

American National Standard for Buildings and Facilities –

Providing Accessibility and Usability for Physically Handicapped People

1. Purpose and Application

1.1 Purpose

The specifications in this standard are intended to make buildings and facilities accessible to and usable by people with such physical disabilities as the inability to walk, difficulty walking, reliance on walking aids, blindness and visual impairment, deafness and hearing impairment, incoordination, reaching and manipulation disabilities, lack of stamina, difficulty interpreting and reacting to sensory information, and extremes of physical size. Accessibility and usability allow a physically handicapped person to get to, enter, and use a building or facility.

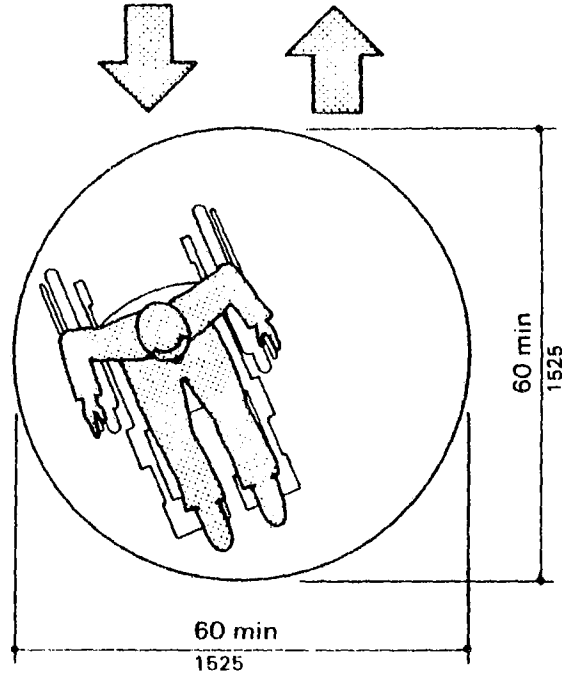
This standard provides specifications for elements that can be used in making functional spaces accessible. For example, it specifies technical requirements for making doors, routes, seating, and other elements accessible. These accessible elements can be used to design accessible functional spaces such as classrooms, hotel rooms, lobbies, or offices.

This standard is intended for adoption by government agencies and by organizations setting model codes to achieve uniformity in the technical design criteria in building codes and other regulations. This standard may also be used by non-governmental parties as technical design guidelines or requirements to make buildings and facilities accessible to and usable by physically handicapped people.

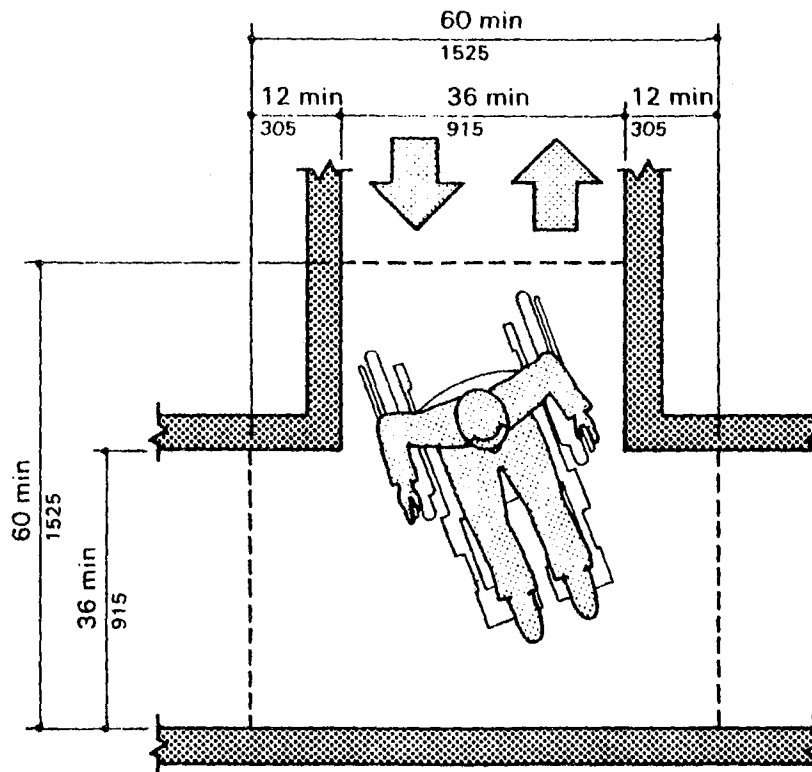
1.2 Application

This standard can be applied to the following:

- (1) The design and construction of new buildings and facilities, including both spaces and elements; site improvements; and public walks
- (2) Remodeling, alteration, and rehabilitation of existing construction
- (3) Permanent, temporary, and emergency conditions



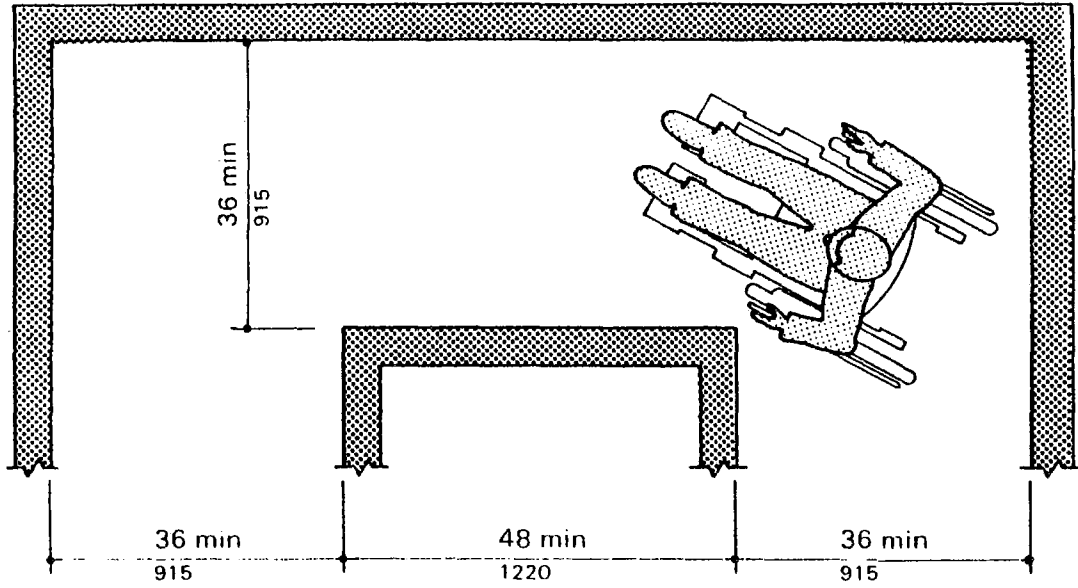
(a) 60-in (1525-mm)-Diameter Space



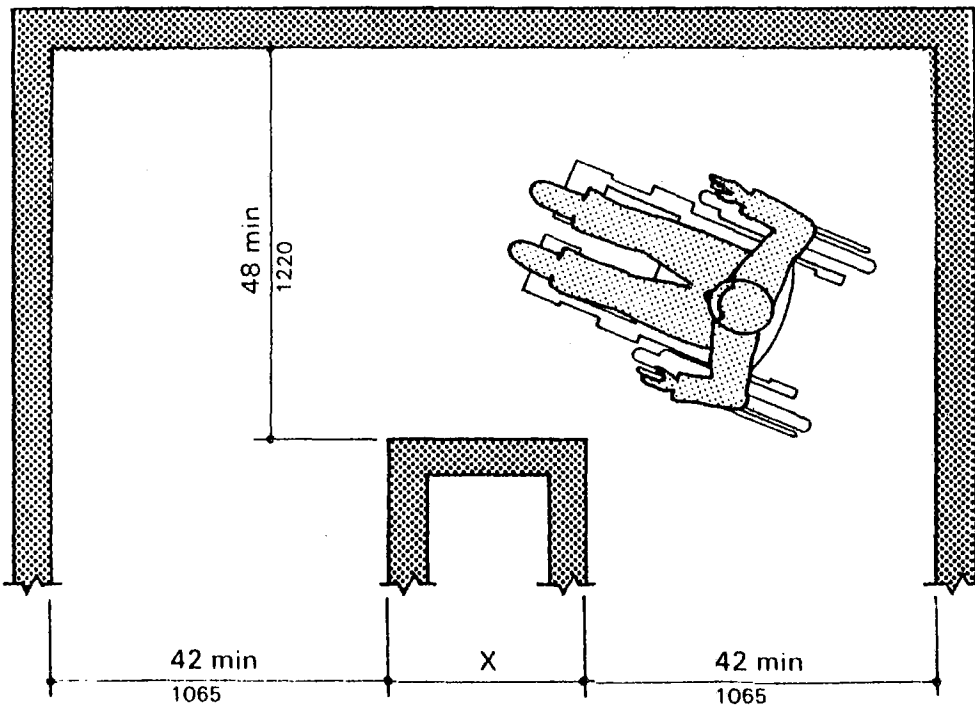
NOTE: Dashed lines indicate minimum length of clear space required on each arm of the T-shaped space in order to complete the turn.

