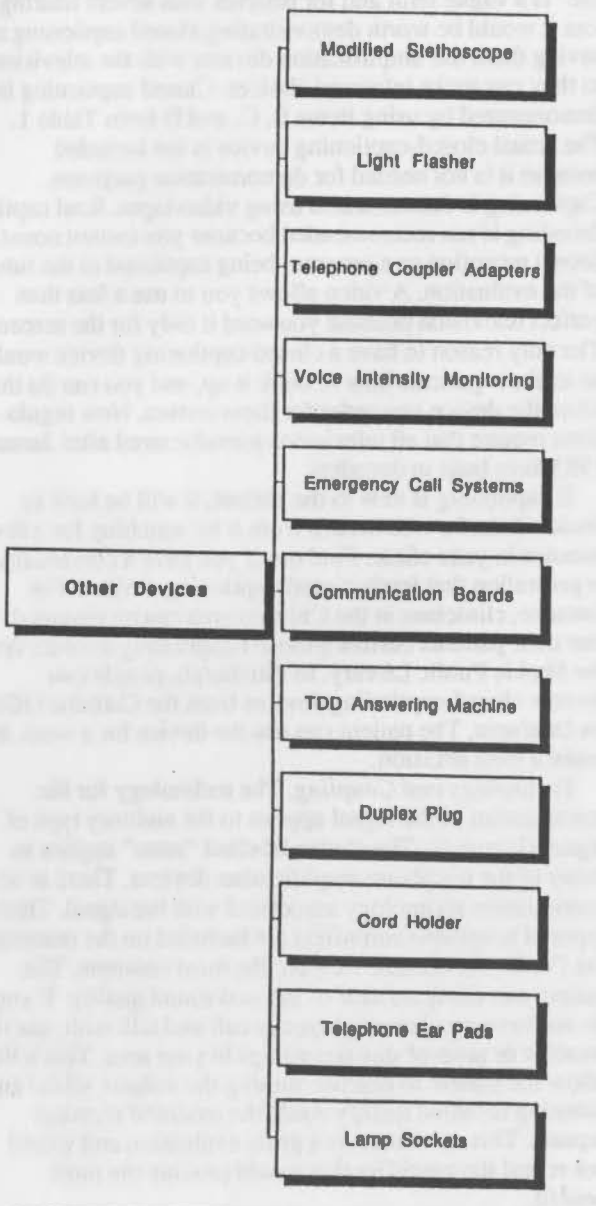
The "other devices" are listed in Figure 9. These are solutions for very specific problems and do not require several levels of evaluation. By selecting the specific problem, the individual is presented with any devices that provide a solution. See the next section for details on selection.

Selection

After selecting all of the choices in either Figure 6, 7, or 9, the *Interactive Product Locator* automatically searches the product database for matches. All of the devices matching the identified characteristics are presented in a summary that includes a picture, the distributors, and other information. The user can print the set of selected descriptions.

Once a set of devices matches the characteristics you have selected, you make a final decision. Although device information and pictures are provided on the device cards, it is recommended that the dispenser place her/himself on the mailing list of the device distributors. The brochures can be used for specific details when making the final

FIGURE 9. Evaluation categories for special devices.



choice. A distributor mailing list can be created from the distributor database in the *Interactive Product Locator*. Receiving mailings allows the user to update the device and distributor database (the company distributing the software is offering updates once a year). The final decision will involve patient preference, dexterity, cost, needed batteries, manufacturer/supplier warranty, trial period, return policy, and so forth. Garstecki (1988) provided a review of the contributing factors to assistive device selection and benefit. These factors contribute to the final selection.

Device Ordering

The audiologist must choose among several ordering options, such as (a) having the clinic order the device following the current hearing aid dispensing model; (b) having patients referred to an assistive device distributor to purchase the device, with the knowledge they may or may not return to the clinic for evaluation; or (c) giving the patients ordering information and having them order the device independently, knowing they may or may not return to the clinic for evaluation. I strongly recommend the first choice. The process of assistive device selection is only partially completed at the time of ordering. The audiologist should be the one in contact with the patient and the manufacturer. As with the old hearing aid dispensing model, dealing with several facilities is not convenient for the patient and may undermine the evaluation that the audiologist is trying to conduct.

Selection Validation and Fitting

Selection validation and fitting is dependent on the type of device that has been purchased. As with hearing aids, it also is dependent on the patient's abilities. The functioning of assistive devices should be checked prior to the patient's visit, just as we check hearing aids before we schedule a fitting appointment. This avoids an unnecessary trip if the assistive device is defective.

A few fitting procedures will apply to all of the devices. Set up the device in the assistive device center—plug components in, insert batteries, plug the device into the hearing aid, manipulate the T-switch, and so forth. If family members are present, make sure they understand the set-up instructions. Supply the user with the manufacturer's written instructions. If these are not clear, supplement them with your own handout. Have the patients complete the entire set-up on their own while you watch. Go over any important cleaning or care instructions. Make sure the assistive device room is set up so the patient can use the device. If it is a telephone ring alerting device, make the telephone ring so the device is triggered. This way, the patients will know what to expect when they get home. If it is a personal communication device, create a noise background and have the patient use the device. Again, the SIR (Cox and McDaniel, 1989) is ideal for this type of demonstration because it will continue to play continuous discourse and babble while you assist the patient. Place the microphone in different positions to illustrate ideal microphone placement (close to the speaker). Allow the patients to manipulate the volume controls on the device or on the hearing aid until they are fairly comfortable and understand how to control the device.

Alerting Device

If you have verified that the device is working, the patients know how to use it, and can react to it (i.e., hear the sound, see the light), the next step is to send them home with the device for a trial period.

Personal Communication Device

Several authors have recommended procedures for validating personal communication device choices. Turner and Holte (1985) provide an easy-to-follow method for functional gain assessment of the device. The result is a description of the audibility of speech signals for the patient. Hawkins (1987) and Grimes and Mueller (1991a, 1991b) provide excellent protocols for real-ear probe-microphone measurements for validation purposes. If one believes in prescriptive fitting, then the personal communication device output should be compared with target gain. Comparison with the hearing aid response is not recommended because it does not necessarily meet target gain. The assistive device may come closer to target gain (Grimes & Mueller, 1991b).

As with any validation procedure, making measurements implies that you plan to do something about it if the measurements do not meet your standards. It is a waste of time to simply make measurements for the sake of making them. There are only a few personal devices on the market that allow for frequency response manipulation with potentiometers. Even if you cannot manipulate the response of the device, you can base certain recommendations on the results of your validation. For example, the ideal telecoil orientation in relationship to a neckloop can be determined, recommendations for microphone placement can be achieved, a recommended volume control setting can be identified, and so forth.

The SSPL90 of the assistive device may be drastically different from the hearing aid even if the device is coupled to the ear through the telecoil of the hearing aid. Hawkins (1987) and Palmer and Garstecki (1989) recommend procedures for measuring SSPL90. Again, you may not be able to control the maximum output of the device, but you can provide recommendations on the maximum volume control setting that should be used.

The patient should be supplied with a worksheet of communication activities to try with the new device. This can be standard or developed with the patient. This will ensure at least some use right away.

Mass Access Systems

If you are recommending an assistive device system for a public place, the *Interactive Product Locator* is used, based on decisions made from evaluating the environment in which the system will be used (as opposed to evaluating an individual). The "fitting" includes both installing the device and educating the consumer about its use and maintenance. Again, written information is valuable.

This paper has not specifically discussed assistive devices for classroom use. If a personal communication device is required, the evaluation and selection above are appropriate. The individual concerned with classroom amplification should be educated regarding the benefits of soundfield amplification for the whole classroom (e.g., Davis, 1991; Ray, Sarff, & Glassford, 1984).

Trial Period

Ideally, the patient would be given a 30-day trial period. As with hearing aids, regardless of your selection and validation procedures, patients need the opportunity to use the device in their own environments. This is especially true for the personal communication devices because of their individual amplification and cost as compared with some of the alerting devices. You may create relationships with several manufacturers or distributors that will allow a limited return policy. This type of policy could easily be part of the selection procedure if you are choosing between two devices and all other features are similar. If you do not have a formal trial period, you should still create a trial atmosphere for patients in which they return in 30 days (or sooner if there are problems) for a follow-up appointment.

If you administered a pre-test questionnaire to the patient about communication ability, administer the post-test questionnaire at this time to identify positive changes as a result of the assistive device and any areas that need work. If you did not use a formal questionnaire, use a set of systematic questions at this time to verify that the device is being used properly and that benefit is being received.

Payment

As mentioned in the beginning of this paper, assistive device evaluation, selection, and dispensing does not fit well into the hearing aid payment model. The program described in this paper is highly dependent on evaluation and selection as opposed to actually obtaining the device. The clinician's time and energy are spent using her/his expertise and tools in order to select the most appropriate devices. I recommend a billing schedule that emphasizes the expertise that the patient is receiving. In other words, have a standard fee for an assistive device evaluation. This evaluation produces a list of appropriate devices. The patient is encouraged to purchase the device(s) through the clinic and therefore return for validation, but it is the individual's choice. Purchasing the device through the clinic is attractive because by charging a standard evaluation fee, the audiologist does not need to mark-up the price of the device. By being competitive with other sources that could supply the device (including the individual ordering by her/himself), the audiologist will secure most of the assistive device orders. The cost of the validation procedure should be built into the standard evaluation cost because even if patients purchase the assistive device elsewhere, they should have the opportunity to return to the clinic for a formal validation and fitting. The validation part of the fee also covers telephone calls from the patient about the use of the device, minor repairs, and so forth, for a limited time period. Have a description of what the fee includes (complete evaluation, selection, printout of appropriate devices, validation of final selection, follow-up appointment) to give to the patient. The complete fee should be collected at the evaluation. The cost of the device should be collected at the time of dispensing. Even if patients do not pursue assistive devices at the time of the evaluation, their money was well spent and the device information that is provided can be used later.

If you are wary of the time this evaluation may involve, you may want to have a standard evaluation fee for the first hour. Have an additional charge for every half hour beyond that first hour. This is not as appealing to patients because the final charge is unknown and they may feel rushed. You also may feel that you should not take extra time because you are costing the patient money. The use of the *Interactive Product Locator* and the demonstration/evaluation center should expedite the evaluation process. We have found that the evaluation process does not take more than an hour.

Another fee schedule should be developed for businesses trying to comply with the ADA. An on-site environment evaluation may be required, followed by the database selection procedure, and finally the installation and instruction in use. Create a package cost listing all that you will do for the business. These packages may be individually developed depending on the business.

Standards

As with so many areas in audiology (e.g., auditory brainstem response testing, probe microphone equipment) standards for assistive devices will be developed after the fact. As early as 1976, Hardick provided a rationale for the inclusion of at least auditory training units under standards and rules applicable to hearing aids.

Some believe that limited regulation of assistive devices allows access to the broadest range of hearing help to the consumer (Fishbein, cited in Berbout, 1988). Regulation that would require gain/frequency response information, warranty, and a trial period would be beneficial to the consumer and the dispenser. Manufacturers may provide this information in the future if dispensers insist on it, without requiring formal regulations. Others have recommended a consumer-report-type review of available devices. This type of review could be conducted by an organized group of dispensers.

Conclusions

The goal of the procedure described above is to avoid dispensing an assistive device that is incompatible with the hearing-impaired person, the hearing aid, or the individual's communication environment. The use of an interactive software program for selection and organization of information in conjunction with a well thought out assistive device demonstration/evaluation center enhances the audiologist's ability to select appropriate assistive devices for hearing-impaired individuals and businesses interested in mass access.

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Assistive Technology and Applications: Speech/Language

Diane Bristow

Assistive Technology and Applications

Diane C. Bristow, M.S., CCC-SLP
Office of Disabled Student Services
California State University, Northridge
18111 Nordhoff Street - DVSS
Northridge, CA 91330
(818) 885-2684
(818) 885-4818
FAX: (818) 885-4929

I. Job Development Through Technology Videotape

II. Assistive Technology:

A. for persons with communication impairment

1. Low Tech
   - •Pace Board
   - •Spelling Boards/Manual Communication Boards
   - •Eye Gaze Communication Boards

2. High Tech
   - •Speech Aids
     - -Electrolarynx
     - -Amplifiers
   - •Augmentative Communication Devices with synthesized speech, computer access and environmental control access.
     - -Direct Selection
       - ••Infrared/Ultrasonic Pointing Systems
       - ••Eye Pointing
     - -Scanning
       - ••Count
       - ••Row-Column
       - ••Directed
     - -Encoding
       - ••Dynamic Displays
       - ••Abbreviation Expansion/Logical Letter Code
       - ••Semantic Compaction
       - ••Predictive Techniques
       - ••Sign Language Symbol Encoding
       - ••Morse Code
   - •Augmentative Communication Device with digitized speech output
     - -Direct Selection
     - -Scanning

B. for persons who are hearing impaired

1. Low Tech
   - •Telephone: install a light to designate incoming calls
   - •Attention Getters (e.g., flash room lights)

Assistive Technology and Applications

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B. for persons who are hearing impaired

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1. Low Tech (cont'd)

- Vibrating Alarm Clocks
- Safety (e.g., Install flashing lights with auditory fire alarms.)

2. High Tech

- Hearing Aids
- Amplification Devices for Telephone
- FM Systems
- Cochlear Implants
- Telecommunication Devices for the Deaf: provide visual displays and/ or printed outputs of information communicated by phone.
- Computer Telephone Communication Devices
- Computers: speech and audible cues need to be converted to visual cues.
- Rapid Text - Open and closed captioning software with steno keyboard input
- Visual Paging Systems for the Deaf
- FAX Machines

C. for persons who are blind or visually impaired

1. Low/Light Tech

- Blind
  - -Braille Watches /Clocks
  - -Talking Watches/Clocks
  - -Tape Recorder/Player
  - -Voxcom
  - -Braille Print
  - -Appointment Minder
  - -Writing Guides
    - ••Check
    - ••Letter/Envelope
    - ••Signature

- Visually Impaired
  - -Large Numeral Watches/Clocks
  - -Large Print Books
  - -Large Phone Buttons
  - -Modifications in placement, size, and contrast of printed materials
  - -Magnification
    - ••Telescopic spectacles
    - ••Magnifying lenses
    - ••Compulenz for Computer

•Visually Impaired (cont'd)

-Writing Guides
••Check
••Letter/Envelope
••Signature
-UV Shields

2. High Tech
•Blind
-Computer Access:
••Input Systems:
--Speech recognition with speech synthesis
--Braille Input Systems
--Morse Code with speech synthesis
-Auditory Signals, such as beeps, tones or key echo

••Output Systems
--Speech Synthesis
--Braille Display
--Braille Printout
--Braille with Traditional Orthography Print

-Computer Disk Books
-Talking Calculators
-Dictaphone
-Braille Notetakers
-Tactile device - Optacon
-Optical Character Reader (OCR) with Speech Synthesis
••Hand-held
••Full Page
-Specialized Equipment
••Whistling and Talking Oscilloscopes
••Talking Voltmeter

• Visually Impaired
-Closed Circuit TV
-Black and White
-Color
-Desktop or Portable

-Computer Access:
••Input Systems:
--Speech Recognition with speech synthesis
--Modified Keyboard Contrast
--Large Keyboard
--Auditory Signals, such as beeps, tones or key echo

••Output Systems
--Speech Synthesis
--Increase Font Size on Monitor
--Large Monitor
--Backlighting
--Color Display Contrast
--Increase Printout Font Size

D. for persons who have a learning disability

1. Low Tech

•Talking Watches / Clocks with alarms
•Talking File Cards - Tapes on Cards

1. Low Tech (cont'd)

   - Variable Speed Tape Recorder
   - Daily Planners
   - Calendars
   - Wall Charts / Organizers

2. High Tech

   - Calculator/ Talking Calculator
   - Electronic Dictionary
   - Electronic Thesaurus
   - Electronic Spell Check
   - Typewriter with Visual Display and Spell Check
   - Assistive Listenting Device
   - Use of software to build a support structure:
     - -Menus
     - -Idea outlining and organizing programs
     - -Word processing
     - -Database
   - Support software:
     - -Thesaurus
     - -Word Prediction
     - -Spell Check
     - -Abbreviation Expansion
     - -Grammar Check
     - -On-line help system
   - Computer Visual Displays
     - -Color Contrasts
     - -Screen Organizers - Windows
     - -Enlarged Print
   - Adapted Computer Input/Output
     - -Speech Recognition
     - -Screen Reading with Speech Synthesis
   - Optical Character Readers (OCR) with Speech Synthesis
     - -Hand-held
     - -Full Page

E. for persons who are physically challenged

1. Low Tech
   - Mobile Arm Supports
   - Mouth Stick and Holder Attached to Workstation
   - Head Pointer
   - Reacher

1. Low Tech (cont'd)

- •Manual Door Opener
- •Adjustable Grasping Device
- •Lazy Susan Workstation
- •Adaptive Desk Components:
  - -Heavy Document Elevator
  - -Reference and File Carousels
  - -File Transfer Guide
  - -Reference or Book Stand
  - -Drop Down Shelving
  - -Keyboard Platform
  - -Telephone Platform
  - -Mail Station
  - -Stapler Station
- •Adaptive Computer Components
  - -Floppy Disk Guide
  - -Keyguards for Computer or Typewriter
  - -Wrist Supports
- •Modified Work Chair
- •Modified Work Table

2. High Tech
   - •Control Interfaces: single switch, dual switch, joystick, sensor
   - •Mobility
     - -Wheelchair Controls
     - -Automobile Controls
     - -Functional Electrical Stimulation
   - •Robotic Aids
   - •Environmental Control Units
     - -Hardware-based Systems with Control Interface
     - -Software-based Systems with Control Interface
     - -Voice Activated
   - •Page Turner
   - •Adapted Telephones
     - -Speaker
     - -Switch Operated
   - •Computer Access
     - -Input Methods
       - **Direct Selection
         - --Keyboard modifications
           - **large
           - **mini
           - **disable repeat key
           - **Time delay on key selection
           - **Dvorak keyboard
         - --Pointing aids
         - --Speech recognition
         - --Eye gaze/pointing

•Computer Access
-Input Methods (cont'd)
••Scanning
--Count
--Row-Column
--Directed
••Encoding
--Morse
--Predictive
--Abbreviation Expansion
--Chordic Keyboard
••Computer Entry Terminal
--Direct
--Scanning
--Encoding

III. General Accommodations in the Workplace

A. for persons with communication impairment

1. Physical Environment
•Equipment and/or materials are placed at an appropriate height and/or angle to accommodate for communication equipment.

