## GENERAL ACCESSIBILITY NOTES

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

(2) If handralls 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 handrall shall continue to slope for a distance of the width of one tread from the bottom

riser's 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 handrall 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.

4.10.1 General. Accessible elevators shall be on an accessible route and shall comply with 4.10 and with the ASME ANI-1930, 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.
4.102 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

4.103 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 (1000 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) Yisual 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

4.105 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 (525 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 holstway 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 135 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 ARI.-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:

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 care with in-car lanterne, 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.

4.108 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.

4.10.3 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 still and the edge of any hoistway landing shall be no greater

## 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).

(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 AIT.1-1930. 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 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 AFLI-1930.

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 430 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 (135 mm). It is system is located in a closed compartment the compartment door hardware shall conform to 421, Controls and Operating Mechanisms. The emergency intercommunication system shall not require voice communication.

# 4.5 Ground and Floor Surfaces

4.5.1.4 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 45.

452 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.

453. 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 452.

45.4 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 (seeFig. 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)).

4.8.1° 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. 4.82° 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 (160 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 4.16(3%a) if space limitations

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

4.8.4° Landinge. Rampe 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 600 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.

4.85° Handralls. If a ramp run has a rise greater than 6 in (150 mm) or a horizontal projection greater than 12 in (1830 mm), then it shall have handralls on both sides. Handralls are not required on curb ramps or adjacent to seating in assembly areas. Handrails shall comply with 426 and shall have the following features: (1) Handralls shall be provided along both sides of ramp segments. The inside handrall 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

(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 handrall 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 4.8.1 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

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

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 4.32(1)). They shall also be connected by an accessible route to all accessible spaces or elements within the building or facility.

4.142 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/ail: Minimum Number. Drinking fountains or water coolers required to be accessible by 4.1 shall comply with 4.15.

4.152°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 paralle to the front of the unit. The spout shall provide a flow of water at least 4 in (1000 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 (15 mm) of the front edge of the fountain.

4.15.4 Controls. Controls shall comply with 427.4. Unit controls shall be front mounted or side mounted near the front edge.

(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 21 in (685 mm) high, 30 in (160 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

(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.

4.16.1 General. Accessible water closets shall comply with 4.16.

4.162 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-handec

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

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

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

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.

stall and any obstruction may be reduced to a minimum of 42 in (1065 mm) (Fig. 30).

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. 32(a)) shall have wall-mounted water closets. If the depth of a standard toilet stall is increased at least 3 in (15 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 422.4.

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

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.

4.18.1 General. Accessible urinals shall comply with 4.18.

4.18 Urinals

4.182 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.

4.183 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 42.4. Urinal shields that do not extend beyond the front edge of the urinal rim may be provided with 29 in (135 mm) clearance

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.

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

4.192 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 (1 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 (160 mm by 1220 mm) complying with 42.4 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

4.195 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.

4.196° 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).

## 4.22 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.

4222 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.

422.3° Clear Floor Space. The accessible fixtures and controls required in 422.4, 422.5, 422.6, and 422.7 shall be on an accessible route. An unobstructed turning space complying wit 423 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.

422.4 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 4.173, 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.

4225 Urinals. If urinals are provided, then at least one shall comply with 4.18.

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

## 427 Controls and Operating Mechanisms.

427.1 General. Controls and operating mechanisms required to be accessible by 4.1 shall comply with 427.

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

4212 Clear Floor Space. Clear floor space complying with 42.4 that allows a forward or a parallel approach by a person using a wheelchair shall be provided at controls, dispensers,

4213\* 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 425 and 426. Electrical and communications system receptacles on walls shall be mounted no less than 15 in (380 mm) above the floor.

427.4 Operation. Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to

activate controls shall be no greater than 5 lbf (222 N).

EXCEPTION: These requirements do not apply where the use of special equipment dictates otherwise or where electrical and communications systems receptacles are not normally

428.1 General. Alarm systems required to be accessible by 4.1 shall comply with 428. 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.

4282° Audible Alarms. If provided, audible emergency alarms shall produce a sound that exceeds the prevailing equivalent sound level in the room or space by at least 15 dbA or exceeds any maximum sound level with a duration of 60 seconds by 5 dbA, whichever is louder. Sound levels for alarm signals shall not exceed 120 dbA.

4283° 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).

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

(3) The maximum pulse duration shall be two-tenths of one second (02 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 15 candela.

(5) The flash rate shall be a minimum of 1 Hz and a maximum of 3 Hz.

help is on the way, when the message is answered at the point of entry.

(6) The appliance shall be placed 80 in (2030 mm) above the highest floor level within the space or 6 in (152 mm) below the ceiling, whichever is lower.

(7) In general, no place in any room or space required to have a visual signal appliance shall be more than 50 ft (15 m) from the signal (in the horizontal plane). In large rooms and spaces exceeding 100 ft (30 m) across, without obstructions 6 ft (2 m) above the finish floor, such as auditoriums, devices may be placed around the perimeter, spaced a maximum 100 ft (30 m) apart, in lieu of suspending appliances from the ceiling.

