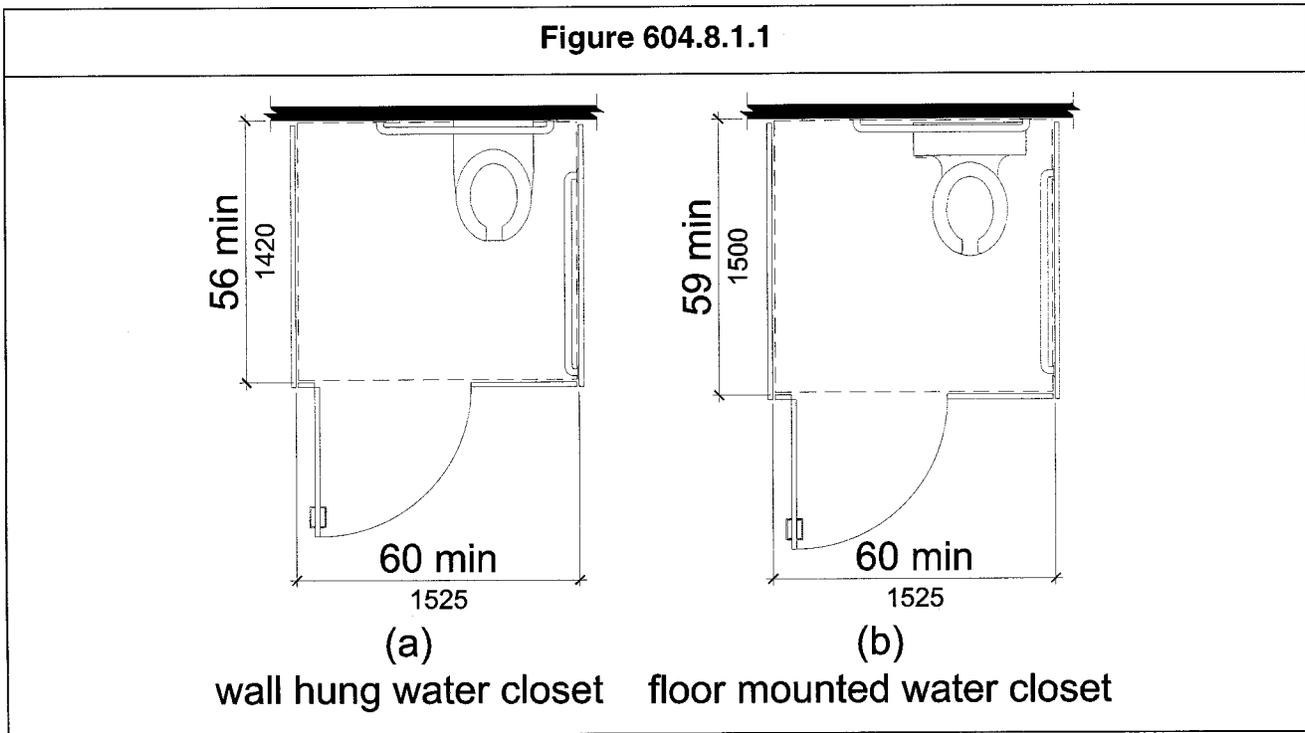


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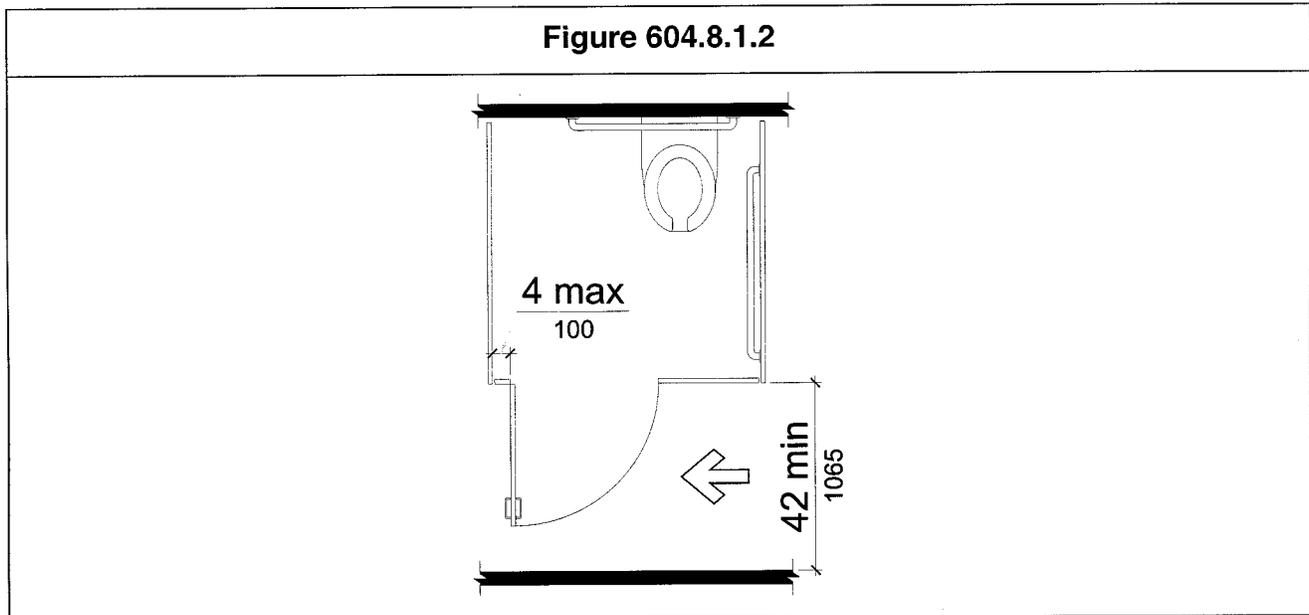
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wall hung water closets and 59 inches (1500 mm) deep minimum for floor mounted water closets measured perpendicular to the rear wall.



604.8.1.2 Doors. Toilet compartment doors, including door hardware, shall comply with 404 except that if the approach is to the latch side of the compartment door, clearance between the door side of the stall and any obstruction shall be a minimum of 42 inches (1065 mm). The door shall be hinged 4 inches (100 mm) maximum from the side wall or partition farthest from the water closet. The door shall be self-closing. A door pull complying with 404.2.7 shall be placed

on both sides of the door near the latch. Compartment doors shall not swing into the minimum required compartment area.



604.8.1.3 Approach. Compartments shall be arranged for left-hand or right-hand approach.

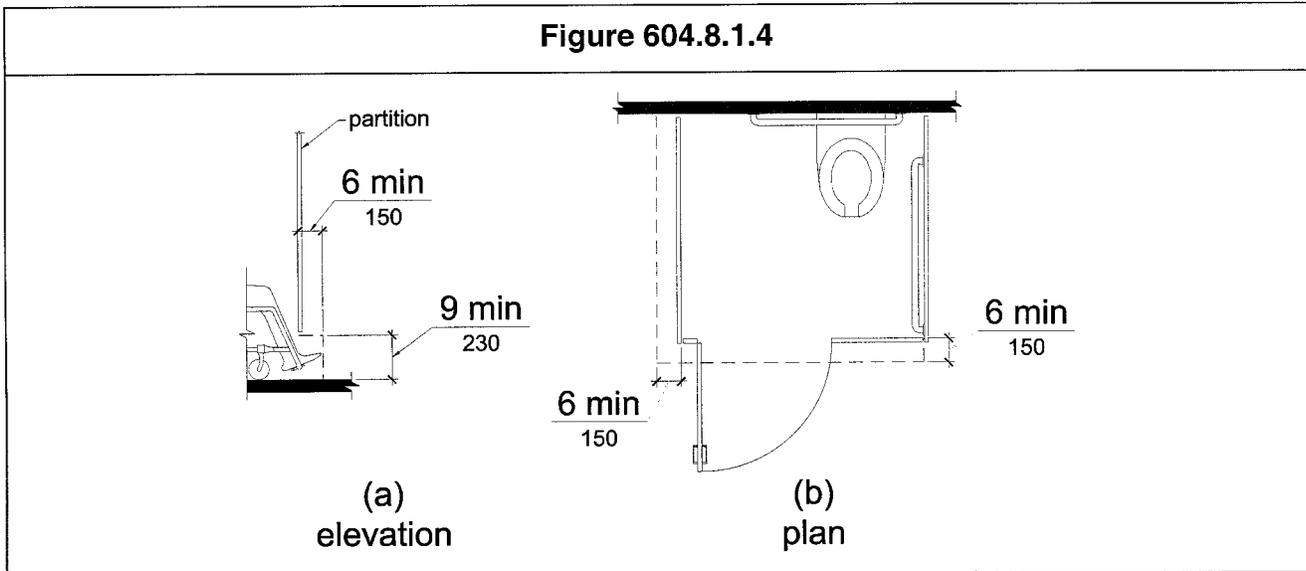
604.8.1.4 Toe Clearance. In *wheelchair accessible* compartments, the front partition and at least one side partition shall provide a toe clearance of 9 inches (230 mm) minimum above the floor and 6 inches (150 mm) deep minimum beyond the compartment-side face of the partition, exclusive of partition support members. Toe clearance at the front partition is not required in a compartment greater than 62 inches (1575 mm) deep with a wall-hung water closet or 65 inches

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(1650 mm) deep with a floor-mounted water closet. Toe clearance at the side partition is not required in a compartment greater than 66 inches (1675 mm) wide.