(b) T-Shaped Space for 180° Turns

Fig. 3
Wheelchair Turning Space



(a) Width of Accessible Route for 90° Turn



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

(b) Width of Accessible Route for Turns around an Obstruction

Fig. 7
Accessible Routes and Ground and Floor Surfaces

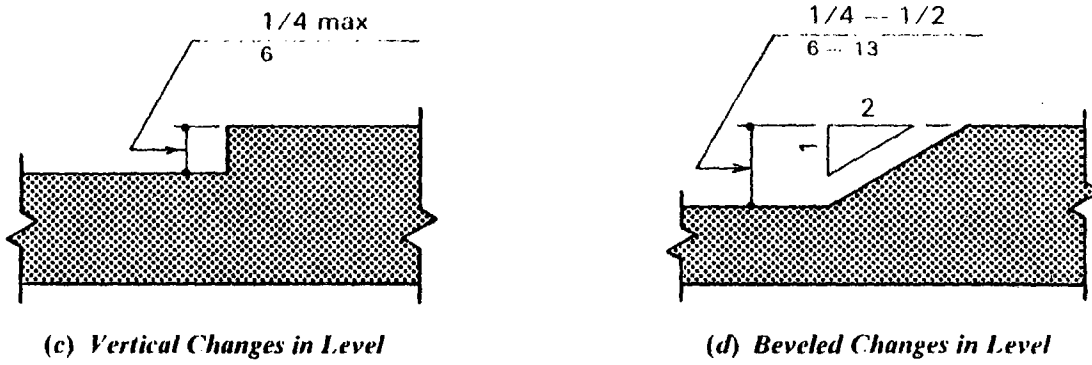


Fig. 7
Accessible Routes and Ground and Floor Surfaces (Continued)

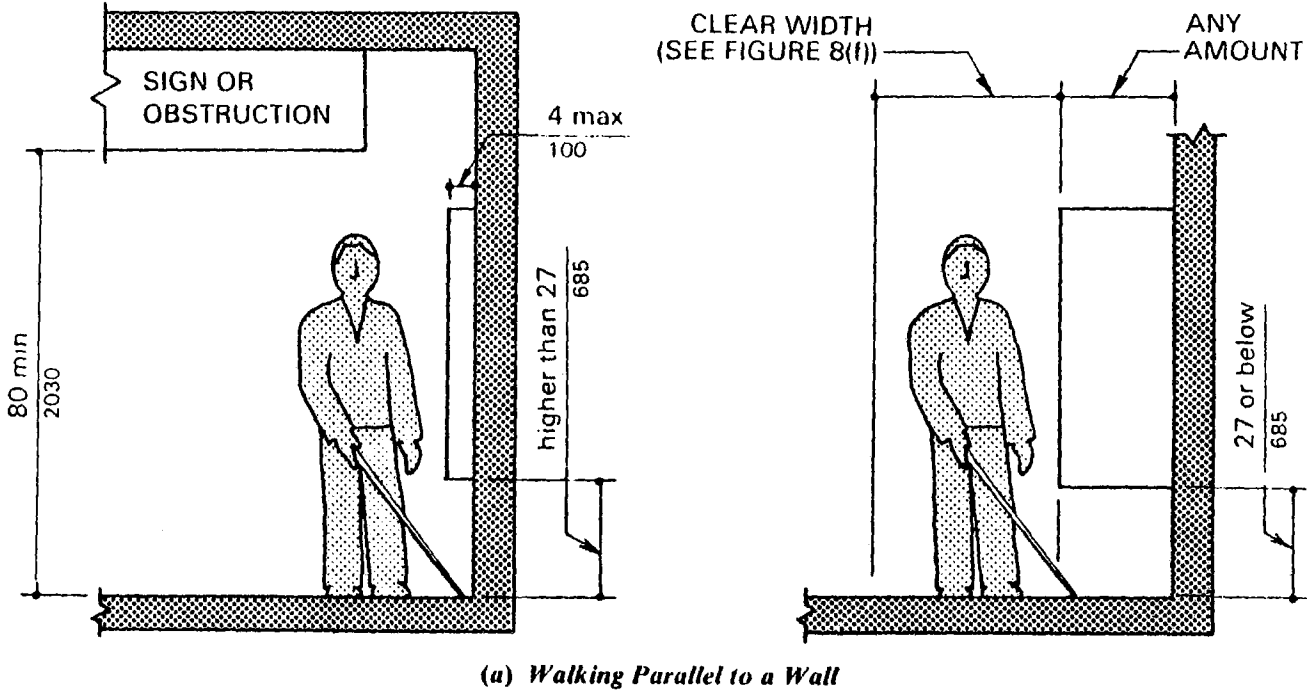


Fig. 8
Protruding Objects

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, and 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. 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(c) and (d)). Changes in level greater than 1/2 in (13 mm) shall be accomplished by means of a ramp that complies with 4.7 or 4.8.

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

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. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

4.6 Parking Spaces and Passenger Loading Zones

4.6.1 General. Accessible parking spaces shall comply with 4.6.2. Accessible passenger loading zones shall comply with 4.6.3.

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

4.6.2* Parking Spaces. Parking spaces for physically handicapped people shall be at least 96 in (2440 mm) wide and shall have an adjacent access

aisle 60 in (1525 mm) wide minimum (see Fig. 9). Parking access aisles shall be part of the accessible route to the building or facility entrance and shall comply with 4.3. Two accessible parking spaces may share a common access aisle. Parked vehicle overhangs shall not reduce the clear width of an accessible circulation route.

Accessible parking spaces shall be designated as reserved for physically handicapped people by a sign showing the symbol of accessibility (see 4.28.5). Such signs shall not be obscured by a vehicle parked in the space.

4.6.3 Passenger Loading Zones. Passenger loading zones shall provide an access aisle at least 48 in (1220 mm) wide and 20 ft (6 m) long adjacent and parallel to the vehicle pull-up space (see Fig. 10). If

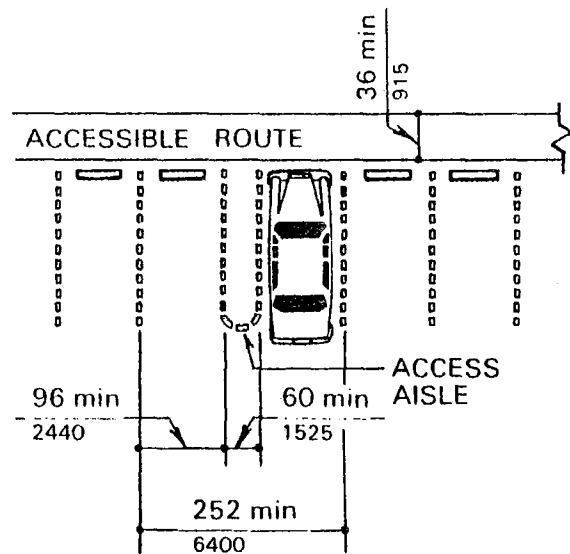


Fig. 9
Dimensions of Parking Spaces

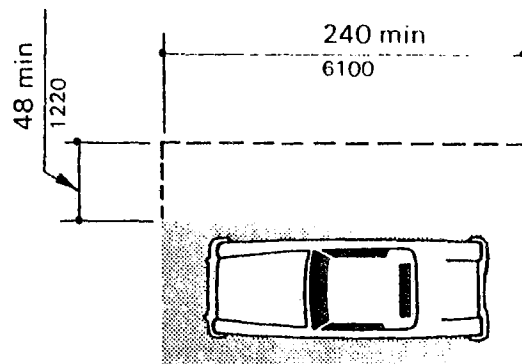


Fig. 10
Access Aisle at Passenger Loading Zones

*See Appendix for additional information.

there are curbs between the access aisle and the vehicle pull-up space, then a curb ramp complying with 4.7 shall be provided.

A minimum vertical clearance of 108 in (2745 mm) shall be provided at accessible passenger loading zones and along vehicle access routes to such areas from site entrances.

