ADA Standards for Accessible Design
ADA AMENDMENTS ACT OF 2008

PL 110-325 (§ 3406)
September 25, 2008

An Act To restore the intent and protections of the Americans with Disabilities Act of 1990.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SEC. 1. SHORT TITLE

This Act may be cited as the “ADA Amendments Act of 2008”.

SEC. 2. FINDINGS AND PURPOSES

(a) FINDINGS.—Congress finds that—

(1) in enacting the Americans with Disabilities Act of 1990 (ADA), Congress intended that the Act “provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities” and provide broad coverage;

(2) in enacting the ADA, Congress recognized that physical and mental disabilities in no way diminish a person’s right to fully participate in all aspects of society, but that people with physical or mental disabilities are frequently precluded from doing so because of prejudice, antiquated attitudes, or the failure to remove societal and institutional barriers;

(3) while Congress expected that the definition of disability under the ADA would be interpreted consistently with how courts had applied the definition of a handicapped individual under the Rehabilitation Act of 1973, that expectation has not been fulfilled;

(4) the holdings of the Supreme Court in Sutton v. United Air Lines, Inc., 527 U.S. 471 (1999) and its companion cases have narrowed the broad scope of protection intended to be afforded by the ADA, thus eliminating protection for many individuals whom Congress intended to protect;

(5) the holding of the Supreme Court in Toyota Motor Manufacturing, Kentucky, Inc. v. Williams, 534 U.S. 184 (2002) further narrowed the broad scope of protection intended to be afforded by the ADA;

(6) as a result of these Supreme Court cases, lower courts have incorrectly found in individual cases that people with a range of substantially limiting impairments are not people with disabilities;

(7) in particular, the Supreme Court, in the case of Toyota Motor Manufacturing, Kentucky, Inc. v. Williams, 534 U.S. 184 (2002), interpreted the term “substantially limits” to require a greater degree of limitation than was intended by Congress; and

(8) Congress finds that the current Equal Employment Opportunity Commission ADA regulations defining the term “substantially limits” as “significantly restricted” are inconsistent with congressional intent, by expressing too high a standard.

(b) PURPOSES.—The purposes of this Act are—

(1) to carry out the ADA’s objectives of providing “a clear and comprehensive national mandate for the elimination of discrimination” and “clear, strong, consistent, enforceable standards addressing discrimination” by reinstating a broad scope of protection to be available under the ADA;
Using ADAAG

What is ADAAG?

The Americans with Disabilities Act (ADA) establishes design requirements for the construction and alteration of facilities in the private and public sectors. These requirements are known as the ADA Accessibility Guidelines or "ADAAG." ADAAG contains requirements for new construction and alterations. The Access Board develops the requirements as "guidelines" to serve as a basis for "standards" enforced by the Department of Justice (DOJ) and the Department of Transportation (DOT). ADAAG derives from an earlier Federal standard, the Uniform Federal Accessibility Standards (UFAS).

ADAAG provides both general and technical requirements. General requirements in 4.1 spell out which spaces and elements must meet the technical criteria in sections 4.2 through 4.35. Special occupancy sections (5 through 15) apply additional general and technical provisions to certain facility types. Information in the appendix is advisory (non-mandatory) and noted by an asterisk (*). Furniture, furnishings, and equipment not fixed to building construction are not addressed by ADAAG but may be covered by other provisions in the DOJ or DOT regulations.

Where does ADAAG apply?

Regulations issued by DOJ and DOT contain enforceable standards based on ADAAG. These regulations spell out what facilities are subject to the standards. It is important that the regulations be used along with the design standards they contain or reference since they provide important information on coverage. These regulations address different types of facilities:

- Places of public accommodation and commercial facilities are addressed by a DOJ regulation (28 CFR Part 36) which contains standards based on ADAAG.
- State and local government facilities are subject to a DOJ regulation (28 CFR Part 35) that currently allows use of the ADAAG-based standards issued for the private sector (with some exceptions) or UFAS. The regulation references, but does not contain, these standards.
- Public transportation facilities are addressed by a DOT regulation (49 CFR Part 37) that contains standards based on ADAAG.

How was ADAAG developed?

Like most Federal regulations, ADAAG was developed under a rulemaking process that invites public comment through publication in the Federal Register. It was published in July 1991 for places of public accommodation and commercial facilities. It was also published in September 1991 for public transit facilities (identical to the other but with a chapter covering bus stops and stations, rail stations, and airports). The standards used by DOJ and DOT were issued at the same time as the Board's ADAAG. Changes and additions to ADAAG are also published through the same rulemaking process that provides public notice and the chance to comment. Note that any changes the Board makes to ADAAG do not become enforceable until they are adopted into the standards maintained by DOJ or DOT.

How is ADAAG enforced?

Because the ADA is a civil rights law, enforcement of its design requirements are not overseen by a local building code official. Enforcement of these requirements, and other provisions of the law, are enforced through private suit or by certain federal agencies when discrimination is alleged. A few states have adopted ADAAG as their accessibility code and implement its provisions through state and local building code officials in the same way as other applicable building regulations are applied, reviewed, and enforced. Several jurisdictions have submitted their building codes and/or standards for review by the DOJ. Standards that meet or exceed the minimum accessibility requirements of the ADA will be certified as equivalent. The model codes, including ANSI A117.1, have sought to coordinate accessibility provisions
### 4.2 Space Allowance and Reach Ranges

**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 (35 CFR 81.5), the responsibility may be carried out by the appropriate local government body or official.

(e) 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 1:12 for a run not to exceed 2 feet (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 4.28 and 4.16 is to 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.

#### 4.2.1 Wheelchair Passage Width.
- **Minimum clear width for a wheelchair passage:** 36 in (915 mm) continuously, see Fig. 1 and 2(b).
- **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.
- **Size and Approach:** The minimum clear floor or ground space required to accommodate a single, stationary wheelchair and occupant is 36 in by 48 in (915 mm by 1220 mm) (see Fig. 4(a)). The minimum clear floor or ground space for wheelchairs is to be measured for forward or parallel approach to an object (see Fig. 4(b) and (c)). Clear floor or ground space for wheelchair use may be part of the linear space required under some objects.

#### 4.2.2 Relationship of Maneuvering Clearance to Wheelchair Spaces.
- One fall 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).

### 4.3 Accessible Route

#### 4.3.1 General.
- All walks, halls, corridors, aisles, skywalks, tunnels, and other spaces that are part of an accessible route shall comply with 4.5.

#### 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.
4.3 Accessible Route.

(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 4.13.6 and 4.13.8). 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 of 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.

Fig. 3
Wheelchair Turning Space

Fig. 4
Minimum Clear Floor Space for Wheelchairs
4.3 Accessible Route.

4.3.7 Slope. An accessible route with a running slope greater than 1:120 is a ramp and shall comply with 4.8. Nowhere shall the cross slope of an accessible route exceed 1:60.

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 3.0.

4.3.9 Doors. Doors along an accessible route shall comply with 4.15.

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 Accessible Route.

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-resistant corridor (complying with local requirements for fire-resistant construction and for openings) located immediately adjacent to an exit enclosure.

4.4 Protruding Objects.

4.4.1 General. Objects projecting from walls (for example, telephones) with their leading edges between 27 in and 60 in (686 mm and 1524 mm) above the finished floor shall protrude no more than 4 in (100 mm) into walks, halls, corridors, passageways, or aisles (see Fig. 8a). Objects mounted with their leading edges at or below 27 in (686 mm) above the finished floor may protrude any amount (see Fig. 8a and b). Free-standing objects mounted on posts or pylons may override 12 in (305 mm) maximum from 67 in to
4.5 Ground and Floor Surfaces.

4.5.4 General. Ground and floor surfaces along accessible routes and in accessible areas and spaces including floors, walls, ramps, stairs, and

Fig. 8
Protruding Objects
4.6 Parking and Passenger Loading Zones.

4.6.2 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.

4.6.3* 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, cut pile, level cut pile, or level cut and cut 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 4.6.2.

4.6.4 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)).

4.6.6 Passenger Loading Zones. Parking spaces required to be accessible by 4.1 shall comply with 4.6.2 through 4.6.6. Passenger loading zones required to be accessible by 4.1 shall comply with 4.6.6 and 4.6.8.

4.6.6 Location. Accessible parking spaces serving a particular building shall be located on the shortest accessible route of travel from the accessible entrance to an accessible entrance in the parking facility. In buildings with multiple accessible entrances, the accessible parking spaces shall be dispersed and located closest to the accessible entrance.

