

/* Part 2 of 4 of the building requirements follows. */

4.1.7 Accessible Buildings: Historic Preservation.

(1) Applicability:

(a) General Rule. Alterations to a qualified historic building or facility shall comply with 4.1.6 Accessible Buildings: Alterations, the applicable technical specifications of 4.2 through 4.35 and the applicable special application sections 5 through 10 unless it is determined in accordance with the procedures in 4.1.7(2) that compliance with the requirements for accessible routes (exterior and interior), ramps, entrances, or toilets would threaten or destroy the historic significance of the building or facility in which case the alternative requirements in 4.1.7(3) may be used for the feature.

EXCEPTION: (Reserved).

(b) Definition. A qualified historic building or facility is a building or facility that is:

(i) Listed in or eligible for listing in the National Register of Historic Places; or

(ii) Designated as historic under an appropriate State or local law.

(2) Procedures:

(a) Alterations to Qualified Historic Buildings and Facilities Subject to Section 106 of the National Historic Preservation Act:

(i) Section 106 Process. Section 106 of the National Historic Preservation Act (16 U.S.C. 470 f) requires that a Federal agency with jurisdiction over a Federal, federally assisted, or federally licensed undertaking consider the effects of the agency's undertaking on buildings and facilities listed in or eligible for listing in the National Register of Historic Places and give the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking prior to approval of the undertaking.

(ii) ADA Application. Where alterations are undertaken to a qualified historic building or facility that is subject to section 106 of the National Historic Preservation Act, the Federal agency with jurisdiction over the undertaking shall follow the section 106 process. If the State Historic Preservation Officer or Advisory Council on Historic Preservation agrees that compliance with the requirements for accessible routes (exterior and interior), ramps, entrances, or toilets would threaten or destroy the historic significance of the building or facility, the alternative requirements in 4.1.7(3) may be used for the feature.

(b) Alterations to Qualified Historic Buildings and Facilities Not Subject to Section 106 of the National Historic Preservation Act. Where alterations are undertaken to a qualified historic building or facility that is not subject to section 106 of the National

Historic Preservation Act, if the entity undertaking the alterations believes that compliance with the requirements for accessible routes (exterior and interior), ramps, entrances, or toilets would threaten or destroy the historic significance of the building or facility and that the alternative requirements in 4.1.7(3) should be used for the feature, the entity should consult with the State Historic Preservation Officer. If the State Historic Preservation Officer agrees that compliance with the accessibility requirements for accessible routes (exterior and interior), ramps, entrances or toilets would threaten or destroy the historical significance of the building or facility, the alternative requirements in 4.1.7(3) may be used.

(c) Consultation With Interested Persons. Interested persons should be invited to participate in the consultation process, including State or local accessibility officials, individuals with disabilities, and organizations representing individuals with disabilities.

(d) Certified Local Government Historic Preservation Programs. Where the State Historic Preservation Officer has delegated the consultation responsibility for purposes of this section to a local government historic preservation program that has been certified in accordance with section 101(c) of the National Historic Preservation Act of 1966 (16 U.S.C. 470a (c)) and implementing regulations (36 CFR 61.5), the responsibility may be carried out by the appropriate local government body or official.

(3) Historic Preservation: Minimum Requirements:

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

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

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

EXCEPTION: If it is determined that no entrance used by the public can comply with 4.14, then access at any entrance not used by the general public but open (unlocked) with directional signage at the primary entrance may be used. The accessible entrance shall also have a notification system. Where security is a problem, remote monitoring may be used.

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

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

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

NOTE: The technical provisions of sections 4.2 through 4.35 are the same as those of the American National Standard Institute's document A117.1-1980, except as noted in the text.

4.2 Space Allowance and Reach Ranges.

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

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

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

4.2.4* Clear Floor or Ground Space for Wheelchairs.

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

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

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

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

4.2.6* Side Reach. If the clear floor space allows parallel approach by a person in a wheelchair, the maximum high side reach allowed shall be 54 in (1370 mm) and the low

side reach shall be no less than 9 in (230 mm) above the floor (Fig. 6(a) and (b)). If the side reach is over an obstruction, the reach and clearances shall be as shown in Fig 6(c).