4.7 Curb Ramps

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

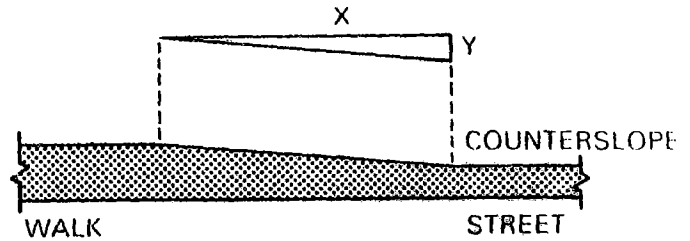
4.7.2 Slope. Slopes of curb ramps shall comply with 4.8.2. The slope shall be measured as shown in Fig. 11. Maximum counterslopes of adjoining gutters and road surfaces immediately adjacent to the curb ramp or accessible route shall not exceed 1:20.

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

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



NOTES:

- (1) Slope = y/x , where y is a level plane.
- (2) Counterslope shall not exceed 1:20.

Fig. 11
Measurement of Curb Ramp Slopes

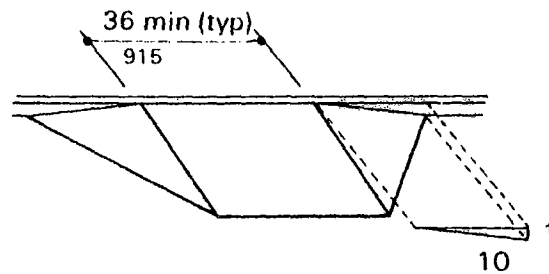
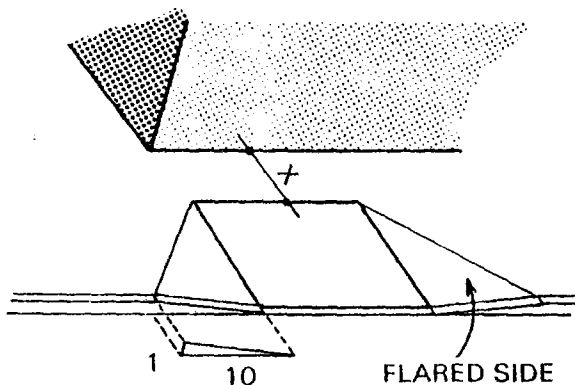
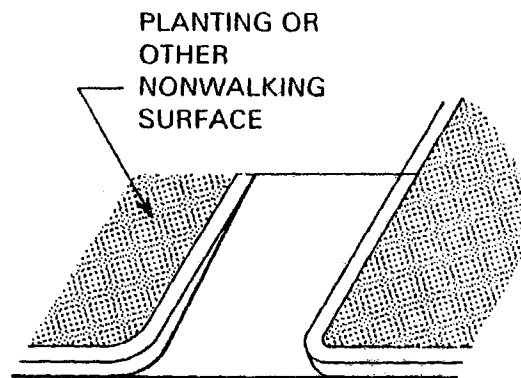


Fig. 13
Built-Up Curb Ramp



(a) Flared Sides



(b) Returned Curb

NOTE: If $y < 48$ in (1220 mm), then the slope of the flared sides shall not exceed 1:12.

Fig. 12
Sides of Curb Ramps

4.7.7 Warning Textures. A curb ramp shall have a detectable warning texture complying with 4.27 and extending the full width and depth of the curb ramp, including any flares (see Fig. 14).

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 a segment of straight curb at least 24 in (610 mm) long located on each side of the curb ramp and within the marked crossing (see Fig. 15(c)).

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

*See Appendix for additional information.

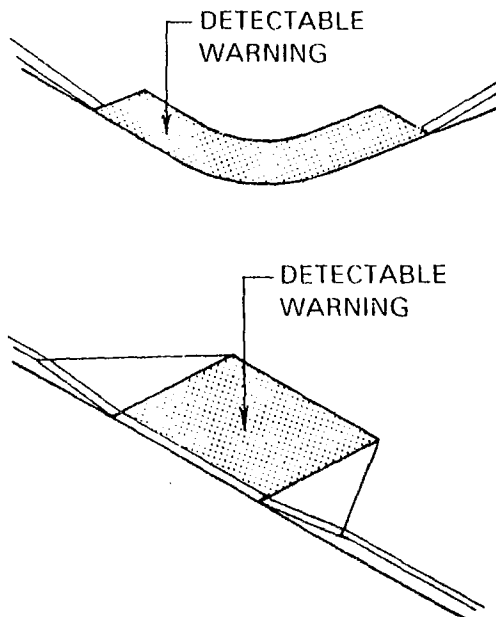


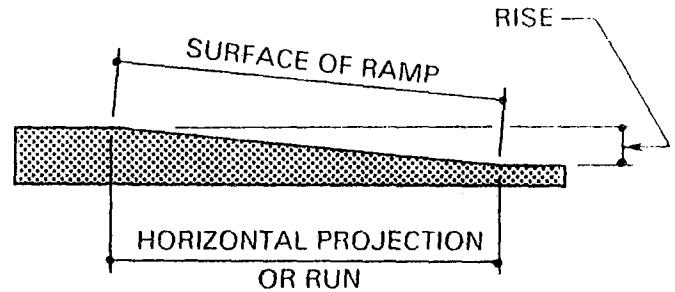
Fig. 14
Warning Signals at Curb Ramps

4.7.12 Uncurbed Intersections. If there is no curb at the intersection of a walk and an adjoining street, parking lot, or busy driveway, then the walk shall have a detectable warning texture complying with 4.27.5 at the edge of the vehicular way.

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 ramp run shall be 30 in (760 mm) (see Fig. 16). Curb ramps and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as shown in Table 3 if space limitations prohibit the use of a 1:12 slope or less.



Slope	Maximum Rise		Maximum Horizontal Projection	
	in	mm	ft	m
1:12 to 1:15	30	760	30	9
1:16 to 1:19	30	760	40	12
1:20	30	760	50	15

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

Table 3
Allowable Ramp Dimensions for Construction in Existing Sites, Buildings, and Facilities

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

†A slope steeper than 1:8 not allowed.