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 Curb Ramps.

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 return 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 4.28.2. 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 within the markings, excluding any flared sides (see Fig. 15).

4.7.10 Diagonal Curb Ramps. If diagonal (or corner type) curb ramps have return 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(e)).

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 an island 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 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.
4.8 Ramps.

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 bottom and top of each ramp and each ramp 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 (150 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 or adjacent to seating in assembly areas. 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 (see Fig. 17).

3. The clear space between the handrail and the wall shall be 1 - 1/2 in (35 mm).

4. Gripping surfaces shall be continuous.

5. Top of handrail gripping surfaces shall be mounted between 34 in and 36 in (865 mm and 965 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 firings.

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

<table>
<thead>
<tr>
<th>Slope</th>
<th>Maximum Rise</th>
<th>Maximum Horizontal Projection</th>
</tr>
</thead>
<tbody>
<tr>
<td>in</td>
<td>mm</td>
<td>ft</td>
</tr>
<tr>
<td>1:12</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>1:16</td>
<td>30</td>
<td>49</td>
</tr>
</tbody>
</table>

Fig. 15
Curb Ramps at Marked Crossings
4.9 Stairs.

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

4.9 Stairs.

4.9.6 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. Tread 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 greater than 1/2 in (13 mm). Risers shall be sloped or the underside of the nosing shall have an angle not less than 90 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 (300 mm) beyond the top riser and at least 12 in (300 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(a) and (b)). 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 (868 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 over-travel or under-travel.
4.10 Elevators.

Fig. 19
Stair Handrails

NOTE:
X is the 12 in. minimum handrail extension required at each step rise.
Y is the minimum handrail extension of 12 in plus the width of one tread that is required at each bottom step.

Fig. 20
Hoistway and Elevator Entrances

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 75 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 jamb walls. 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 jamb. (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 those operations without requiring contact for an obstruction passing through the opening at heights of 6 in and 29 in (152 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 A17.1-1980.

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:

\[ T = \frac{D}{180} \text{ or } T = \frac{D}{455} \text{ seconds} \]

where \( T \) is the total time in seconds and \( D \) is the distance in feet or millimeters from a point in the lobby or corridor 80 in (2030 mm) directly in front of the farthest call button controlling that car to the
4.10 Elevators.

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 6 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 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 (63.6 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, 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 42 in (1070 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 36 in (915 mm) above the finish floor (see Fig. 23(a) and (b)).

(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
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, 4.8, 4.27, and ASME A17.1 Safety Code for Elevators and Escalators, Section XX, 1990.

4.11.3 Entrance. If platform lifts are used, 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 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 doors 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(c)).

EXCEPTION: Doors not requiring full user passages, such as for patients, 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 hospitals 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 4.2.5).

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. Hardware required for accessible door passage shall be mounted no higher than 44 in (1120 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 latches, measured to the leading edge of the door.
4.13 Doors.

**Front Approaches — Swinging Doors**

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

**Hinge Side Approaches — Swinging Doors**

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

**Latch Side Approaches — Swinging Doors**

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

Fig. 23

Maneuvering Clearances at Doors

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**Slide Approach — Sliding Doors and Folding Doors**

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

**Latch Side Approach — Sliding Doors and Folding Doors**

**Fig. 25**

Maneuvering Clearances at Doors (Continued)

**Fig. 26**

Two Hinged Doors in Series
### 4.14 Entrances

#### 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: 5 lb (22.2N)
   - (b) interior hinged doors: 5 lb (22.2N)
   - (c) sliding or folding doors: 6 lb (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 ANSI/ADA A156.10-1986. Slowly opening, low-powered, automatic doors shall comply with ANSI A156.10-1984. Such doors shall not open to back check faster than 3 seconds and shall require no more than 15 lb (66.8N) 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 ANSI A156.10-1984.

### 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 4.16.

#### 4.15.2 Spout Height. Spouts shall be no higher than 36 in (915 mm), measured from the floor or ground surface 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. On an accessible drinking fountain with a round or oval bowl, the spout must be positioned so the flow of water is within 3 in (76 mm) of the front edge of the fountain.

#### 4.15.4 Controls. Controls shall comply with 4.5.4. 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 (686 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.

**EXCEPTION:** These clearances shall not be required at units used primarily by children ages 12 and younger where clear floor space for a parallel approach complying with 4.2.4.16 provided and where the spout is no higher than 30 in (760 mm), measured from the floor or ground surface to the spout outlet.

#### 4.16 Water Closets

##### 4.16.1 General. Accessible water closets shall comply with 4.16.2 through 4.16.6.

**EXCEPTION:** Water closets used primarily by children ages 12 and younger shall be permitted to comply with 4.16.7.

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Images and figures are not transcribed.
4.17 Toilet Stalls.

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

4.17.3 Size and Arrangement. The size and arrangement of the standard toilet stall shall comply with 4.17.3.

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 50 in (1270 mm), then the toe clearance is not required.

4.17.5 Doors. Toilet stall doors, including door hardware, shall comply with 4.17.5.

EXCEPTION: Toilet stall doors, including door hardware, shall comply with 4.17.5. If toilet stall approach is from the back side of the stall door, clearance between the door side of the stall and any obstruction shall be reduced to a minimum of 42 in (1066 mm) (Fig. 30).
4.17 Toilet Stalls.

4.17.7 Toilet Stalls for Children. Toilet stalls used primarily by children ages 12 and younger shall comply with 4.17.7 as permitted by 4.17.1.


2) Size and Arrangement. The size and arrangement of the standard toilet stall shall comply with 4.17.3 and Fig. 30(a). Standard Stall, except that the centerline of water closets shall be 12 in minimum to 16 in maximum (306 mm to 406 mm) from the side wall or partition and the minimum depth for stalls with wall-mounted water closets shall be 59 in (1500 mm). Alternate stalls complying with Fig. 30(b) may be provided where permitted by 4.17.3 except that the stall shall have a minimum depth of 63 in (1651 mm) where wall-mounted water closets are provided.

3) Toe Clearances. In standard stalls, the front partition and at least one side partition shall provide a toe clearance of at least 12 in (306 mm) above the finish floor.

4) Doors. Toilet stall doors shall comply with 4.17.5.

5) Grab Bars. Grab bars shall comply with 4.17.6 and the length and positioning shown in Fig. 30(a), (b), (c), and (d) except that grab bars shall be mounted 18 in minimum to 27 in maximum (457 mm to 686 mm) above the finish floor measured to the grab bar centerline.

EXCEPTION: 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 grab bar may be split or at water closets with a centerline placement below 15 in (380 mm), a rear grab bar 24 in (610 mm) minimum on the open side of the toilet stall shall be permitted.

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 minimum of 17 in (432 mm) above the finish floor.

4.18.3 Clear Floor Space. A clear floor space 30 in by 48 in (762 mm by 1219 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 (737 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 (1118 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 (864 mm) above the finish floor. Provide a clearance of at least 29 in (737 mm) above the floor to the bottom of the apron. Knee and toe clearance shall comply with Fig. 31.

EXCEPTION 1: Lavatories used primarily by children ages 6 through 12 shall be permitted to have an apron clearance of a 4 in (102 mm) minimum provided that the rim or counter surface is no higher than 31 in (760 mm).

EXCEPTION 2: Lavatories used primarily by children ages 6 and younger shall not be required to meet these clearances if clear floor space for a parallel approach complying with 4.2.4 is provided.

4.19.3 Clear Floor Space. A clear floor space 30 in by 48 in (762 mm by 1219 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
4.20 Bathtubs.

4.20.1 General. Accessible bathtubs shall comply with 4.26.20.2 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. 33.

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 handheld 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.

4.22 Toilet Rooms.

4.22.1 Minimum Number. Toilet fixtures 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.

4.22.3 Clear Floor Space. The accessible doorways and clearances 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 4.23 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 stall 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 4.20(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 stall shall comply with 4.16.

4.22.5 Urinals. If urinals are provided, then at least one stall shall comply with 4.16.

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 are provided, then at least one of each shall be on an accessible route and shall comply with 4.27.
4.22 Toilet Rooms

Fig. 33
Clear Floor Space at Bathtubs

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 space complying with 4.23.3 shall be provided within an accessible bathroom. The clear floor spaces at fixtures and controls, the accessible route, and the turning space may overlap.