2. Staff Preparation/Orientation
•Demonstrate use of augmentative communication system.
•Communications to the Augmentative Communication User:
-Speak in a normal tone, volume and inflection pattern.
-Wait for the augmentative communication user to provide an answer when you ask a question.
-Inform the augmentative communication user when you do not have enough time to communicate, but return later to hold a conversation.

B. for persons who are hearing impaired

1. Physical Environment
•Positioning in meetings should be in the front of the room with better ear toward speaker.
•Use of round or oval tables facilitate line of vision for group discussions.
•Design office layouts to provide a clear line of sight between administrative and secretarial office for sign/gestural communication.
•Provide visible signals for arrival of elevators.
•All auditory cueing signals need to be modified to accommodate visual signals.
•Establish visible room numbers and office titles to facilitate communication.

2. Staff Preparation/Orientation
•General communication strategies on a one-to-one basis:
-Obtain the deaf/H.I. person's attention before speaking. Maintain visual contact throughout the conversation.
-State the topic of discussion and speak slowly and clearly.

2. Staff Preparation/Orientation (cont'd)
   -Repeat, then try to rephrase the statement when the deaf/H.I. individual does not understand.
   -Use gestures and facial expressions to aid communication interpretation.
   -Take time to communicate.

•General communication strategies in group meetings:
   -Whenever possible, provide new vocabulary in advance.
   -Avoid unnecessary pacing and speaking when writing on a blackboard.
   -Use interpreters.
   -Use visual aids, such as overhead transparencies, diagrams and the blackboard.
   -Repeat questions and statements made from the group.
   -Slow the pace of communication to facilitate understanding.
   -Facilitate full participation by the deaf/H.I. person.

C. for persons who are blind or visually impaired

1. Physical Environment
   •Maintain clear access paths.
   •Equipment and furniture should be stationary.
   •Standardized workstations should be established for blind/ visually impaired employees that move from one station to the next.
   •For visually impaired or partially blind:
      -the placement of materials should be at an appropriate distance, angle and height for visual field.
      -visual material may need to be enlarged.
      -use of contrasts (e.g., white on black)
      -eliminate material that has been poorly duplicated.

2. Staff Preparation/Orientation
   •Instruct supervisors and co-workers to submit memos on audio-cassettes, in place of printed memos.
   •Inform staff to speak in a normal tone, volume, and inflection pattern.

D. for persons who have a learning disability

1. Physical Environment
   •Maintain placement of equipment and supplies.
   •Facilitate spatial and temporal organization through:
      -color coding of files.
      -placement of markers for equipment and materials.

2. Staff Preparation/Orientation
   •Encourage supervisors and fellow employees to:
      -submit communications on audio cassettes, instead of printed text.
      -accentuate most pertinent information in written form.
      -increase use of graphics and diagrams.
      -provide additional time for L.D. employees with expressive language difficulties to speak their thoughts.

E. for persons who are physically challenged

1. Physical Environment
   - •Ramp access to building.
   - •Provide adequate space for maneuvering.
   - •Develop system for ease and speed of access to exits in case of an emergency.
   - •Adjust table/desk height in workstation.
   - •Placement of materials should accommodate reach dimension.
2. Staff Preparation/Orientation
   - •Encourage staff to offer assistance:
     - -when needed at mealtimes or breaks.
     - -in positioning materials at workstation.

III. Some Applications of Assistive Technology in Employment

Case Report: Geri

Geri has a weak vocal intensity and at times no audible speech, secondary to the diagnosis of multiple sclerosis. Geri uses an amplifier when her speech intensity is reduced. She converts to using a computer with morse code input, when she is unable to speak. With these technologies Geri continues her role as a social worker.

Case Report: Ismail

Ismail has a diagnosis of Amyotrophic Lateral Sclerosis or Lou Gherig's disease. He has lost all functional use of his hands. Ismail speaks through a talking trach, but vocal intensity is weak and speech intelligibility is decreasing. With the installation of foot operated control system he is able to continue his work as a professional film maker. Ismail operates his video equipment with his right foot using a track ball. By pressing the appropriate switch he can make selections. He will soon be obtaining an electronic communication device that utilizes word prediction.

Case Report: Sal

Sal is severely speech impaired, secondary to the diagnosis of spastic and athetoid cerebral palsy. Communication is achieved through the assistance of an augmentative communication device. He accesses words, phrases and sentences on this device through a single switch. Sal works as a mail carrier. This position necessitates that he deliver mail through three buildings, covering up to 29 floors. Sal's job coach assists him in sorting the mail prior to delivery. The use of different technology assists Sal in completing his job tasks. He uses a power wheelchair, which is operated through a chin control, to travel through the buildings. His communication device enables him to communication to co-workers and supervisors. Transportation to and from work is supplied through the local government's van system.

Case Reports: Phone Operators with Spastic Dysphonia

Pacific Telesis has numerous operators with the diagnosis of spastic dysphonia. To reduce the amount of time that they need to spend speaking, digitized speech systems on standard computers have been introduced. By utilizing a digitized speech system, their own voice can be recorded and re-played for frequently used phrases and sentences. Since they are also still connected to the phone line by microphone, they can produce novel utterances when needed. The listener is unaware of when the digitized speech system is speaking and when the phone operator is spontaneously speaking.

Case Report: Camille

Camille has an acquired profound hearing loss. Following a cochlear implant she sought employment. She is now employed as the Coordinator of Disability Services for Culver City. While she had been offered the position several years prior, she did not feel that she could adequately fulfill the position due to the amount of time she would need to spend on the phone. Following the cochlear implant, her feelings toward the position changed. She now utilizes a TDD, has a light source to indicate that the phone is ringing, and relys on lip reading skills to accommodate for her disability.

EQUIPMENT RESOURCES

Blind and Visually Impaired

Source	Equipment
Adhoc Reading Systems, Inc. 28 Brunswick Woods Drive East Bunswick, NJ 08816 (908) 254-7300 FAX: (908) 254-7310	•DocuRead Expert and Three Bravo, •Boxer-Reader •Braillex, •Elotype, •Premium ReadMe System & Talk Plus •Notex 24, •Elobox, •Lite-Site
Al Squared 1463 Hearst Drive, NE Atlanta, GA 30319 (404) 233-7065 FAX: (404) 233-7059	•ZoomText (2x to 16x) (Text Enlargement through software) •InFocus (2x magnification) •ZoomText Plus - works in Windows
Aids Unlimited, Inc. 1101 N. Calvert Street Suite 405 Watches/Clocks Baltimore, MD 21202-3840 (410) 659-0232	•Appointment Minder •Automatic Needle Threader •Large Numeral •Voice ActivatedCassette Tape Recorders •Talking Watches/Clocks •Talking Calculator •Electronic Talking Cash Register •Note Teller Talking Bill Identifier
American Printing House for the Blind, Inc. 1839 Frankfort Avenue P.O. Box 6085 Louisville, KY 40206-0085 (502) 895-2405 (Voice) (800) 223-1839 (U.S. & Canada) FAX: (502) 895-1509 *(Mail Order Catalogue)*	•Light Sensor •Signature Guide •Braille Rulers •Braille Binders and Notebooks •Reading Stands
Ann Morris Enterprises Inc. 26 Horseshoe Lane Levittown, NY 11756 (516) 796-4938 FAX: (516) 564-9692	•Talking Calculator •Talking Clock •Braille Slate and Stylus •Large Digit Calculator
Arkenstone, Inc. 1185 Bordeaux Drive, Suite D Sunnyvale, CA 94089 (408) 745-1188 (800) 444-4443 FAX: (408) 745-6739	•Optical Character Readers •Arkenstone Hand Scanner

Equipment for the Blind and Visually Impaired (cont'd)

Source	Equipment
Artic Technologies 55 Park Street, Suite 2 Troy, MI 48083 (313) 588-7370 (800) 677-3848 Tech Support FAX: (313) 588-2650	•Artic Vision •Business Vision •Business Vision D/K for DECtalk • Artic Crystal •Artic Focus - Text Enlargement •Artic Gizmo Pad •Artic ENCORE - Personal Data Keeper •SynPhonix - speech synthesizers •TransPort - battery operated, portable SynPhonix speech synthesizer
Berkeley Systems, Inc. 2095 Rose Street Berkeley, CA 94704 (510) 540-5535 (800) 877-5535 FAX (510) 540-5115	•Outspoken - Macintosh Screen Reader •inTouch - Tactile Imaging of Screen •inLarge - Macintosh Text Enlarger
Blazie Engineering 109 E. Jarrettville Road Forest Hill, MD 21050 (410) 879-4944 FAX: (410) 452-5752	•Braille 'n Speak •Personal Braille Printer •Personal Touch Braille Note Taker/Computer Adaptor •Thiel Beta-X3 Braille Printing Terminal
Bossert Specialties, Inc. *Low Vision Aids* 3620 E, Thomas Road, Suite D-124 Phoenix, AZ 85018 P.O. Box 15441 Phoenix, AZ 85060 (602) 956-6637 (800) 776-5885 Order Desk (Mail Order Catalogue)	•Safe-T-Lite Cane •Magnifiers •Monoculars •Book Stands
Braille Institute Library 741 North Vermont Avenue Los Angeles, CA 90029 (800) 252-9486 (213) 660-3880 FAX: (213) 663-0867	•Talking Books on Cassettes •Talking Books on Records •Braille Books •Magazines in Braille and on Records
BRYTECH Box 1357 Ogdensbury, NY 13669-9998 (613) 727-5800	•Note Teller - money identifer

Equipment for the Blind and Visually Impaired (cont'd)

Duxbury Systems, Inc
435 King Street
P.O. Box 1504
Littleton, MA 01460
(508) 486-9766
FAX: (508) 486-9712
CompuServe: 76150, 2046

- Duxbury Braille Translator/MS-DOS
  DUXWP-for WordPerfect 5.0 & 5.1
  Braille Board - simple translator
- Duxbury Braille Font for Adobe Type Manager/Windows
- Duxbury Braille Font for Adobe Type Manager/Macintosh
- Duxbury Braille Translator IBM
  Options:
  French Supplement
  Nemeth Math Supplement
  Spanish Supplement
- Duxbury Braille Translator/Macintosh
- Duxbury Braille Editor (Edgar) for IBM

Enabling Technologies, Co.
3102 S.E. Jay Street
Stuart, FL 34997
(407) 283-4817
FAX: (407) 220-2920

- Romeo Braille Printer
- Braille BookMaker
- Braille Express
- Marathon Brailler
- PED-30 (for over 50 copies of a document)
- ETgraphX - braille graphics software
- InfoTouch
- Eureka A4
- Optical Character Recognition
  - Text Reader 320 for Eureka
  - Eureka Hand Scanner
  - Rosetta PC - based OCR

ESCHENBACH OPTIK of America, Inc.
904 Ethan Allen Highway
telemicroscopes
Ridgefield, CT 06877
(203) 438-7471
FAX: (203) 431-4718

- Low Vision Aids
magnifiers, telescopes,

Headbourne Mounted Magnification Systems, Moncular Mounting Kits, Electronic Magnifier, Reading Stands
- Educational Library of Low Vision Publications

Henter-Joyce, Inc.
10901-C Roosevelt Blvd.
Suite 1200
St. Petersburg, FL 33716
(813) 576-5658
(800) 336-5658
FAX: (813) 577-0099
form

- JAWS Job Access With Speech
  Works with Accent,Symphonics 200/220, Braille n'Speak, Echo, Prose/Call Text, Votalker, VPTM, Dectalk, P.S.S. Speech Synthesizer
- FORM-MATE software (pre-printed access)

Equipment for the Blind and Visually Impaired (cont'd)

Source	Equipment
Humanware, Inc. 6245 King Road Loomis, CA 95650 (916) 652-7253 FAX (916) 652-7296 (800) 722-3393	•Keynote GOLD Screen Reading Systems •Keynote PC+, DI and DX •Master Touch & MasterTouch Tablet •Index Advanced / IndexClassis •Braille-N-Print- braille & print •Ransley Braille Interface™ (RGI) •Alva Braille Terminal •Braille Embossers: Romeo, Bookmaker, Marathon & Express •Mountbatten Brailler •Keybraille (refreshable braille) •Nomad (touch-sensitive board) •Mowat Sensor-object sensor •ClearView CCTV-color & monochrome •Viewpoint - portable CCTV
IBM P.O. Box 2150 Atlanta, GA 30301-2150 (800) IBM-2133 FAX: (404) 238-4247	•Personal System 2 Screen Reader
Independent Living Aids, Inc. 27 East Mall Plainview, NY 11803 (800) 537-2118 FAX: (516) 752-3135	•Large Numeral Watches/Clocks •Braille Watches •Magnifiers •Braille Slate and Styluses •Brailled Desk Calendar •Talking Calculators •Bookstand •Large Print Dictionary and World Atlas •Writing Guides •Raised Line Drawing Kit •Large Numeral Telephones
Lighthouse *Low Vision Products* 36-02 Northern Blvd. Long Island City, NY 11101 (718) 937-6959 (800) 453-4923 Product Info FAX: (718) 786-0437 (Mail Order Catalogue)	•Braille Slates and Stylus •Braille Labeling Aids •Touchable Phone Dial •Talking Calculator •Talking Clock •"EZ IN" Needle Threader
LS & S Group Inc. *Products for Visually Impaired* P.O. Box 673 Northbrook, IL 60065 (708) 498-9777 (800) 468-4789 FAX: (708) 498-1482	•Talking Watches / Clocks •Talking Calculators •Wide Variety of Products

Equipment for the Blind and Visually Impaired (cont'd)

National Association for Visually Handicapped
22 West 21st Street - 6th Floor
New York, NY 10010
(212) 889-3141
FAX: (212) 727-2931

- Magnifiers
- Talkman Four-track player
- Writing Aids
- Large Numeral Watches
- Enlarged Telephone Dial
- Touchable Telephone

Optelec US, Inc.
4 Lyberty Way
P.O. Box 729
Westford, MA 01886
(508) 392-0707
(800) 828-1056
FAX: (508) 692-6073

- CCTV
  FDR23
  FDR23S
  20/20, 20/20 Plus
  20/20 Spectrum Color
  20/20 Remote Camera & Moveable Arm
- LP-DOS - Text Enlargement
- LP-DOS Deluxe - compatible with Windows and all MS DOS

Recordings for the Blind
George Kerscher, Director
37 Corbin Hall
University of Montana
Missoula, MT 59812
Mailing Address:
P.O. Box 7068
Missoula, MT 59807
(406) 243-5481
FAX: (406) 243-2349

- Computerized Books

Robotron Pty. Ltd
15/428 St. Kilda Rd.
Melbourne 3004
Australia
Tel: (03) 867 6322
FAX: (03) 820 1254

- Eureka A4
- Optical Character Recognition
  Rosetta - PC-based
  Eureka A4 Hand Scanner
- Robotron Text Reader 320

SkiSoft Publishing Corporation
1644 Massachusetts Avenue Suite 79
Lexington, MA 02173
(800) 662-3622
(617) 863-1876
FAX (617) 861-0086

- Eye Relief
  (Word Processor with large text)

Seeing Technologies, Inc.
7074 Brooklyn Blvd.
Minneapolis, MN 55429
(612) 560-8080
(800) 462-3738
FAX: (612) 560-0663

- Closed Circuit TV: Color, B&W
- Seetec MAGic - memory resident magnification for PC's and Laptops

- National CCTV Headquarters: service, sell and buy back all brands & models of CCTV's. Will accept trade-ins, and lease of CCTV's.