4.8.3 Clear Width. The minimum clear width of a ramp shall be 36 in (915 mm) (see Fig. 17).

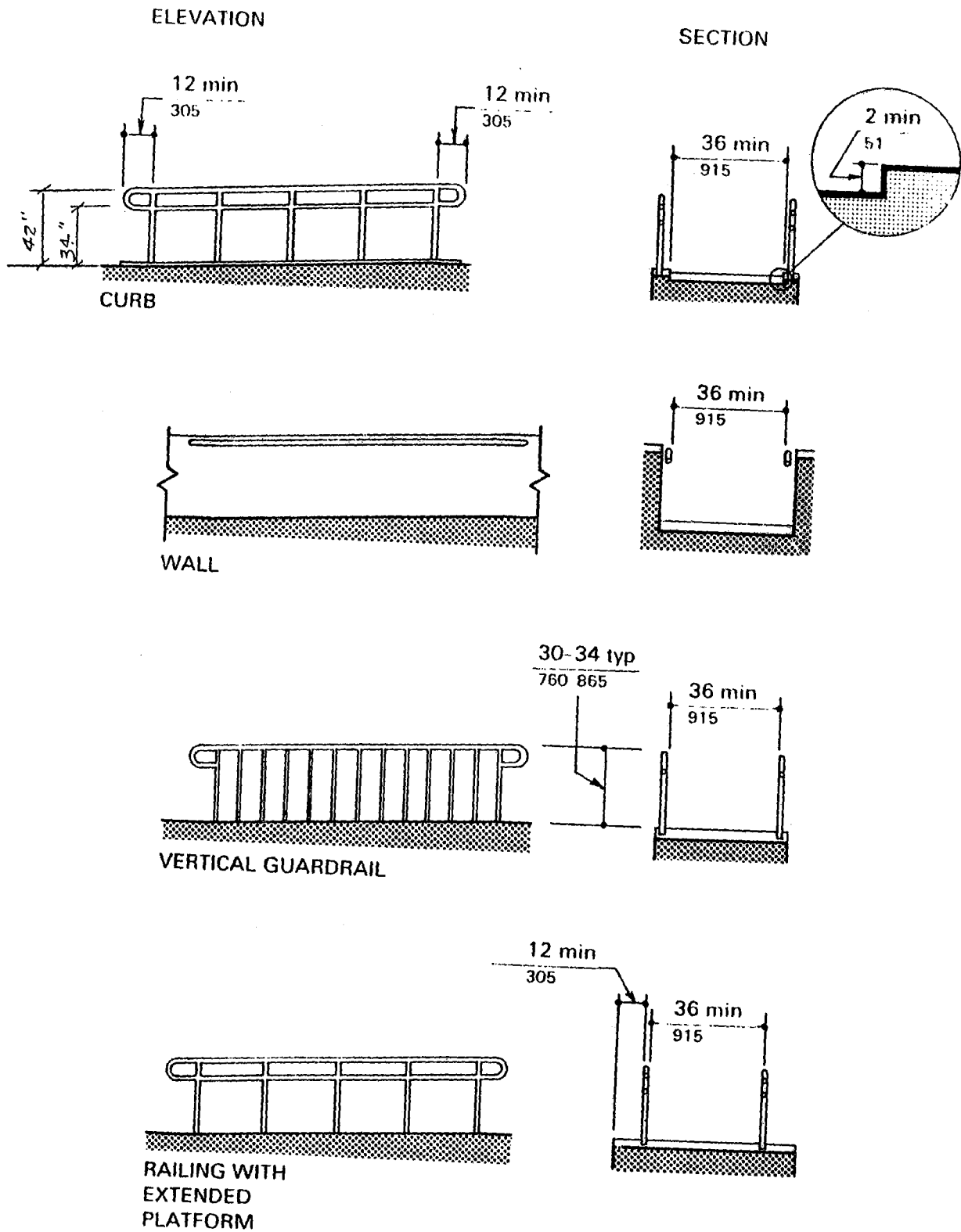


Fig. 17
Examples of Edge Protection and Handrail Extensions

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

- (1) The landing shall be at least as wide as the widest 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. Handrails shall have the following features:

- (1) Handrails shall be provided along both sides of ramp segments. The inside handrail on switch-back or dogleg ramps shall always be continuous.
- (2) If handrails are not continuous, they shall extend at least 12 in (305 mm) beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface.
- (3) The clear space between the handrail and the wall shall be $1\frac{1}{2}$ in (38 mm). 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) Gripping surfaces shall be continuous, without interruption by newel posts, other construction elements, or obstructions.
- (5) The diameter or width of the gripping surfaces of a handrail shall be $1\frac{1}{4}$ in to $1\frac{1}{2}$ in (32 mm to 38 mm), or the shape shall provide an equivalent

gripping surface (see Fig. 39(a), (b), and (c)). Standard pipe sizes designated by the industry as $1\frac{1}{4}$ in to $1\frac{1}{2}$ in (32 mm to 38 mm) are acceptable industry tolerances as noted under 3.2.

(6) The top of handrail gripping surfaces shall be mounted between 30 in and 34 in (760 mm and 865 mm) above ramp surfaces.

(7) A handrail 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 $\frac{1}{8}$ in (3.2 mm).

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 (51 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 General. Stairs that are required as a means of egress and stairs between floor levels not connected by an elevator 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 depth. Risers shall be a maximum of 7 in (180 mm) in height, and stair treads shall be no less than 11 in (280 mm) in depth, measured from riser to riser (see Fig. 18(a)). Open risers are not permitted on accessible routes.

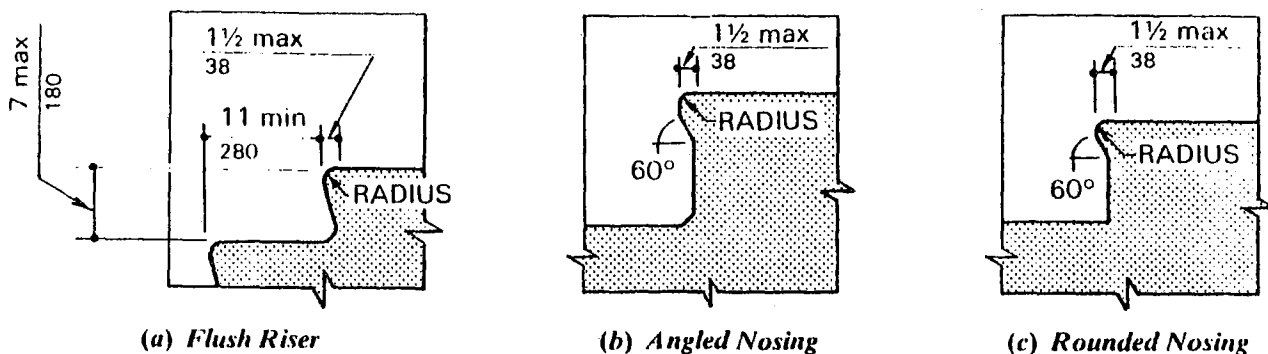


Fig. 18

Usable Tread Width and Examples of Acceptable Nosings

*See Appendix for additional information.

4.12.2 Window Hardware. Windows requiring pushing, pulling, or lifting to open (for example, double-hung, sliding, or casement and awning units without cranks) shall require no more than 5 lbf (22.2 N) to open or close. Locks, cranks, and other window hardware shall comply with 4.25.

4.13 Doors

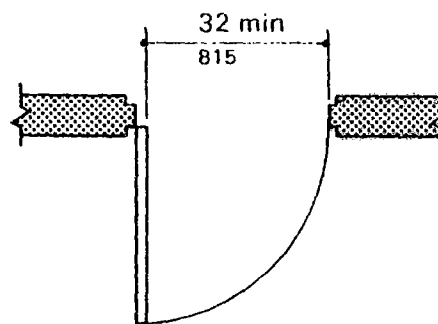
4.13.1 General. Doors to accessible spaces and elements and along accessible routes shall comply with the requirements of 4.13.

4.13.2 Revolving Doors and Turnstiles. Revolving doors or turnstiles shall comply with 4.13 or shall not be the only means of passage at an accessible entrance or along an accessible route.

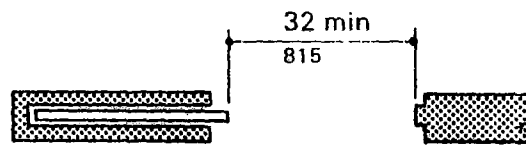
4.13.3 Gates. Gates, including ticket gates, shall meet all applicable specifications of 4.13.

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.

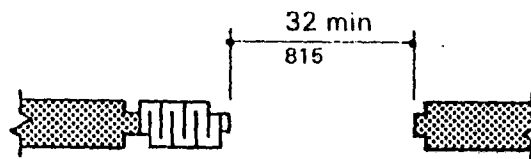
4.13.5 Clear Width. Doorways intended for user passage shall have a minimum clear opening of 32 in (815 mm) with the door open 90 degrees, measured between the face of the door and the stop (see Fig. 24(a), (b), (c), and (d)). Openings more than 24 in (610 mm) in depth shall comply with 4.2.1 and 4.3.3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