4.3 Accessible Route.

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

4.3.2 Location.

(1) At least one accessible route within the boundary of the site shall be provided from public transportation stops, accessible parking, and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance they serve. The accessible route shall, to the maximum extent feasible, coincide with the route for the general public.

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

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

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

4.3.3 Width. The minimum clear width of an accessible route shall be 36 in (915 mm) except at doors (see 4.13.5 and 4.13.6). If a person in a wheelchair must make a turn around an obstruction, the minimum clear width of the accessible route shall be as shown in Fig. 7(a) and (b).

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

4.3.5 Head Room. Accessible routes shall comply with 4.4.2.

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

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

4.3.8 Changes in Levels. Changes in levels along an accessible route shall comply with 4.5.2. If an accessible route has changes in level greater than 1/2 in (13 mm), then a curb ramp, ramp, elevator, or platform lift (as permitted in 4.1.3 and 4.1.6) shall be provided that complies with 4.7, 4.8, 4.10, or 4.11, respectively. An accessible route does not include stairs, steps, or escalators. See definition of "egress, means of" in 3.5.

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

4.3.10* Egress. Accessible routes serving any accessible space or element shall also serve as a means of egress for emergencies or connect to an accessible area of rescue assistance.

4.3.11 Areas of Rescue Assistance.

4.3.11.1 Location and Construction. An area of rescue assistance shall be one of the following:

(1) A portion of a stairway landing within a smokeproof enclosure (complying with local requirements).

(2) A portion of an exterior exit balcony located immediately adjacent to an exit stairway when the balcony complies with local requirements for exterior exit balconies. Openings to the interior of the building located within 20 feet (6 m) of the area of rescue assistance shall be protected with fire assemblies having a three- fourths hour fire protection rating.

(3) A portion of a one-hour fire-resistive corridor (complying with local requirements for fire-resistive construction and for openings) located immediately adjacent to an exit enclosure.

(4) A vestibule located immediately adjacent to an exit enclosure and constructed to the same fire-resistive standards as required for corridors and openings.

(5) A portion of a stairway landing within an exit enclosure which is vented to the exterior and is separated from the interior of the building with not less than one-hour fire-resistive doors.

(6) When approved by the appropriate local authority, an area or a room which is separated from other portions of the building by a smoke barrier. Smoke barriers shall have a fire-resistive rating of not less than one hour and shall completely enclose the area or room. Doors in the smoke barrier shall be tight-fitting smoke- and draft-control assemblies having a fire-protection rating of not less than 20 minutes and shall be self-closing or automatic closing. The area or room shall be provided with an exit directly to an exit enclosure. Where the room or area exits into an exit enclosure which is required to be of more than one-hour fire- resistive construction, the room or area shall

have the same fire- resistive construction, including the same opening protection, as required for the adjacent exit enclosure.

(7) An elevator lobby when elevator shafts and adjacent lobbies are pressurized as required for smokeproof enclosures by local regulations and when complying with requirements herein for size, communication, and signage. Such pressurization system shall be activated by smoke detectors on each floor located in a manner approved by the appropriate local authority. Pressurization equipment and its duct work within the building shall be separated from other portions of the building by a minimum two-hour fire- resistive construction.

4.3.11.2 Size. Each area of rescue assistance shall provide at least two accessible areas each being not less than 30 inches by 48 inches (760 mm by 1220 mm). The area of rescue assistance shall not encroach on any required exit width. The total number of such 30-inch by 48-inch (760 mm by 1220 mm) areas per story shall be not less than one for every 200 persons of calculated occupant load served by the area of rescue assistance.

EXCEPTION: The appropriate local authority may reduce the minimum number of 30-inch by 48-inch (760 mm by 1220 mm) areas to one for each area of rescue assistance on floors where the occupant load is less than 200.

4.3.11.3* Stairway Width. Each stairway adjacent to an area of rescue assistance shall have a minimum clear width of 48 inches between handrails.