Equipment for the Blind and Visually Impaired (cont'd)

Telesensory Systems, Inc.
455 North Bernardo Avenue
P.O. Box 7455
Mountain View, CA 94039-7455
(415) 960-0920
(800) 227-8418
FAX: (415) 969-9064

- Braille Interface Terminal
- Vert Systems
- Optacon II
- Vista VGA -text enlargement
- Zoom Text - text enlargement
- Zoom Text Plus - text enlargement for Windows
- VersaBraille II - braille input/output
- Navigator - braille display unit
- OutSPOKEN - screen reading for Macintosh
- OsCaR
- Vantage - CCTV
- MEVA - portable CCTV
- Chroma CCD - Color CCTV
- Lynx - link between CCTV camera & computer VGA display to display video images on computer
- M Print - print & braille copies
- Versapoint - braille printer

VisAids, Inc.
102-09 Jamaica Avenue
P.O. Box 26
Richmond Hill, NY 11418
(718) 847-4734
(800) 346-9579 Order Desk
FAX: (718) 441-2550
(Mail Order Catalogue)

- Voxcom Message Recorder
- Braille Slates
- Writing Guides
- Magnifiers
- Raised Line Drawing Kits

Walters, S. Inc.
30423 Canwood Street
Suite 126
Agoura Hills, CA 91301
(818) 706-2202
FAX: (818) 706-2206
WATS (800) 9-WALTER

- Low Vision Optical Equipment
  Monoculars, Binoculars, Microscopes, Magnifiers, Stands, Frames, Cases, Accessories

Xerox Imaging Systems
Kurzweil Personal Reader Family of Products
9 Centennial Dr.
Peabody, MA 01960
(508) 977-2000
(800) 248-6550
FAX (508) 343-0311

- Xerox/Kurzweil PersonalReaders
  PC/KPR-for PC Compatibles
  KPR-stand alone

EQUIPMENT RESOURCES

Assistive Devices
Deaf and Blind

Source	Equipment
Adhoc Reading Systems, Inc. 28 Brunswick Woods Drive East Bunswick, NJ 08816 (908) 254-7300 FAX: (908) 254-7310	•Braillex
Berkeley Systems, Inc. 2095 Rose Street Berkeley, CA 94704 (510) 540-5535 (800) 877-5535 FAX: (510) 540-5115	•inTouch - Tactile Imaging of •Macintosh; operates with Optacon
Enabling Technologies, Co. 3102 SE Jay Street Stuart, FL 34997 (407) 283-4817 FAX: (407) 220-2920	•InfoTouch - access to TDD
Humanware, Inc. 6245 King Road Loomis, CA 95650 (916) 652-7253 FAX (916) 652-7296 (800) 722-3393	•Alva - braille input/output visual display
Silent Call Corporation P.O. Box 868 3655 Clarkston Road Clarkston, MI 48347-0868 (313) 391-1710 (Voice) (313 391-1799 (TDD)	•Vibra-Call - wireless system that monitors devices such as phone, smoke detector, doorbell, sounds/voices. •PAJ •MATE - signaling device used to access pull-cord pager systems •Omni Page - Personal Pager System , person-to-person or device-to-person •Omni Page II - Commerical/ Industrial Pager System •Deluxe Alarm Clock Awakening systems •Sidekick! - hotel/motel room
Telesensory Systems, Inc. 455 North Bernardo Avenue P.O. Box 7455 Mountain View, CA 94039-745 (415) 960-0920 (800) 227-8418	•Optacon II - tactile reading device •Navigator - refreshable braille display for computer •Telebraille - braille TDD

EQUIPMENT RESOURCES

Physically Challenged
Low Tech

Source	Equipment
Able Office Center for Rehabilitation Technology, Inc. Georgia Institute of Technology 490 10th Street Atlanta, Georgia 30332-0156 (404) 876-8580 (800) 457-9555 FAX: (404) 875-9409	•Adaptive Office Components: •Heavy Document Elevator •Reference and File Carousel •Floppy Disk Guide •File Transfer Guide •Reference Stand •Drop Down Shelving •Keyboard Platform •Telephone Platform •Mail Station •Stapler Station
Arcoa Industries 888 Rancheros Drive San Marcos, CA 92069 (619) 489-1170 (800) 748--5529 FAX: (619) 489-0984	•E-Z Reachers •E-Z Shoe On
Enrichments 145 Tower Drive P.O. Box 579 Hinsdale, IL 60521	•Car Door Opener •Door Knob Handles •Dustpan Brush Adaptor •Home/health Equipment
Extensions for Independence 555 Saturn Blvd #B-368 San Diego, CA 92154 (619) 423-7709	•Mouthsticks - Telescoping •Telephone Adaptors •Modified Workstation •Laptrays •Typewriter Adaptations
Fred Sammons, Inc. Box 32 Brookfield, IL 60513 (708) 325-4602 (800) 323-5547 FAX: (800) 547-4333	•Reachers •Wheelchair Accessories •Dressing Aids
LS & S Group P.O. Box 673 Northbrook, IL 60065 (708) 498-9777 (800) 468-4789 FAX: (708) 498-1482	•Door Knob Opener •Hand Clip Phone Holder •Inflatable Build-up Grip
Touch Turner 443 View Ridge Drive Everett, WA 98203 (206) 252-1541	•Pagemate Easel for Books

EQUIPMENT RESOURCES

Assistive Devices
Deaf and Hearing Impaired

Source	Equipment
AAlert Paging Company Townsend Street, Suite 101 San Francisco, CA 94107 (415) 597-3526 FAX (415) 543-2070	•Vibriating Visual Display Paging System for the Deaf 139
Ameriphone **American Phone Products, Inc.** 5192 Bolsa Avenue Suite #5 Huntington Beach, CA 92649 (714) 897-0808 (800) 874-3005 FAX: (714) 897-4703	•Emergency Phone •Handset Amplifiers •Remote Control •Speakerphone •Auto-Call Dialer •Call Alert - Flashing Light •Alert-Plus* - hotel / motel •Hearing Plus* - hotel / motel •Super Phone-Ringer
AT & T National Special Needs Center 2001 Route 46 Suite 310 Parsippany, NJ 07054 (201) 299-7085	•Telecommunication Devices for the Deaf •Telephone Amplifiers •Visual Signal for Phone •Telecaption
Bruce Medical Supply 411 Waverly Oaks Road P.O. Box 9166 Waltham, MA 02254 (617) 894-6262 (800) 225-8446 FAX: (617) 894-9519	•Vibrating Alarm Clock •Phone Amplifier
HARC Mercantile, LTD. HAC of America, Inc. 3130 Portage Street, Suite B P.O. Box 3055 Kalamazoo, MI 49003-3055 (800) 445-9968 (616) 381-0177 (616) 381-2219 (TDD) FAX: (616) 381-3614 (Mail Order Catalogue)	•Telephone Amplification Division of Systems •Telecommunication Devices for the Deaf •Light Signals for Phones
IBM P.O. Box 2150 Atlanta, GA 30301-2150 (800) IBM-2133 FAX: (404) 238-4247	•Phone Communicator

Assistive Devices
Deaf and Hearing Impaired (cont'd)

Source	Equipment
Phone TTY Incorporated 202 Lexington Avenue Hackensack, NJ 07601 (201) 489-7889 (Voice or TTY) FAX: (201) 489-7891	•Baby Cry Signaler •Telecommunication Devices for the Deaf •Doorbell Signaler •Wake Up Vibrator •Telephone Signaler •Wireless Remote Receiver for Signalers •Smoke Detector Signaler •Shake Awake - vibrating alarm clock
Pacific Bell - Deaf and Disabled Services 1149 Gower Street Los Angeles, CA 90038 (213) 468-6291	•Telecommunication Devices for the Deaf •Louder Rings •Amplifiers •Visual Signals •Braille TDD
RapidText, Inc. 18013 Sky Park Circle Irvine, CA 92714 (714) 261-6333 (714) 252-1563 (TDD) FAX: (714) 261-5147	•Software for Open/Closed Captioning
Shake Awake Corp. 9230 Olympic Blvd. Suite 203 Beverly Hills, CA 90212 (310) 274-6341 Voice or TDD (800) 727-1827 FAX: (310) 274-5980	•Vibrating Alarm Clock
Silent Call Corporation P.O. Box 868 3655 Clarkston Road Clarkston, MI 48347-0868 (313) 391-1710 (Voice) (313 391-1799 (TDD) 572-5227 (FAX) (313) 391-2098	•Vibra-Call - wireless system that monitors devices such as phone, smoke detector, doorbell, sounds •Sidekick! - hotel/motel room •PAJ •MATE - signaling device used to access pull-cord pager (800) systems in commerical, residental, and healthcare settings •Omni Page - Personal Pager System , person-to-person or device-to-person •Omni Page II - Commerical/ Industrial Pager System •Global "Combo" alarm clock w/ halogen table/reading lamp •L'il Ben Pillow Vibrator - compatible with Global "Combo" •Alarm Clock Awakening systems

Assistive Devices
Deaf and Hearing Impaired (cont'd)

Ultratec, Inc.
450 Science Dr.
Madison, WI 53711
(608) 238-5400 (Voice/TDD)
FAX: (608) 238-3008

- Telecommunication Devices for the Deaf
- TDD's: basic, print, large visual display, detectors, Intele-Modem
- Compact TDD - pocket size
- Super Signal System - turns sounds in the home into signals

Weitbrecht Communications, Inc.
2656 29th Street, Suite 205
Santa Monica, CA 90405
(310) 452-8613
FAX: (310) 450-9918
(800) 233-9130

- Compact Portable TDD
- Minicom IV TDD
- Miniprint II TDD
- Superprint
- Supercom TDD
- Watchman Sound Signaling System

EQUIPMENT RESOURCES

Amplification Devices

Source	Equipment
Luminaud Inc. 8688 Tyler Boulevard Mentor, OH 44060 (216) 255-9082 FAX: (216) 255-2431	•Amplifier
Park Surgical Co. Inc 5001 New Utrecht Avenue Brooklyn, New York 11219 (718) 436-9200 (800) 633-2431 FAX (718) 854-2431	•Amplifier •Throat Microphone

Assistive Listening Devices

Source	Equipment
Phonic Ear 3880 Cypress Drive Petaluma, CA 94954-7600 (707)769-1110 (800) 227-0735 (USA) (800) 772-3374 (CA) FAX: (707) 769-9624	•Easy Listener (designed for LD) •Personal FM System •Monaural FM System •Binaural FM System •Frequency Selection Transmitter

EQUIPMENT RESOURCES

Artificial Larynx

Source	Equipment
AT & T National Special Needs Center 2001 Route 46 Suite 300 Parsippany, NJ 07054 (201) 299-7085 (201)299-7104 (201) 299-8081 (800) 233-1222	•Artificial Larynx
INHEALTH Technologies 214 Santa Barbara Street Santa Barbara, CA 93101 (800) 477-5969 (805)962-5887 FAX (805) 963-4152	•Blom-Singer Tracheoesophageal Puncture Stent
Luminaud Inc. 8688 Tyler Boulevard Mentor, OH 44060 (216) 255-9082	•Artificial Larynx •Cooper Rand
Park Surgical Co. Inc 5001 New Utrecht Avenue Brooklyn, New York 11219 (718) 436-9200 (800) 633-2431 FAX (718) 854-2431	•Artificial Larynx

Augmentative Communication Systems

Source	Equipment
Adaptive Communication Systems, Inc. 1400 Lee Drive Coraopolis, PA 15108 (800) 247-3433 (412) 264-2288 FAX: (412) 264-1143	•RealVoice •ScanPAC •DAC - digitized speech system •Sammy System
Canon USA Inc. One Canon Plaza Lake Success, NY 11042 -1113 (516) 488-6700 FAX: (516) 354-7886	•Canon Communicator •CC-7S Print & Speech •CC-7P Print
Crestwood Company 6625 N. Sidney Place Milwaukee, WI 53209 (414) 352-5678 FAX (414) 352-5679	•Manual Communication Boards •Eye Gaze Communication Boards
Imaginart 307 Arizona Street Bisbee, AZ 85603 (800) 828-1376 (602) 432-5741 FAX: (602) 432-5134	•Color/Black & White Pictures •Eye Gaze Communication Boards •Manual Communication Boards
Interactive Therapeutics, Inc. P.O. Box 1805 Stow, OH 44224 (216) 688-1371 (800) 253-5111 (Mail Order Catalogue)	•Picture and Word Communication Notebooks
Phonic Ear, Inc. 3880 Cypress Drive Petaluma, CA 94854-7600 (800) 227-0735 (USA) (707) 769-1110 FAX: (707) 769-9624 U.S.A./International	•Vois 160 •EZ Viewer
Prentke Romich Company 1022 Heyl Road Wooster, OH 44691 (800) 262-1984 (216) 262-1984 FAX: (216) 263-4829 Canada: 1-800-253-1984	•Liberator •Touch Talker •Light Talker •IntroTalker •Point and Scan IntroTalker •Remote Switch IntroTalker

Augmentative Communication Systems (cont'd)

Source	Equipment
Sentient Systems Technology, Inc. 5001 Baum Blvd. Pittsburgh, PA 15213 (412) 682-0144 (800) 344-1778 FAX: (412) 682-0241	•EyeTyper Model 200 •DynaVox
Tech Aid, Inc. Suite 198 5464 N. Port Washington Road Milwaukee, WI 53217 (800) 451-2773 FAX: (414) 962-1700	•Lightwriters SL8 and SL30
Words+, inc. P.O. Box 1229 Lancaster, CA 93584 (805) 949-8331 (800) 869-8521 FAX: (805) 949-0973	•Morse Code Equalizer •Morse Code WSKE •E Z Keys •MultiScan •Scanning WSKE II •Talking Screen •Words+ Equalizer •Talking Screen •Audscan II •System 2000
Zygo Industries, Inc. 15824 S.W. Upper Boones Ferry Road Lake Oswego, OR 97035 P.O. Box 1008 Portland, OR 97207-1008 (503) 684-6006 (800) 234-6006 (U.S.A./Canada) FAX: (503) 684-6011	• MACAW (direct selection) • MACAW - SC (scanning & direct selection) •Secretary (writing/talking aid) •PARROT •Lightwriter SL3 •Lightwriter SL4a •PACA •QEB Scribe (typewriting aid) •Talking Notebook II •GEWA's - Polycom w/ Polytalk's multi-lingual speech synthesizer)

EQUIPMENT RESOURCES

Computer Access

Source	Equipment
Apple Computer, Inc. 20525 Mariani Avenue MS 36SE Cupertino, CA 95014 (408) 974-7910	•Built-In Access Features on the Macintosh •CloseView (magnification) •Disk Eject (no latches) •Easy Access provides: •Stickey Keys •Mouse Keys •Slow Keys •Key Repeat •Volume Control
Articulate Systems, Inc. 600 West Cummings Park Suite 4500 Woburn, MA 01801 (617) 935-5650 FAX: (617) 935-9484	•Voice Navigator II (for MacIntosh Computer) (200-1,000 word vocabulary)
ComputAbility Corporation 40000 Grand Rivers #109 Novi, MI 48375 (313) 477-6720 (800) 433-8872 FAX: (313) 477-6324	•AID+ Me •Keyguards •Mini Membrane Keyboard Macintosh, IBM & Compatibles •Membrane Keyboard II (programmable) Macintosh •Macintosh •Keyguards: IIe, IIGS, Mac Plus, SE, II, LC, Classic, PowerBooks •Touch Window •Moisture Guards for Mac •Ke:nx 2.0 •Adaptive Firmware Card •Switch Interface •Mini Keyboard by TASH •Unicorn Expanded Keyboard
Don Johnston Developmental Equipment, Inc. 1000 North Rand Road Building 115 P.O. Box 639 Wauconda, IL 60084 (708) 526-2682 (800) 999-4660 FAX: (708) 526-4177	
Dragon Systems, Inc 320 Nevada Street Newton, MA 02160 (617) 965-5200 (800) 825-5897 FAX: (617) 527-0372	•DragonDictate (30,000 word vocabulary for IBM) •Dragon Writer (1,000 word vocabulary for IBM)
Du-It Control Systems Group, Inc. 8765 Township Road Shreve, OH 44676 (216) 567-2906 FAX: (216) 567-3925	•LIAISON for the Macintosh

Computer Access (cont'd)