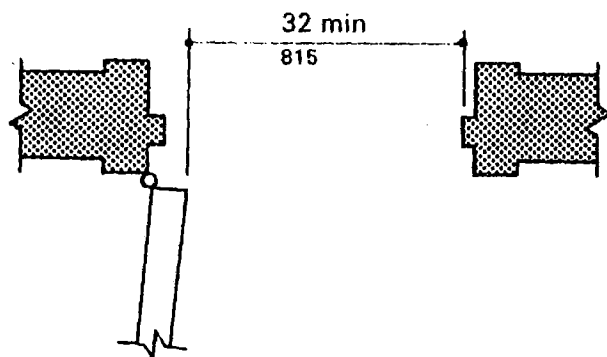
(b) Hinged Door



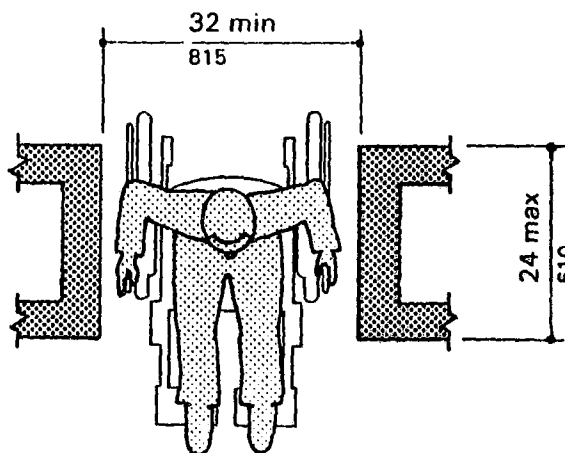
(c) Sliding Door



(d) Folding Door



(a) Detail

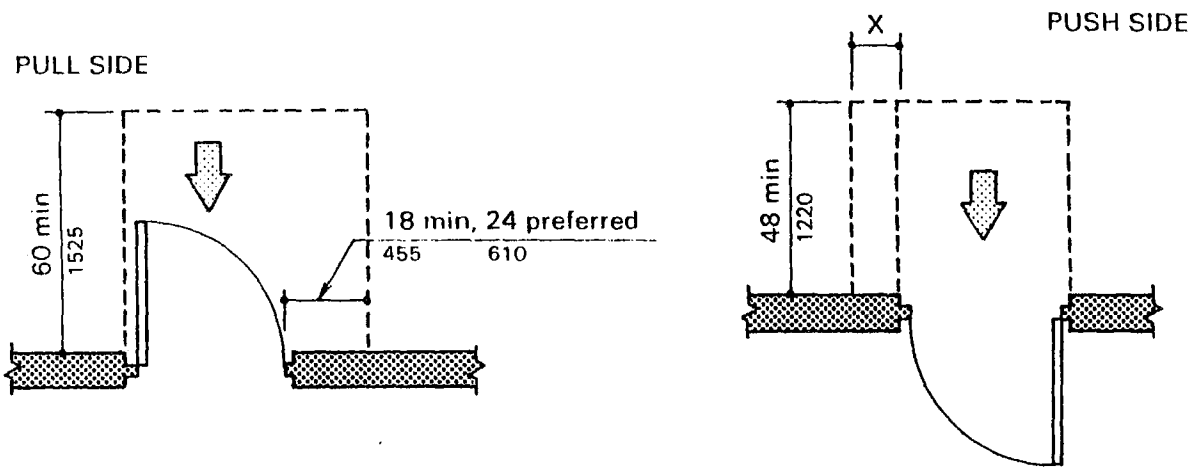


(e) Maximum Doorway Depth

Fig. 24
Clear Doorway Width and Depth

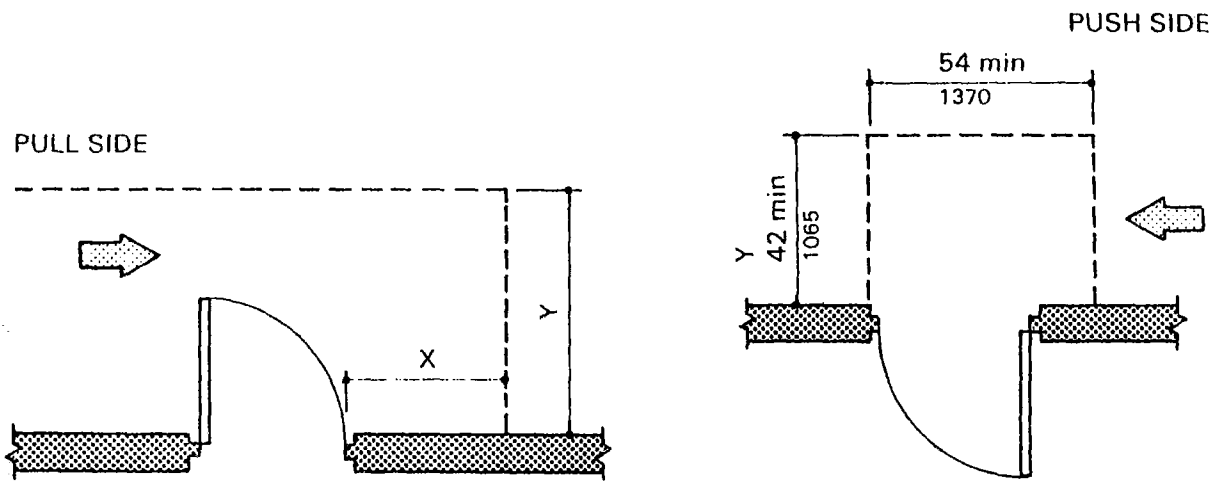
4.13.6 Maneuvering Clearances at Doors. Minimum maneuvering clearances at doors that are not automatic shall be as shown in Fig. 25. The floor or ground area within the required clearances shall be level and clear. Entry doors to acute care hospital

bedrooms for inpatients shall be exempt 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.



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

(a) *Front Approaches — Swinging Doors*



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

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

(b) *Hinge-Side Approaches — Swinging Doors*

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

Fig. 25
Maneuvering Clearances at Doors

4.13.8* Thresholds at Doorways. Thresholds at doorways shall not exceed $\frac{1}{4}$ in (19 mm) in height for exterior residential sliding doors or $\frac{1}{2}$ 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. They shall be mounted within reach ranges specified in 4.2. Lever-operated mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs. When sliding doors are fully open, operating hardware shall be exposed and usable from both sides. In dwelling units, only doors at accessible entrances to the unit itself shall comply with the requirements of this paragraph. Doors to hazardous areas shall have hardware complying with 4.27.3.

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 90 degrees, the door will take at least 3 seconds to move to an open position of approximately 12 degrees.

4.13.11* Door-Opening Force. The maximum force, expressed in pounds-force (lbf) and newtons (N), 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: 8.5 lbf (37.8 N)
- (b) Interior hinged doors: 5 lbf (22.2 N)
- (c) Sliding or folding doors: 5 lbf (22.2 N)

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. If an automatic door is used, it shall comply with ANSI/BHMA A156.10-1985.

4.13.13 Power-Assisted Doors and Low-Energy Power-Operated Doors. Power-assisted doors shall comply with ANSI/BHMA A156.19-1984. Such doors shall not open to back check faster than 3 seconds and shall require no more than 15 lbf (66.6 N) to stop door movement.

*See Appendix for additional information.

4.14 Entrances

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

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

4.15 Drinking Fountains and Water Coolers

4.15.1 General. All drinking fountains and water coolers on an accessible route shall comply with 4.4. Accessible drinking fountains or water coolers shall comply with 4.15 and shall be on an accessible route.

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

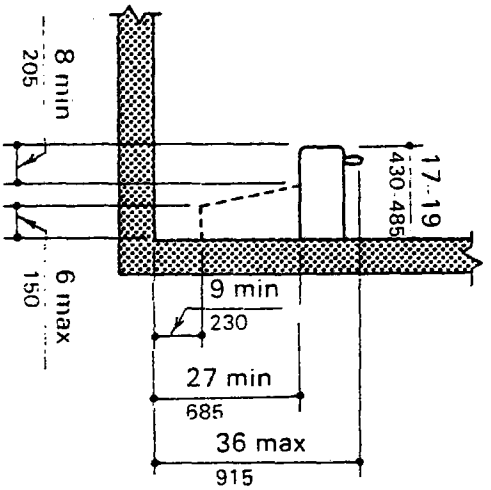
4.15.3 Spout Location. The spouts of drinking fountains and water coolers shall be at the front of the unit and shall direct the water flow in a trajectory that is parallel or nearly parallel to the front of the unit. The spout shall provide a flow of water at least 4 in (100 mm) high so as to allow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

4.15.4 Controls. Controls shall be located at or near the front edge of the fountain or water cooler and shall comply with 4.25.4.

4.15.5 Clearances

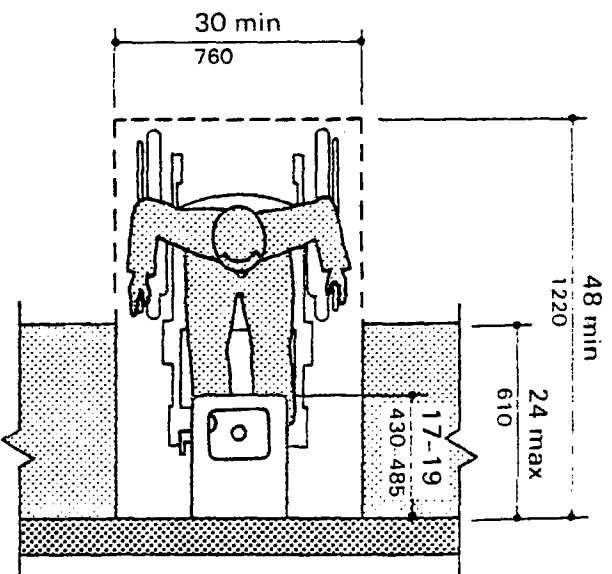
(1) Wall-mounted and post-mounted cantilevered units shall have a clear knee space between the bottom of the apron and the floor or ground at least 27 in (685 mm) high, 30 in (760 mm) wide, and 17 in to 19 in (430 mm to 485 mm) deep (see Fig. 27(a) and (b)). Such units shall also have a minimum clear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

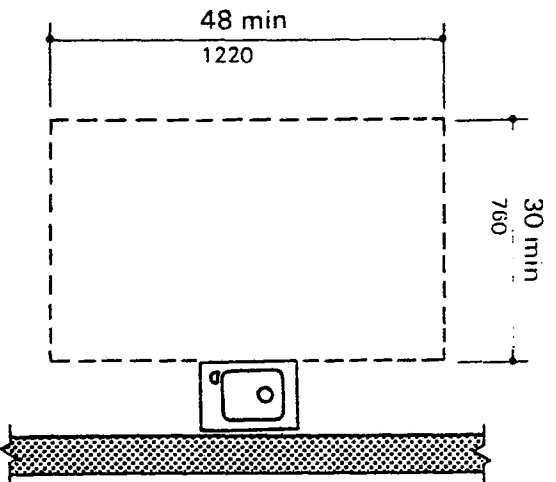


NOTE: Equipment permitted within dashed lines if mounted below apron.