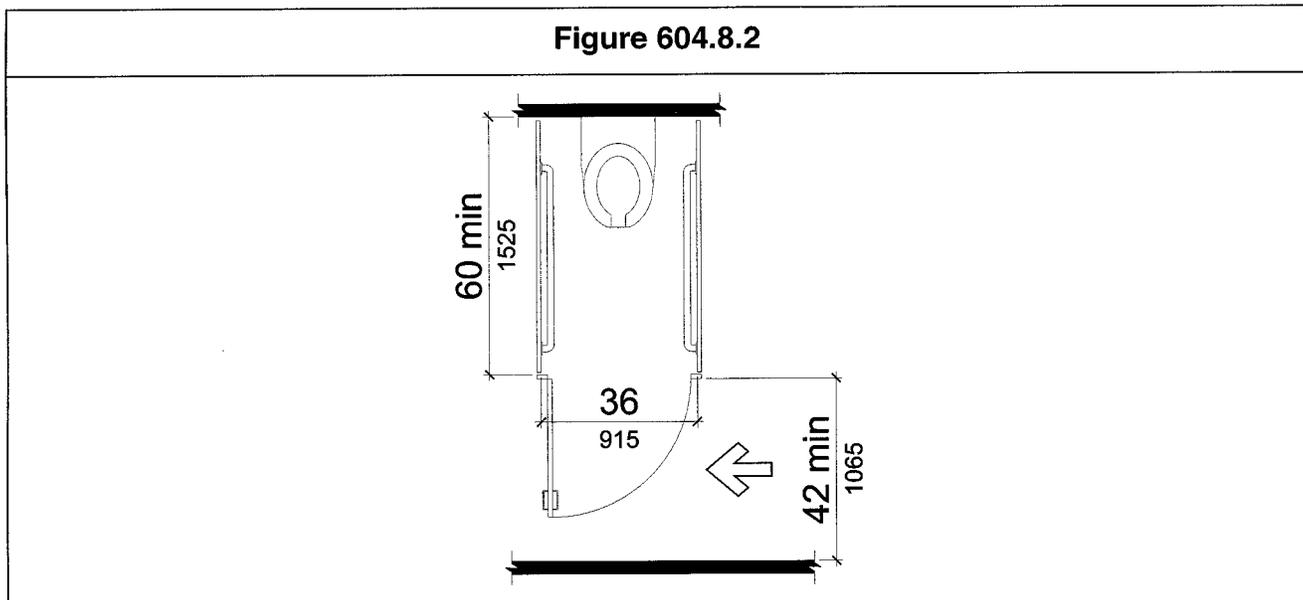
Figure 604.8.1.4



604.8.1.5 Grab Bars. Grab bars shall comply with 609. A side-wall grab bar complying with 604.5.1 located on the wall closest to the water closet and a rear-wall grab bar complying with 604.5.2 shall be provided.

604.8.2 Non-Wheelchair Accessible Compartments.

Figure 604.8.2



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604.8.2.1 Size. Non-wheelchair accessible compartments shall be 60 inches (1525 mm) deep minimum and 36 inches (915 mm) wide.

604.8.2.2 Doors. Toilet compartment doors, including door hardware, shall comply with 404 except that if the approach is to the latch side of the compartment door, clearance between the door side of the stall and any obstruction shall be a minimum of 42 inches (1065 mm). The door shall be self-closing. A door pull complying with 404.2.7 shall be placed on both sides of the door near the latch. Compartment doors shall not swing into the minimum required compartment area.

604.8.2.3 Grab Bars. Grab bars shall comply with 609. A side-wall grab bar complying with 604.5.1 shall be provided on both sides of the compartment.

604.8.3 Coat Hooks and Shelves. Accessible coat hooks provided within toilet compartments shall be located within one of the reach ranges specified in 308. When provided, a fold-down shelf shall be located 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the floor.

604.9 Water Closets and Toilet Compartments for Children's Use. Accessible water closets and toilet compartments for children's use shall comply with 604.9.

Advisory 604.9

The requirements in 604.9 are to be followed where the exception for children's water closets in 604.1 is used. The following table provides additional guidance in applying the specifications for water closets for children according to the age group served and reflects the differences in the size, stature, and reach ranges of children ages 3 through 12. The specifications chosen should correspond to the age of the primary user group. The specifications of one age group should be applied consistently in the installation of a water closet and related elements.

Specifications for Water Closets Serving Children Ages 3 through 12

	Ages 3 and 4	Ages 5 through 8	Ages 9 through 12
Water Closet Centerline	12 inches (305 mm)	12 to 15 inches (305 to 380 mm)	15 to 18 inches (380 to 455 mm)
Toilet Seat Height	11 to 12 inches (280 to 305 mm)	12 to 15 inches (305 to 380 mm)	15 to 17 inches (380 to 430 mm)
Grab Bar Height	18 to 20 inches (455 to 510 mm)	20 to 25 inches (510 to 635 mm)	25 to 27 inches (635 to 685 mm)
Dispenser Height	14 inches (355 mm)	14 to 17 inches (355 to 430 mm)	17 to 19 inches (430 to 485 mm)

604.9.1 Location. The water closet shall be located with a wall or partition to the rear and to one side. The centerline of the water closet shall be 12 inches (305 mm) minimum to 18 inches (455 mm) maximum from the side wall or partition, except that the water closet shall be centered in the non-wheelchair *accessible* toilet compartment specified in 604.8.2.

604.9.2 Clear Floor Space. Clearance around a water closet shall comply with 604.3.

604.9.3 Height. The height of water closets shall be 11 inches (280 mm) minimum to 17 inches (430 mm) maximum measured to the top of the toilet seat. Seats shall not be sprung to return to a lifted position.

604.9.4 Grab Bars. Grab bars for water closets shall comply with 604.5.

EXCEPTION: If *administrative authorities* require flush controls for flush valves to be located in a position that conflicts with the location of the rear grab bar, then that grab bar may be split or shifted to the open side of the toilet area.

604.9.5 Flush Controls. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309.2 and 309.4 and shall be installed 36 inches (915 mm) maximum above the floor.

604.9.6 Dispensers. Toilet paper dispensers shall comply with 309.4 and shall be 7 inches (180 mm) minimum and 9 inches (230 mm) maximum in front of the water closet. The outlet of the dispenser shall be 14 inches (355 mm) minimum and 19 inches (485 mm) maximum above the floor. There shall be a clearance of 1 1/2 inches (38 mm) minimum below the grab bar. Dispensers shall not be of a type that control delivery or that do not allow continuous paper flow.

604.9.7 Toilet Compartments. *Accessible* toilet compartments shall meet the requirements of 604.9.7. Compartments containing more than one plumbing fixture shall comply with 603.

604.9.7.1 Wheelchair Accessible Compartments.

604.9.7.1.1 Size. *Wheelchair accessible* compartments shall be 60 inches (1525 mm) wide minimum measured perpendicular to the side wall, and 59 inches (1500 mm) deep minimum measured perpendicular to the rear wall.

604.9.7.1.2 Doors. Toilet compartment doors, including door hardware, shall comply with 404 except that if the approach is to the latch side of the compartment door, clearance between the door side of the stall and any obstruction shall be a minimum of 42 inches (1065 mm). The door shall be hinged 4 inches (100 mm) maximum from the side wall or partition farthest from the water closet. The door shall be self-closing. A door pull complying with 404.2.7 shall be placed on both sides of the door near the latch. Compartment doors shall not swing into the minimum required compartment area.

604.9.7.1.3 Approach. Compartments shall be arranged for left-hand, or for right-hand approach.

604.9.7.1.4 Toe Clearance. In *wheelchair accessible* compartments, the front partition and at least one side partition shall provide a toe clearance of 12 inches (305 mm) minimum above the floor and 6 inches (150 mm) deep minimum beyond the compartment-side face of the partition, exclusive of partition support members.

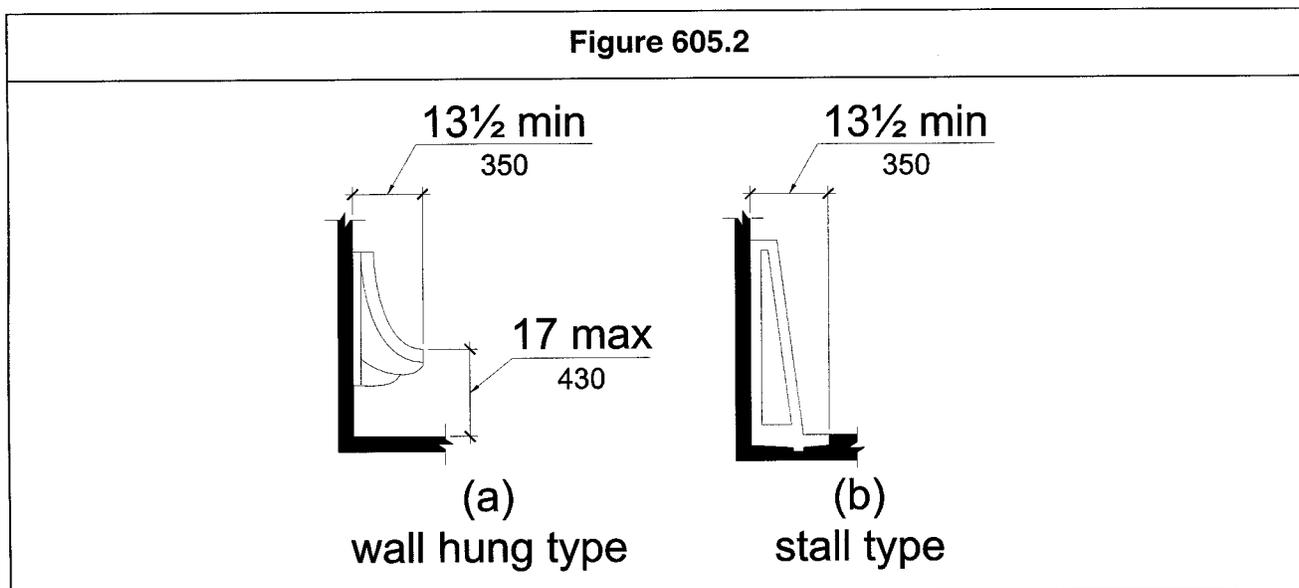
604.9.7.1.5 Grab Bars. Grab bars shall comply with 609. A side-wall grab bar complying with 604.5.1 located on the wall closest to the water closet and a rear-wall grab bar complying with 604.5.2 shall be provided.