Source	Equipment
IBM P.O. Box 2150 Atlanta, GA 30055 (800) 426-2133	•VoiceType (7,000 word vocabulary)
InfoGrip, Inc. 5800 One Perkins Place Suite F Baton Rouge, LA 70808 (504) 766-8082 FAX: (504) 763-9793	•IBM PC & Compatibles / UNIX / Macintosh •Bat - Chordic keyboard •Mini-BAT for Palmtop Computers •One-handed and two-handed braille programs
In Touch Systems 11 Westview Road Spring Valley, NY (914) 354-7431	•Macintosh • Magic Wand Keyboard (7"x6"x.5")
Kensington Microware Ltd. 251 Park Ave South New York, NY 10010 (212) 475-5200	•Macintosh •Turbo Mouse Plus
LC Technologies, Inc. 4415 Glenn Rose Street Telephone, Speech Fairfax, VA 22032 (703) 425-7509 (800) 733-5284 FAX: (703) 323-4782	•Eye gaze computer system for ECU, entertainment, synthesis, word processing
Maxie Switch, Inc. 2901 E. Elvira Tucson, AZ 85706 (602) 294-5450 FAX: (602) 294-6890	•Fast Tracker Keyboard (built-in trackball) •MaxiPRO (programmable keyboard)
McIntyre Computer Systems Division 22809 Shagbark Birmingham, MI 48010 (313) 645-5090	•Macintosh •McIntyre - mouth operation •LipStick - mouth operated joystick
Micro Touch Systems, Inc. 55 Jonspin Rd. Wilmington, MA 01887 (508) 694-9900	•Macintosh Mac-n Touch - touch screen
Pointer Systems, Inc. One Mill Street Burlington, VT	•Freewheel •Macintosh •IBM •Freeboard (on screen keyboard)

Computer Access (cont'd)

Source	Equipment
Prentke Romich Company 1022 Heyl Road Wooster, OH 44691 (800) 262-1984 FAX: (216) 263-4829 Canada: 1-800-253-1984	•IBM and Compatibles •HeadMaster •Remote HeadMaster •On-Screen Keyboards: •HandiKey™ Deluxe, •WiViK™ •KII Computer Interface •T-TAM •Keyguards: IBM PC, PS2 •Disk Guides: 5 1/4" and 3 1/2" •Wireless Data System •Macintosh and Apple •HeadMaster for Mac Plus & 512, Mac SE, II, Classic, LC, Apple IIGS •Remote HeadMaster for new Macs and Apple IIGS •T-TAM for Macintosh & IIGS •On-Screen Keyboards: •ScreenKeys™, •WordWriter^C, •ScreenDoors™ •AKI 2E Computer Interface •Keyguards: Apple IIe, IIc, IIgs, Mac 512, Mac Plus
Safko International, Inc. 3140 North Arizona Ave, Suite 111 Chandler, AZ 85224 (602) 497-1987	•Macintosh •SenSei Computer System special software to access the Macintosh
TASH, Inc. 91 Station Street Unit 1 Ajax, Ontario, Canada L1S 3H2 (416) 686-4129 FAX: (416) 686-6895	•King Keyboard (Mac & IBM) •Mini Keyboard (Mac & IBM) •DADA (IBM) •Unicorn Board •Octima Chord Keyboard •Bloorview Minature Keyboard •Mouse Emulator for Macintosh
Trace Center Reprint Service University of Wisconsin, Madison S-151 Waisman Center 1500 Highland Avenue Madison, WI 53705-2280 (608) 263-2237 FAX: (608) 262-8848	•One Finger Program
Typing Institute for the Handicapped 3102 W. Augusta Avenue Phoenix, AZ 85051 (602) 939-5344	•Dvorak One Handed Keyboard

Computer Access (cont'd)

Source	Equipment
Unicorn Engineering Co. 5221 Central Avenue Richmond, CA 94804 (415) 528-0670	•Macintosh •Unicorn 510 (touch sensitive) •Unicorn Model II (Programmable membrane keyboard)
Words+, inc. P.O. Box 1229 Lancaster, CA 93584 (800) 869-8521 FAX: (805) 949-0973	•Key Wiz (Word Prediction) •Scanning WSKE •Morse Code •Expanded Keyboard Emulator •T-TAM
World Communications 245 Tonopah Drive Fremont, CA 94539 (510)656-0911	•HelpWare •Help U Type •Help U Type for Windows •Help U Keyboard (eliminator) •Mouse Keys (emulator for Windows) •Freedom Writer (word processor) •Help U Key •HelpBoard (user defined keyboard)
Zofcom 3962 Nelson Court Palo Alto, CA 94306 (415) 858-2003	•TongueMouse Keyboard for Macintosh, IBM & Compatibles
Zygo Industries, Inc. 15824 S.W. Upper Boones Ferry Road Lake Oswego, OR 97035 P.O. Box 1008 Portland, OR 97207-1008 (503) 684-6006 (800) 234-6006 (U.S.A./Canada) FAX: (503) 684-6011	•Headpointer •Keyboard Emulators •TETRAscanII •scanWRITER •GEWA Keyboards •FTB 108 Enlarged for IBM and Compatibles •METB 121 Reduced Size for IBM and Compatibles

Incorporating ADA Consultation Into Your Practice

Eleanor Stromberg

INCORPORATING ADA CONSULTATION INTO YOUR PRACTICE

ELEANOR M. STROMBERG, PH.D.

ABC's of the ADA, Washington, D.C., May 1-3, 1992

The dream and the reality of ADA consultation.

Requirements for development and implementation of ADA consultation services.

Philosophical commitment

Time

Dollars

Knowledge of ADA and related laws

Knowledge of auxiliary aids

Example of long range plan for development of consultation services at the Cincinnati Speech and Hearing Center.

General consulting issues.

Consulting examples. Good and not so good experiences so far.

CONSULTATION SERVICES DEVELOPMENT PLAN

Cincinnati Speech and Hearing Center

1. Increase awareness in the community about ADA and about hearing, speech and language disabilities

2. Inform consumers about our ADA consultation service

3. Inform patients and their families about ADA, their rights and responsibilities

4. Assess competition

5. Develop accessibility audit procedures

6. Develop client prospect list

7. Design plan for client contact

8. Assess related staff needs

9. Assess costs of consultation services

10. Design fee structure for consultation services

AUXILIARY AIDS

LIST OF SUGGESTED DEMONSTRATION DEVICES

Telecommunications

- Amplifier handset
- Portable telephone amplifier
- TDD (TT) with printer and memory
- Basic TDD (TT) without printer
- Two electronically connected telephones for TDD (TT), telecoil demonstration

Signalers

- Portable demonstrator board for variety of signalers
- Signalers for smoke alarm, baby cry, telephone, doorbell, alarm clock
- Remote receivers
- Vibrator
- Strobe light
- Standard lamp

Listening Devices

- Pocket talker
- Conference microphones (hard wire, hearing aid bootable)
- Personal FM transmitter and receiver with variety of output couplers (headset, neckloop, earbud, stetoclip)
- Wide area FM transmitter and multiple receivers, output couplers
- Wide area infrared system, multiple receivers and output couplers
- Educational FM receiver with additional body hearing aid components
- Induction loop system for TV listening
- Infrared system for TV listening
- Conference table FM mic and transmitter

Captioners

- Closed caption decoder for TV
- Computer Assisted Notetaking (CAN)

Augmentative Communication Devices

- Electrolarynx
- Visible speech aid
- Voice amplifier

The Cincinnati Speech and Hearing Center

Complete Professional Hearing, Speech and
Language Services for People of All Ages

Date

Name (corporate attorney)
Organization
Address
City, State, Zip

Dear _____:

Compliance with the Americans with Disabilities Act (ADA) is an important matter. The Cincinnati Speech and Hearing Center provides a consultation service designed to help you comply with ADA for people with hearing and speech disabilities. Compliance does not have to be complicated or expensive if you have a resource. We are that resource.

The Council of Better Business Bureaus recommends consulting with local disability organizations for advice on ADA compliance. Our Center has been serving Cincinnati as a community organization since 1925. We see thousands of people with hearing or speech disabilities every year. Now we can pass that experience on to you in planning an effective response to ADA.

There are many "no cost" practices and "low cost" devices which will provide access to your business for people with hearing or speech disabilities. We can help you with both practices and devices.

You may have heard of devices described in the ADA rules as "auxiliary aids." Auxiliary aids are required in certain situations for people with hearing or speech disabilities. We can help you determine if your business really needs these or not and if you do, which ones are best for your situation. These auxiliary aids are available for demonstration in our Center for Assistive Devices.

In the Cincinnati area, hearing and speech disabilities affect more than 170,000 persons, many of whom are potential patrons of your business. Take a moment to complete our ADA checklist. Any "Yes" answer means there are potential ways to attract these consumers to your business and actions you need to take to comply with the law.

We are your resource. Call our ADA Specialist at 221-0527.

Sincerely,

MAIN CENTER
3021 Vernon Place
Cincinnati, Ohio 45219
(513) 221-0527
TDD (513) 221-3300

EASTERN OFFICE
2085 A Front Wheel Drive
Batavia, Ohio 45103
(513) 724-2022

NORTHERN OFFICE
Mason Health Center
770 Reading Road
Mason, Ohio 45040
(513) 398-8733

The Cincinnati Speech and Hearing Center

Complete Professional Hearing, Speech and
Language Services for People of All Ages

CHECK LIST

Americans with Disabilities Act (ADA)

A "Yes" answer to any checklist item indicates need for action to comply with ADA for people with hearing and speech disabilities.

YES	NO		
___	___	1.	Do your services require spoken explanations essential to consumer satisfaction?
___	___	2.	Do you offer your consumers the opportunity to make outgoing telephone calls on more than an incidental basis?
___	___	3.	Do you provide information through sound tracks on films, video tape, or slides?
___	___	4.	Do you have meeting rooms which accommodate at least 50 persons?
___	___	5.	Do you contract with organizations for use of your meeting rooms?
___	___	6.	Do your receptionists provide spoken information?
___	___	7.	Do your services involve lengthy or complex communication in areas such as health, legal matters, or finances?
___	___	8.	Do your services require understanding of oral or written informed consent?
___	___	9.	Do you have isolated areas such as public restrooms in which visual alarms are needed for the safety of a person who is deaf?
___	___	10.	Do you use spoken public announcements?
___	___	11.	Do you need to quickly identify type of disability to provide help in emergency situations?
___	___	12.	Do you provide overnight lodging for rent or hire?
___	___	13.	Do you provide TV for viewing by consumers?

ADA is now! Let our ADA Specialist help you comply.

Call 221-0527

MAIN CENTER
3021 Vernon Place
Cincinnati, Ohio 45219
(513) 221-0527
TDD (513) 221-3300

EASTERN OFFICE
2085 A Front Wheel Drive
Batavia, Ohio 45103
(513) 724-2022

NORTHERN OFFICE
Mason Health Center
770 Reading Road
Mason, Ohio 45040
(513) 398-8733

Individualized Assessments and Communication Profiles

James Healey

Keys to Forensic Preparation
Roy Rowland

Americans with Disabilities Act and Medical Evaluations

Worker Fitness and Risk Evaluations (WFRE)

Evaluations administered by medical personnel for the purpose of determining a workers ability to perform specific job tasks and determinations of risk in relation to anticipated workplace exposures.

WFRE's

Preplacement examinations
Return to work evaluations
Impairment and Disability evaluations
Government mandated surveillance

Why Conduct WFRE's ?

Economic
Regulatory
Epidemiologic
Benevolent

ADA prohibits employment discrimination against "qualified individuals with disabilities"

Key terms :
Individual with a disability
Qualified individual with a disability
Reasonable accomodation
Direct threat

Current medical practices targeted by EEOC

Job-unrelated questions
Job-unrelated tests of ability or risk
Unscientific risk determination
Exclusion based on uncertain outcome
Decisions regarding acceptable risk to self
Exclusion based on insurance costs
Disclosure of confidential medical data

Medical Examinations and Inquiries

* Pre-offer, Pre-employment
* Post-offer, Preplacement
* Examination of employees

PRE-OFFER, PRE-EMPLOYMENT

Must be job-related and consistent with business necessity

Focus on ABILITIES not disabilities

Physical agility testing allowed

Drug testing allowed

POST-OFFER, PREPLACEMENT

Not required to be job-related and consistent with business necessity

May condition offer on results

Physical and psychological testing

EXAMINATION OF EMPLOYEES

Must be job-related and consistent with business necessity

Fitness for duty evaluations

Medical monitoring and surveillance

Voluntary medical examinations (health promotion)

JOB-RELATED EVALUATIONS

Examiner familiar with

- Essential tasks
- Working conditions
- Maximal or emergency situations
- Available accomodations
- Regulatory aspects
- First-aid liason

ABILITY TESTS

Do they simulate job ability?

Can current employees pass test?

Implications of failing to pass test?

Risk Factor Identification

Acceptability to workers
Practicality
Effort dependency
Variability
Expertise to interpret
Sensitivity vs. specificity
Predictive value positive
Population distribution

DETERMINATION OF DIRECT THREAT

Significant risk of substantial harm
- high probability

Specific risk must be identified
- duration of the risk
- nature and severity of potential harm
- likelihood that potential harm will occur
- imminence of potential harm

Risk must be current
- not speculative or remote

Based on objective medical or other factual evidence regarding the individual

Reasonable accomodation must be considered

CONFIDENTIALITY

Separate medical files
No medical information in personnel files

Specific person(s) with access to medical files

CONFIDENTIALITY
Who needs to know what?

Management:
Fitness to work
Necessary accomodations
Necessary restrictions

First Aid:
Emergency treatment
Evacuation procedures

PRACTICLE ELEMENTS OF A MODEL PROGRAM

Job description and familiarity with job

Understanding scientific basis of WFRE

Implementation of the actual medical evaluation

Considered decision making

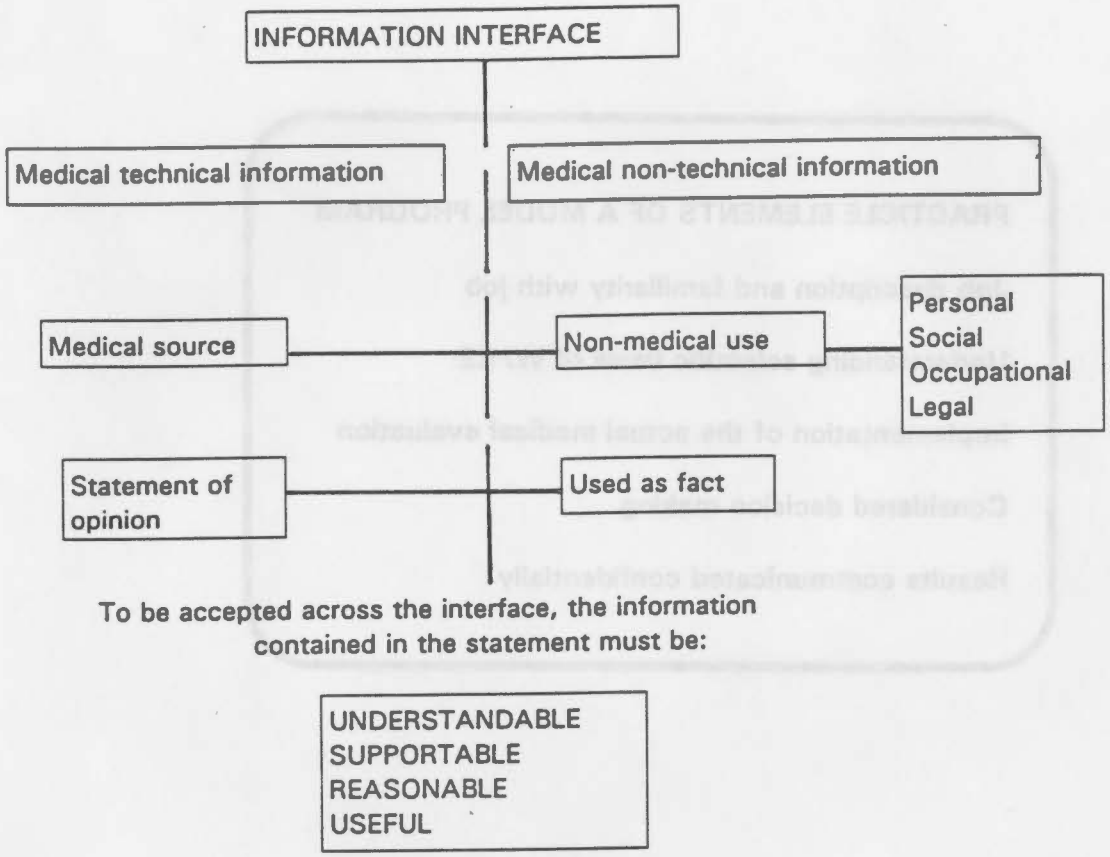
Results communicated confidentially

THE DOCTOR'S ROLE

Advise employer about functional abilities and limitations in relation to job function