Fig. 34
Grab Bars at Bathtubs

Fig. 35
Shower Size and Clearances

Fig. 36
Shower Seat Design
4.23 Bathrooms, Bathing Facilities, and Shower Rooms.

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 8 or more stalls are provided, in addition to the stall complying with 4.17.3, at least one stall 30 in (762 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 4.16.

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 4.29 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 4.3.4.

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 floor finish.

4.24.3 Knee Clearance. Knee clearance that is at least 27 in (686 mm) high, 30 in (762 mm) wide, and 19 in (482 mm) deep shall be provided underneath sinks.

EXCEPTION 1: Sinks used primarily by children ages 6 through 12 shall be permitted to have a knee clearance 24 in (610 mm) high, minimum provided that the rim or counter surface is no higher than 31 in (787 mm).

EXCEPTION 2: Sinks used primarily by children ages 6 and younger shall not be required to provide knee clearance if clear floor space for a parallel approach complying with 4.2.4 is provided.

4.24.4 Depth. Each sink shall be a minimum 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 (762 mm by 1220 mm) complying with 4.2.4 shall be provided in front of a sink to allow for forward approach. The clear floor space shall be on an accessible route and shall extend a maximum of 19 in (482 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 4.26.

4.25.2 Storage Shelves and Closets.
4.26 Handrails, Grab Bars, and Tub and Shower Seats.

4.26.2 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.

4.26.3 Height. Accessible storage spaces shall be within at least one of the reach ranges specified in 4.2.6 and 4.2.8 (see Fig. 6 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. 30(a) and Fig. 30(b).

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

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 4.1.4.6.4.9, 4.1.4.16, 4.2.3 or 4.2.2 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 minimum of 3 in. (76 mm) deep and extends at least 10 in. (255 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 specifications:

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 which 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.

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 1/2 in. (12 mm).

4.27 Controls and Operating Mechanisms.

4.27.1 General. Controls and operating mechanisms required to be accessible by 4.1.1 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 4.2.8. Electrical and communications system receptacles on walls shall be mounted no less than 16 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 system receptacles are not normally intended for use by building occupants.
4.28 Alarms.

4.28.4 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 lb (22.2 N).

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 6 dbA or exceeds any maximum sound level with a duration of 60 seconds at 6 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 a 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 30 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.

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 (6 mm) and a center-to-center spacing of nominal 3.35 in (86 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 only interior surfaces shall differ from adjoining walking surfaces in resiliency or sound-on-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 walkway or cross 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 (914 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 figures on signs shall have a width-to-height ratio between 5:6 and 1:1 and a stroke-width-to-height ratio between 1:6 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.

<table>
<thead>
<tr>
<th>Height Above Finished Floor</th>
<th>Minimum Character Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended or Projected D囿</td>
<td>3 in (76 mm) minimum</td>
</tr>
</tbody>
</table>

Fig. 43
International Symbols
4.31 Telephones.

4.30.4 Raised and Brailled Characters and Pictorial Symbol Signs (Pictograms). Letters and numerals shall be raised 1/32 in (0.8 mm) minimum, upper case, sans serif or simple serif type and shall be accompanied with Grade 2 Braile. Raised characters shall be at least 0.8 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 door leaves, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 in (1526 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 the sign 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 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 (TTYs). Text telephones (TTYs) required by 4.1.3(17)(c) shall be identified by the international TTY symbol (Fig. 43(c)). In addition, if a facility has a public text telephone (TTY), directional signage indicating the location of the nearest text telephone (TTY) shall be placed adjacent to all banks of telephones which do not contain a text telephone (TTY). Such directional signage shall include the international TTY symbol. If a facility has no banks of telephones, the directional signage shall be provided at the entrance (e.g., in a building directory).

4.31 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. Basins, 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.

4.31.5 Hearing Aid Compatible and Volume Control Telephones Required by 4.1.

1. Telephones shall be hearing aid compatible.

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.
4.32.2 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 10 in (250 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 (686 mm) high, 30 in (760 mm) wide, and 19 in (486 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 26 in to 34 in (660 mm to 865 mm) above the floor or ground.

4.32.5 Children’s Fixed or Built-in Seating and Tables. Fixed or built-in seating or tables used primarily by children ages 12 and younger shall comply with 4.32.6 as permitted by 4.32.1.

EXCEPTION: Fixed or built-in seating or tables used primarily by children ages 6 and younger shall not be required to comply with 4.32.6 if clear floor space complying with 4.2.4 parallel to fixed tables or counters is provided.

(1) 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 10 in (250 mm) (see Fig. 45).

(2) Knee Clearances. If seating for people in wheelchairs is provided at tables or counters, knee spaces at least 27 in (686 mm) high, 30 in (760 mm) wide, and 19 in (486 mm) deep shall be provided (see Fig. 45).

(3) Height of Tables or Counters. The tops of accessible tables and counters shall be from 26 in to 30 in (660 mm to 760 mm) above the floor or ground.

Fig. 46
Space Requirements for Wheelchair
Seating Spaces in Series

Fig. 45
Minimum Clearances for Seating and Tables

accessible path of travel
4.3.3 Assembly Areas.

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

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

4.3.3.3 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 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 200, 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 8 percent. Equivalent accessible viewing positions may be located on levels having accessible egress.

4.3.3.4 Surfaces. The ground or floor at wheelchair locations shall be level and shall comply with 4.6.

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

4.3.3.6 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.

4.3.3.7* Types of Listening Systems. Assistive listening systems (4.15) 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, infrared, and radio frequency systems are types of listening systems which are appropriate for various applications.

4.3.4 Automated Teller Machines.

4.3.4.1 General. Each automated teller machine required to be accessible by 4.1.5 shall be on an accessible route and shall comply with 4.34.

4.3.4.2 Clear Floor Space. The automated teller machine shall be located so that clear floor space complying with 4.2.4 is provided to allow a person using a wheelchair to make a forward approach, a parallel approach, or both, to the machine.

4.3.4.3 Reach Ranges.

(1) Forward Approach Only. If only a forward approach is possible, operable parts of all controls shall be placed within the forward reach range specified in 4.2.5.

(2) Parallel Approach Only. If only a parallel approach is possible, operable parts of controls shall be placed as follows:

(a) Reach Depth Not More Than 10 in (256 mm). Where the reach depth to the operable parts of all controls as measured from the vertical plane perpendicular to the edge of the unobstructed clear floor space at the farthest projection of the automated teller machine or surround is not more than 10 in (256 mm), the maximum height above the finished floor or grade shall be 64 in (1670 mm).

(b) Reach Depth More Than 10 in (256 mm). Where the reach depth to the operable parts of any control as measured from the vertical plane perpendicular to the edge of the unobstructed clear floor space at the farthest projection of the automated teller machine or surround is more than 10 in (256 mm), the maximum height above the finished floor or grade shall be as follows:

<table>
<thead>
<tr>
<th>Reach Depth</th>
<th>Maximum Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td>10</td>
<td>255</td>
</tr>
<tr>
<td>11</td>
<td>260</td>
</tr>
<tr>
<td>12</td>
<td>265</td>
</tr>
<tr>
<td>13</td>
<td>330</td>
</tr>
<tr>
<td>14</td>
<td>355</td>
</tr>
<tr>
<td>15</td>
<td>380</td>
</tr>
<tr>
<td>16</td>
<td>405</td>
</tr>
<tr>
<td>17</td>
<td>430</td>
</tr>
<tr>
<td>18</td>
<td>465</td>
</tr>
<tr>
<td>19</td>
<td>80</td>
</tr>
<tr>
<td>20</td>
<td>1200</td>
</tr>
<tr>
<td>21</td>
<td>1200</td>
</tr>
<tr>
<td>22</td>
<td>1200</td>
</tr>
<tr>
<td>23</td>
<td>1200</td>
</tr>
<tr>
<td>24</td>
<td>1200</td>
</tr>
</tbody>
</table>

(3) Forward and Parallel Approach. If both a forward and parallel approach are possible, operable parts of controls shall be placed within at least one of the reach ranges in paragraphs (1) or (2) of this section.

(4) Bins. Where bins are provided for envelopes, wastepaper, or other purposes, at least one of each type provided shall comply with the applicable reach ranges in paragraph (1), (2), or (3) of this section.

EXCEPTION: A function can be performed in a substantially equivalent manner by using an alternate control, only one of the controls needed to perform that function is required to comply with this section. If the controls are identified by tactile markings, such markings shall be provided on both controls.

4.3.5 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.