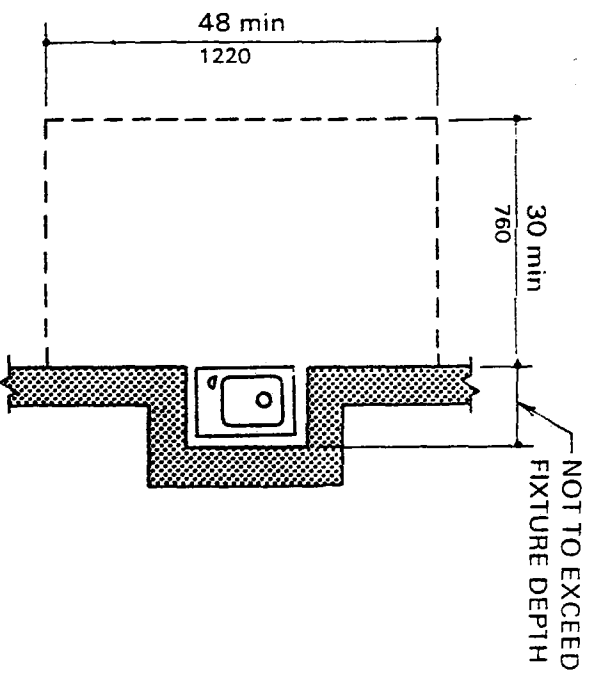
(a) Spout Height and Knee Clearance



(b) Clear Floor Space



(c) Free-Standing Fountain or Cooler



(d) Built-In Fountain or Cooler

Fig. 27
Drinking Fountains and Water Coolers

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). Seats shall not be sprung to return to a lifted position.

4.16.4* Grab Bars. Grab bars for water closets not located in stalls shall comply with Fig. 29 and with 4.24.

*See Appendix for additional information.

4.16.5* Flush Controls. Flush controls shall be hand operated or automatic and shall comply with 4.25.4. Controls for flush valves shall be mounted for use from the wide side of the toilet stall and shall be no more than 44 in (1120 mm) above the floor.

4.16.6 Dispensers. Toilet paper dispensers shall comply with 4.25.4 and shall be installed within reach, as shown in Fig. 29(b).

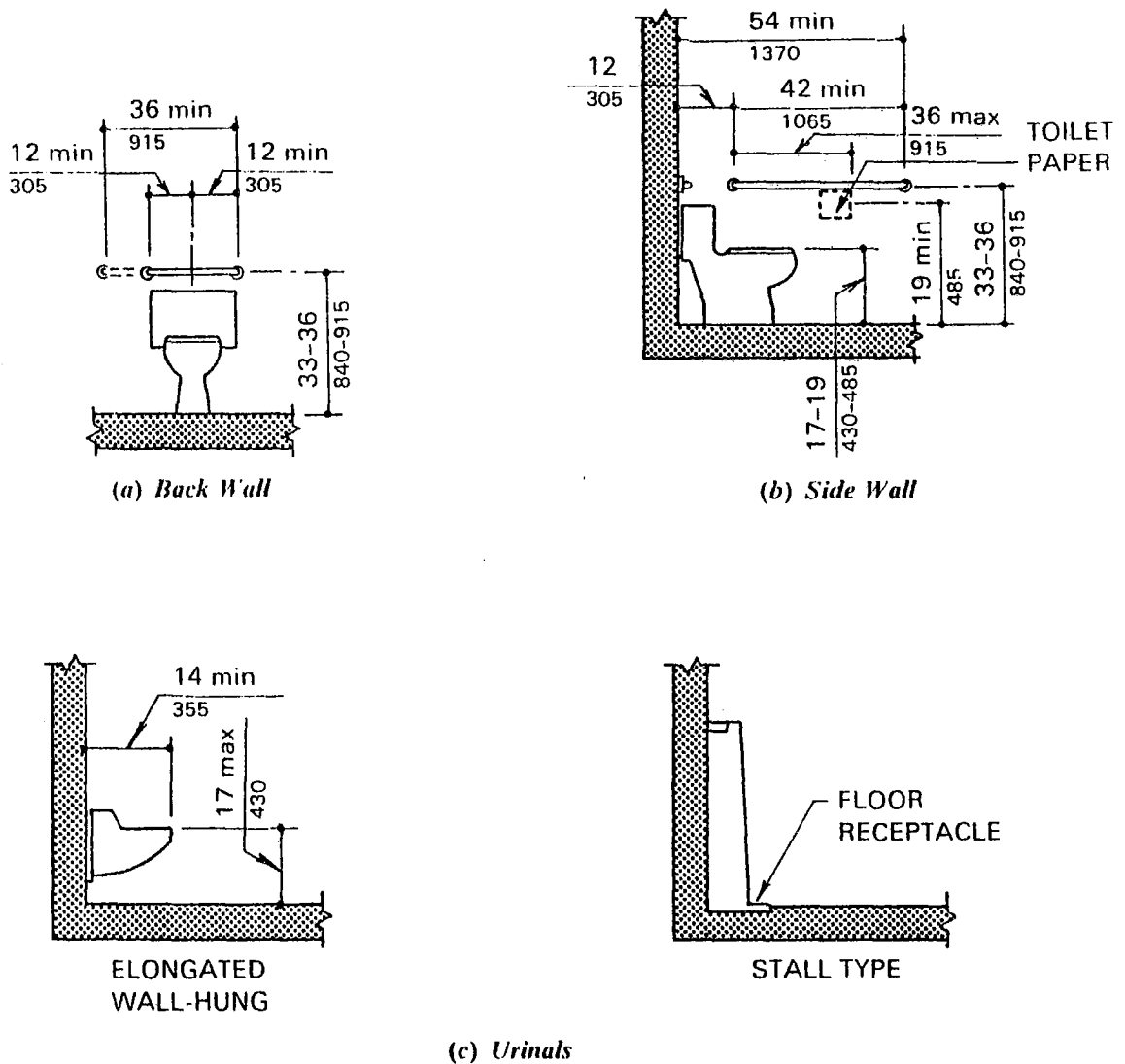


Fig. 29
Water Closets and Urinals

4.17 Toilet Stalls

4.17.1 General. Accessible toilet stalls shall be on an accessible route and shall comply with the requirements of 4.17.

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

4.17.3 Size and Arrangement. The size and arrangement of toilet stalls shall comply with either Fig. 30(a) or (b). Toilet stalls with a minimum depth of 56 in (1420 mm) (see Fig. 30(a)) or 66 in (1675 mm) (see Fig. 30(b)) shall have wall-mounted water closets. If the depth of toilet stalls is increased at least 3 in (75 mm), then a floor-mounted water closet may be used. Arrangements shown for stalls may be reversed to allow either a left-hand or a right-hand approach.

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 shall comply with 4.13, except that if the approach is to the latch side of the stall door, the clearance between the door side of the stall and any obstruction may be reduced to a minimum of 42 in (1065 mm) (see 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 by 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 4.24.

4.18 Urinals

4.18.1 General. Accessible urinals shall comply with 4.18.

4.18.2 Height. Urinals shall be stall type or wall hung with an elongated rim at a maximum of 17 in (430 mm) above the floor (see Fig. 29(c)).

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. Privacy shields allowing less than 30 in (760 mm) clear width shall not extend beyond the front edge of the urinal rim.

4.18.4 Flush Controls. Flush controls shall be hand operated or automatic, shall comply with 4.25.4, and shall be mounted no more than 44 in (1120 mm) above the floor.

4.19 Lavatories, Sinks, and Mirrors

4.19.1 General. Accessible lavatory fixtures, sinks, vanities, and built-in lavatories shall comply with 4.19.

4.19.2 Height and Clearances

4.19.2.1 Lavatories. Lavatories shall be mounted with a clearance of at least 29 in (735 mm) from the floor to the bottom of the apron. Knee and toe clearances shall comply with Fig. 31.