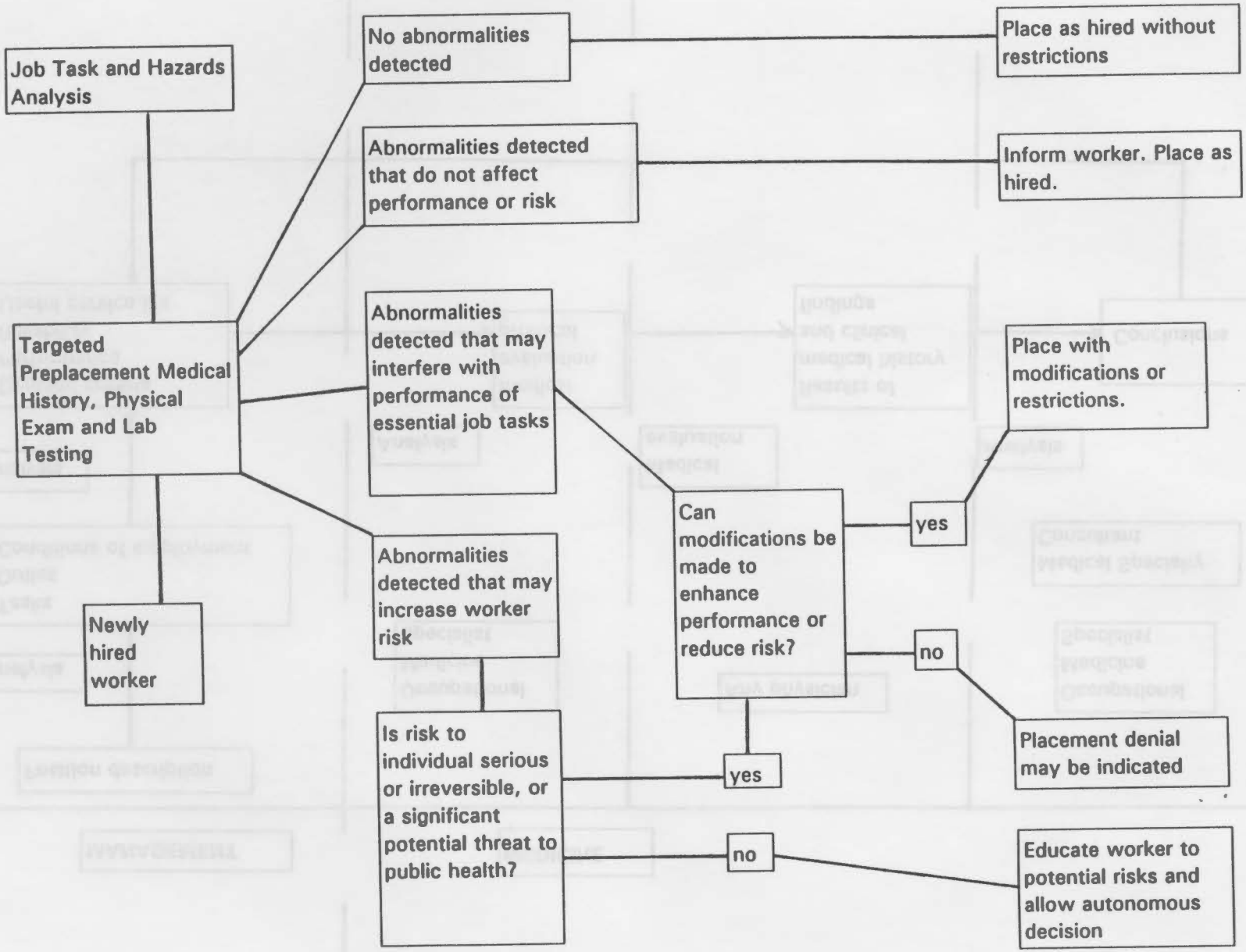
Determine if individual meets employers health and safety requirements

NOT responsible for making employment decisions

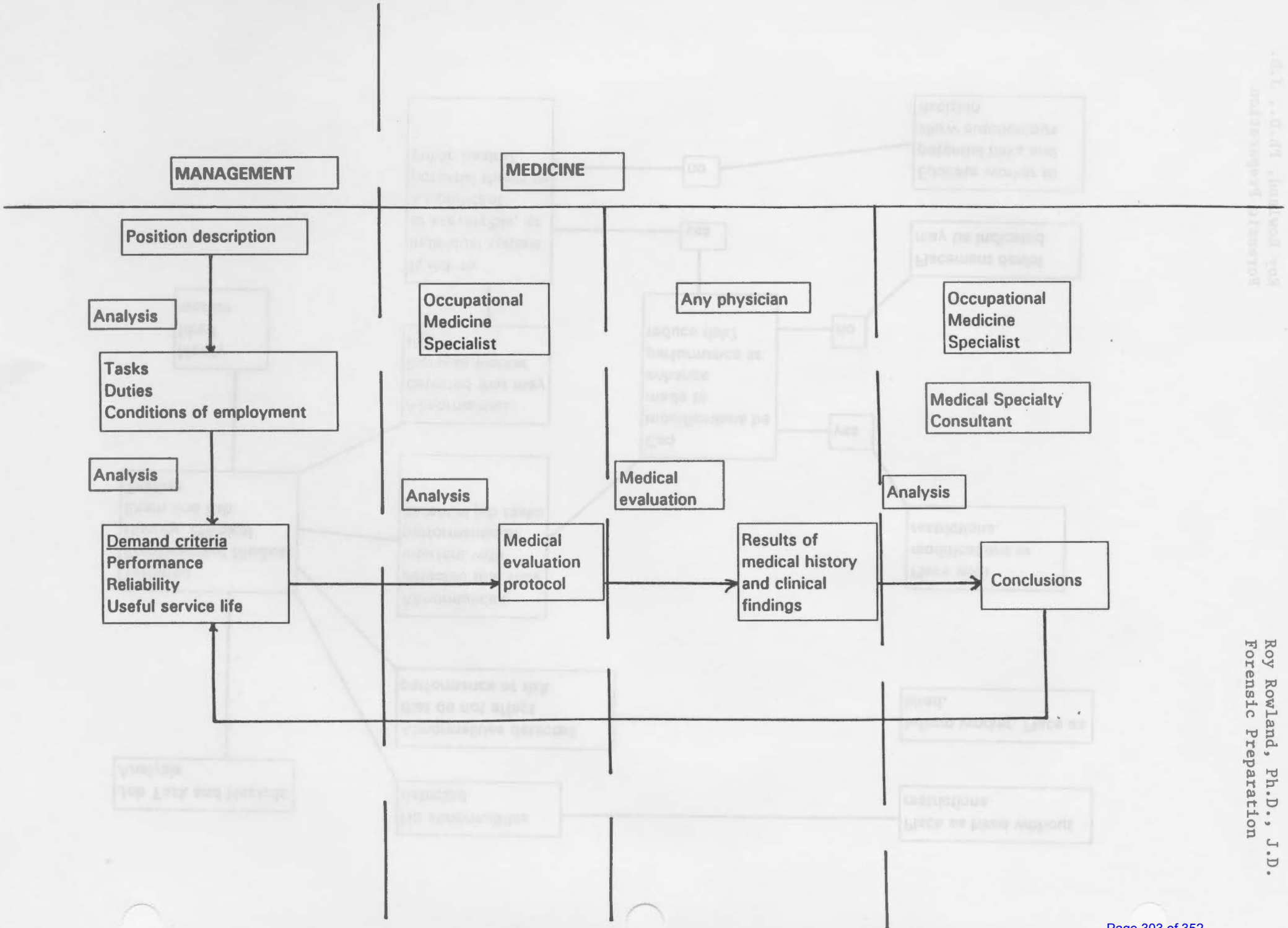


To be accepted across the interface, the information contained in the statement must be:

UNDERSTANDABLE
SUPPORTABLE
REASONABLE
USEFUL



Roy Rowland, Ph.D., J.D.
Forensic Preparation



Roy Rowland, Ph.D., J.D.
Forensic Preparation

Marketing Tools and Strategies
Helen Pollack
Cheryl Russell
Alexis Waters
Fred Whiting

Strategies for Assessing Facility Communication Accessibility

Jo Williams

TDD Relay Systems: Personnel Training and Issues

Pamela Ransom

Visual Communications in the '90's

Judith Harkins

The ABC'S OF THE ADA CONFERENCE

EXHIBITOR DEMONSTRATIONS

AMERICAN LOOP SYSTEMS

1:30 p.m. Tactaid 7 and Tactaid II+ Vibrotactile

2:00 p.m. 3-D Loop Assistive Listening System
State-of-the-art induction-based assistive listening system

2:30 p.m. Tactaid II+ Vibotactile Device

3:30 p.m. 3-D Loop Classroom Auditory Trainer System
Innovative listening system

4:00 p.m. Tactaid 7 Vibrotactile Device

4:30 p.m. Microloop Personal Induction Loop Assistive Listening System

FRANKLIN LEARNING RESOURCES

1:30 p.m. **On Going Demonstration of:**
Hand-held electronic references and spelling correctors

HEAR YOU ARE, INC.

1:30 p.m. Large Area FM Systems for Theaters, Movie Houses and Auditoriums
ADA Compliance

2:30 p.m. Nursing Home and Hospital ADA Compliance Equipment

3:30 p.m. Business Beware! Are You Prepared for ADA

4:00 p.m. Assistive Listening Systems/ Pluses and Minuses of Each

4:30 p.m. Loop Systems and Person Assistive Listening Devices

LC TECHNOLOGIES

On Going Demonstrations of:
Vision-controlled Eyeglaze Computer System and an opportunity to run it with your own eyes.
Award winning computer enables on-verbal quadriplegic users to verbalize via speech synthesizer by eye-activating programmable phrases, keys or on-screen typewriter keyboard keys.

PHYDEAUX'S FOR FREEDOM

On Going Demonstrations of:
Two categories of person/dog teams: mobility assistance and hearing assistance. Skills to be demonstrated include alerting to a telephone, a baby crying, and a call to a person with a hearing impairment. Mobility teams will demonstrate assistance in moving from a wheelchair to another seat, retrieval of various objects and ability to solve problems. The roles of the dog and owner in public will be covered.

POTOMAC TECHNOLOGY

On Going Demonstration of:
TDD's pay phone, TDD signaling systems and assistive listening devices.

PRENTKE ROMICH COMPANY

1:30 p.m.	Intro Talker TM Unit, Point Scan Intro Talker-TM Hands on programming applications; IEP-TM for Intro Talker.
2:00 p.m.	Touch Talker TM and Light Talker TM, Power In Play TM, Minspeak Application Program (MAP)
2:30 p.m.	Interaction, Education and Play + TM MAP
3:30 p.m.	Liberator TM "Hands On" Demonstration
4:00 p.m.	Language, Learning and Living TM MAP
4:30 p.m.	Words Strategy TM MAP

SELF HELP FOR HARD OF HEARING PEOPLE, INC. (SHHH)

On Going Demonstration of:
Educational materials that are helpful to audiologists, speech pathologists and consumers. Included will be SHHH JOURNALS, lists of publications and information on implementing the Americans with Disabilities Act in hospitals and hotel/motel facilities.

SUPPORT SYNDICATE FOR AUDIOLOGY

On Going Demonstration of:
The "Interactive Product Locator of Assistive Devices for Hearing-Impaired Individuals" software package.
Discussion of the essential variables that must be evaluated when selecting appropriate technology.

TELECOMMUNICATIONS FOR THE DEAF

On Going exhibit of:
Brochures and information regarding the use of the TDD.

TELEX COMMUNICATIONS

On Going Demonstration of:
The use and operation of the Telex wireless FM systems.
How to install a group (wide area) system.
Applications of the personal system will be reviewed.
Various coupling options for FM receivers will be covered.

THE PSYCHOLOGICAL CORPORATION

1:30 p.m.- 3:00 p.m. THINKable - A brief overview of THINKable, a cognitive rehabilitation software program for IBM PS/2 computers.

3:30 p.m.- 5:00 p.m. SpeechViewer II - A brief overview of SpeechViewer II, a computer-based clinical tool for children and adults used by speech and language professionals.

WILLIAMS SOUND CORP.

1:30 p.m. Large Area FM Wireless Listening System for the Hearing Impaired
2:00 p.m. Enhanced Amplified Telephone
2:30 p.m. Personal Amplifier for one to one consultation with a Hearing Impaired Person. Personal FM Auditory Trainer.
3:30 p.m. Large Area Wireless Listening System for the Hearing Impaired.
4:00 p.m. Enhanced Amplified Telephone
4:30 p.m. Personal Amplifier for one to one consultation with a Hearing Impaired Person. Personal FM Auditory Trainer

The ABC'S OF THE ADA CONFERENCE

TIMES FOR EXHIBITOR DEMONSTRATIONS

1:30 p.m. AMERICAN LOOP SYSTEMS
Tactaid 7 and Tactaid II + Vibrotactile

FRANKLIN LEARNING RESOURCES
On Going Demonstration of:
Hand-held electronic references and spelling correctors

HEAR YOU ARE, INC.
Large Area FM Systems for Theaters, Movie Houses and Auditoriums
ADA Compliance

LC TECHNOLOGIES
On Going Demonstrations of:
Vision-controlled Eyeglaze Computer System and an opportunity to run it with your own eyes.
Award winning computer enables non-verbal quadriplegic users to verbalize via speech synthesizer by eye-activating programmable phrases, keys or on-screen typewriter keyboard keys.

PHYDEAUX'S FOR FREEDOM
On Going Demonstrations of:
Two categories of person/dog teams: mobility assistance and hearing assistance. Skills to be demonstrated include alerting to a telephone, a baby crying, and a call to a person with a hearing impairment. Mobility teams will demonstrate assistance in moving from a wheelchair to another seat, retrieval of various objects and ability to solve problems. The roles of the dog and owner in public will be covered.

POTOMAC TECHNOLOGY
On Going Demonstration of:
TDD's pay phone, TDD signaling systems and assistive listening devices.

PRENTKE ROMICH COMPANY
Intro Talker TM Unit, Point Scan Intro Talker-TM Hands on programming applications; IEP-TM for Intro Talker.

SELF HELP FOR HARD OF HEARING PEOPLE, INC. (SHHH)
On Going Demonstration of:
Educational materials that are helpful to audiologists, speech pathologists and consumers. Included will be SHHH JOURNALS, lists of publications and information on implementing the Americans with Disabilities Act in hospitals and hotel/motel facilities.

SUPPORT SYNDICATE FOR AUDIOLOGY

On Going Demonstration of:
The "Interactive Product Locator of Assistive Devices for Hearing-Impaired Individuals" software package.
Discussion of the essential variables that must be evaluated when selecting appropriate technology.

TELECOMMUNICATIONS FOR THE DEAF

On Going exhibit of:
Brochures and information regarding the use of the TDD.

TELEX COMMUNICATIONS

On Going Demonstration of:
The use and operation of the Telex wireless FM systems.
How to install a group (wide area) system.
Applications of the personal system will be reviewed.
Various coupling options for FM receivers will be covered.

THE PSYCHOLOGICAL CORPORATION

1:30 p.m.- 3:00 p.m. THINKable - A brief overview of THINKable, a cognitive rehabilitation software program for IBM PS/2 computers.

WILLIAMS SOUND CORP.

1:30 Large area FM Listening System for the hearing impaired

2:00 p.m. AMERICAN LOOP SYSTEMS
3-D Loop Assistive Listening System
State-of-the-art induction-based assistive listening system

PRENTKE ROMICH COMPANY
Touch Talker TM and Light Talker TM, Power In Play TM, Minspeak Application Program

WILLIAMS SOUND CORP
Enhanced Amplified Telephone

2:30 p.m. AMERICAN LOOP SYSTEMS
Tactaid II + Vibotactile Device

HEAR YOU ARE, INC
Nursing Home and Hospital ADA Compliance Equipment

PRENTKE ROMICH COMPANY
Interaction, Education and Play + TM MAP

WILLIAMS SOUND CORP
Personal Amplifier for one to one consultation with a Hearing Impaired Person. Personal FM Auditory Trainer

3:30 p.m. AMERICAN LOOP SYSTEMS
3-D Loop Classroom Auditory Trainer System
Innovative listening system

HEAR YOU ARE, INC.
Business Beware! Are You Prepared for ADA

PRENTKE ROMICH COMPANY
Liberator TM "Hands On" Demonstration

THE PSYCHOLOGICAL CORPORATION
SpeechViewer II - A brief overview of SpeechViewer II, a based clinical tool for children and adults used by speech and language professionals.