4.3.5.1 General. Dressing, fitting, and locker rooms required to be accessible by 4.1 shall comply with 4.35 and shall be on an accessible route.

4.3.5.2 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 hinged opening at least 30 in (762 mm) wide if clear floor space complying with section 4.2.2 of the dressing room usable by a person using a wheelchair.

4.3.5.3 Doors. All doors to accessible dressing rooms shall be in compliance with section 4.13.

4.3.5.4 Bench. A bench complying with 4.37 shall be provided within the room.

4.3.5.5 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 allowing a view to a person on the bench as well as to a person in a standing position.

4.3.6 Saunas and Steam Rooms.

4.3.6.1 General. Saunas and steam rooms required to be accessible by 4.1.7 shall comply with 4.36.

4.3.6.2* Wheelchair Turning Space. A wheelchair turning space complying with 4.2.5 shall be provided within the room.
4.37 Benches.

4.37.7 Wet Locations. The surface of benches installed in wet locations shall be slip-resistant and shall not accumulate water.

5.0 Restaurants and Cafeterias.

5.1 General. Except as specified or modified in this section, restaurants and cafeterias shall comply with the requirements of section 4. 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 (864 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 (1524 mm) in length minimum shall be provided in compliance with 4.32 or service shall be available at accessible tables within the same area.

5.3 Access Aisles. All accessible fixed tables shall be accessible by means of an access aisle at least 36 in (916 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, lobbies, and outdoor seating areas, shall be accessible. In non-elevator buildings, an accessible means of telephone access to the mezzanine is not required under the following conditions: 1) the area of the 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 are not restricted to use by people with disabilities; 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 use by people with disabilities.

5.5 Food Service Lines. Food service lines shall have a minimum clear width of 36 in (914 mm), with a preferred clear width of 42 in (1067 mm) to allow passage around a person using a wheelchair. Tray slides shall be mounted no higher than 34 in (864 mm) above the floor (see Fig. 53). If self-service shelves are provided, at least 60 percent of each type must be within reach ranges specified in 4.2.8 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. 64).

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 4.6 or 4.11. Open
6.0 Medical Care Facilities.

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 24 hours. In addition to the requirements of section 4, medical care facilities and buildings shall comply with 6.

(1) Hospitals. General purpose hospitals, psychiatric facilities, decontamination 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) Alternatives 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 bedrooms 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/bath rooms 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 4.8.6.

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

7.0 Business, Mercantile and Civic.

7.1 General. In addition to the requirements of section 4, 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 areas used for transactions where cash registers are used or 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. Such counters shall be accessible, but not limited to, counters in retail stores, distribution centers. 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) In areas used for transactions that may not have a cash register but at which goods or services are sold or distributed including, but not limited to, ticketing counters, teller stations, registration counters in transit, and other similar transactions, information counters, bank office counters and library check-out areas, 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 a disability can write, and 2) use of the space on the side of the counter or at the counter's desk, for handling materials back and forth).

All accessible sales and service counters shall be on an accessible route complying with 4.3.

(3) In public facilities where counters or teller windows have solid partitions or security glass to separate personnel from the public, at least one of each type shall provide a method to facilitate voice communication. Such methods may include, but are not limited to, grills, slats, talk-through baffles, intercoms, or telephone handset devices. The method of communication shall be accessible to both individuals who use wheelchairs and individuals who have difficulty bending or stooping. If provided for public use, at least one telephone communication device shall be equipped with volume controls complying with 4.3.1.5. Hand-operable communications devices, if provided, shall comply with 4.27.
8.0 Libraries.

7.3* Check-out Aisles.

1. In new construction, accessible check-out aisles shall be provided in conformance with the table below:

<table>
<thead>
<tr>
<th>Total Check-out Aisles of Each Design</th>
<th>Minimum Number of Accessible Check-out Aisles (of Each Design)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 4</td>
<td>1</td>
</tr>
<tr>
<td>5 - 8</td>
<td>2</td>
</tr>
<tr>
<td>9 - 15</td>
<td>3</td>
</tr>
<tr>
<td>over 15</td>
<td>3 plus 20% of additional aisles</td>
</tr>
</tbody>
</table>

EXCEPTION: In new construction, where the selling space is under 6000 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 6000 square feet of selling space. In facilities of 6000 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 specific 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 adjacent counter height shall not exceed 36 in (915 mm) above the finish floor. The top of the lip shall not exceed 40 in (1016 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 is equally convenient to that provided for the ambulatory population is acceptable.

8. LIBRARIES.

8.1 General. In addition to the requirements of section 4, 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 4.5.

8.3 Check-Out Areas. At least one lane at each check-out area shall comply with 7.21. 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 comply with fig. 85. 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. 66).

9.0 Accessible Transient Lodging.

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). Exceptions: 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 60 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 figures 67(a) and (b).

<table>
<thead>
<tr>
<th>Number of Rooms</th>
<th>Accessible Rooms</th>
<th>Rooms with Roll-in Showers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 25</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>26 to 60</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>61 to 75</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>76 to 100</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>101 to 150</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>151 to 200</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>201 to 300</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>301 to 400</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>401 to 600</td>
<td>9</td>
<td>4, plus one for each additional over 100</td>
</tr>
<tr>
<td>601 to 1000</td>
<td>2% of total</td>
<td>20 plus one for each additional over 100 over 1000</td>
</tr>
<tr>
<td>1001 and over</td>
<td>20 plus one for each additional 100 over 1000</td>
<td></td>
</tr>
</tbody>
</table>

(1) Except as specified in the special technical provisions of this section, accessible transient lodging shall comply with the applicable requirements of section 4. Transient lodging includes facilities or portions thereof used for sleeping accommodations, when not classed as a medical care facility.
9.1.4 Classes of Sleeping Accommodations.

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:

<table>
<thead>
<tr>
<th>Number of Elements</th>
<th>Accessible Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 25</td>
<td>1</td>
</tr>
<tr>
<td>26 to 50</td>
<td>2</td>
</tr>
<tr>
<td>51 to 75</td>
<td>3</td>
</tr>
<tr>
<td>76 to 100</td>
<td>4</td>
</tr>
<tr>
<td>101 to 150</td>
<td>5</td>
</tr>
<tr>
<td>151 to 200</td>
<td>6</td>
</tr>
<tr>
<td>201 to 300</td>
<td>7</td>
</tr>
<tr>
<td>301 to 400</td>
<td>8</td>
</tr>
<tr>
<td>401 to 600</td>
<td>9</td>
</tr>
<tr>
<td>601 to 1000</td>
<td>10</td>
</tr>
<tr>
<td>1001 and over</td>
<td>20 plus 1 for each 100 over 1000</td>
</tr>
</tbody>
</table>

(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 faciliation 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 under 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 50 sleeping rooms, or fraction thereof, of rooms being altered until the number of such rooms equals the number required to be accessible under 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 4.26. Additional storage may be provided outside of the dimensions required by 4.26.

(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 4.13.6 and 4.3.6 do not apply where it is necessary to utilize a higher door threshold or a change in level to prevent the integrity of the unit from wind/water damage. Where this exception results in patios, terraces or balconies that are not an accessible level, equivalent faciliation shall be provided (e.g., equivalent faciliation 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) garages, 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.
15.1 Amusement Rides.

15.1.7.3 Openings. Where openings are provided to access wheelchair spaces on amusement rides, the entry shall provide a 32 inch (813 mm) minimum clear opening.

15.1.7.4 Approach. One side of the wheelchair space shall adjoin an accessible route.

15.1.7.5 Companion Seats. Where the interior width of the amusement ride is greater than 53 inches (1344 mm), seating is provided for more than one rider, and the wheelchair is not required to be centered within the amusement ride, a companion seat shall be provided for each wheelchair space.

15.1.7.6 Shoulder-to-Shoulder Seating. Where an amusement ride provides shoulder-to-shoulder seating, companion seats shall be shoulder-to-shoulder with the adjacent wheelchair space.

EXCEPTION: Where shoulder-to-shoulder companion seating is not operationally or structurally feasible, compliance with this provision shall be required to the maximum extent feasible.

15.1.8 Amusement Ride Seats Designed for Transfer. Amusement ride seats designed for transfer shall comply with 15.1.6 when positioned for loading and unloading.

15.1.8.1 Clear Floor or Ground Space. Clear floor or ground space complying with 4.2.4 shall be provided in the load and unload area adjacent to the amusement ride seats designed for transfer.