(8) No place in common corridors or hallways in which visual alarm signalling appliances are required shall be more than 50 ft (15 m) from the signal.

428.4\* Auxiliary Alarms. Units and sleeping accommodations shall have a visual alarm connected to the building emergency alarm system or shall have a standard IID-voit electrical receptacle into which such an alarm can be connected and a means by which a signal from the building emergency alarm system can trigger such an auxiliary alarm. When visual alarms are in place the signal shall be visible in all areas of the unit or room. Instructions for use of the auxiliary alarm or receptacle shall be provided

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 15 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

(2) Sites. Level, indirect routes or those with running slopes lower than 1:20 can sometimes provide more convenience than direct routes with maximum allowable slopes or with ramps. A4.3.10 Egress. Because people with disabilities may visit, be employed or be a resident in any building, emergency management plans with specific provisions to ensure their safe evacuation also play an essential role in fire safety and life safety.

A43.113 Stairway Width. A 48 in (1220 mm) wide exit stairway is needed to allow assisted evacuation (e.g., carrying a person in a wheelchair) without encroaching on the exit path for

A4.3.11.4 Two-way Communication. It is essential that emergency communication not be dependent on voice communications alone because the safety of people with hearing or speech

impairments could be jeopardized. The visible signal requirement could be satisfied with something as simple as a button in the area of rescue assistance that lights, indicating that

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

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

A4.13.10 Door Closers. Closers with delayed action features give a person more time to maneuver through doorways. They are particularly useful on frequently used interior doors such A4.13.11 Door Opening Force. Although most people with disabilities can exert at least 5 lbf (22.2N), both pushing and pulling from a stationary position, a few people with severe disabilities cannot exert 3 lbf (13.13N). Although some people cannot manage the allowable forces in this guideline and many others have difficulty, door closers must have certain

minimum closing forces to close doors satisfactorily. Forces for pushing or pulling doors open are measured with a push-pull scale under the following conditions: 1) Hinged doors: Force applied perpendicular to the door at the door opener or 30 in (160 mm) from the hinged side, whichever is farther from the hinge.

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

(3) Application of force: Apply force gradually so that the applied force does not exceed the resistance of the door. In high-rise buildings, air-pressure differentials may require a modification of this specification in order to meet the functional intent. A4.13.12 Automatic Doors and Power-Assisted Doors. Sliding automatic doors do not need guard rails and are more convenient for wheelchair users and visually impaired people to use. If slowly opening automatic doors can be reactivated before their closing cycle is completed, they will be more convenient in busy doorways.

Area of Refuge System requirements are specified by three organizations

IBC (International Building Codes)

NFPA (National Fire Alarm and Signaling Code)

ADAAG (Americans with Disabilities Act Accessibilities Guidelines.

The 2009 International Building Code (IBC) now requires a two-way communication system on ALL NEW CONSTRUCTION for all Areas of Refuge regardless if they have a sprinkler system or not. Also significant remodels or change of use of a building may require Areas of Refuge.

10016.3 Two-Way Communication. Areas of Refuge shall be provided with a two-way communication system complying with Sections 1001.8.1 and 1001.8.2.

1001.8 Two-Way Communication. A two-way communication system shall be provided at the elevator landing on each accessible floor that is one or more stories above or below the story of exit discharge complying with Sections 1007.8.1 and 1007.8.2.

D Two-way communication systems are not required at the elevator landing where the two-way communication system is provided within areas of refuge in accordance with section 1001.63 (Stairwell Areas of Refuges)

(Rath Base Stations) approved by the fire department. Where the central control point is not constantly attended, a two-way communication system shall have a timed automatic telephone dial-out capability to a monitoring location or 911. The two-way communication system shall include both audible and visible signals. Note: Most local Authorities Having Jurisdiction (AHJ) require two way off-site person to person voice communications.

1007.82 Directions. Directions for the use of the two-way communication system, instructions for summoning assistance via the two-way communication system and written identification of the location shall be posted adjacent to the two-way communication system.

1001.8.1 System Requirements. Two-way communications shall provide communication between each required location (Rath Call Boxes) and the fire command center or central control

1007.9 Signage. Signage indicating special accessibility provisions shall be provided as shown: 1) Each door providing access to an area of refuge from the adjacent floor shall be identified by a sign stating: AREA OF REFUGE (Part 9044)

Signage shall comply with the ICC AIT.I requirements for visual characters and include the International Symbol of Accessibility. Where exit sign illumination is required by Section 1012 the signs shall be illuminated. (Part 9050) Additionally, tactile signage complying with ICC AIT.I shall be located at each door to an Area of Refuge. (Part 9044) 1007.10 Directional Signage. Direction signage indicating the location of the other means of egress and which are accessible means of egress shall be provided at the following:
(Part \* 10471L-Left or \*1047R-Right)

L At exits serving a required accessible space but not providing an approved accessible means of egress

1007.11 Instructions. In areas of refuge and exterior areas for assisted rescue, instructions on the use of the area under emergency conditions shall be posted. The instructions shall

2) Information on planned availability of assistance in the use of stairs or supervised operation of elevators and how to summon such assistance. 3) Directions for use of the two-way communications system where provided.