WILLIAMS SOUND CORP.
Large area Wireless Listening System for the Hearing Impaired

4:00 p.m. AMERICAN LOOP SYSTEMS
Tactaid 7 Vibrotactile Device

HEAR YOU ARE, INC.
Assistive Listening Systems/ Pluses and Minuses of Each

PRENTKE ROMICH COMPANY
Language, Learning and Living TM MAP

WILLIAMS SOUND CORP
Enhanced Amplified Telephone

4:30 p.m. AMERICAN LOOP SYSTEMS
Microloop Personal Induction Loop Assistive Listening System

HEAR YOU ARE, INC.
Loop Systems and Person Assistive Listening Devices

PRENTKE ROMICH COMPANY
Words Strategy TM MAP

WILLIAMS SOUND CORP
Personal Amplifier for one to one consultation with a Hearing Impaired Person. Personal FM Auditory Trainer

AMERICAN
SPEECH-LANGUAGE-
HEARING
ASSOCIATION

ASHA ADA TECHNICAL ASSISTANCE AND MATERIALS

Technical assistance and materials on the Americans with Disabilities Act (ADA) are available as part of the ASHA ADA technical assistance grant from the U.S. Department of Justice, "Communication Disabilities and the ADA: The ABC's (Accommodations, Barriers, and Compliance)".

Grant activities and technical assistance are directed toward promoting compliance with communication requirements under Title II Public Services and Title III Public Accommodations regulations. General information and resources for other ADA areas and audiology/speech-language pathology services are also available.

Technical support (phone, written) includes:

- Specific information on communication (hearing, speech, and language) disabilities and ADA regulations
  - auxiliary aids and services
  - communication barriers and removal strategies
  - effective communication requirements
- General information on ADA regulations
- Resource information

Materials developed as part of the grant will include:

- Fact Sheets on Communication, Communication and the ADA in camera-ready format for duplication
- Written and videotape training materials for Title II and Title III services and facilities including specific information on compliance requirements for:
  - law enforcement
  - emergency services communications
  - child care centers
  - hotels/motels
  - restaurants
  - retail stores
  - places of assembly/meeting planners
  - hospitals/health care facilities.

See Materials request form for listing of materials.

For more information about the grant or for technical assistance on the ADA and communication disabilities, contact:

Jo Williams
Director,
ASHA ADA Project
10801 Rockville Pike
Rockville, MD 20852
301-897-5700

AMERICAN
SPEECH-LANGUAGE-
HEARING
ASSOCIATION

ASHA ADA MATERIALS AND RESOURCES

I. Materials

____ Communication Disabilities and the ADA--Fact Sheets

____ ADA Questions and Answers

____ ADA General Fact Sheet

____ ADA Statutory Deadlines

____ Title I Employment and EEOC Materials List

____ Title II Regulations (Department of Justice)
____ Title II Highlights
____ Uniform Federal Accessibility Standard (UFAS)

____ Title III Regulations (Department of Justice)
____ Title III Highlights
____ ADA Requirements in Public Accommodations--Fact Sheets
____ ADA Accessibility Guidelines (ADAAG) (ATBCB)

II. Other

____ Mailing List for ASHA ADA products/activities
Notification of availability of ASHA training materials for:

____ Law Enforcement
____ Emergency Services
____ Child Care Centers
____ Places of Assembly
____ Restaurants
____ Hotels/Motels
____ Retail Stores
____ Hospitals/Health Care

Name:_____ Phone_____

Address: _____

_____

Please indicate whether: Audiologist;Speech-Language Pathologist;
Dual Certification;Other(_____)

Send form to: Ann Hyland, ASHA ADA Project, 10801 Rockville Pike,
Rockville, MD 20852. (FAX 301-571-0457)

U.S. Equal Employment Opportunity Commission

ADA Publications

Title	Comments
Facts about the ADA (English)	One sheet
Facts About the ADA (Spanish)	One sheet
The ADA: Questions and Answers (English)	EEOC/DOJ Booklet—19 pages
The ADA: Questions and Answers (Spanish)*	EEOC Booklet—19 pages
The ADA: Your Responsibilities as an Employer (English)	EEOC Booklet—17 pages
The ADA: Your Responsibilities as an Employer (Spanish)*	EEOC Booklet—17 pages
The ADA: Your Employment Rights as an Individual with a Disability (English)	EEOC Booklet—11 pages
The ADA: Your Employment Rights as an Individual with a Disability (Spanish)*	EEOC Booklet—11 pages
ADA Handbook*	EEOC/DOJ Titles I, II, and III—600 pages
ADA Title I Regulations (Federal Register, July 26, 1991)	

*Note: Items marked with an asterisk (*) are not yet available. Please call the Office of Communications and Legislative Affairs to check on the status of these publications before requesting copies: (202) 663-4900 (VOICE) or (202) 663-4494 (TDD).

To order subscriptions to the U.S. Equal Employment Opportunity Commission's **Americans with Disabilities Act Technical Assistance Manual, (Title I)** please use the order form below.

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
* 6196

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To fax your orders (202) 512–2233

☐ **YES,** enter my subscription(s)as follows:

____ subscription(s) to the **AMERICANS WITH DISABILITIES ACT TECHNICAL ASSISTANCE MANUAL (Title I),** (AWDA) including the basic manual and annual supplements for the next two years for $25.00 per year ($31.25 foreign).

The total cost of my order is $_____. Price includes regular domestic postage and handling and is subject to change.

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(Additional address/attention line)

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(Daytime phone including area code)

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Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

or order from your nearest Government Bookstore

U.S. Government Bookstores are located in the following cities: Atlanta, Denver, New York, Birmingham, Ala., Detroit, Philadelphia, Boston, Houston, Pittsburgh, Chicago, Jacksonville, Fla., Portland, Ore., Cleveland, Kansas City, Mo., Pueblo, Colo., Columbus, Laurel, Md., San Francisco, Dallas, Los Angeles, Seattle, Milwaukee and Washington, D.C. **(See your yellow pages.)**

Photocopies of this order form are acceptable.

U.S. Department of Justice
Civil Rights Division
Office of the Americans with Disabilities Act

List of Documents

1. Title II Regulation—State and Local Government Services
2. Title III Regulation—Public Accommodations and Commercial Facilities
3. ADA Highlights—Title II (7 pages)
4. ADA Highlights—Title III (10 pages)
5. Americans with Disabilities Act (Pamphlet)
6. Americans with Disabilities Act Statutory Deadlines (Fact Sheet)
7. Americans with Disabilities Act Requirements in Public Accommodations (Fact Sheet)
8. Americans with Disabilities Act (General Fact Sheet)
9. The Americans with Disabilities Act Questions and Answers (Pamphlet)
10. Available in mid-November—The Americans with Disabilities Act Handbook (includes regulations for Titles I, II and III, the ADA Accessibility Guidelines, Uniform Accessibility Standards, and a Resource Guide)

These documents are available in the following formats:

Large Print
Braille
Computer disk
Audiotape
Electronic bulletin board (202) 514-6193

Available from:

Office on the Americans with Disabilities Act
Civil Rights Division
U.S. Department of Justice
P.O. Box 66118
Washington, DC 20035-6118
(202) 514-0301 (Voice)
(202) 514-0381 (TDD)

I. Rehabilitation Act of 1973

Rehabilitation Services Administration and National Institute on Disability and Rehabilitation Research, Department of Education

The Rehabilitation Act of 1973 is the principal federal legislation establishing programs aimed at promoting the employment and independent living of people with disabilities. Programs authorized under this Act are administered within the U.S. Department of Education by the Rehabilitation Services Administration and the National Institute on Disability and Rehabilitation Research. Following are selected programs established under this Act to promote these purposes.

A. Programs administered by the Rehabilitation Services Administration

The Rehabilitation Services Administration administers the principal federal service programs designed to promtote the rehabilitatation, employment, and independent living of people with disabilities.

1) Centers for Independent Living (Title VII, Part B of the Act)

Centers for Independent Living are community based, nonresidential centers that provide independent living services to enable individuals with disabilities to live and function independently.

Services provided to individuals with severe disabilities include independent living skills training, counseling and personal advocacy services on income benefits and legal rights, information and referral, peer counseling, education and training necessary for living in the community and participation in community activities, housing assistance, transportation, equipment and adaptive aid loans, and personal care attendant training and referral.

Other services provided are outreach/community education, technical assistance to other community agencies, transitional services to assist youth in making the transition from school to the community, intake and assessment, service coordination, emergency intervention, social and recreation, and vocational/educational/employment services.

Independent living centers are often an excellent source of advice on an array of accessibility, attitudinal, and other issues of concern to people with disabilities. There are 202 centers for independent living across the country. For the location and/or telephone number of one nearest you contact either the **Independent Living Research Utilization Center at 2323 South Shephard Street, Suite 1000, Houston, Texas 77019, telephone (713) 520-0232 (voice) or (713) 520-5136 (TDD)** or the **National Council on Independent Living at Troy Atrium, Fourth Street and Broadway, Troy, New York 12180, telephone (518) 274-1979 (voice) or (518) 274-0701 (TDD).**

2) State Vocational Rehabilitation Agencies (Title I of the Act)

Eighty-four State vocational rehabilitation agencies are funded by the Federal Government. These agencies operate in each State, territory, and the District of Columbia to provide

vocational rehabilitation services to individuals with physical or mental disabilities. Separate agencies service individuals who are blind or visually impaired in several States.

Services are provided based upon eligibility criteria that include the presence of a physical or mental disability; evidence that the disability results in a substantial handicap to employment; and the reasonable expectation that vocational rehabilitation services can benefit the individual in terms of employability.

State vocational rehabilitation agencies provide assessment and evaluation services, counseling, guidance and referral services, vocational training, physical and mental restoration services, job development and job placement services, among other types of services to assist individuals with disabilities to become gainfully employed.

State vocational rehabilitation agencies can assist employers by assessing the accommodations that may be necessary for an employee with a disability, provide technical assistance on the nature and functional limitation of a disability, and make referrals to appropriate resources for rehabilitation technology services.

State agencies administer several types of supported employment programs, including the Supported Employment State Formula Grant program, Community-Based Supported Employment Projects, and Supported Employment State-Change Grants. Supported employment is competitive work in an integrated setting for individuals with severe disabilities for whom competitive work has not traditionally occurred and who, because of their disability, need on-going support services to perform such work.

For further information, including information on how to contact the vocational rehabilitation office nearest you, contact the **Rehabilitation Services Administration, Mary E. Switzer Building, Room 3028, 330 C Street, SW, Washington, D.C. 20202, telephone (202) 732-1282 (voice) or (202) 732-1330 (TDD).**

3) Projects with Industry (PWI) (Title VI of the Act)

PWI is a Federal Government/private industry initiative, involving corporations, labor organizations, trade associations, foundations, and voluntary agencies, that operate through a partnership with the rehabilitation community. The program creates, as well as expands, job opportunities for people with disabilities in the competitive labor market. As part of this program, training is provided for jobs in realistic work settings, generally within commercial or industrial establishments, coupled with supportive services to enhance pre- and post-employment success of people with disabilities in the marketplace.

There are one hundred and twenty-five federally funded PWI's, affiliated with more than 4,000 private corporations. Each project is required by law to have a Business Advisory Council that provides the mechanism for private sector business participation in policy-making for the project. This affords business and industry the opportunity to provide input into the design and character of training programs that are geared to existing job openings.

PWI's can be a good starting point for meeting other business people in your locality who have experience in hiring, and a commitment to hiring, people with disabilities. To locate the closest PWI, contact the **Inter-National Association of Business, Industry and Rehabilitation (I-NABIR) at P.O. Box 15242, Washington, D.C. 20003, telephone (202) 543-6353 (voice only),** or the **Rehabilitation Services Administration, Mary E. Switzer Building, Room 3028, 330 C Street, SW, Washington, D.C. 20202, (202) 732-1282 (voice) or (202) 732-1330 (TDD).**

B. Programs administered by the National Institute on Disability and Rehabilitation Research

The National Institute on Disability and Rehabilitation Research administers the principal federal disability research programs, the Technology Related Assistance for Individuals with Disabilities Act, regional ADA technical assistance centers, and certain other ADA related activities described below.

Existing Programs

1) National Rehabilitation Information Center (NARIC)

NARIC is an information center and library on disability and rehabilitation. It collects and disseminates the results of federally funded research projects. Its collection includes commercially published books, journal articles, and audiovisual materials. It currently has more than 30,000 documents.

NARIC has information specialists who will perform searches for the inquirer. Information may be requested by calling **(800) 346-2742 (voice or TDD) or (301) 588-9284 (voice or TDD) between the hours of 8 A.M. and 6 P.M. Eastern Standard Time on Monday through Friday. NARIC's address is National Rehabilitation Information Center, 8455 Colesville Road, Suite 935, Silver Spring, Maryland 20910.**

2) Research and Training Centers

NIDRR funds 39 research and training centers specialized by subject matter and dispersed throughout the country. The R&T centers conduct applied research directed towards producing new knowledge in the disability and rehabilitation field that will improve rehabilitation services and promote the independent living of people with disabilities. Centers also develop and conduct related teaching and training programs to disseminate and speed the utilization of key findings.

Many of the centers focus on issues pertaining to particular disabilities. Other centers whose specialty areas may be of particular interest to the reader are:

Center on Enhancing Employability of Individuals with Handicaps

Center for Access to Rehabilitation and Economic Opportunity

Center on Rural Rehabilitation Services

Independent Living Research Utilization center

Center on Improving Supported Employment Outcomes for Individuals with Developmental and Other Severe Disabilities

Center on New Directions for Rehabilitation Facilities

Information on other R&T centers, as well as how to contact those listed above, may be obtained from the **National Institute on Disability and Rehabilitation Research, U.S. Department of Education, 400 Maryland Avenue, SW, Washington, D.C. 20202-2572 (202) 732-1134 (voice) or (202) 732-5079 (TDD).**

3) Technology Related Assistance for Individuals with Disabilities Act

NIDRR is funding the development of State programs and projects to provide technology-related assistance to persons with disabilities and to train service providers and people with disabilities in the application of assistive technology.

More information about these programs and projects may be obtained by contacting **NIDRR at the address listed above or at (202) 732-5066 (voice) or (202) 732-5079 (TDD).**

Proposed Programs Facilitating the Implementation of the ADA

Congress provided funds to NIDRR in 1991 to develop a technical assistance program to facilitate the implementation of the ADA. These funds will be used for the following three major programs, conducted under grants from NIDRR over a 5-year period, beginning in the fall of 1991;

4) Regional Disability and Business Accommodation Centers (RDBACs)

Ten regional centers will be established to provide a broad range of information, technical assistance, and training on the ADA to employers and other covered entities, people with disabilities, and other segments of the community. Technical assistance will focus on facilitating the effective implementation of the ADA, successful employment outcomes for individuals with disabilities, and greater accessibility in public accommodations.

5) National Peer Training Projects

These projects will be designed to enhance the capacity of persons with disabilities and their organizations to facilitate the implementation of the ADA. One project will provide training for local capacity-building in independent living centers providing services to individuals with disabilities. A second project will develop peer and family training networks.

6) Materials Development Projects

This project will develop, test, and distribute technical assistance and training materials to be used by individuals with disabilities, employers, service providers, the regional centers, and others who need to know about the ADA.

More information about these programs may be obtained by contacting the **National Institute on Disability and Rehabilitation Research, Department of Education, 400 Maryland Avenue, SW, Switzer Building, Washington, D.C. 20202-2601, (202) 732-1134 (voice) or (202) 732-5079 (TDD).**

II. Work Incentive Programs for People with Disabilities

Social Security Administration, Department of Health and Human Services

These programs are intended to provide individuals with disabilities who are beneficiaries of two programs---the Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) programs---supports they need to move from benefit dependency to self sufficiency. Work incentives are intended to help beneficiaries enter or reenter the workforce by protecting their entitlement to cash payments and/or Medicaid or Medicare protection until they can support themselves.

Among the work incentives available to either SSDI or SSI recipients, or both, are:

- impairment-related work expenses
- trial work period
- extended period of eligibility
- continuation of Medicare coverage
- Medicare for people with disabilities who work
- earned income exclusion
- student earned income exclusion
- blind work expenses
- plan for achieving self-support
- property essential to self-support
- section 1619 work incentives

For more information about these programs, contact the **Program Management Branch, Social Security Administration, 3R1 Operations Building, 6401 Security Boulevard, Baltimore, Maryland 21235 (301) 965-9864 (voice only).**

I. Developmental Disabilities Assistance and Bill of Rights Act

Administration on Developmental Disabilities, Department of Health and Human Services

This legislation supports the development and coordination of programs and services promoting the independence, productivity, community integration, and protection of the rights of persons of all ages with developmental disabilities.

A developmental disability is defined as a severe, chronic disability attributable to a mental or physical impairment, or combination of both, that is manifested before age 22; is likely to continue indefinitely; results in substantial limitations in three or more of the following areas of major life activity: self-care, receptive and expressive language, learning, mobility, self-direction, capacity for independent living, and economic self-sufficiency; and results in the need for individually planned and coordinated services lifelong or over an extended period of time.