15.1.8.2 Transfer Height. The height of the amusement ride seats shall be 14 inches (366 mm) minimum to 24 inches (610 mm) maximum measured above the load and unload surface.

15.1.8.3 Transfer Entry. Where openings are provided to transfer amusement ride seats, the space shall be designed to provide clearance for transfer from a wheelchair or mobility device to the amusement ride seat.

15.1.8.4 Wheelchair Storage Space. Wheelchair storage spaces complying with 4.2.4 shall be provided in or adjacent to unload areas for each required amusement ride seat designed for transfer and shall not overlap any required means of egress or accessible route.

15.1.8.5 Transfer Devices for Use with Amusement Rides. Transfer devices for use with amusement rides shall comply with 15.1.9 when positioned for loading and unloading.

15.1.8.6 Clear Floor or Ground Space. Clear floor or ground space complying with 4.2.4 shall be provided in or adjacent to unload areas for each required transfer device and shall not overlap any required means of egress or accessible route.

15.2 Boating Facilities.

15.2.1 General. Newly designed or newly constructed and altered boating facilities shall comply with 15.2.

15.2.2 Accessible Route. Accessible routes, including gangways that are part of accessible routes, shall comply with 4.3.

EXCEPTION 1: Where an existing gangway or series of gangways is replaced or altered, an increase in the length of the gangway is not required to comply with 15.2.2, unless required by 4.1.8(2).

EXCEPTION 2: The maximum rise specified in 4.8.2 shall not apply to gangways.

EXCEPTION 3: Where the total length of the gangway or series of gangways serving as part of a required accessible route is at least 80 feet (24 m), the maximum slope specified in 4.8.2 shall not apply to the gangways.

EXCEPTION 4: In facilities containing fewer than 25 boat slips and where the total length of the gangways or series of gangways serving as part of a required accessible route is at least 50 feet (9140 mm), the maximum slope specified in 4.8.2 shall not apply to the gangways.

EXCEPTION 5: Where gangways connect to transition plates, landings specified by 4.8.4 shall not be required.

EXCEPTION 6: Where gangways and transition plates connect and are required to have handrails, handrail extensions specified by 4.8.5 shall not be required. Where handrail extensions are provided on gangways or transition plates, such extensions are not required to be parallel with the ground or floor surface.

EXCEPTION 7: The cross slope of gangways, transition plates, and floating piers that are part of an accessible route shall be 1:60 maximum measured in the static position.

EXCEPTION 8: Limited-use/limited-appleseed elevators or platform lifts complying with 4.11.
15.2 Boating Facilities.

shall be permitted in lieu of gangways complying with 4.3.

15.2.3* Boat Slips: Minimum Number. Where boat slips are provided, boat slips complying with 15.2.5 shall be provided in accordance with Table 15.2.3. Where the number of boat slips is not identified, each 40 feet (12 m) of boat slip edge provided along the perimeter of the pier shall be counted as one boat slip for the purpose of this section.

### Table 15.2.3

<table>
<thead>
<tr>
<th>Total Boat Slips in Facility</th>
<th>Minimum Number of Required Accessible Boat Slips</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 25</td>
<td>1</td>
</tr>
<tr>
<td>26 to 50</td>
<td>2</td>
</tr>
<tr>
<td>51 to 100</td>
<td>3</td>
</tr>
<tr>
<td>101 to 150</td>
<td>4</td>
</tr>
<tr>
<td>151 to 300</td>
<td>6</td>
</tr>
<tr>
<td>301 to 400</td>
<td>8</td>
</tr>
<tr>
<td>401 to 500</td>
<td>8</td>
</tr>
<tr>
<td>501 to 600</td>
<td>8</td>
</tr>
<tr>
<td>601 to 700</td>
<td>9</td>
</tr>
<tr>
<td>701 to 800</td>
<td>10</td>
</tr>
<tr>
<td>801 to 900</td>
<td>11</td>
</tr>
<tr>
<td>901 to 1000</td>
<td>12</td>
</tr>
<tr>
<td>1001 and over</td>
<td>12 plus 1 for each 100 or fraction thereof over 1000</td>
</tr>
</tbody>
</table>

15.2.3.1* Dispersion. Accessible boat slips shall be dispersed throughout the various types of slips provided. This provision does not require an increase in the minimum number of boat slips required to be accessible.

15.2.4* Boarding Piers at Boat Launch Ramps. Where boarding piers are provided at boat launch ramps, at least 6 percent, but not less than one of the boarding piers shall comply with 15.2.4 and shall be served by an accessible route complying with 4.3.

EXCEPTION 1: Accessible routes serving floating boarding piers shall be permitted to use exceptions 1, 2, 5, 6, 7, and 8 in 16.2.2.

EXCEPTION 2: Where the total length of the gangway or series of gangways serving as part of a required accessible route is at least 30 feet (9140 mm), the maximum slope specified by 4.3.5 shall not apply to the gangways.

EXCEPTION 3: Where the accessible route serving a floating boarding pier or skid pier is located within a boat launch ramp, the portion of the accessible route located within the boat launch ramp shall not be required to comply with 4.5.

15.2.4.1* Boarding Pier Clearances. The entire length of the piers shall comply with 16.2.6.

15.2.5* Accessible Boat Slips. Accessible boat slips shall comply with 16.2.6.

15.2.5.1 Clearances. Accessible boat slips shall be served by clear pier space 60 inches (1525 mm) wide minimum and at least as long as the accessible boat slips. Every 10 feet (3050 mm) maximum of linear pier edge serving the accessible boat slips shall contain at least one continuous clear opening 60 inches (1525 mm) minimum in width (see Fig. 60).

EXCEPTION 1: The width of the clear pier space shall be permitted to be 36 inches (915 mm) maximum for a length of 24 inches (610 mm) maximum, provided that multiple 36 inch (915 mm) wide segments are separated by segments that are 60 inches (1525 mm) minimum clear in width and 60 inches (1525 mm) minimum clear in length (see Fig. 60).

EXCEPTION 2: Edge protection 4 inches (100 mm) high maximum and 2 inches (51 mm) deep maximum shall be permitted at the continuous clear openings (see Fig. 61).

15.3 Fishing Piers and Platforms.

15.3.1 General. Newly designed or newly constructed and altered fishing piers and platforms shall comply with 16.3.

15.3.2 Accessible Route. Accessible routes, including gangways that are part of accessible routes, serving fishing piers and platforms shall comply with 4.3.
15.3 Fishing Piers and Platforms.

EXCEPTION 1: Accessible routes serving floating fishing piers and platforms shall be permitted to use exceptions 1, 2, 6, 7 and 8 in 15.2.2.

EXCEPTION 2: Where the total length of the gangway or series of gangways serving as part of a required accessible route is at least 30 feet (9140 mm), the maximum slope specified by 4.8.2 shall not apply to the gangways.

15.3.3 Railings. Where railings, guards, or handrails are provided, they shall comply with 15.3.3.

15.3.3.1 Edge Protection. Edge protection shall be provided and shall extend 2 inches (61 mm) minimum above the ground or deck surface.

EXCEPTION: Where the railing, guard, or handrail is 34 inches (864 mm) or less above the ground or deck surface, edge protection shall not be required if the deck surface extends 12 inches (305 mm) minimum beyond the inside face of the railing. The clearance shall be 9 inches (229 mm) minimum above the ground or deck surface beyond the railing. Toe clearance shall be 30 inches (760 mm) minimum wide (see Fig. 62).

15.3.3.2 Height. At least 25 percent of the railings, guards, or handrails shall be 44 inches (1116 mm) maximum above the ground or deck surface.

EXCEPTION: This provision shall not apply to that portion of a fishing pier or platform where a guard which complies with sections 1003.2.12.1 (Height) and 1005.2.12.2 (Opening limitations) of the International Building Code (incorporated by reference, see 2.3.2) is provided.

15.3.3.3 Dispersion. Railings required to comply with 15.3.3.2 shall be dispersed throughout a fishing pier or platform.

15.3.4 Clear Floor or Ground Space. At least one clear floor or ground space complying with 4.2.4 shall be provided where the railing height required by 15.3.3.2 is located. Where no railings are provided, at least one clear floor or ground space complying with 4.2.4 shall be provided.

15.3.5 Maneuvering Space. At least one maneuvering space complying with 4.2.3 shall be provided on the fishing pier or platform.

15.4 Golf.

15.4.1 General. Newly designed or newly constructed and altered golf courses, driving ranges, practice putting greens, and practice teeing grounds shall comply with 15.4.