Each Area of Refuge must be provided with a two-way communication system between the Area of Refuge and a central control point (Rath Base Stations).

Each Area of Refuge must be identified by a sign stating "AREA OF REFUGE" and displaying the international symbol of accessibility.

Signs must be installed at all exits not providing accessible means of egress and where otherwise necessary to clearly indicate the direction of the Area of Refuge.

24.5.3.2 The Area of Refuge (rescue assistance) emergency communications system shall be comprised of remotely located Area of Refuge stations and a central control point. (Rath

of the location shall be posted adjacent to the two-way communications system.

245.3.3 The remote Area of Refuge stations and the central control point (Rath Base Stations) shall communicate with each other. 24.5.3.4 If the central control point is not constantly attended, it shall have a timed automatic communications capability to connect with a constantly attended monitoring location

acceptable to the Authority Having Jurisdiction where responsible personnel can initiate the appropriate response. 24.5.3.5 The physical location of the central control point (Rath Base Stations) shall be as designated by the building code in force or the Authority Having Jurisdiction.

24.53.6 The Area of Refuge station shall provide for hands-free, two-way communication, provide an audible and visible signal to indicate communication has occurred and indicate

2453.7 Instructions for the use of the two-way communications system and for summoning assistance via the two-way communications system and written identification, including Braille,

The Area of Refuge must be equipped with a two-way communication system with both visual and audible signals provided in each Area of Refuge assistance. The Area of Refuge must have adequate signage that directs the occupants to the area. The ADA guidelines apply to new buildings and significant remodels for public accommodations and commercial facilities with stories above or below the main ground floor.

ADAAG 35 Defines the Area of Rescue Assistance as an area which has direct access to an exit, where people who are unable to use stairs may remain temporarily in safety to await further instructions or assistance during emergency evacuation

Audible signals can include voice output or recorded messages. A button that lights to indicate that help is on its way is an acceptable visual signal.

505.4 Height. Top of gripping surfaces of handrails shall be 34 inches (865 mm) minimum and 38 inches (965 mm) maximum vertically above stair nosings, ramp surfaces and walking surfaces. Handrails shall be at a consistent height above stair nosings, ramp surfaces and walking surfaces.

# 708 Two-Way Communication Systems

108.1 General. Accessible two-way communication systems shall comply with Section 708. 7082 Audible and Visual Indicators. The system shall provide both visual and audible signals.

1083 Handsets. Handset cords, if provided, shall be 29 inches (135 mm) minimum in length.

measured horizontally relative to the front face of the drinking fountain.

602.1 General. Accessible drinking fountains shall comply with Sections 602 and 307. 6022 Clear Floor Space. A clear floor space complying with Section 305, positioned for a forward approach to the drinking fountain, shall be provided. Knee and toe space complying with Section 306 shall be provided. The clear floor space shall be centered on the drinking fountain.

1. Drinking fountains for standing persons 2. Drinking fountains primarily for children's use shall be permitted where the spout is 30 inches (160 mm) maximum above the floor, and a parallel approach complying with Section 305, centered on the drinking fountain, is provided. 3. In existing buildings, existing drinking fountains providing a parallel approach complying with Section 305, centered on the drinking fountain, shall be permitted.

4. Where specifically permitted by the administrative authority, a parallel approach complying with Section 305, centered on the drinking fountain, shall be permitted for drinking

fountains that replace existing drinking fountains with a parallel approach. 602.3 Operable Parts. Operable parts shall comply with Section 309. 602.4 Spout Outlet Height. Spout outlets of wheelchair accessible drinking fountains shall be 36 inches (915 mm) maximum above the floor. Spout outlets of drinking fountains for standing persons shall be 38 inches (965 mm) minimum and 43 inches (1090 mm) maximum above the floor.

602.5 Spout Location. The spout shall be located 15 inches (380 mm) minimum from the vertical support and 5 inches (125 mm) maximum from the front edge of the drinking fountain, including bumpers. Where only a parallel approach is provided, the spout shall be located 3½ inches (89 mm) maximum from the front edge of the drinking fountain, including bump Fig. 602.5 Drinking Fountain Spout Location

602.6 Water Flow. The spout shall provide a flow of water 4 inches (102 mm) minimum in height. The angle of the water stream from spouts within 3 inches (76 mm) of the front of the drinking fountain shall be 30 degrees maximum, and from spouts between 3 inches (16 mm) and 5 inches (125 mm) from the front of the drinking fountain shall be 15 degrees maximum.

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