4.19.2.2 Sinks. Sinks shall be mounted with the counter or rim no higher than 34 in (865 mm) from the floor. Each sink shall be a maximum of 6½ in (165 mm) deep. (Sinks in kitchens of accessible dwelling units shall comply with 4.32.5.5.)

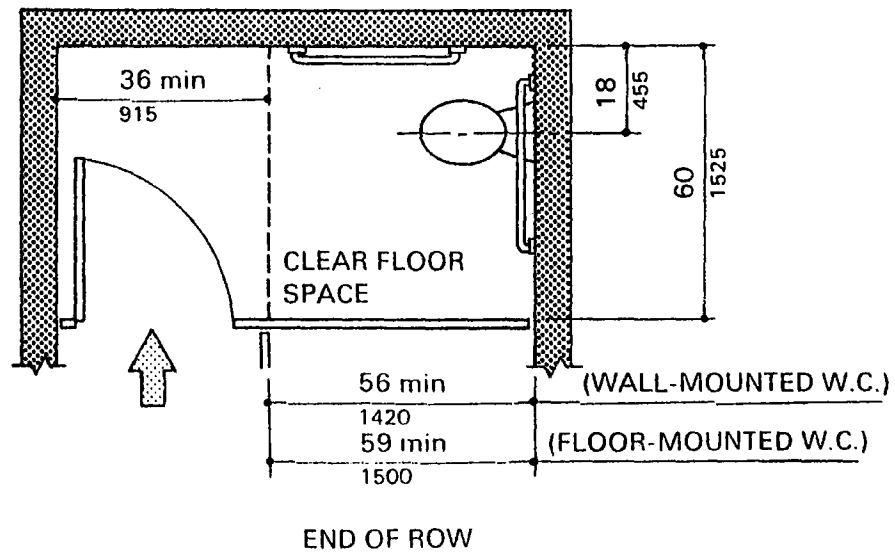
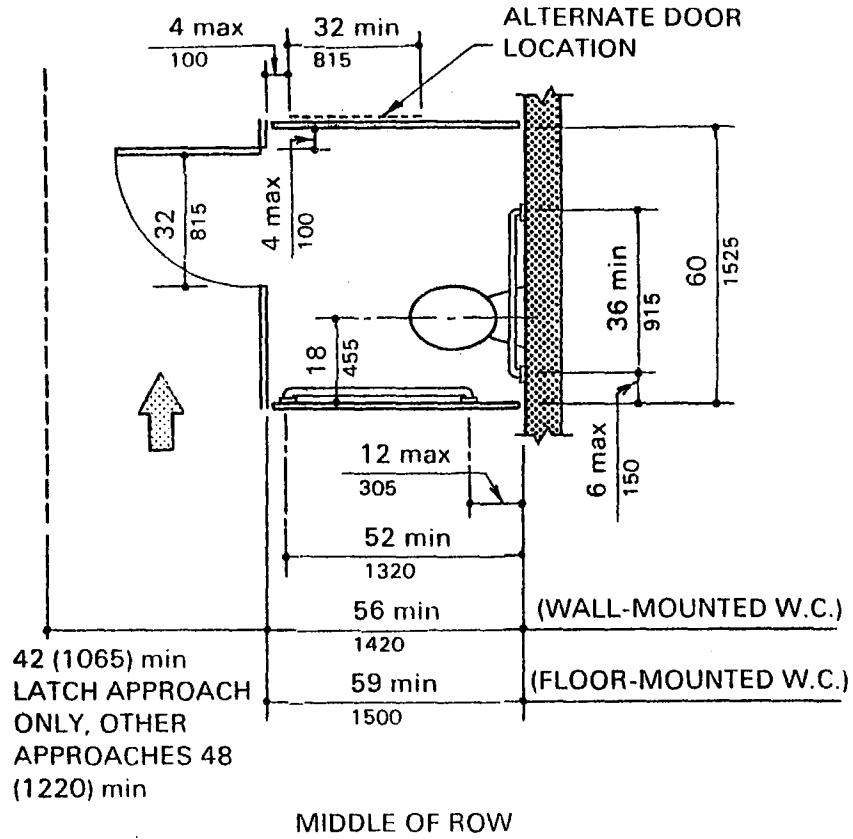
4.19.3 Clear Floor Space. A clear floor space 30 in by 48 in (760 mm by 1220 mm) complying with 4.2.4 shall be provided in front of a lavatory or sink to allow a forward approach. Such clear floor space shall adjoin or overlap an accessible route and shall extend a maximum of 19 in (485 mm) underneath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

4.19.4 Exposed Pipes and Surfaces. Hot water and drain pipes under lavatories or sinks shall be insulated or otherwise protected if they abut the clearance areas indicated in Fig. 31. There shall be no sharp or abrasive surfaces under lavatories or sinks.

4.19.5 Faucets. Faucets shall comply with 4.25.4. Conventional one-quarter-turn, lever-operated, push-type, and automatically controlled mechanisms are examples of acceptable designs. Self-closing valves are allowed if the faucet remains open for at least 10 seconds.

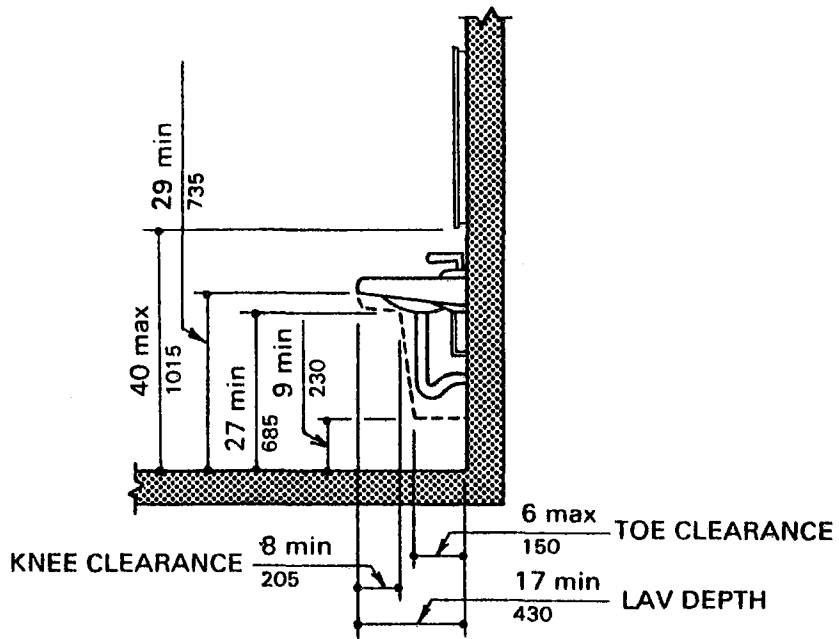
4.19.6* Mirrors. Mirrors shall be mounted with the bottom edge of the reflecting surface no higher than 40 in (1015 mm) from the floor (see Fig. 31).

*See Appendix for additional information.



(a) Standard Stalls

Fig. 30
Toilet Stalls



NOTE: Dashed line indicates dimensional clearance of optional underlavatory enclosure.