15.4.2 Accessible Route - Golf Course. An accessible route shall connect accessible elements and spaces within the boundary of the golf course. In addition, an accessible route shall connect the golf car rental area, bag drop areas, practice putting greens, accessible practice teeing grounds, course toilet rooms, and course weather shelters. The accessible route required by this section shall be 48 inches (1220 mm) minimum wide. Where handrails are provided, the accessible route shall be 60 inches (1826 mm) minimum wide.

EXCEPTION 1: A golf car parking complying with 15.4.7 shall be permitted in lieu of all or part of an accessible route required by 15.4.2.

EXCEPTION 2: The handrail requirements of 4.8.5 shall not apply to an accessible route located within the boundary of a golf course.

15.4.3 Accessible Route - Driving Ranges. An accessible route shall connect accessible teeing stations at driving ranges with accessible parking spaces and shall be 48 inches (1220 mm) wide minimum. Where handrails are provided, the accessible route shall be 60 inches (1826 mm) wide minimum.

EXCEPTION: A golf car parking complying with 15.4.7 shall be permitted in lieu of all or part of an accessible route required by 15.4.3.

15.4.4 Teeing Grounds. Teeing grounds shall comply with 15.4.4.

15.4.4.1 Number Required. Where one or two teeing grounds are provided for a hole, at least one teeing ground serving the hole shall comply with 15.4.4.3. Where three or more teeing grounds are provided for a hole, at least two teeing grounds shall comply with 15.4.4.3.

15.4.4.2 Forward Teeing Ground. The forward teeing ground shall be accessible.

EXCEPTION: In alterations, the forward teeing ground shall not be required to be accessible where compliance is not feasible due to terrain.

15.4.4.3 Teeing Grounds. Teeing grounds required by 15.4.4.1 and 15.4.4.2 shall be designed and constructed so that a golf car can enter and exit the teeing ground.

15.4.5 Teeing Stations at Driving Ranges and Practice Teeing Grounds. Where teeing stations or practice teeing grounds are provided, at least 5 percent of the practice teeing stations or practice teeing grounds, not less than one, shall comply with 15.4.4.3.

15.4.6 Weather Shelters. Where weather shelters are provided on a golf course, each weather shelter shall have a clear floor or ground space 60 inches (1826 mm) minimum by 60 inches (1524 mm) minimum and shall be designed and constructed so that a golf car can enter and exit.

15.4.7 Golf Car Passage. Where curbs or other constructed barriers are provided along a golf car passage to prohibit golf cars from entering a fairway, openings at least 60 inches (1626 mm) wide shall be provided at intervals not to exceed 76 yards (69 m).

15.4.7.1 Width. The golf car passage shall be 48 inches (1220 mm) minimum wide.

15.4.8 Putting Greens. Each putting green shall be designed and constructed so that a golf car can enter and exit the putting green.

15.5 Miniature Golf.

15.5.1 General. Newly designed or newly constructed and altered miniature golf courses shall comply with 15.5.

15.5.2 Accessible Holes. At least fifty percent of holes on a miniature golf course shall comply with 16.5.3 through 16.5.6 and shall be consecutive.
15.6 Play Areas.

**EXCEPTION.** One break in the sequence of consecutive accessible holes shall be permitted, provided that the last hole on a miniature golf course is the last hole in the sequence.

15.6.3 Accessible Route. An accessible route complying with 4.3 shall connect the course entrance with the first accessible hole and the start of play area on each accessible hole. The course shall be configured to allow exit from the last accessible hole to the course exit or entrance and shall not require travel back through other holes.

15.6.3.1 Accessible Route - Located On The Playing Surface. Where the accessible route is located on the playing surface of the accessible hole, exceptions 1-5 shall be permitted.

**EXCEPTION 1:** Where carpet is provided, the requirements of 4.5.3 shall not apply.

**EXCEPTION 2:** Where the accessible route intersects the playing surface of a hole, a 1 inch (25 mm) maximum curb shall be permitted for a width of 52 inches (132 mm) minimum.

**EXCEPTION 3:** A slope of 1:4 maximum for a 4 inch (100 mm) maximum rise shall be permitted.

15.6.4 Start of Play Areas. Start of play areas at holes required to comply with 15.6.2 shall have a slope not steeper than 1:48 and shall be 48 inches (1220 mm) minimum by 60 inches (1525 mm) minimum.

15.6.5 Golf Club Reach Range. All areas within accessible holes where golf balls rest shall be within 36 inches (915 mm) maximum of an accessible route having a maximum slope of 1:20 for 48 inches (1220 mm) in length (see Fig. 63).

15.6 Play Areas.

15.6.1 General. Newly designed and newly constructed play areas for children ages 2 and over and altered portions of existing play areas shall comply with the applicable provisions of section 4, except as modified or otherwise provided by this section. Where separate play areas are provided within a site for specified age groups, each play area shall comply with this section. Where play areas are designed or constructed in phases, this section shall be applied so that when each successive addition is completed, the entire play area complies with all the applicable provisions of this section.

**EXCEPTION 1:** Play areas located in family child care facilities where the proprietor actually resides shall not be required to comply with 15.6.

**EXCEPTION 2:** Where play components are relocated in existing play areas for the purpose of creating safe use zones, 15.6 shall not apply, provided that the ground surface is not changed or extended for more than one use zone.

**EXCEPTION 3:** Where play components are altered and the ground surface is not altered, the ground surface shall not be required to comply with 15.6.7, unless required by 4.1.9(2).

**EXCEPTION 4:** The provisions of 15.6.1 through 15.6.7 shall not apply to amusement attractions.

**EXCEPTION 5:** Compliance with 4.4 shall not be required within the boundary of the play area.

**EXCEPTION 6:** Stairs shall not be required to comply with 4.9.

15.6.2 Ground Level Play Components. Ground level play components shall be provided in the number and types required by 15.6.2.1 and 15.6.2.2. Ground level play components that are provided to comply with 15.6.2.1 shall be permitted to satisfy the number required by 15.6.2.2, provided that the minimum required types of play components are provided. Where more than one ground level play component required by 16.6.2.1 and 16.6.2.2 is provided, the play components shall be integrated in the play area.

15.6.2.1 General. Where ground level play components are provided, at least one of each type provided shall be located on an accessible route complying with 15.6.4 and shall comply with 15.6.6.

15.6.2.2 Additional Number and Types. Where elevated play components are provided, ground level play components shall be provided in accordance with Table 15.6.2.2. Ground level play components required by 15.6.2.2 shall be located on an accessible route complying with 15.6.4 and shall comply with 15.6.6.

**Table 15.6.2.2 Number and Types of Ground Level Play Components Required to be on Accessible Route**

<table>
<thead>
<tr>
<th>Number of Elevated Play Components Provided</th>
<th>Minimum Number of Ground Level Play Components Required to be on Accessible Route</th>
<th>Minimum Number of Different Types of Ground Level Play Components Required to be on Accessible Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2 to 4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5 to 7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8 to 10</td>
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<td>3</td>
</tr>
<tr>
<td>11 to 13</td>
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<td>3</td>
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<tr>
<td>14 to 16</td>
<td>6</td>
<td>3</td>
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<td>3</td>
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<tr>
<td>20 to 22</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>23 to 25</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>More than 25</td>
<td>8 plus 1 for each additional 3 over 25, or fraction thereof</td>
<td>6</td>
</tr>
</tbody>
</table>

*Note: 1:30 maximum slope*  
Fig. 63  
Golf Club Reach Range
### 15.6 Play Areas

**EXCEPTION:** If at least 50 percent of the elevated play components are connected by a ramp, and if at least 3 of the elevated play components connected by the ramp are different types of play components, 15.6.2.2 shall not apply.

15.6.2 Elevated Play Components. Where elevated play components are provided, at least 60 percent shall be located on an accessible route complying with 15.6.4. Elevated play components connected by a ramp shall comply with 15.6.6.

15.6.4 Accessible Routes. At least one accessible route complying with 4.3, as modified by 15.6.4, shall be provided.

**EXCEPTION 1:** Transfer systems complying with 15.6.5 shall be permitted to connect elevated play components, except where 20 or more elevated play components are provided, no more than 25 percent of the elevated play components shall be permitted to be connected by transfer systems.

**EXCEPTION 2:** Where transfer systems are provided, an elevated play component shall be permitted to connect to another elevated play component in lieu of an accessible route.