4.3.11.4* Two-way Communication. A method of two-way communication, with both visible and audible signals, shall be provided between each area of rescue assistance and the primary entry. The fire department or appropriate local authority may approve a location other than the primary entry.

4.3.11.5 Identification. Each area of rescue assistance shall be identified by a sign which states "AREA OF RESCUE ASSISTANCE" and displays the international symbol of accessibility. The sign shall be illuminated when exit sign illumination is required. Signage shall also be installed at all inaccessible exits and where otherwise necessary to clearly indicate the direction to areas of rescue assistance. In each area of rescue assistance, instructions on the use of the area under emergency conditions shall be posted adjoining the two-way communication system.

4.4 Protruding Objects.

4.4.1* General. Objects projecting from walls (for example, telephones) with their leading edges between 27 in and 80 in (685 mm and 2030 mm) above the finished floor shall protrude no more than 4 in (100 mm) into walks, halls, corridors, passageways, or aisles (see Fig. 8(a)). Objects mounted with their leading edges at or below 27 in (685 mm) above the finished floor may protrude any amount (see Fig. 8(a) and (b)). Free-standing objects mounted on posts or pylons may overhang 12 in (305 mm) maximum

from 27 in to 80 in (685 mm to 2030 mm) above the ground or finished floor (see Fig. 8(c) and (d)). Protruding objects shall not reduce the clear width of an accessible route or maneuvering space (see Fig. 8(e)).

4.4.2 Head Room. Walks, halls, corridors, passageways, aisles, or other circulation spaces shall have 80 in (2030 mm) minimum clear head room (see Fig. 8(a)). If vertical clearance of an area adjoining an accessible route is reduced to less than 80 in (nominal dimension), a barrier to warn blind or visually-impaired persons shall be provided (see Fig. 8(c-1)).

4.5 Ground and Floor Surfaces.

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

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

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

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

4.6 Parking and Passenger Loading Zones.

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

4.6.2 Location. Accessible parking spaces serving a particular building shall be located on the shortest accessible route of travel from adjacent parking to an accessible entrance. In parking facilities that do not serve a particular building, accessible parking shall be located on the shortest accessible route of travel to an accessible pedestrian entrance of the parking facility. In buildings with multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located closest to

the accessible entrances.

4.6.3* Parking Spaces. Accessible parking spaces shall be at least 96 in (2440 mm) wide. Parking access aisles shall be part of an accessible route to the building or facility entrance and shall comply with 4.3. Two accessible parking spaces may share a common access aisle (see Fig. 9). Parked vehicle overhangs shall not reduce the clear width of an accessible route. Parking spaces and access aisles shall be level with surface slopes not exceeding 1:50 (2%) in all directions.

4.6.4* Signage. Accessible parking spaces shall be designated as reserved by a sign showing the symbol of accessibility (see 4.30.7). Spaces complying with 4.1.2(5)(b) shall have an additional sign "Van-Accessible" mounted below the symbol of accessibility. Such signs shall be located so they cannot be obscured by a vehicle parked in the space.

4.6.5* Vertical Clearance. Provide minimum vertical clearance of 114 in (2895 mm) at accessible passenger loading zones and along at least one vehicle access route to such areas from site entrance(s) and exit(s). At parking spaces complying with 4.1.2(5)(b), provide minimum vertical clearance of 98 in (2490 mm) at the parking space and along at least one vehicle access route to such spaces from site entrance(s) and exit(s).

4.6.6 Passenger Loading Zones. Passenger loading zones shall provide an access aisle at least 60 in (1525 mm) wide and 20 ft (240 in)(6100 mm) long adjacent and parallel to the vehicle pull-up space (see Fig. 10). If there are curbs between the access aisle and the vehicle pull-up space, then a curb ramp complying with 4.7 shall be provided. Vehicle standing spaces and access aisles shall be level with surface slopes not exceeding 1:50 (2%) in all directions.