604.9.7.2 Non-Wheelchair Accessible Compartments. Non-wheelchair *accessible* compartments shall comply with 604.8.2.

605 Urinals

605.1 General. Urinals required to be *accessible* shall comply with 605.

605.2 Height and Depth. Urinals shall be the wall-hung type with the rim 17 inches (430 mm) maximum above the floor or ground or the stall-type. Urinals shall provide a minimum depth of 13 1/2 inches (345 mm) measured from the outer face of the urinal rim to the back of the fixture.

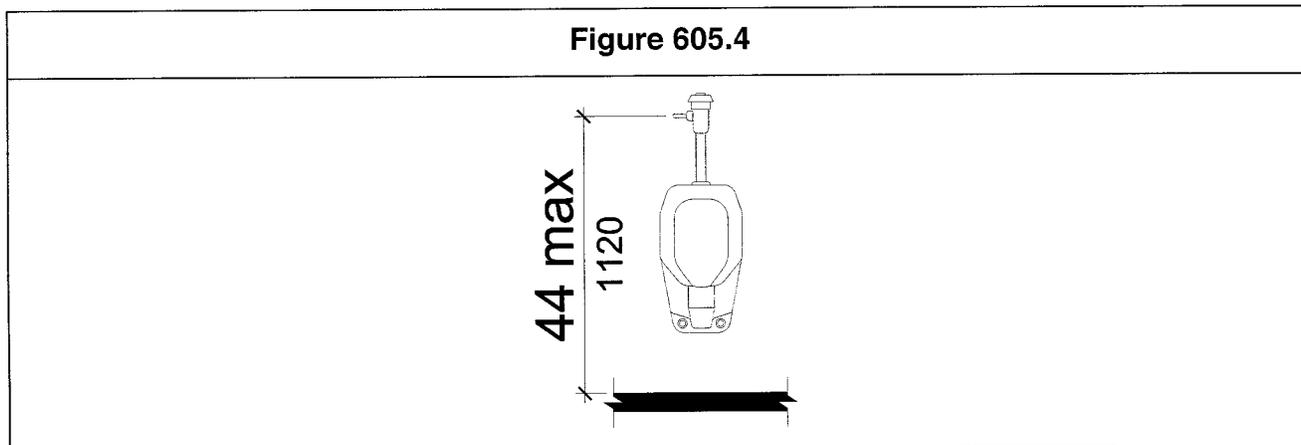


605.3 Clear Floor Space. A clear floor or ground *space* complying with 305 positioned for forward approach shall be provided. This clear *space* shall adjoin or overlap an *accessible route*.

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605.4 Flush Controls. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309.4 and shall be 44 inches (1120 mm) maximum above the floor or ground.

**606 Lavatories and Sinks**

606.1 General. Sinks, lavatory fixtures, vanities and lavatories required to be *accessible* shall comply with 606.

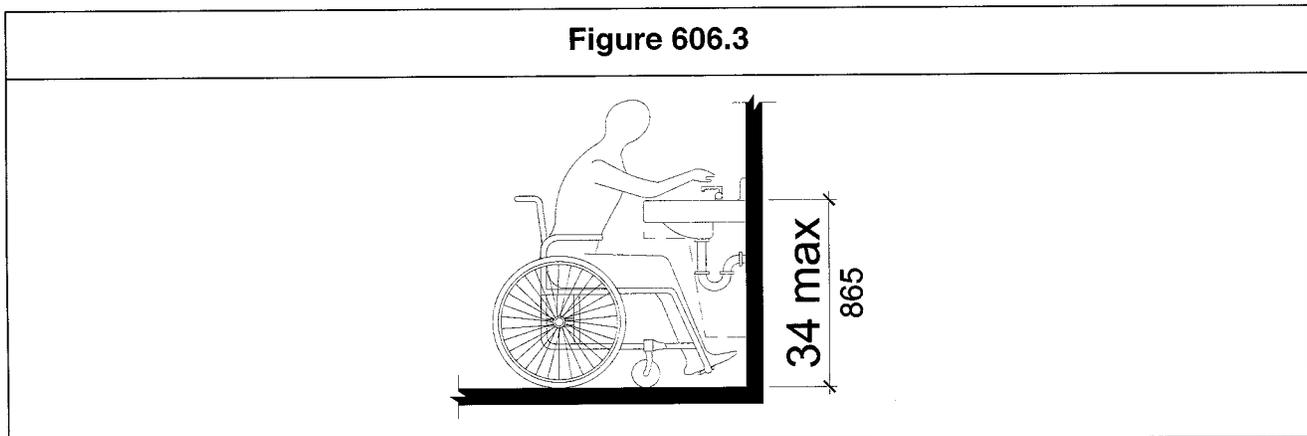
Advisory 606.1

If soap and towel dispensers are provided, they must be located within the reach ranges specified in 308 and should be usable by a person at the *accessible* lavatory.

606.2 Clear Floor Space. A clear floor *space* complying with 305, positioned for forward approach, and knee and toe clearance complying with 306 shall be provided.

- EXCEPTIONS:**
1. The dip of the overflow shall not be considered in determining knee and toe clearances.
 2. The requirement for knee and toe clearance shall not apply to a lavatory in a toilet and bathing facility for a single occupant, accessed only through a private office and not for *common use* or *public use*.
 3. The requirement for knee and toe clearance shall not apply to more than one bowl of a multi-bowl sink.
 4. A knee clearance of 24 inches (610 mm) minimum above the floor or ground shall be permitted at lavatories and sinks used primarily by children ages 6 through 12 where the rim or counter surface is 31 inches (760 mm) maximum above the floor or ground.
 5. A parallel approach shall be permitted in lieu of a forward approach to lavatories and sinks used primarily by children ages 5 and younger.

606.3 Height. Lavatories and sinks shall be installed with the front of the higher of the rim or counter surface 34 inches (865 mm) maximum above the finish floor.



EXCEPTION: This requirement shall not apply to a lavatory in a toilet and bathing *facility* for a single occupant, accessed only through a private office and not for *common use* or *public use*.

606.4 Faucets. Faucets shall comply with 309. Hand-operated, self-closing faucets shall remain open for 10 seconds minimum.

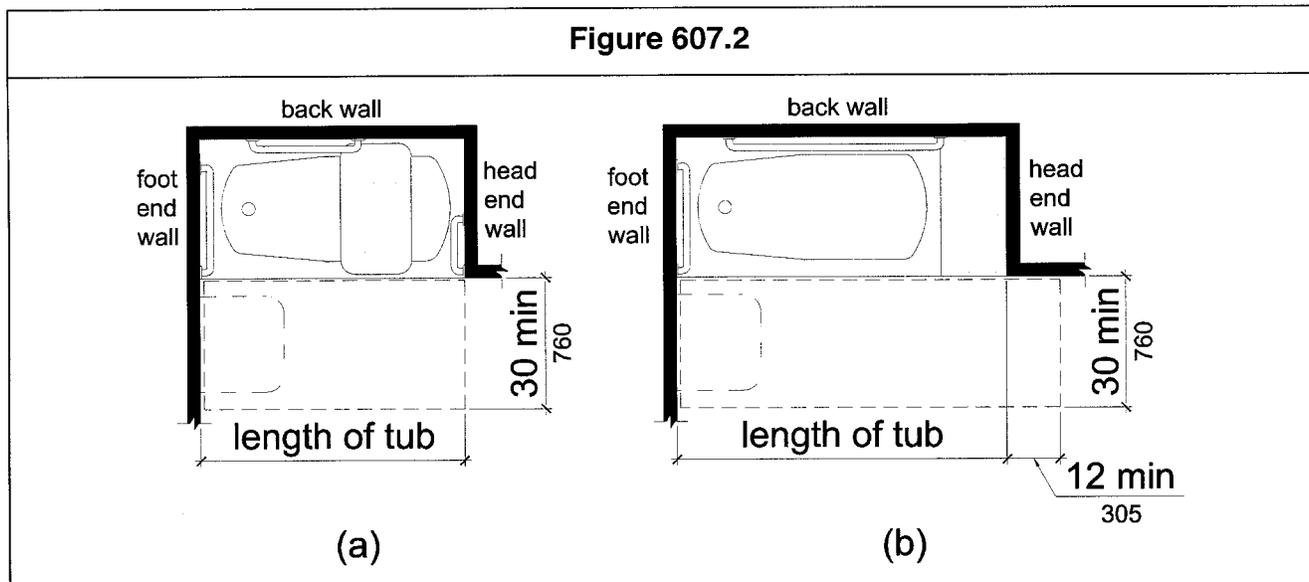
606.5 Exposed Pipes and Surfaces. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.