One program authorized under the Act is the Protection and Advocacy Program, which provides for the protection and advocacy of the individual rights of all persons with developmental disabilities who are, or may be, eligible for treatment, services or habilitation, or who are being considered for a change in living arrangments. The Protection and Advocacy agencies (P&A's) are also extensively involved in training and education activities for persons with developmental disabilities and their families, and in public information and awareness efforts. They will be involved in protecting the rights of individuals with developmental disabilities covered under the Americans with Disabilities Act.

For more information about Developmental Disabilities Act programs, including how to locate the nearest P&A agency, contact the **Administration on Developmental Disabilities, Program Operations Division, 200 Independence Avenue SW, Room 329D, Washington, D.C. 20201 (202) 245-2897 (voice) or (202) 245-2890 (TDD).**

IV. Job Training Partnership Act

Office of Employment and Training Programs, Department of Labor

The Job Training Partnership Act authorizes programs that train and place "economically disadvantaged" persons in the work force through joint public-private sector initiatives. Each State has a State Job Training Coordinating Council and one or more Private Industry Councils at the local level which administer the program. JTPA is the largest federal job placement and training program.

The program is not targeted specifically to individuals with disabilities, but individuals with disabilities who meet the income criteria are eligible for services. In addition, up to 10 percent of JTPA service recipients may be individuals who are not economically disadvantaged within the meaning of the statute but who have encountered barriers to employment; this group includes "individuals with handicaps." The Act defines a "handicapped individual" as any individual who has a mental or physical disability that contitutes or results in a substantial handicap to employment.

For the most part, JTPA funds benefiting persons with disabilities have been used to place persons with mild and moderate disabilities in community jobs.

For more information on this program, contact the **Office of Employment and Training Programs, Department of Labor, 200 Constitution Avenue NW, Room N4709, Washington, D.C. 20210, (202) 535-0580 (voice only).**

RESOURCE LIST

Resource List

This Resource List contains separate sections for government and non-governmental organizations.

I. Easy Reference Guide for Government Agencies

The following is intended as an Easy Reference Guide to assist the reader in identifying the relevant government agency for several areas of interest:

For questions pertaining to:	Consult these government agencies:
employment	Equal Employment Opportunity Commission (R,TA,E) President's Committee on Employment of People with Disabilities (TA) Small Business Administration (TA) National Institute on Disability and Rehabilitation Research (TA)
public accommodations	Department of Justice (R,TA,E)
public services	Department of Justice (R,TA,E)
rehabilitation and independent living services	Department of Education (P)
tax law provisions	Department of Treasury (TA)
accessibility	Architectural and Transportation Barriers Compliance Board (G,TA)
work incentive	Social Security Administration (P)

Key

R: issued regulations
TA: provides technical assistance on how to comply
E: has enforcement authority
P: administers programs relevant to successful implementation of the Act
G: issues guidelines

II. Government Agencies

Civil Rights Division
Office on the Americans with Disabilities Act
U.S. Department of Justice
P.O. Box 66118
Washington, D.C. 20035-6118
(202) 514-0301 (voice)
(202) 514-0383 (TDD)

Regulations, technical assistance, and enforcement for titles II (public services) and III (public accommodations).

Equal Employment Opportunity Commission
1801 L Street NW
Washington, D.C. 20507
800-669-EEOC (voice)
800-800-3302 (TDD)

Regulations, technical assistance, and enforcement for title I (employment).

Department of Transportation
400 Seventh Street SW
Room 10424
Washington, D.C. 20590
(202) 366-9305
(202) 755-7687 (TDD)

Regulations, technical assistance, and enforcement for title II and III transportation provisions.

Architectural and Transportation Barriers Compliance Board
1111 18th Street NW
Suite 501
Washington, D.C. 20036
800-USA-ABLE
800-USA-ABLE (TDD)

Americans with Disabilities Act Accessibility Guidelines (ADAAG) required under title III (public accommodations) and technical assistance on architectural, transportation, and communications accessibility issues.

Federal Communications Commission
1919 M Street NW
Washington, D.C. 20554
(202) 632-7260 (voice)
(202) 632-6999 (TDD)

Regulations, technical assistance and enforcement for title IV (communications).

The following agencies implement programs relating to, or are responsible for provisions pertaining to, the implementation of titles I, II, and III of the ADA.

Internal Revenue Service
Office of the Chief Counsel
P.O. Box 7604
Ben Franklin Station
Washington, D.C. 20044
(202) 566-3292 (voice only)

The Internal Revenue Service provides technical assistance on various tax code provisions designed to encourage businesses to hire people with disabilities. See Appendix G for an explanation of these provisions.

National Council on Disability
800 Independence Avenue SW
Suite 814
Washington, D.C. 20591
(202) 267-3846 (voice)
(202) 267-3232 (TDD)

Charged by statute with responsibility for developing recommendations for federal disability policy and overseeing the research priorities for the National Institute on Disability and Rehabilitation Research.

Small Business Administration
Office of Advocacy
Office of Economic Research
409 Third Street SW
Fifth Floor
Washington, D.C. 20416
(202) 205-6530 (voice only)

President's Committee on Employment of People with Disabilities
1331 F Street NW
Third Floor
Washington, D.C. 20004
(202) 376-6200 (voice)
(202) 376-6205 (TDD)

Provides technical assistance on employment provisions of ADA directly and through its Governors' Committees on Employment of People with Disabilities.

Rehabilitation Services Administration
U.S. Department of Education
Mary E. Switzer Building
Room 3028
330 C Street SW
Washington, D.C. 20202-2531
(202) 732-1282 (voice and TDD)

Administers the principal Federal service programs designed to rehabilitate, employ, and promote the independent living of people with disabilities. See the description of Rehabilitation Act of 1973 programs contained in Appendix item L, Related Federal Disability Laws, for further information about these programs.

National Institute on Disability and Rehabilitation Research
U.S. Department of Education
400 Maryland Avenue SW
Washington, D.C. 20202-2572
(202) 732-1134 (voice)
(202) 732-5079 (TDD)

Administers the principal Federal disability research programs, the Technology Related Assistance for Individuals with Disabilities Act, and ADA technical assistance centers. See the description of Rehabilitation Act of 1973 programs contained in Appendix item L, Related Federal Disability Laws, for further information about these programs.

Public Health Service
U.S. Department of Health and Human Services
Centers for Disease Control
Mail Stop C09
1600 Clifton Road NE
Atlanta, Georgia 30333
(404) 639-2237 (voice only)

The ADA in certain circumstances permits the reassignment of individuals with certain contagious diseases specified by the Public Health Service from food handling jobs to another job if the risk posed by the individual may not be eliminated by a reasonable accommodation. The Public Health service issued its proposed list of such diseases in May 1991, with publication of the final list expected in the autumn of 1991.

Administration on Developmental Disabilities
U.S. Department of Health and Human Services
Program Operations Division
200 Independence Avenue SW
Room 329D
Washington, D.C. 20201
(202) 245-2897 (voice)
(202) 245-2890 (TDD)

ADD administers the Developmental Disabilities Act, designed to promote community integration and maximum independence for people with developmental disabilities. ADD administers the Protection and Advocacy Program for Developmentally Disabled individuals. See the description of Developmental Disabilities Assistance and Bill of Rights Act programs contained in Appendix item L, Related Federal Disability Laws, for further information on the Protection and Advocacy system.

Social Security Administration
Office of Disability
Room 545
Altimeyer Building
6401 Security Boulevard
Baltimore, Maryland 21235
(301) 965-3424 (voice only)

SSA administers programs that provide incentives for individuals receiving Social Security Disability Insurance (SSDI) or SSI (Supplemental Security Income) to obtain gainful employment.

Office of Federal Contract Compliance Programs
U.S. Department of Labor
200 Constitution Ave. NW
Washington, D.C. 20210
(202) 523-9501 (voice only)

Enforcement agency for section 503 of the Rehabilitation Act, which, unlike the ADA, includes an affirmative action requirement affecting certain Federal contractors.

National Library Services for the Blind and Physically Handicapped
1291 Taylor Street NW
Washington, D.C. 20542
(202) 707-5100 (voice)
(202) 707-0744 (TDD)

A free national library program that lends braille and cassette tapes versions of up to 59,000 unique books and magazines that are typically found in public libraries to individuals with visual disabilities. Over 20 million books and magazines were circulated to a readership of 695,350 in 1990.

III. Non-Government Organizations

What follows is a partial listing of organizations offering assistance in implementing the employment, public services, and public accommodations provisions of the ADA.

Virtually all of the organizations listed below provide information and referral services on ADA matters. Many publish newsletters and/or journals and hold meetings at least annually at which ADA implementation issues have been, and are likely to continue to be, a popular subject for panels, speakers, and workshops to address. Some of these organizations also hold periodic seminars on the ADA that are occasionally open to non-members as well as members. Specific information on these activities, as well as membership information, may be obtained from the organizations.

Many of these organizations are in the process of developing additional ADA-related services and products following the publication by the Equal Employment Opportunity Commission and the Department of Justice of final regulations for titles I, II, and III of the ADA on July 26, 1991. An effort was made to obtain the most current information available from these organizations concerning their ADA-related activities as of the September, 1991, publication deadline for this handbook. Wherever possible, mention of planned activities that may be of interest to the reader has been made in the annotations.

Inclusion in the list below does not constitute an endorsement by the Equal Employment Opportunity Commission or the Department of Justice of these organizations or of any legal interpretations of the Americans with Disabilities Act offered by them.

1. Disability

This section is subdivided into cross-disability and disability-specific listings. Cross-disability organizations provide services to individuals with different types of disabilities. For more information you may contact either the Equal Employment Opportunity Commission or the Department of Justice (see Government listings above).

a. Cross-Disability

Disability Rights Education and Defense Fund
2212 Sixth Street
Berkeley, California 94710
(510) 644-2555 (voice)
(510) 644-2629 (TDD)
(800) 466-4232 (voice and TDD: operational beginning December 1, 1991)

Specializes in training and technical assistance for people with disabilities and their representatives, State and local government units, businesses and trade associations; also public policy advocacy and litigation.

Independent Living Research Utilization
2323 South Shephard Street
Suite 1000
Houston, Texas 77019
(713) 520-0232 (voice)
(713) 520-5136 (TDD)

Provides information and technical assistance pertaining to independent living and disability rights; will provide information on how to contact the community-based independent living center closest to the inquirer.

National Council on Independent Living
Troy Atrium
Fourth Street and Broadway
Troy, N.Y. 12180
(518) 274-1979 (voice)
(518) 274-0701 (TDD)

Umbrella organization representing community based independent living centers. Will provide referral information on services offered by centers, and will locate the center closest to the inquirer. See also Independent Living Research Utilization entry.

National Organization on Disability
910 16th Street NW
Suite 600
Washington, D.C. 20006
(202) 293-5960 (voice)
(202) 293-5968 (TDD)

Issued fact sheet on the ADA to its 3,000 Communities in Action, consisting primarily of mayors' offices on disability policy, who are pledged to bring about changes promoting the full integration of people with disabilities into their communities; offers a 10 minute video narrated by Charles Kuralt, "Community Partners at Work," available only to its affiliated Communities in Action for community showings; offers to any local organization camera-ready copies of public service announcements promoting changes consistent with the goals of the ADA.

World Institute on Disability
510 16th Street
Suite 100
Oakland, California 94612
(415) 763-4100 (voice and TDD)

Cross-disability research, training and policy development center; involved in assisting businesses interested in marketing products and ideas to the 43 million individuals with disabilities in the United States.

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b. Disability-Specific

Alexander Graham Bell Association for the Deaf, Inc.
3417 Volta Place NW
Washington, D.C. 20007
(202) 337-5220 (voice and TDD)

Information and referral; planned ADA brochure for fall 1991.

American Amputee Foundation
P.O. Box 250218
Hillcrest Station
Little Rock, Arkansas 72225
(501) 666-2523 (voice only)

Self-help information and referral network offering technical assistance, information on assistive devices, videos, some financial assistance, and publications, including a comprehensive national resource directory.

American Civil Liberties Union AIDS Project
132 West 43rd Street
New York, New York 10036
(212) 944-9800 (voice only)

Distributes brochure on how the ADA applies to people with AIDS.

American Council of the Blind
1115 15th Street NW
Suite 720
Washington, D.C. 20005
(202) 467-5081 (voice only)
(800) 424-8666 (Monday through Friday 3-5:30 EST only)

Advocacy, educational, and information sharing activities; provides access to several Special Interest affiliates, such as American Blind Lawyers Association, Guide Dog Users, Inc., and Council of Citizens with Low Vision, Intl.

American Foundation for the Blind
15 West 16th Street
New York, New York 10011
(212) 620-2000 (voice)
(212) 620-2158 (TDD)

Offers information on assistive technology; has a listing of jobs held by individuals who are blind indicating how adaptations were made in various employment situations; sells products, some unique and some designed by AFB; provides evaluations of assistive technology.

American Printing House for the Blind
1839 Frankfort Avenue
Louisville, Kentucky 40206-0085
(502) 895-2405 (voice only)

One of several braille publishers in the United States; also distributes materials in large print and audio recordings; distributes instructional aids, education computer software, and textbooks for children.

American Speech-Language-Hearing Association
10801 Rockville Pike
Rockville, Maryland 20852
(301) 897-5700 (voice and TDD)
(800) 638-8255 (consumer hotline number; voice and TDD)

Distributes technical information pieces; developing an ADA brochure; seminars available to non-members as well as members; consumer hotline number.

Association of Persons in Supported Employment
5001 W. Broad Street
Suite 34
Richmond, Virginia 23230
(804) 282-3655 (voice only)

Assists businesses interested in developing supported employment programs in obtaining necessary support services; current projects include a train the trainer Social Security Administration work incentive program; members include rehabilitation service personnel, consumers of supported employment services and their families.

The Association for Severely Handicapped Individuals
7010 Roosevelt Way, NE
Seattle, Washington 98115
(206) 523-8446 (voice)
(206) 524-6198 (TDD)

Epilepsy Foundation of America
4351 Garden City Drive
Landover, Maryland 20785
(301) 459-3700 (voice only)

Developing manual scheduled for publication in fall 1991 on the ADA as it applies to people with epilepsy.

Helen Keller Center for Deaf-Blind Youth and Adults
111 Middle Neck Road
Sands Point, New York 11050
(516) 944-8900 (voice and TDD)

The only rehabilitation facility in the United States devoted solely to the needs of individuals who are deaf-blind. Offers training for service providers; information and referral from its central and nine regional offices.

Learning Disabilities Association of America
4156 Library Road
Pittsburgh, Pennsylvania 15234
(412) 341-1515 (voice only)

Organization composed primarily of parents and professionals with 500 State and local chapters.

Legal Action Center
236 Massachusetts Avenue NE
Suite 510
Washington, D.C. 20002
(202) 544-5478 (voice only)

Provides information and technical assistance on the ADA as it affects individuals with current or past drug abuse or alcohol-related problems, and individuals with AIDS or who test positive for the HIV virus.

National Alliance for the Mentally Ill
2101 Wilson Blvd.
Suite 302
Arlington, Virginia 22201
(703) 524-7600 (voice only)

Represents primarily families; planning an ADA fact sheet/pamphlet; 1,046 State and local affiliates.

National Association for the Physically Handicapped
4230 Emerick Street
Saginaw, Michigan 48602
(517) 799-3060 (voice only)

National Association for Retarded Citizens
1522 K St. NW
Suite 516
Washington, D.C. 20005
(202) 785-3388 (voice)
(202) 785-3411 (TDD)

1300 State and local chapters representing 140,000 individuals with mental retardation and their families; offers technical assistance and fact sheet on the ADA.

National Association of the Deaf
814 Thayer Avenue
Silver Spring, Maryland 20910-4500
(301) 587-1788 (voice)
(301) 587-1789 (TDD)

Members include consumers, parents, and teachers; has 22,000 members and chapters in all 50 States; provides basic information and referral on deafness and accommodations for people who are deaf.

National Easter Seals Society
1350 New York Ave NW
Washington, D.C. 20005
(202) 347-3066 (voice)
(202) 347-7385 (TDD)

Some of Easter Seals' 175 affiliates are training businesses on the requirements for titles I (employment) and III (public accommodations) of ADA. Videotape "Nobody is Burning Wheelchairs"; provides technical assistance on public accommodations provisions.

National Federation of the Blind
1800 Johnson Street
Baltimore, Maryland 21230
(301) 659-9314 (voice only)

Some legal referrals and advocacy; publications on employment issues; computer bulletin board; technical assistance; sells aids and devices; large exhibit at annual conferences on available adaptive equipment.

National Head Injury Foundation
1140 Connecticut Avenue NW
Suite 812
Washington, D.C. 20036
(202) 296-6443 (voice only)
(800) 444-6443 (families, consumers; voice only)

Chapters or contacts in every State; referral information on medical and vocational rehabilitation and employment options.