**EXCEPTION 3:** Platform lifts (wheelchair lifts) complying with 4.11 and applicable State or local codes shall be permitted to be used as part of an accessible route.

15.6.4.1 Location. Accessible routes shall be located within the boundaries of the play area and shall connect ground level play components as required by 15.6.2.1 and 15.6.2.2 and elevated play components as required by 15.6.3, including entry and exit points of the play components.

15.6.4.2 Protrusions. Objects shall not protrude into ground level accessible routes at or below 80 in (2030 mm) above the ground or floor surface.

15.6.4.3 Clear Width. The clear width of accessible routes within play areas shall comply with 15.6.4.3.

15.6.4.3.1 Ground Level. The clear width of accessible routes at ground level shall be 60 in (1525 mm) minimum.

### 15.6.5 Transfer Systems

**EXCEPTION 1:** Handrails shall not be required at ramps located within ground level use zones.

**EXCEPTION 2:** Handrail extensions shall not be required.

15.6.4.5.1 Handrail Gripping Surface. Handrails shall have a grip width of 0.95 in (24.1 mm) maximum, or the shape shall provide an equivalent gripping design.

15.6.4.5.2 Handrail Height. The top of handrail gripping surfaces shall be 28 in (710 mm) maximum above the ground surface.

15.6.5.1 Transfer Platforms. Transfer platforms complying with 15.6.5.1 shall be provided where transfer is intended to be from a wheelchair or other mobility device (see Fig. 64).

15.6.5.1.1 Size. Platforms shall have a level surface 14 in (360 mm) minimum in depth and 24 in (610 mm) minimum in width.

15.6.5.1.2 Height. Platform surfaces shall be 11 in (290 mm) minimum to 16 in (410 mm) maximum above the ground or floor surface.

15.6.5.1.3 Transfer Space. A level space complying with 4.2.4 shall be centered on the 48 in (1220 mm) minimum long dimension parallel to the 24 in (610 mm) minimum long unobstructed space of the transfer platform.

15.6.5.1.4 Transfer Supports. A means of support for transferring shall be provided.

15.6.5.2 Transfer Steps. Transfer steps complying with 15.6.5.2 shall be provided where movement is intended from a transfer platform to a level with elevated play components required to be located on an accessible route (see Fig. 65).

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**Fig. 64**

**Fig. 65**
15.8 Swimming Pools, Wading Pools, and Spas.

**Fig. 68** Pool Lift Seat Location

<table>
<thead>
<tr>
<th>water pool deck</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 min 405 min</td>
</tr>
</tbody>
</table>

**Fig. 69** Clear Deck Space at Pool Lifts

<table>
<thead>
<tr>
<th>water pool deck</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 min 605 min</td>
</tr>
</tbody>
</table>

**Fig. 70** Pool Lift Seat Height

<table>
<thead>
<tr>
<th>16-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>405-485</td>
</tr>
</tbody>
</table>

15.8.5.2 Seat Location. In the raised position, the centerline of the seat shall be located over the deck and 16 inches (406 mm) minimum from the edge of the pool. The deck surface between the centerline of the seat and the pool edge shall have a slope not greater than 1:48 (see Fig. 68).

**Fig. 71** Pool Lift Submerged Depth

15.8.5.3 Clear Deck Space. On the side of the seat opposite the water, a clear deck space shall be provided parallel with the seat. The space shall be 36 inches (915 mm) wide minimum and shall extend forward 48 inches (1220 mm) maximum from a line located 12 inches (305 mm) behind the rear edge of the seat. The clear deck space shall have a slope not greater than 1:48 (see Fig. 69).

15.8.5.4 Seat Height. The height of the seat shall be designed to allow a step at 16 inches (406 mm) minimum to 19 inches (485 mm) maximum measured from the deck to the top of the seat surface when in the raised (load) position (see Fig. 70).

15.8.5.5 Seat Width. The seat shall be 10 inches (254 mm) minimum wide.

15.8.5.6 Footrests and Armrests. Footrests shall be provided and shall move with the seat. If provided, armrests positioned opposite the water shall be removable or shall fold clear of the seat when the seat is in the raised (load) position.

**Fig. 72** Sloped Entry Submerged Depth

15.8.5.7* Operation. The lift shall be capable of unassisted operation from both the deck and water levels. Controls and operating mechanisms shall be unobstructed when the lift is in use and shall comply with 4.27.4.

15.8.5.8 Submerged Depth. The lift shall be designed so that the seat will submerge to a water depth of 16 inches (406 mm) minimum below the stationary water level (see Fig. 71).

15.8.5.9* Lifting Capacity. Single person pool lifts shall have a minimum weight capacity of 300 lbs. (136 kg) and be capable of sustaining a static load of at least one and a half times the rated load.

15.8.6 Sloped Entries. Sloped entries designed to provide access into the water shall comply with 16.6.6.

15.8.6.1* Sloped Entries. Sloped entries shall comply with 4.3, except as modified below.

**Fig. 73** Sloped Entry Handrails

**EXCEPTION:** Where sloped entries are provided, the surfaces shall not be required to be slip resistant.

15.8.6.2 Submerged Depth. Sloped entries shall extend to a depth of 24 inches (610 mm) minimum to 30 inches (760 mm) maximum below the stationary water level. Where landings are required by 4.8.5, at least one landing shall be located 24 inches (610 mm) minimum to 30 inches (760 mm) maximum below the stationary water level (see Fig. 72).
15.8 Swimming Pools, Wading Pools, and Spas.

15.8.7 Transfer Walls. Transfer walls shall comply with 15.8.7.

15.8.7.1 Clear Deck Space. A clear deck space of 60 inches (1524 mm) minimum by 60 inches (1524 mm) minimum with a slope not steeper than 1:48 shall be provided at the base of the transfer wall. Where one grab bar is provided, the clear deck space shall be centered on the grab bar. Where two grab bars are provided, the clear deck space shall be centered on the clearance between the grab bars (see Fig. 74).

15.8.7.2 Height. The height of the transfer wall shall be 16 inches (406 mm) minimum to 19 inches (483 mm) maximum measured from the deck (see Fig. 76).

15.8.7.3 Wall Depth and Length. The depth of the transfer wall shall be 12 inches (305 mm) minimum to 16 inches (406 mm) maximum. The length of the transfer wall shall be 60 inches (1524 mm) minimum and shall be centered on the clear deck space (see Fig. 76).

15.8.7.4 Surface. Surfaces of transfer walls shall not be sharp and shall have rounded edges.

15.8.7.5 Grab Bars. At least one grab bar shall be provided on the transfer wall. Grab bars shall be perpendicular to the pool wall and shall extend the full depth of the transfer wall. The top of the gripping surface shall be 4 inches (100 mm) minimum and 8 inches (160 mm) maximum above walls. Where one grab bar is provided, clearance shall be 24 inches (610 mm) minimum on both sides of the grab bar. Where two grab bars are provided, clearance between grab bars shall be 24 inches (610 mm) minimum. Grab bars shall comply with 4.22 (see Fig. 77).

15.8.8 Transfer Systems. Transfer systems shall comply with 15.8.8.

15.8.8.1 Transfer Platform. A transfer platform 19 inches (483 mm) minimum clear depth by 24 inches (610 mm) minimum clear width shall be provided at the head of each transfer system (see Fig. 79).

15.8.8.2 Clear Deck Space. A clear deck space of 60 inches (1524 mm) minimum by 60 inches (1524 mm) minimum with a slope not steeper than 1:48 shall be provided at the base of the transfer platform surface and shall be centered along a 24 inch (610 mm) minimum unobstructed side of the transfer platform (see Fig. 78).

15.8.8.3 Height. The height of the transfer platform shall comply with 15.8.7.2.

15.8.8.4 Transfer Steps. Transfer step height shall be 8 inches (203 mm) maximum. Transfer steps shall extend to a water depth of 12 inches (305 mm) minimum below the stationary water level (see Fig. 80).

15.8.8.5 Surface. The surface of the transfer system shall not be sharp and shall have rounded edges.

15.8.8.6 Size. Each transfer step shall have a tread clear depth of 14 inches (356 mm) minimum and 17 inches (432 mm) maximum and shall have a tread clear width of 24 inches (610 mm) minimum (see Fig. 81).
15.8 Swimming Pools, Wading Pools, and Spas.