607 Bathtubs

607.1 General. Bathtubs required to be *accessible* shall comply with 607.

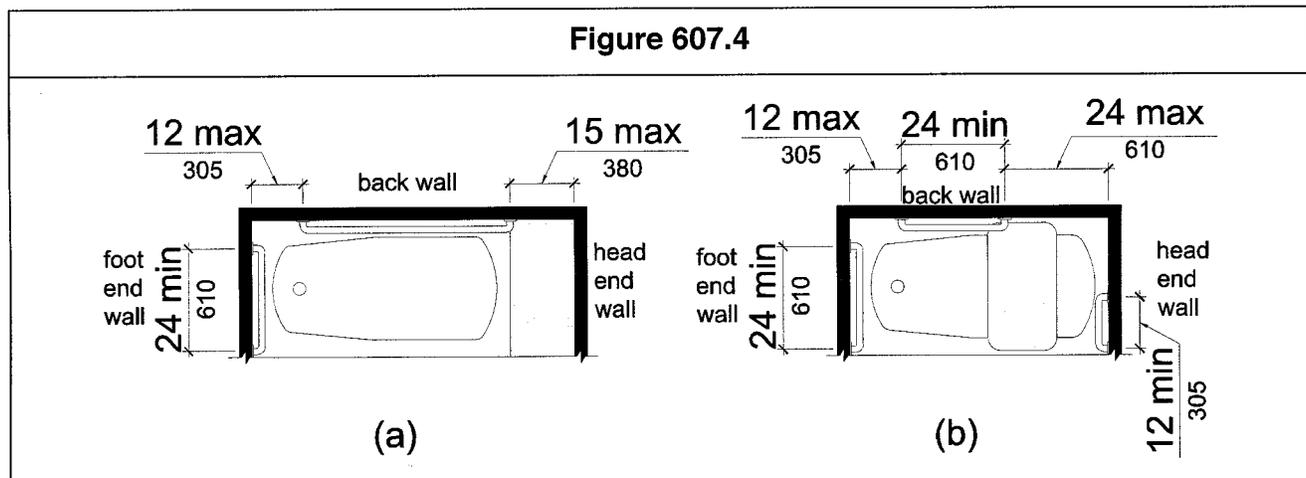
607.2 Clear Floor Space. Clearance in front of bathtubs shall extend the length of the tub and shall be 30 inches (760 mm) wide minimum. A lavatory complying with 606 shall be permitted at the foot end of

the clear floor space. Where a permanent seat is provided at the head end of the tub, the clear floor space shall extend a minimum of 12 inches (305 mm) beyond the seat.



607.3 Seat. A permanent seat at the head end of the tub or a removable in-tub seat shall be provided. Seats shall comply with 610.

607.4 Grab Bars. Grab bars for bathtubs shall comply with 609 and shall be provided in accordance with 607.4.1 and 607.4.2.

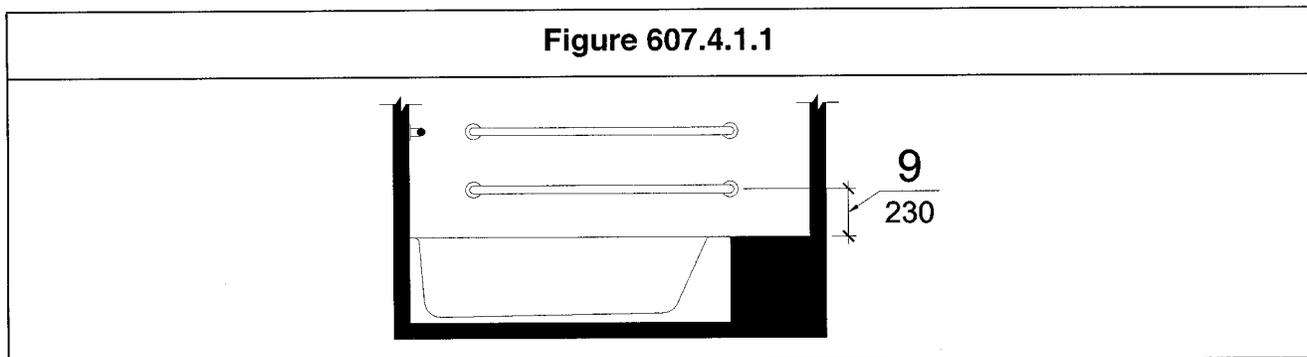


EXCEPTION: Grab bars are not required to be installed in a bathing facility for a single occupant accessed only through a private office and not for common use or public use, provided that

reinforcement has been installed in walls and located so as to permit the installation of such grab bars.

607.4.1 Bathtubs With Permanent Seats. For bathtubs with permanent seats, grab bars shall be provided in accordance with 607.4.1.

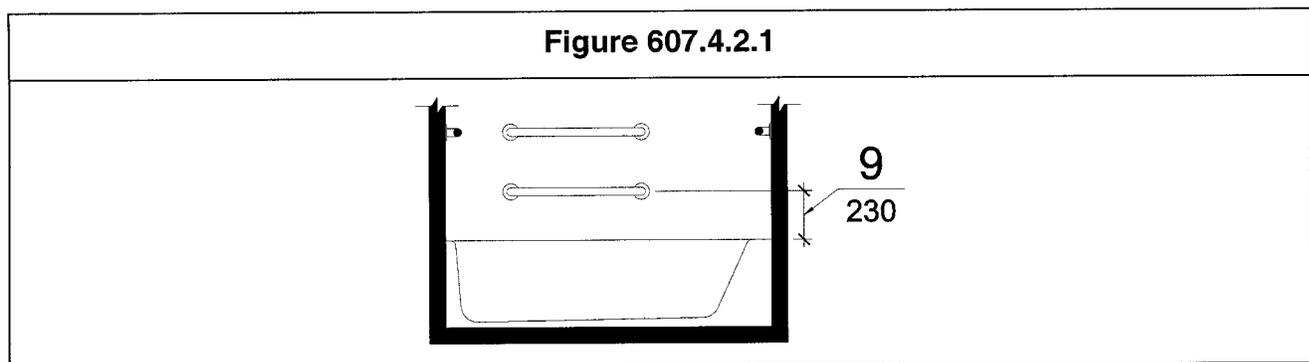
607.4.1.1 Back Wall. Two grab bars shall be installed on the back wall, one located in accordance with 609.3 and the other located 9 inches (230 mm) above the rim of the tub. Each grab bar shall be installed 15 inches (380 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the foot end wall.



607.4.1.2 Foot End Wall. A grab bar 24 inches (610 mm) long minimum shall be installed on the foot end wall at the front edge of the tub.

607.4.2 Bathtubs Without Permanent Seats. For bathtubs without permanent seats, grab bars shall comply with 607.4.

607.4.2.1 Back Wall. Two grab bars shall be installed on the back wall, one located in accordance with 609.3 and other located 9 inches (230 mm) above the rim of the tub. Each grab bar shall be 24 inches (610 mm) long minimum and shall be installed 24 inches (610 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the foot end wall.

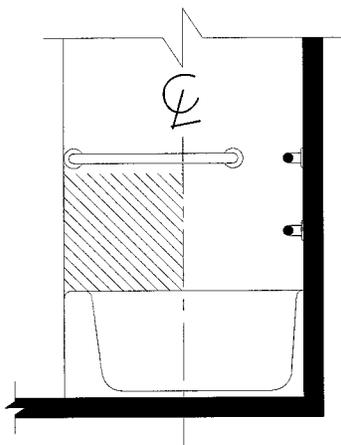


607.4.2.2 Foot End Wall. A grab bar 24 inches (610 mm) long minimum shall be installed on the foot end wall at the front edge of the tub.

607.4.2.3 Head End Wall. A grab bar 12 inches (305 mm) long minimum shall be installed on the head end wall at the front edge of the tub.

607.5 Operable Parts. *Operable parts*, other than drain stoppers, shall be located on an end wall above the tub rim and below the grab bars, and between the front edge of the tub and the mid-point of the width of the tub. *Operable parts* shall comply with 309.4.

Figure 607.5



607.6 Shower Spray Unit and Water. A shower spray unit with a hose 59 inches (1500 mm) long minimum that can be used both as a fixed shower head and as a hand-held shower shall be provided. The shower spray unit shall have a water-on and water-off control. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of grab bars. Bathtub/shower spray units shall deliver water that is thermal shock protected to 120°F maximum.

607.7 Bathtub Enclosures. Enclosures for bathtubs shall not obstruct *operable parts* or transfer from *wheelchairs* onto bathtub seats or into tubs. Enclosures on bathtubs shall not have tracks installed on the rim of the open face of the tub.

608 Shower Compartments

608.1 General. Shower compartments required to be *accessible* shall comply with 608.

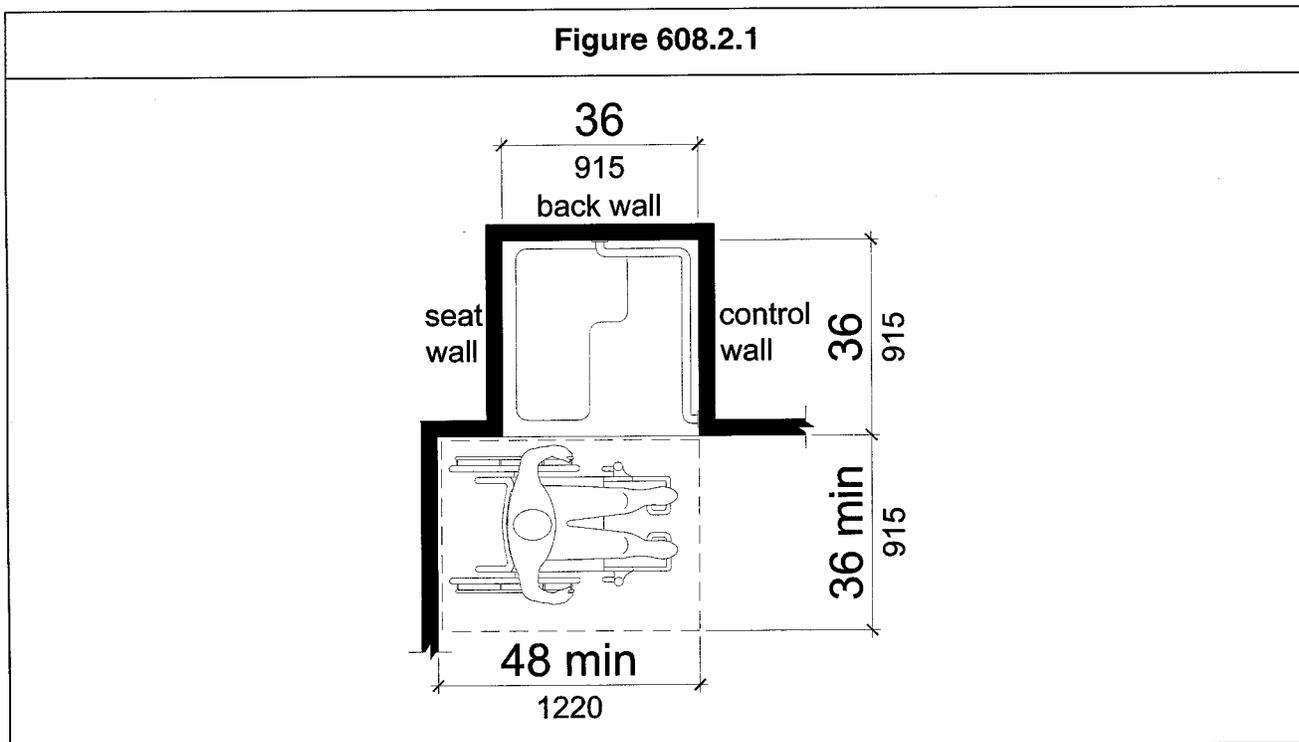
Advisory 608.1

Shower stalls that are 60 inches (1525 mm) wide and have no curb may increase the usability of a bathroom because the shower area provides additional maneuvering *space*.