4.7 Curb Ramps.

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

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

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

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

4.7.5 Sides of Curb Ramps. If a curb ramp is located where pedestrians must walk across the ramp, or where it is not protected by handrails or guardrails, it shall have

flared sides; the maximum slope of the flare shall be 1:10 (see Fig. 12(a)). Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp (see Fig. 12(b)).

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

4.7.7 Detectable Warnings. A curb ramp shall have a detectable warning complying with 4.29.2. The detectable warning shall extend the full width and depth of the curb ramp.

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

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

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

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

4.8 Ramps.

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

4.8.2* Slope and Rise. The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12. The maximum rise for any run shall be 30 in (760 mm) (see Fig. 16). Curb ramps 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.

4.8.3 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 (38 mm).
- (4) Gripping surfaces shall be continuous.
- (5) Top of handrail gripping surfaces shall be mounted between 34 in and 38 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 fittings.

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

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

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

4.9 Stairs.

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

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

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

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

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

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

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

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

(5) Top of handrail gripping surface shall be mounted between 34 in and 38 in (865 mm and 965 mm) above stair nosings.

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

(7) Handrails shall not rotate within their fittings.

4.9.5 Detectable Warnings at Stairs. (Reserved).

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

4.10 Elevators.

4.10.1 General. Accessible elevators shall be on an accessible route and shall comply

with 4.10 and with the ASME A17.1-1990, Safety Code for Elevators and Escalators. Freight elevators shall not be considered as meeting the requirements of this section unless the only elevators provided are used as combination passenger and freight elevators for the public and employees.

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

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

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

(1) Hall lantern fixtures shall be mounted so that their centerline is at least 72 in (1830 mm) above the lobby floor. (See Fig. 20.)

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

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

4.10.5 Raised and Braille Characters on Hoistway Entrances. All elevator hoistway entrances shall have raised and Braille floor designations provided on both jambs. The centerline of the characters shall be 60 in (1525 mm) above finish floor. Such characters shall be 2 in (50 mm) high and shall comply with 4.30.4. Permanently applied plates are acceptable if they are permanently fixed to the jambs. (See Fig. 20).

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

in accordance with the requirements of ASME A17.1-1990.

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

$$T = D/(1.5 \text{ ft/s}) \text{ or } T = D/(445 \text{ mm/s})$$

where T total time in seconds and D distance (in feet or millimeters) from a point in the lobby or corridor 60 in (1525 mm) directly in front of the farthest call button controlling that car to the centerline of its hoistway door (see Fig. 21). For cars with in-car lanterns, T begins when the lantern is visible from the vicinity of hall call buttons and an audible signal is sounded. The minimum acceptable notification time shall be 5 seconds.

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

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

4.10.10 Floor Surfaces. Floor surfaces shall comply with 4.5.

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

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

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

(2) Tactile, Braille, and Visual Control Indicators. All control buttons shall be designated by Braille and by raised standard alphabet characters for letters, arabic characters for numerals, or standard symbols as shown in Fig. 23(a), and as required in ASME A17.1-1990. Raised and Braille characters and symbols shall comply with 4.30. The call button for the main entry floor shall be designated by a raised star at the left of the floor designation (see Fig. 23(a)). All raised designations for control buttons shall be placed immediately to the left of the button to which they apply. Applied plates, permanently attached, are an acceptable means to provide raised control designations. Floor buttons shall be provided with visual indicators to show when each call is registered. The visual indicators shall be extinguished when each call is answered.

(3) Height. All floor buttons shall be no higher than 54 in (1370 mm) above the finish

floor for side approach and 48 in (1220 mm) for front approach. Emergency controls, including the emergency alarm and emergency stop, shall be grouped at the bottom of the panel and shall have their centerlines no less than 35 in (890 mm) above the finish floor (see Fig. 23(a) and (b)).

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

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

4.10.14* Emergency Communications. If provided, emergency two-way communication systems between the elevator and a point outside the hoistway shall comply with ASME A17.1-1990. The highest operable part of a two-way communication system shall be a maximum of 48 in (1220 mm) from the floor of the car. It shall be identified by a raised symbol and lettering complying with 4.30 and located adjacent to the device. If the system uses a handset then the length of the cord from the panel to the handset shall be at least 29 in (735 mm). If the system is located in a closed compartment the compartment door hardware shall conform to 4.27, Controls and Operating Mechanisms. The emergency intercommunication system shall not require voice communication.