National Information Center on Deafness
Gallaudet University
800 Florida Avenue NE
Washington, D.C. 20002
(202) 651-5051 (voice)
(202) 651-5052 (TDD)

Publications on workplace accommodations for people who are deaf; has list of manufacturers and up-to-date information on topics related to deafness and hearing loss; developing updated ADA materials on the employment of individuals who are deaf; will provide information on how to obtain the services of a qualified interpreter.

National Mental Health Consumers' Association
311 South Juniper Street
Room 902
Philadelphia, Pennsylvania 19107
(215) 735-2465 (voice only)
(215) 735-1273 (TDD)
(800) 688-4226 (voice only)

A clearinghouse providing technical assistance to assist in the development and successful operation of consumer operated self-help programs for people with mental illnesses; distributes information on the ADA to individuals and organizations.

National Organization for Rare Disorders
Fairwood Professional Building
P.O. Box 8923
New Fairfield, Connecticut 06812-1783
(800) 999-6673 (voice only)
(203) 746-6518 (voice only)

Umbrella group for associations representing individuals with rare disorders, defined as those with an incidence of less than 200,000 in the population. There are about 5,000 such known disorders affecting an estimated 20 million Americans. Serves as a clearinghouse offering information and resources on support groups, research on the disorders, and how to seek or keep employment, among other issues.

National Spinal Cord Injury Association
600 West Cummings Park
Suite 2000
Woburn, Massachusetts 01801
(617) 935-2722 (voice only)

Serves consumers, families, and professionals; provides information and referral on rehabilitation and employment options.

Paralyzed Veterans of America
801 18th Street NW
Washington, D.C. 20006
(202) 872-1300 (voice only)

Guidebook on access to hotels and motels used by American Institute of Architects (to be revised in accordance with ADA); disseminates information about tax benefits for businesses accommodating consumers and employees with disabilities; promotes access to outdoors and wilderness areas.

Rochester Institute of Technology
National Center on Employment for the Deaf
Lyndon Baines Johnson Building
P.O. Box 9887
Rochester, New York 14623-0887
(716) 475-6219 (voice)
(716) 475-6205 (TDD)

Serves as a job placement office for deaf individuals, primarily graduates of the National Technical Institute for the Deaf; posts job listings from employers from all over the country; provides information on companies interested in hiring individuals with deafness or hearing loss; assists in updating of resumes; referral information.

Self-Help for Hard of Hearing People
7800 Wisconsin Avenue NW
Bethesda, Maryland 20814
(301) 657-2248 (voice)
(301) 657-2249 (TDD)

Serves consumers and professionals; provides technical assistance to hospitals on meeting the needs of individuals with hearing impairments; videotape and information packet on employing people with hearing loss.

Telecommunications for the Deaf, Inc.
8719 Colesville Road
Suite 300
Silver Spring, Maryland 20910
(301) 589-3786 (voice)
(301) 589-3006 (TDD)

Publishes and sells a nationwide Telecommunications Device for the Deaf (TDD) directory; information on visually-based accommodations for deaf and hearing impaired people, such as alarms, decoders, and TDD's. Sells decoders and a videotape on how to use TDD's.

United Cerebral Palsy
1522 K Street NW
Suite 1112
Washington, D.C. 20005
(202) 842-1266 (voice only)

Conducts, as part of a joint venture called the National Center for Access Unlimited, various training and technical assistance activities for businesses; published monograph on accessible design; plans to publish additional monograph on personnel practices and a consumer-oriented rights manual by the spring of 1992.

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2. Disability-Business-Rehabilitation

The Dole Foundation for Employment of People with Disabilities
1819 H Street NW
Suite 850
Washington, D.C. 20006
(202) 457-0318 (voice and TDD)

A public foundation that funds employment-related projects including technical assistance and training projects; part of a partnership of corporations and philanthropic organizations committed to funding training, technical assistance, and educational projects promoting the integration of people with disabilities into society.

Goodwill Industries of America
9200 Wisconsin Avenue
Bethesda, Maryland 20814
(301) 530-6500 (voice only)

Represents 179 vocational rehabilitation facilities of many types; brochure on ADA; conducts seminars and publications for members.

Industry-Labor Council of National Center for Disability Services
201 I.U. Willets Road
Albertson, New York 11507
(516) 747-6323 (voice)
(516) 747-5355 (TDD)

Membership organization serving 152 mostly Fortune 500 corporations and labor unions; conducts training seminars for members and non-members on multiple aspects of employing people with disabilities; information hotline service; assists in recruiting efforts by businesses; audiovisual library.

Inter-National Association of Business, Industry and Rehabilitation
P.O. Box 15242
Washington, D.C. 20003
(202) 543-6353 (voice only)

Represents businesses, labor unions and job placement service organizations sponsoring federally funded Projects with Industry programs. These organizations are public-private partnerships that competitively employ people with disabilities. (See the description of Rehabilitation Act of 1973 programs contained in Appendix item L, Related Federal Disability Laws, for additional information about this program.) Also represents similar programs which are not federally funded. Provides technical assistance, referral information.

Mainstream, Inc.
Suite 1010
1030 15th Street NW
Washington, D.C. 20005
(202) 898-1400 (voice and TDD)

Customized training, mostly for businesses, associations and service providers on multiple aspects of employing people with disabilities. Produces kit of ADA-related materials; placement programs in Dallas and Washington, D.C.

National Association of Rehabilitation Facilities
1910 Association Drive
Suite 200
Reston, Virginia 22091-1502
(703) 648-9300 (voice only)

Training for members, which include providers of rehabilitation services; developing revised manual for primarily employers and question and answer materials on ADA. NARF has a toll free number that individuals can call to obtain referral information on the availability of public and private medical and vocational rehabilitation options. That number is (800) 368-3513. Information about model rehabilitation programs for service providers is also available at that number.

National Association of Rehabilitation Facilities in the Private Sector
P.O. Box 697
Brookline, Massachusetts 02146
(617) 566-4432 (voice only)

Serves approximately 3,000 individual and corporate members, which include private sector rehabilitation professionals and facilities in diverse fields. Will send, for a nominal fee, a printout of members in inquirer's locale. Offers for $35 its directory of members, organized geographically and by specialty area.

National Rehabilitation Association
633 South Washington Street
Alexandria, Virginia 22314
(703) 836-0850 (voice)
(703) 836-0852 (TDD)

Specializes in visiting hotels and providing information on how to make them accessible; 62 chapters with 17,000 members including people with disabilities, families, service providers, and businesses.

Rehabilitation Services Administration
U.S. Department of Education
Mary E. Switzer Building
Room 3028
330 C Street SW
Washington, D.C. 20202
(202) 732-1282 (voice)
(202) 732-1330 (TDD)

Each State has one or more agencies that provide rehabilitation services to individuals with disabilities. RSA will provide information on how to contact the agency in your State and provide additional information on other federally funded community-based employment and independent living related services and programs, including the Independent Living program, Projects with Industry, and supported employment programs.

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3. Business

U.S. Chamber of Commerce
Labor and Human Resources Department
1615 H St. NW
Washington, D.C. 20062
(202) 463-5502 (voice only)

Published booklet *What Businesses Must Know About the Americans with Disabilities Act.*

National Association of Wholesale Distributors
1725 K St. NW
Suite 700
Washington, D.C. 20006
(202) 872-0885 (voice only)

Federation of 114 national associations. Planning to publish information book on ADA as it applies to wholesale distributors by the end of 1991.

National Restaurant Association
1200 17th Street NW
Washington, D.C. 20036
(202) 331-5988 (general information) (voice only)
(202) 331-5985 (physical accessibility questions) (voice only)
(202) 331-5910 (other legal questions) (voice only)

Has an employment brochure; legal department takes technical assistance calls; 800 technical assistance number for members.

National Retail Federation
701 Pennsylvania Avenue
Suite 710
Washington, D.C. 20004

Umbrella group representing 20 national associations representing over 1 million establishments employing 16 million people. Conducts training seminars; planning an ADA compliance manual.

Society for Human Resources Management
606 North Washington Street
Alexandria, Virginia 22314
(703) 548-3440 (ask for Technical and Information Services unit) (voice only)

Serves human resources professionals, including EEO professionals.
Planning publication of overview of employment provisions in November, 1991.

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4. Advocacy/Legal

Listing the following organizations does not constitute an endorsement by the Department of Justice or the Equal Employment Opportunity Commission of the legal interpretations of the Americans with Disabilities Act held by these groups. The Department of Justice and the Equal Employment Opportunity Commission believe that an accurate understanding of the ADA can prevent the filing of unnecessary and unfounded charges and strongly support efforts to resolve disputes arising under the ADA wherever possible through means other than the filing of charges or lawsuits.

a. Cross Disability

American Bar Association
Commission on Mental and Physical Disability Law
1800 M Street NW
Washington, D.C. 20036
(202) 331-2240 (voice)
(312) 988-5168 (TDD)

Clearinghouse answering legal inquiries on ADA for a fee; has on file *Mental and Physical Disability Law Reporter* for past fifteen years, which includes coverage of title V Rehabilitation Act cases; library available by appointment only; offers, through its ADA Project, training on legal and compliance issues for businesses, disability organizations, State and local government agencies, and law firms.

Disability Rights Education and Defense Fund
2212 Sixth Street
Berkeley, California 94710
(510) 644-2555 (voice)
(510) 644-2629 (TDD)
(800) 466-4232 (voice and TDD: operational beginning December 1, 1991)

Employment Law Center
1663 Mission Street
Suite 400
San Francisco, California 94103
(415) 864-8848 (voice only)

Engages in policy work and litigates selected employment law reform cases under State and federal disability law.

National Disability Action Center
1101 15th Street NW
Suite 1215
Washington, D.C. 20005
(202) 775-9231 (voice and TDD)

Public Interest Law Center of Philadelphia
125 South Ninth Street
Seventh Floor, Suite 700
Philadelphia, Pennsylvania 19107
(215) 627-7100 (voice only)

Western Law Center for the Handicapped
1441 West Olympic Boulevard
Los Angeles 90015
(213) 736-1031 (voice only)

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b. Disability-Specific

American Civil Liberties Union AIDS Project
132 West 43rd Street
New York, New York 10036
(212) 944-9800 (voice only)

Legal Action Center
153 Waverly Place
New York, New York 10014
(212) 243-1313 (voice only)

Technical assistance and litigation for individuals with current or past drug abuse or alcohol problems, and individuals with AIDS or who test positive for the HIV virus.

National Association of Protection and Advocacy Systems
900 Second Street NE
Suite 211
Washington, D.C. 20002
(202) 408-9514 (voice)
(202) 408-9521 (TDD)

Represents federally funded Protection and Advocacy agencies. See the description of Developmental Disabilities Assistance and Bill of Rights Act programs contained in Appendix item L, Related Federal Disability Laws, for a description of this program.

National Center on Law and the Deaf
800 Florida Avenue NE
Room 326 Ely Center
Washington, D.C. 20002
(202) 651-5373 (voice and TDD)

National Mental Health Law Project
1101 15th Street NW
Suite 1212
Washington, D.C. 20005
(202) 467-5730 (voice)
(202) 467-4232 (TDD)

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5. Information Databases on Disability

ABLEDATA
Newington Children's Hospital
181 East Cedar Street
Newington, Connecticut 06111
(800) 344-5405 (voice and TDD)
(203) 667-5405 (voice and TDD)

A national database providing information on 16,000 products for people with disabilities produced by 2,000 companies. Information/products focus on such areas as attendant/personal care, mobility, communications, and recreation. Printouts of up to 8 pages of product information are free of charge, with sliding scale for more extensive listings; open from 8-5 Eastern Standard Time, from Monday through Friday.

Mental Health Policy Resource Center
1730 Rhode Island Avenue NW
Suite 308
Washington, D.C. 20036
(202) 775-8826 (voice only)

Runs on-line database, available by subscription, containing documents on the ADA as it pertains to people with mental disabilities; publishing manuscript reviewing section 503 Rehabillitation Act case law ruling on reasonable accommodations for people with mental disabilities in autumn 1991; non-circulating library with ADA-related materials open to public by appointment.

National Rehabilitation Information Center (NARIC)
8455 Colesville Road
Suite 935
Silver Spring, Maryland 20910
(301) 588-9284 (voice and TDD)
(800) 346-2742 (voice and TDD)

A library and information center on disability and rehabilitation. Collects and disseminates the results of federally funded research projects. Collection includes commercially published books, journal articles, and audiovisual materials. Currently has more than 30,000 documents. NARIC has information specialists who will perform searches for the caller. Phone either of the numbers listed above between 8 A.M. and 6 P.M. EST Monday through Friday and ask to speak with an information specialist.

National Information Center for Children and Youth with Handicaps (NICHCY)
P.O. Box 1492
Washington, D.C. 20013
(703) 893-6061 (local, voice/TDD)
(800) 999-5599 (toll free, voice/TDD)

Information and referral service for people with disabilities, their families and professionals. Disseminates publications and information on self-help advocacy, ADA, and broad array of disability matters. Has particular expertise in matters of concern to children with disabilities and their parents.

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6. Technology

ABLEDATA
Newington Children's Hospital
181 East Cedar Street
Newington, Connecticut 06111
(800) 344-5405 (voice and TDD)
(203) 667-5405 (voice and TDD)

See listing under category 5, Information Databases on Disability.

Apple Computer
Worldwide Disability Solutions Group
20525 Mariani Avenue
Cupertino, California 95014
(408) 974-7910 (voice only)

Program and resource referral source with extensive database on accommodations for people with disabilities produced by Apple and other companies; publishes consumer booklet, videotapes.

IBM National Support Center for Persons with Disabilities
P.O. Box 2150
Atlanta, Georgia 30301
(800) 426-2133 (voice and TDD)

Clearinghouse with extensive database on adaptive technology produced by IBM and other companies; publishes "resource guides", organized by disability (vision, mobility, hearing, speech); offers training program for people with disabilities in computer skills; offers discounts on computer systems.

Job Accommodation Network
West Virginia University
809 Allen Hall
P.O. Box 6123
Morgantown, West Virginia 26506-6123
(800) 526-7234 (U.S. other than West Virginia; voice or TDD)
(800) 526-4698 (West Virginia; voice and TDD)
(800) 526-2262 (Canada; voice and TDD)

Free service for those seeking information on how to accommodate particular functional limitations; has database with information on over 16,000 specific reasonable accommodations. An information specialist will assist the caller in obtaining relevant information. JAN provides information on accommodations that are not technology-based as well.

Rehabilitation Engineering Society of America
1101 Connecticut Avenue NW
Suite 700
Washington, D.C. 20036
(202) 857-1199 (voice only)

Clearinghouse of information on rehabilitation technology; provides technical assistance to States; membership includes rehabilitation technology specialists, manufacturers, and rehabilitation professionals; publishes *Assistive Technology Sourcebook.*

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7. Accessibility and Job Accommodations

American National Standards Institute
11 West 42nd Street
13th Floor
New York, New York 10036
(212) 642-4900 (voice only)

Provides information concerning architectural standards to make buildings accessible to people with disabilities.

American Institute of Architects
Public Affairs Department
1735 New York Avenue NW
Washington, D.C. 20006
(202) 626-7461 (voice only)

Offers bibliographies on periodicals and books on barrier-free design and an information packet on how the ADA applies to architectural design.

Job Accommodation Network
West Virginia University
809 Allen Hall
P.O. Box 6123
Morgantown, West Virginia 26506-6123
(800) 526-7234 (U.S. other than West Virginia; voice or TDD)
(800) 526-4698 (West Virginia; voice or TDD)
(800) 526-2262 (Canada; voice or TDD)

See listing under category 6, Technology.

National Captioning Institute
5203 Leesburg Pike
Suite 1500
Falls Church, Virginia 22041
(703) 998-2400 (voice and TDD)

Develops, and is one of several distributors of, closed-captioning decoders; research on closed captioning and new technologies; distributes some decoders to needy individuals.

Registry of Interpreters for the Deaf
8719 Colesville Road
Suite 310
Silver Spring, Maryland 20910-3919
(301) 608-0050 (voice and TDD)

Will refer inquirer to interpreter service agencies in inquirer's locale; publishes annually updated directory of interpreters certified under RID's National Testing System. There are other certifications systems in use. For information on how to obtain the services of a qualified interpreter, contact the National Information Center on Deafness at (202) 651-5051 (voice) or (202) 651-5052 (TDD).

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8. Alternative Dispute Resolution Information and Services

American Arbitration Association
140 West 51st Street
New York, New York 10020
(212) 484-4060 (voice only)

Provides information on mediation, arbitration, and other means of dispute resolution other than litigation. Will provide a list of "neutrals" (mediators or arbitrators with subject matter expertise) and refer the interested parties to one of its 35 local offices for scheduling of hearing and processing of the case.

Standing Committee on Dispute Resolution
American Bar Association
1800 M Street NW
Washington, DC 20036
(202) 331-2258 (voice only)

Publishes *Dispute Resolution Programs*, a directory listing "neutrals" (mediators or arbitrators with subject matter expertise) and self-identfied dispute resolution programs, every two years.