608.2 Size and Clearances for Shower Compartments.

608.2.1 Transfer Type Shower Compartments. Transfer-type shower compartments shall be 36 inches (915 mm) by 36 inches (915 mm) inside finished dimension measured at the centerpoint of opposing sides and shall have a minimum 36 inch (915 mm) wide entry on the face of the shower compartment. Clear floor *space* of 36 inches (915 mm) wide minimum by 48 inches (1220 mm) long minimum measured from the control wall shall be provided.

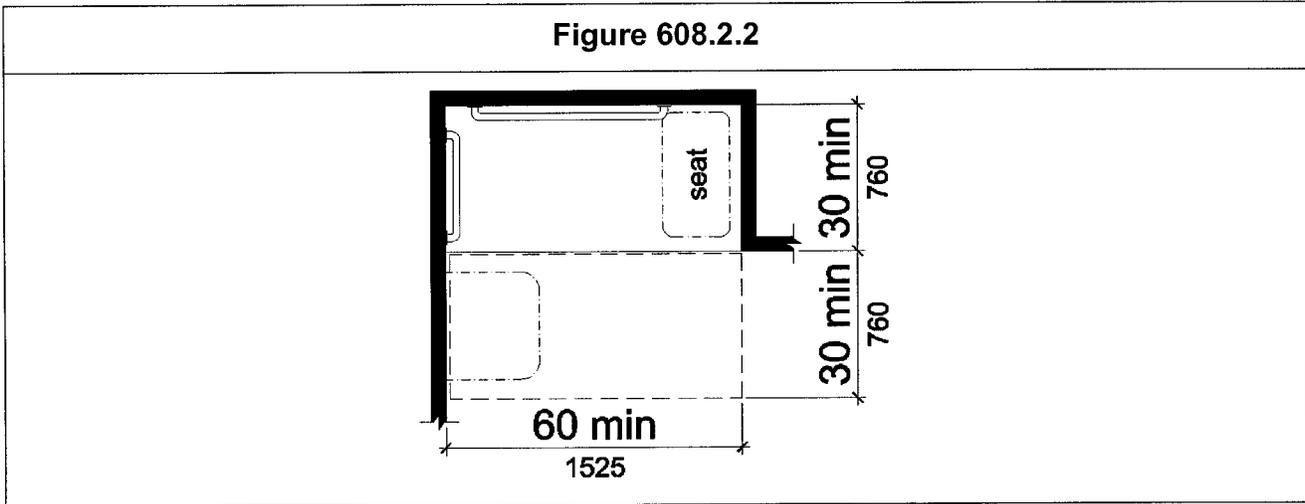
Figure 608.2.1



608.2.2 Standard Roll-In Type Shower Compartment. Standard roll-in type shower compartments shall be 30 inches (760 mm) minimum by 60 inches (1525 mm) minimum clear inside dimension measured at the centerpoint of opposing sides and shall have a minimum 60 inches (1525 mm) wide entry on the face of the shower compartment. A 30 inch (760 mm) wide minimum by 60 inch (1525 mm) long minimum clear floor *space* shall be provided adjacent to the open face of the shower compartment. A lavatory complying with 606 shall be permitted at the end of the clear *space*,

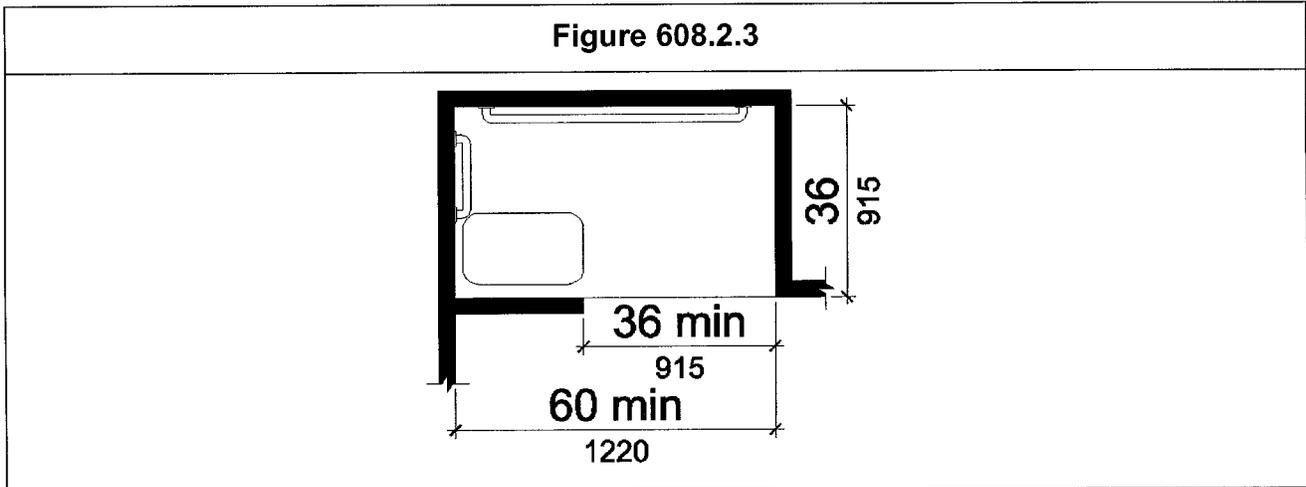
opposite the shower compartment end where the seat is installed and opposite the shower compartment side where shower controls are located.

Figure 608.2.2



608.2.3 Alternate Roll-In Type Shower Compartment. Alternate roll-in shower compartments shall be 36 inches (915 mm) in width and 60 inches (1220 mm) minimum in depth. A 36 inch (915 mm) wide minimum entry shall be provided on one side of the stall.

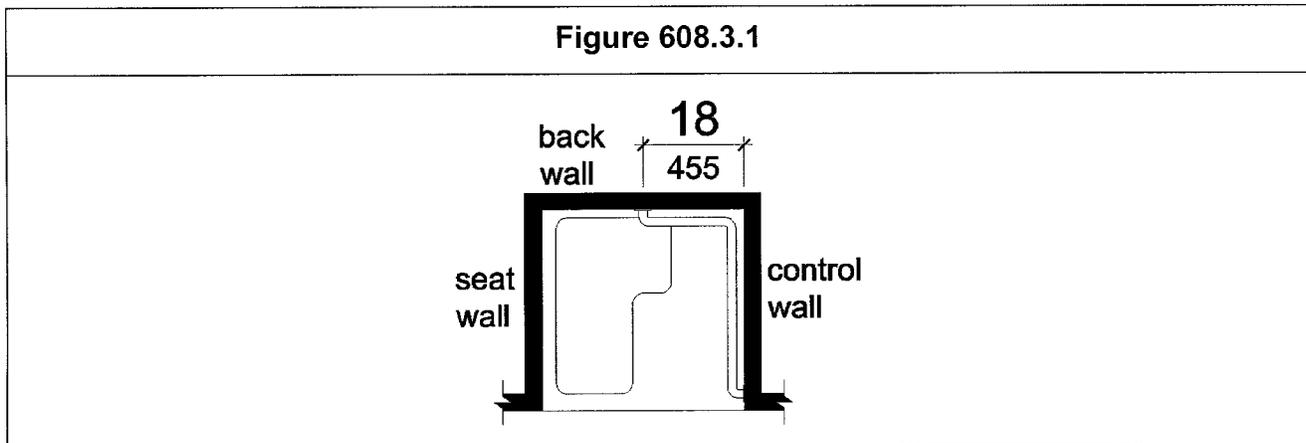
Figure 608.2.3



608.3 Grab Bars. Grab bars shall comply with 609 and shall be provided in accordance with 608.3. Where multiple grab bars are used, they shall be installed at the same height.

EXCEPTION: Grab bars are not required to be installed in a shower *facility* for a single occupant, accessed only through a private office and not for *common use* or *public use* provided that reinforcement has been installed in walls and located so as to permit the installation of such grab bars.

608.3.1 Transfer Type Showers. Grab bars shall be extended across the control wall and back wall to a point 18 inches (455 mm) from the control wall.