4.11 Platform Lifts (Wheelchair Lifts).

4.11.1 Location. Platform lifts (wheelchair lifts) permitted by 4.1 shall comply with the requirements of 4.11.

4.11.2* Other Requirements. If platform lifts (wheelchair lifts) are used, they shall comply with 4.2.4, 4.5, 4.27, and ASME A17.1 Safety Code for Elevators and Escalators, Section XX, 1990.

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

4.12 Windows.

4.12.1* General. (Reserved).

4.12.2* Window Hardware. (Reserved).

4.13 Doors.

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

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

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

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

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

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

4.13.6 Maneuvering Clearances at Doors. Minimum maneuvering clearances at doors that are not automatic or power-assisted shall be as shown in Fig. 25. The floor or ground area within the required clearances shall be level and clear.

EXCEPTION: Entry doors to acute care hospital bedrooms for in-patients shall be exempted from the requirement for space at the latch side of the door (see dimension "x" in Fig. 25) if the door is at least 44 in (1120 mm) wide.

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

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

4.13.9* Door Hardware. Handles, pulls, latches, locks, and other operating devices on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. Lever-operated

mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs. When sliding doors are fully open, operating hardware shall be exposed and usable from both sides. Hardware required for accessible door passage shall be mounted no higher than 48 in (1220 mm) above finished floor.

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

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

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

(2) Other doors.

(a) exterior hinged doors: (Reserved).

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

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

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

4.13.12* Automatic Doors and Power-Assisted Doors. If an automatic door is used, then it shall comply with ANSI/BHMA A156.10-1985. Slowly opening, low-powered, automatic doors shall comply with ANSI A156.19-1984. Such doors shall not open to back check faster than 3 seconds and shall require no more than 15 lbf (66.6N) to stop door movement. If a power-assisted door is used, its door-opening force shall comply with 4.13.11 and its closing shall conform to the requirements in ANSI A156.19-1984.

4.14 Entrances.

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

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

4.15 Drinking Fountains and Water Coolers.

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

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

4.15.3 Spout Location. The spouts of drinking fountains and water coolers shall be at the front of the unit and shall direct the water flow in a trajectory that is parallel or nearly parallel to the front of the unit. The spout shall provide a flow of water at least 4 in (100 mm) high so as to allow the insertion of a cup or glass under the flow of water. 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 (75 mm) of the front edge of the fountain.

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

4.15.5 Clearances.

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

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

4.16 Water Closets.

4.16.1 General. Accessible water closets shall comply with 4.16.

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

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

4.16.4* Grab Bars. Grab bars for water closets not located in stalls shall comply with 4.26 and Fig. 29. The grab bar behind the water closet shall be 36 in (915 mm) minimum.

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

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

4.17 Toilet Stalls.

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

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

4.17.3* Size and Arrangement. The size and arrangement of the standard toilet stall shall comply with Fig. 30(a), Standard Stall. Standard toilet stalls with a minimum depth of 56 in (1420 mm) (see Fig. 30(a)) shall have wall-mounted water closets. If the depth of a standard toilet stall is increased at least 3 in (75 mm), then a floor-mounted water closet may be used. Arrangements shown for standard toilet stalls may be reversed to allow either a left- or right-hand approach. Additional stalls shall be provided in conformance with 4.22.4.

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

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

4.17.5* Doors. Toilet stall doors, including door hardware, shall comply with 4.13. If toilet stall approach is from the latch side of the stall door, clearance between the door side of the stall and any obstruction may be reduced to a minimum of 42 in (1065 mm) (Fig. 30).

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

4.18 Urinals.

4.18.1 General. Accessible urinals shall comply with 4.18.

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

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

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

4.19 Lavatories and Mirrors.

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

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

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

4.19.4 Exposed Pipes and Surfaces. Hot water and drain pipes under lavatories shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories.