15.8.8.7* Grab Bars. At least one grab bar on each transfer step and the transfer platform, or a continuous grab bar serving each transfer step and the transfer platform, shall be provided. Where provided, the top of the gripping surface shall be 4 inches (100 mm) minimum and 6 inches (150 mm) maximum above each step and transfer platform. Where a continuous grab bar is provided, the top of the gripping surface shall be 4 inches (100 mm) minimum and 6 inches (150 mm) maximum above the step nosing and transfer platform. Grab bars shall comply with 4.2.6 and be located on at least one side of the transfer system. The grab bar located at the transfer platform shall not obstruct transfer (see Fig. 82).

15.8.8.9 Pool Stairs. Pool stairs shall comply with 15.8.9.

15.8.8.1 Pool Stairs. Pool stairs shall comply with 4.8.9, except as modified below.

15.8.8.2 Handrails. The width between handrails shall be 20 inches (510 mm) minimum and 24 inches (610 mm) maximum. Handrail extensions required by 4.5.4 shall not be required at the bottom landing serving a pool stair.

15.8.10* Water Play Components. Where water play components are provided, the provisions of 15.6 and 4.3 shall apply except as modified or otherwise provided in this section.

EXCEPTION 1: Where the surface of the accessible route, clear floor or ground spaces and maneuvering spaces connecting play components is submerged, the provisions of 15.6 and 4.3 for cross slope, running slope, and surface shall not apply.

EXCEPTION 2: Transfer systems complying with 15.6.6 shall be permitted to be used in lieu of ramps to connect elevated play components.
A4.1.6 Accessible Buildings: Alterations.

A4.1.6.1(b) When an entrance is being altered, it is preferable that those entrances being altered be made accessible to the extent feasible.


A4.1.7.1 The Department of Justice's regulations implementing titles II and III of the ADA require alternative methods of access where compliance with the special access provisions in 4.1.7(3) would threaten or destroy the historic significance of a qualified historic facility. The requirement for public facilities subject to title II is provided at 28 CFR 35.164(b) and the requirement for private facilities subject to title III is provided at 28 CFR 36.406(b).

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 clearance 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 walkways for comfortable gaiting. Crutch tips, often extending downward 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.

A4.2.2 Space Allowances and Reach Ranges.

(3) Space Requirements for Passing. Able-bodied persons 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. Forty-eight inches (1200 mm) provides a minimum width for 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 (1200 mm) is the minimum width needed for an ambulatory person to pass a nonambulatory or semi-ambulatory person. Within this 48 in (1200 mm) width, the ambulatory person will have to twist to pass a wheelchair user, a person with a service animal, or 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 80 in (2035 mm) diameter or a 30 in by 60 in (760 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 trips 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 & 4.2.6 Reach. Reach ranges for persons seated in wheelchairs may be further clarified in Fig. A3(B). These drawings approximate the plan view the information shown in Fig. 4.5, and 6.

The following table provides guidance on reach ranges for children according to age where building elements such as coat hocks, lockers, or controls and operating mechanisms are designed for use primarily by children. These dimensions apply to either forward or side reaches. Accessible elements, controls, and operating mechanisms designed for adult use or children over age 12 can be located outside these ranges but must be within the adult reach ranges required by 4.2.5 and 4.2.6.

<table>
<thead>
<tr>
<th>Children’s Reach Ranges</th>
<th>Forward or Side Reach</th>
<th>Ages 3 and 4</th>
<th>Ages 6 through 8</th>
<th>Ages 9 through 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (maximum)</td>
<td>36 in (915 mm)</td>
<td>40 in (1015 mm)</td>
<td>44 in (1120 mm)</td>
<td></td>
</tr>
<tr>
<td>Low (minimum)</td>
<td>20 in (500 mm)</td>
<td>18 in (456 mm)</td>
<td>16 in (406 mm)</td>
<td></td>
</tr>
</tbody>
</table>

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

Fig. A2
Minimum Turning Space for Wheelchair

Fig. A3
Minimum Clear Floor or Ground Space for Wheelchair User
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 1.6 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.

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 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.
A4.5 Ground and Floor Surfaces.

A4.5.1 General. People who have difficulty walking or maintaining balance or who use crutches, canes, or wheelchairs, and those with restricted gait are particularly sensitive to slippage 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 various ways, provides a close approximation of the slip resistance of a surface. Contrary to popular belief, some slipage is necessary for safe walking, especially for persons with restricted gait; 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 0.6. 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 0.8 is recommended for accessible routes and 0.6 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.

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 used 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 slump or warp. In heavily trafficked areas, a thick, soft (piles) 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 (1524 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 some instances, the actual life/vehicle/container combinations (e.g., a Board-sponsored Accessible Parking and Loading Zones Project) researchers found that a space and aisle totaling about 204 in (5200 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 (1524 mm) access aisle (see Fig. A5(b)). One 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 enter and exit the vehicle on either the driver or passenger side, although, in some cases, this would require turning 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 planks, curbs or wheel stops.
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.

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 fillers 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 approaches can also use 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 the bar may be split or shifted toward the side of the toilet area.

A4.16.7 Water Closets for Children. The requirements in 4.16.7 are to be followed where the exception for children’s water closets in 4.16.1 is utilized. Use of this exception is optional since these guidelines do not require water closets or other building elements to be designed according to children’s dimensions. The following table provides additional guidance in applying the specifications for water closets for children according to the age group served and reflects the differences in size, stature, and reach ranges of children 3 through 12. The specifications chosen should correspond to the age of the primary user group. The specifications of one age group should be applied consistently in the installation of a water closet and related elements.

A4.17 Toilet Stalls.

A4.17.3 Size and Arrangement. This section requires use of the 36 in (915 mm) standard stall (Figure 30(a)) and permits the 36 in (915 mm) or 42 in (1067 mm) wide alternate stall (Figure 30(b)) only in alternation 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.

Table A3 Specifications for Water Closets Serving Children Ages 3 through 12

<table>
<thead>
<tr>
<th>Ages 3 and 4</th>
<th>Ages 5 through 8</th>
<th>Ages 9 through 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Water Closet Centerline</td>
<td>12 in (305 mm)</td>
<td>12 to 15 in (305 to 381 mm)</td>
</tr>
<tr>
<td>(2) Toilet Seat Height</td>
<td>(250 to 305 mm)</td>
<td>12 to 15 in (305 to 381 mm)</td>
</tr>
<tr>
<td>(3) Grab Bar Height</td>
<td>(455 to 510 mm)</td>
<td>20 to 26 in (510 to 660 mm)</td>
</tr>
<tr>
<td>(4) Dispenser Height</td>
<td>(355 mm)</td>
<td>14 to 17 in (355 to 432 mm)</td>
</tr>
</tbody>
</table>
A4.19 Lavatories and Mirrors.

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. A wider stall would position the grab bars too far apart to be easily used, and a narrower stall would position the grab bars too close to the water closet. 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.

A4.17.7 Toilet Stalls for Children. See A4.16.7.

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. Clear floor space for a forward approach 30 by 48 inches (760 mm by 1220 mm) should be provided in front of full length mirrors. Doors should not swing into this clear floor space. Mirrors provided above lavatories designed for children should be mounted with the bottom edge of the reflecting surface no higher than 34 inches (866 mm) above the finish floor or at the lowest mounting height permitted by fixtures and related elements.

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 (916 mm by 916 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 alternations when technical feasibility 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 attendant, especially when attendants are of the opposite sex. Since these facilities have proven so useful, it is often considered advantageous to install the "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 4.1.6) 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 (1066 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 will provide 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 feasible in the alteration of existing facilities, accessible "unisex" toilets are a reasonable alternative.

3. In designing accessible single-user restrooms, have the provisions of adequate space to allow a side transfer will provide accommodation to the largest number of wheelchair users.

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 (e.g., 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.

A4.25.3 Height. For guidance on children's reach ranges, see A4.2.2 & 4.2.5.
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.

A4.27.1 Height. Fig. A8 further illustrates mandatory and advisory control and operating 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. For guidance on children's reach ranges, see A4.2.3 & 4.2.6.

A4.27.2 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 50 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), has 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 coiled or coded alarm systems.

A4.29 Alarm Systems. 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 (120 candela v. 15 candella 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 of 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:

$$\text{Contrast} = \frac{|E_1 - E_2|}{E_1} \times 100$$

where $E_1$ = light reflectance value (LRV) of the lighter area

and $E_2$ = light reflectance value (LRV) of the darker area.

Note that in any application both white and black are never absolutes but, $E_1$ never equals 100 and $E_2$ 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 precorded 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
Design using ADA Standards