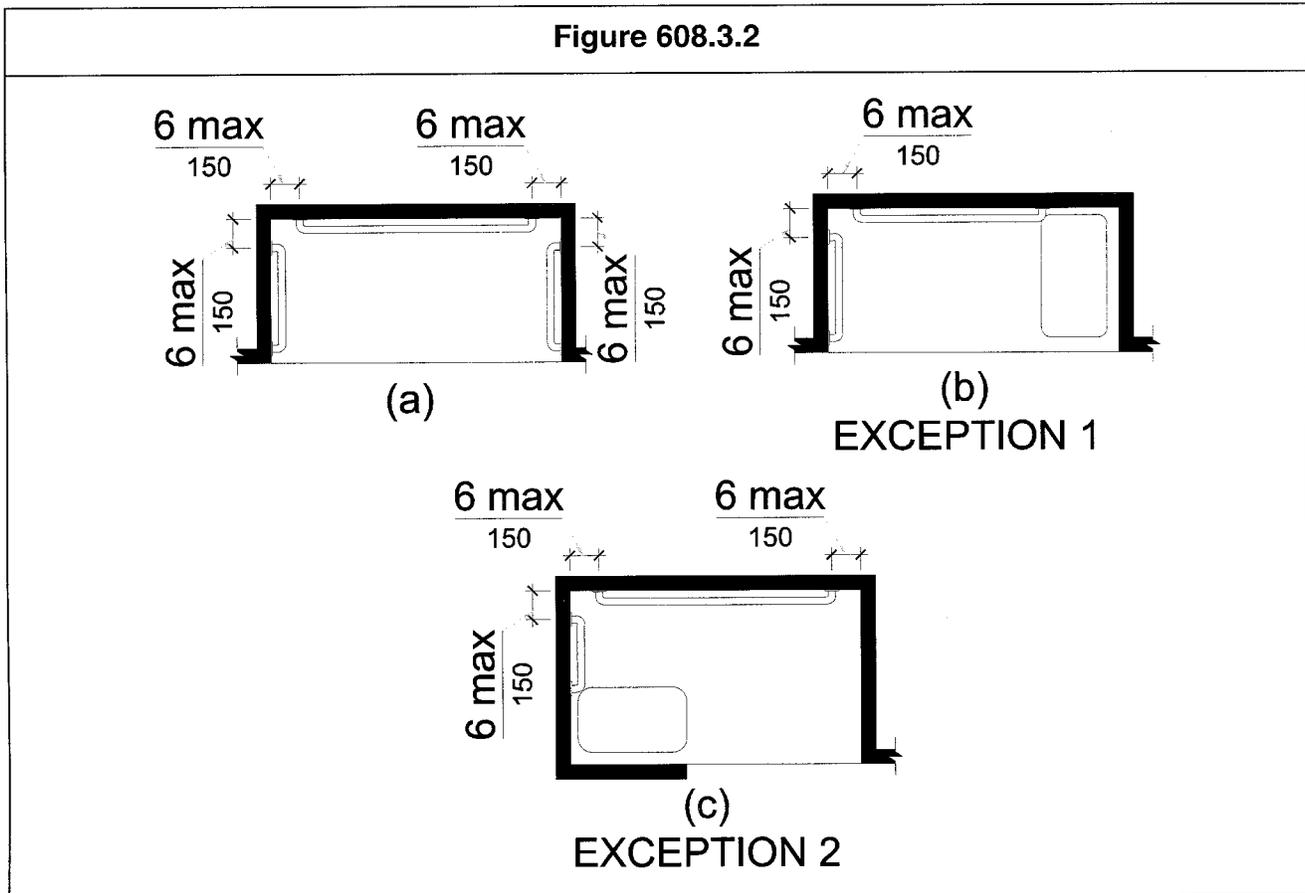


608.3.2 Roll-In Type Showers. Grab bars shall be provided on the three walls of the shower. Grab bars shall be installed 6 inches (150 mm) maximum from the adjacent wall.

EXCEPTIONS: 1. Where a seat is provided in a roll-in type shower, grab bars shall not extend over the seat at the control wall and shall not be located behind the seat.

2. In alternate roll-in type showers, grab bars shall not be required on the side wall opposite the control wall and shall not be located behind the seat.

Figure 608.3.2

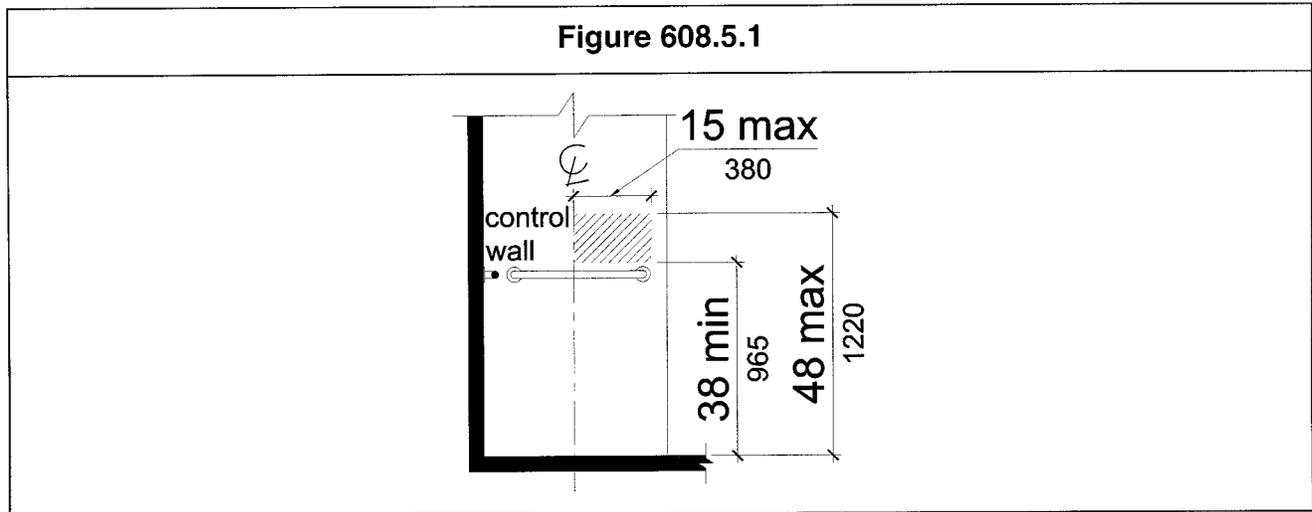


608.4 Seats. An attachable or integral seat shall be provided in transfer-type shower compartments. A folding seat shall be provided in roll-in showers used in *accessible transient lodging* guest rooms. Seats shall comply with 610.

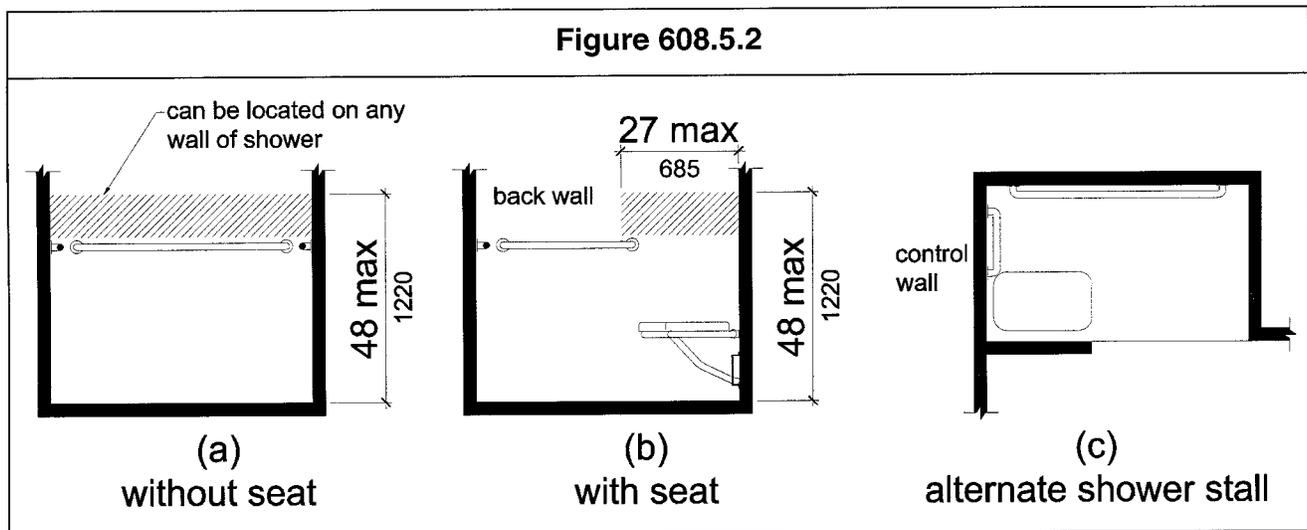
608.5 Operable Parts. Controls and faucets shall comply with 309.4.

608.5.1 Transfer Type Showers. In transfer-type shower compartments controls, faucets, and the shower spray unit shall be installed on the side wall opposite the seat 38 inches (965 mm) minimum

to 48 inches (1220 mm) maximum above the shower floor and shall be located on the control wall 15 inches (380 mm) maximum left or right of the centerline of the seat.



608.5.2 Roll-in Type Shower. Controls in roll-in type shower compartments shall be located above the grab bar but no higher than 48 inches (1220 mm) above the shower floor. In roll-in type shower compartments with seats, the controls, faucets, and the shower spray unit shall be installed on the wall adjacent to the seat wall and shall be located 27 inches (685 mm) maximum from the seat wall. In alternate roll-in type shower compartments, the shower unit and controls shall be installed on the end wall furthest from the compartment entry.



Advisory 608.5.2

In roll-in showers without seats, the shower head and *operable parts* can be located on any of the three walls of the shower without adversely affecting accessibility.

608.6 Shower Spray Unit and Water. A shower spray unit with a hose 59 inches (1500 mm) long minimum that can be used both as a fixed shower head and as a hand-held shower shall be provided. The shower spray unit shall have a water-on and water-off control. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of grab bars. Shower spray units shall deliver water that is thermal shock protected to 120°F maximum.