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

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

4.20 Bathtubs.

4.20.1 General. Accessible bathtubs shall comply with 4.20.

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

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

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

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

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

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

4.21 Shower Stalls.

4.21.1* General. Accessible shower stalls shall comply with 4.21.

4.21.2 Size and Clearances. Except as specified in 9.1.2, shower stall size and clear floor space shall comply with Fig. 35(a) or (b). The shower stall in Fig. 35(a) shall be 36 in by 36 in (915 mm by 915 mm). Shower stalls required by 9.1.2 shall comply with Fig. 57(a) or (b). The shower stall in Fig. 35(b) will fit into the space required for a bathtub.

4.21.3 Seat. A seat shall be provided in shower stalls 36 in by 36 in (915 mm by 915 mm) and shall be as shown in Fig. 36. The seat shall be mounted 17 in to 19 in (430 mm to 485 mm) from the bathroom floor and shall extend the full depth of the stall. In a 36 in by 36 in (915 mm by 915 mm) shower stall, the seat shall be on the wall opposite the controls. Where a fixed seat is provided in a 30 in by 60 in minimum (760 mm by 1525 mm) shower stall, it shall be a folding type and shall be mounted on the wall adjacent to the controls as shown in Fig. 57. The structural strength of seats and their attachments shall comply with 4.26.3.

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

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

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

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

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

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

4.22 Toilet Rooms.

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

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

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

4.22.4 Water Closets. If toilet stalls are provided, then at least one shall be a standard toilet stall complying with 4.17; where 6 or more stalls are provided, in addition to the stall complying with 4.17.3, at least one stall 36 in (915 mm) wide with an outward swinging, self-closing door and parallel grab bars complying with Fig. 30(d) and 4.26 shall be provided. Water closets in such stalls shall comply with 4.16. If water closets are not in stalls, then at least one shall comply with 4.16.

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

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

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

4.23 Bathrooms, Bathing Facilities, and Shower Rooms.

4.23.1 Minimum Number. Bathrooms, bathing facilities, or shower rooms required to be accessible by 4.1 shall comply with 4.23 and shall be on an accessible route.

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

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

4.23.4 Water Closets. If toilet stalls are provided, then at least one shall be a standard toilet stall complying with 4.17; where 6 or more stalls are provided, in addition to the stall complying with 4.17.3, at least one stall 36 in (915 mm) wide with an outward swinging, self-closing door and parallel grab bars complying with Fig. 30(d) and 4.26 shall be provided. Water closets in such stalls shall comply with 4.16. If water closets are not in stalls, then at least one shall comply with 4.16.

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

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

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

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

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

4.24 Sinks.

4.24.1 General. Sinks required to be accessible by 4.1 shall comply with 4.24.

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

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

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

4.24.5 Clear Floor Space. A clear floor space at least 30 in by 48 in (760 mm by 1220

mm) complying with 4.2.4 shall be provided in front of a sink to allow forward approach. The clear floor space shall be on an accessible route and shall extend a maximum of 19 in (485 mm) underneath the sink (see Fig. 32).

4.24.6 Exposed Pipes and Surfaces. Hot water and drain pipes exposed under sinks shall be insulated or otherwise configured so as to protect against contact. There shall be no sharp or abrasive surfaces under sinks.

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

4.25 Storage.

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

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

4.25.3 Height. Accessible storage spaces shall be within at least one of the reach ranges specified in 4.2.5 and 4.2.6 (see Fig. 5 and Fig 6). Clothes rods or shelves shall be a maximum of 54 in (1370 mm) above the finish floor for a side approach. Where the distance from the wheelchair to the clothes rod or shelf exceeds 10 in (255 mm) (as in closets without accessible doors) the height and depth to the rod or shelf shall comply with Fig. 38(a) and Fig. 38(b).

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

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

4.26.1* General. All handrails, grab bars, and tub and shower seats required to be accessible by 4.1, 4.8, 4.9, 4.16, 4.17, 4.20 or 4.21 shall comply with 4.26.

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

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