Fig. 31
Lavatory Clearances

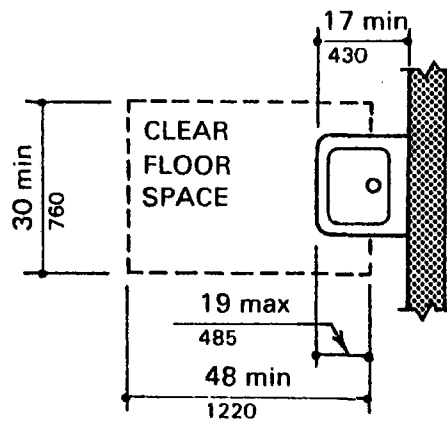
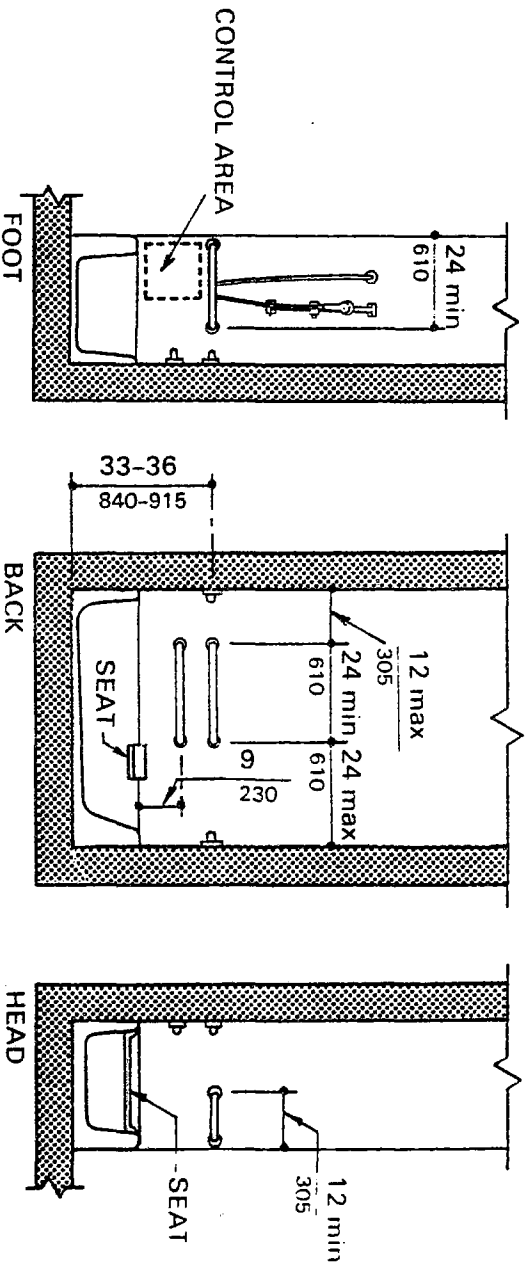
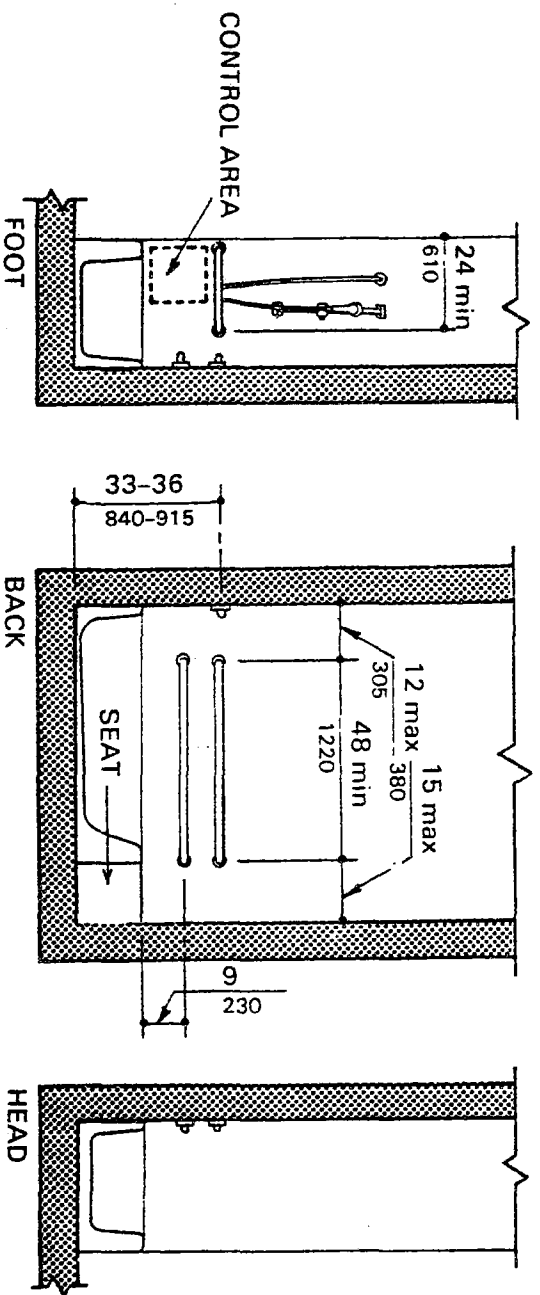


Fig. 32
Clear Floor Space at Lavatories



(a) With Seat in Tub



(b) With Seat at Head of Tub

Fig. 34
Grab Bars at Bathtubs

4.24 Grab Bars, and Tub and Shower Seats

4.24.1* General. All grab bars and tub and shower seats in accessible toilet or bathing facilities shall comply with 4.24.

*See Appendix for additional information.

4.24.2 Size and Spacing of Grab Bars. The diameter or width of the gripping surfaces of a grab bar shall be 1/4 in to 1/2 in (32 mm to 38 mm), or the shape shall provide an equivalent gripping surface. If grab bars are mounted adjacent to a wall, the space between the wall and the grab bar shall be 1/2 in (38 mm) (see Fig. 39(e)).

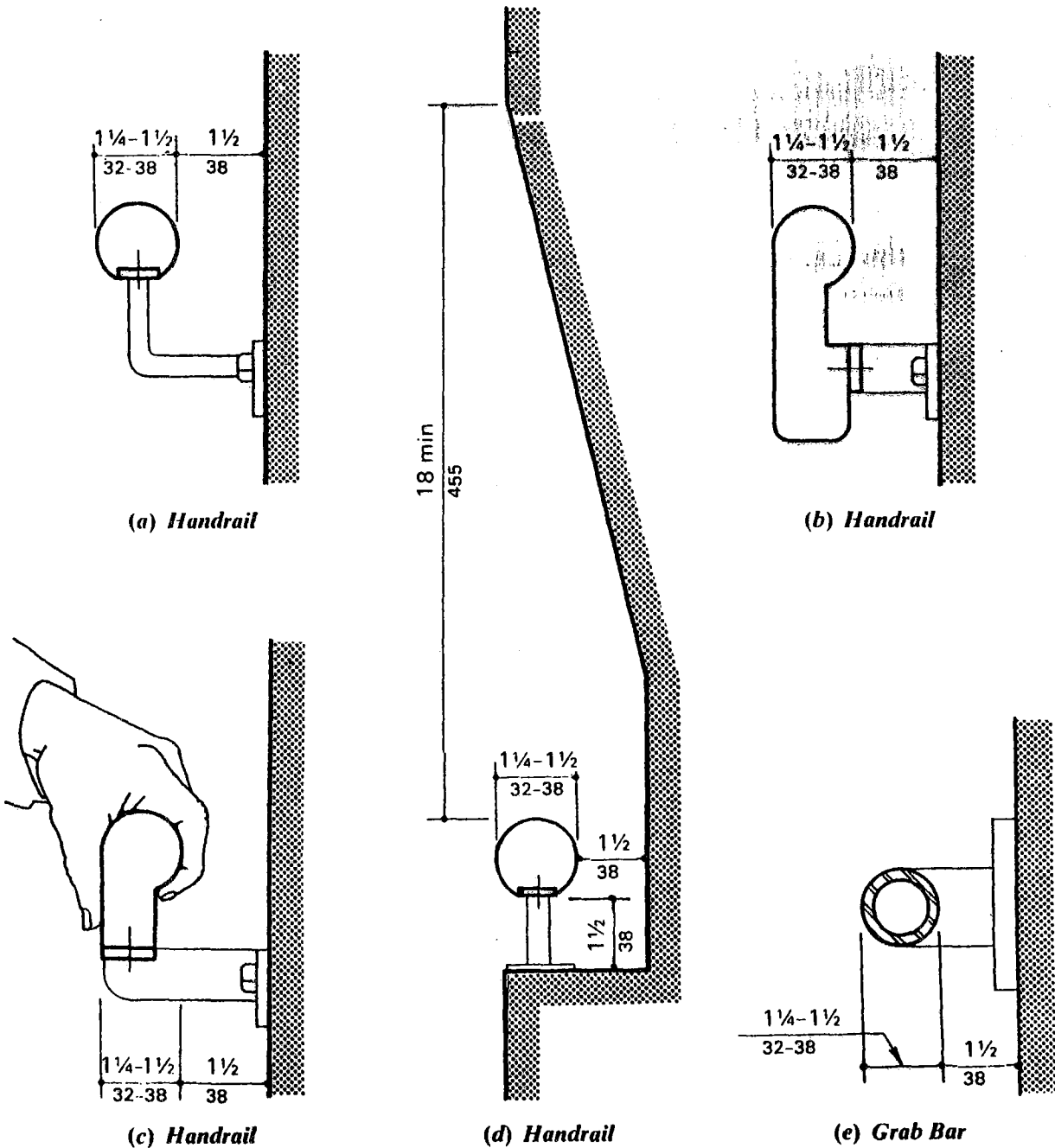


Fig. 39
Size and Spacing of Handrails and Grab Bars