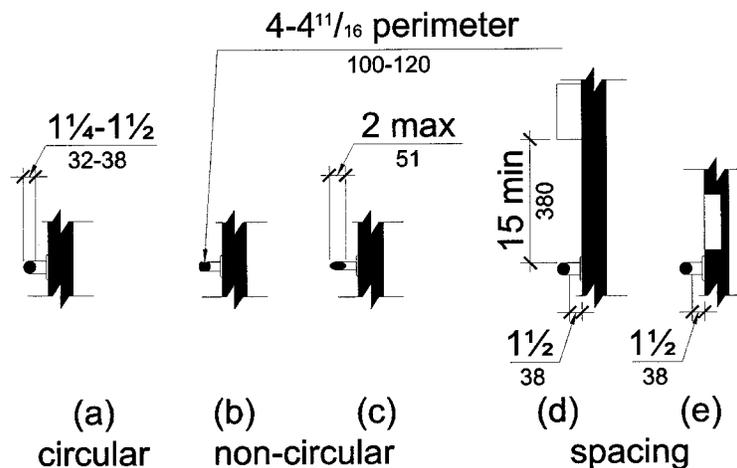
608.7 Curbs. Thresholds in shower compartments shall be 1/2 inch (13 mm) high maximum in accordance with 303.

608.8 Shower Enclosures. Enclosures for shower compartments shall not obstruct *operable parts* or obstruct transfer from *wheelchairs* onto shower seats.

609 Grab Bars

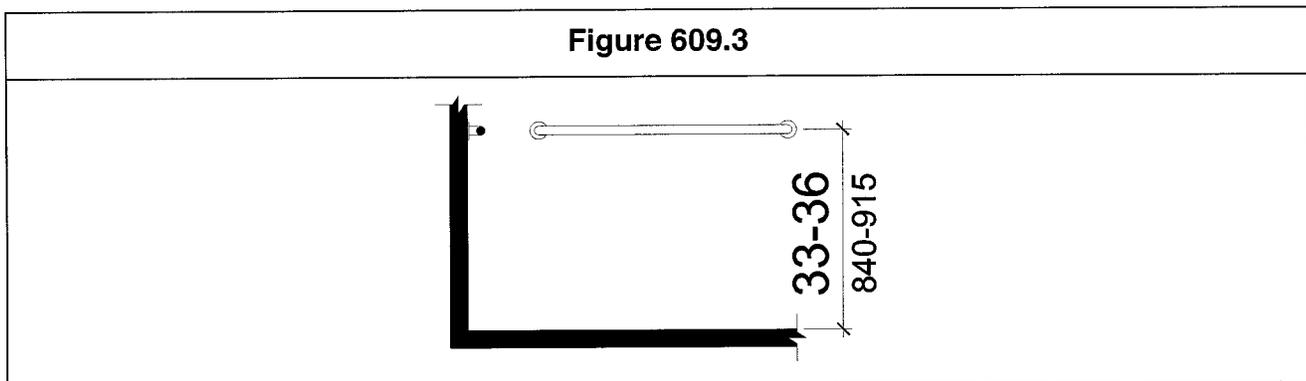
609.1 General. Grab bars in *accessible toilet facilities* and *bathing facilities* shall comply with 609.

609.2 Size and Spacing of Grab Bars. The diameter of grab bars shall be 1-1/4 inches (32 mm) minimum to 1-1/2 inches (38 mm) maximum. If not round, the shape shall provide equivalent graspability with a maximum cross-section dimension of 2 inches (51 mm) and perimeter dimension of 4 inches (100 mm) minimum and 4-11/16 inches (120 mm) maximum and with edges having a 1/8-inch (3.2 mm) minimum radius. The *space* between the wall and the grab bar shall be 1-1/2 inches (38 mm). The *space* between the grab bar and projecting objects above shall be 15 inches (380 mm) minimum.

Figure 609.2

EXCEPTION: The *space* between the grab bars and shower controls, shower fittings, and other grab bars above shall be 1-1/2 inches (38 mm) minimum.

609.3 Position of Grab Bars. Grab bars shall be installed in a horizontal position, 33 inches (840 mm) minimum to 36 inches (915 mm) maximum above the floor, except that at water closets for *children's use* complying with 604.9, grab bars shall be installed in a horizontal position 18 inches (455 mm) minimum to 27 inches (685 mm) maximum above the floor.



609.4 Surface Hazards. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive *elements*. Edges shall have a radius of 1/8 inch (3.2 mm) minimum.

609.5 Fittings. Grab bars shall not rotate within their fittings.

609.6 Installation. Grab bars shall be installed in any manner that provides a gripping surface at the locations specified in this standard and that does not obstruct the required clear floor *space*.

609.7 Structural Strength. Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 lb (1112 N) is applied at any point on the grab bar, fastener, mounting device, or supporting structure.

610 Seats

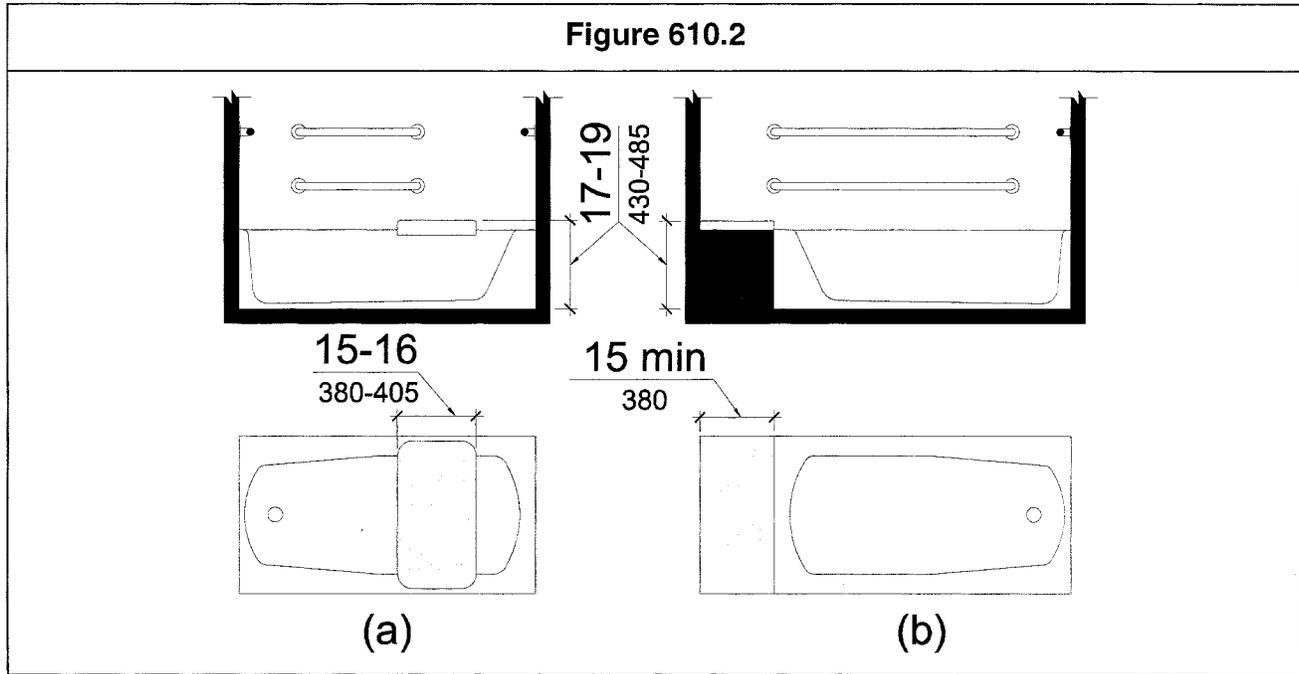
610.1 General. Seats in *accessible* bathtubs and shower compartments shall comply with 610.

610.2 Bathtub Seats. The depth of a removable in-tub seat shall be 15 inches (380 mm) minimum to 16 inches (405 mm) maximum. The seat shall be capable of secure placement. The depth of a permanent

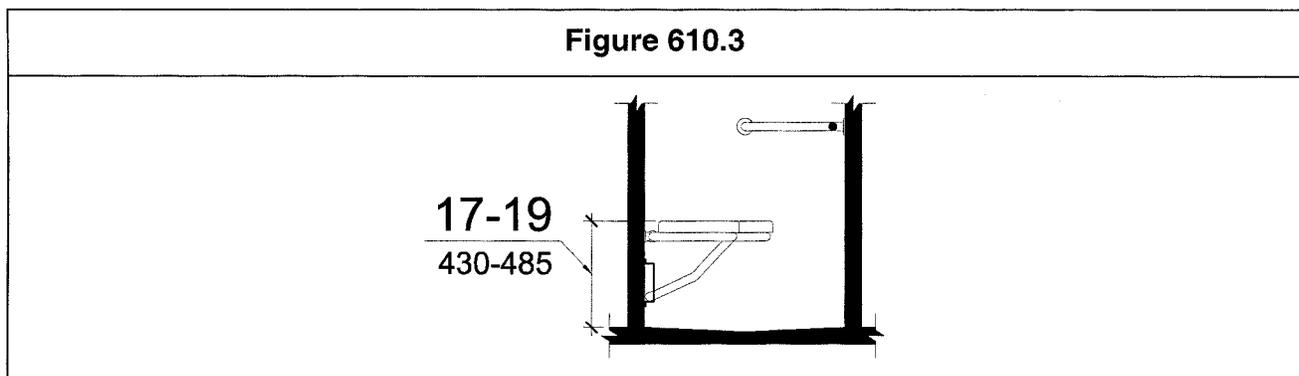
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seat at the head end of the bathtub shall be 15 inches (380 mm) minimum. The top of bathtub seats shall be 17 inches (430 mm) minimum to 19 inches (485 mm) maximum above the bathroom floor.

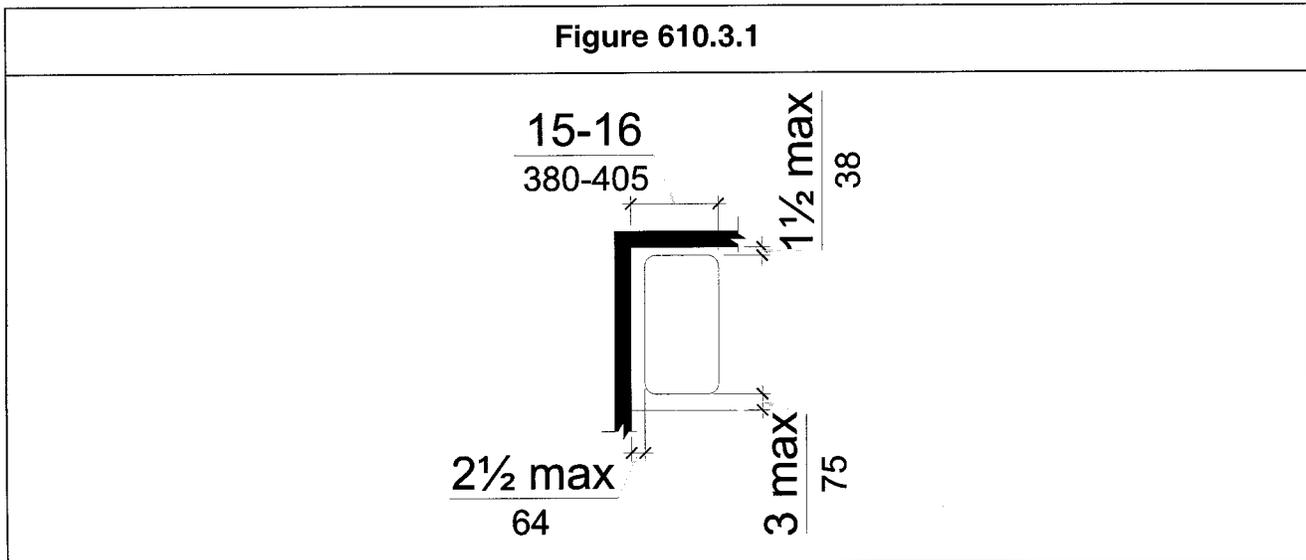


610.3 Shower Compartment Seats. Where a seat is provided in a roll-in shower compartment, it shall be a folding type and shall be installed on the wall adjacent to the controls. Seats shall be L-shaped or rectangular. The top of the seat shall be 17 inches (430 mm) minimum to 19 inches (485 mm) maximum above the bathroom floor. In transfer-type showers, the seat shall extend from the back wall to a point within 3 inches (75 mm) of the compartment entry. In roll-in-type showers, the seat shall be located adjacent to the compartment entry and shall extend from the control wall to a point within 3 inches (75 mm) of the compartment entry.



610.3.1 Rectangular Seats. The rear edge of a rectangular seat shall be 2 1/2 inches (64 mm) maximum and the front edge 15 inches (380 mm) minimum to 16 inches (405 mm) maximum from the seat wall. The side edge of the seat shall be 1-1/2 inches (38 mm) maximum from the back wall of a transfer-type shower and 1-1/2 inches (38 mm) maximum from the control wall of a roll-in-type shower.

Figure 610.3.1

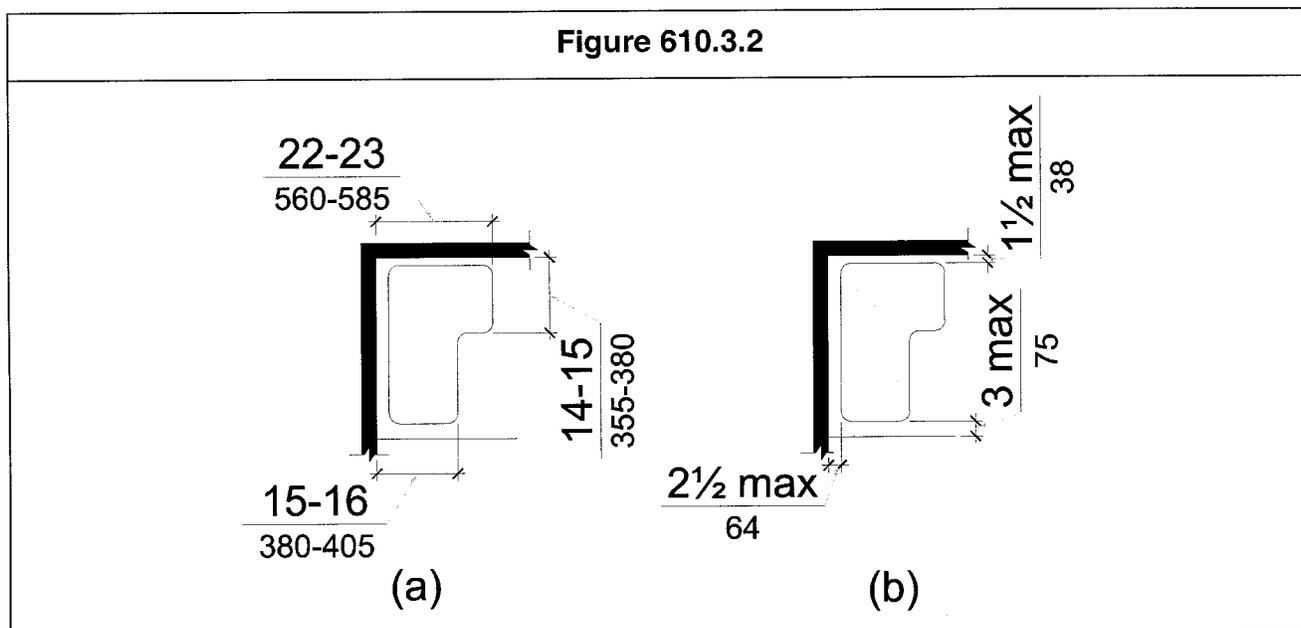


610.3.2 L-shaped Seats. The rear edge of an L-shaped seat shall be 2 1/2 inches (64 mm) maximum and the front edge 15 inches (380 mm) minimum to 16 inches (405 mm) maximum from the seat wall. The rear edge of the "L" portion of the seat shall be 1 1/2 inches (38 mm) maximum from the wall and the front edge shall be 14 inches (355 mm) minimum to 15 inches (380 mm)

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maximum from the wall. The end of the "L" shall be 22 inches (560 mm) minimum to 23 inches maximum (585 mm) from the main seat wall.



610.4 Structural Strength. Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 lb (1112 N) is applied at any point on the seat, fastener, mounting device, or supporting structure.

611 Laundry Equipment

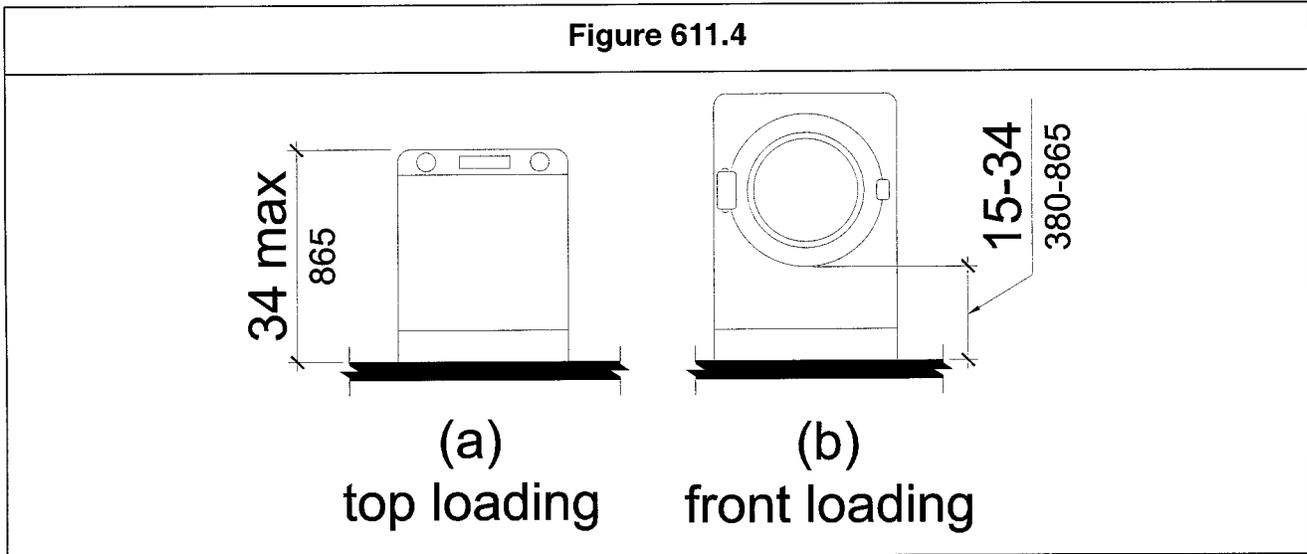
611.1 General. Washing machines and clothes dryers required to be *accessible* shall comply with 611.

611.2 Clear Floor Space. A clear floor or ground *space* complying with 305 positioned for parallel approach shall be provided. The clear floor or ground *space* shall be centered on the appliance.

611.3 Operable Parts. *Operable parts* including doors, lint screens, detergent and bleach compartments shall comply with 309.

611.4 Height. Top loading machines shall have the door to the laundry compartment located 34 inches (865 mm) maximum above the floor. Front loading machines shall have the bottom of the opening to the

laundry compartment located 15 inches (380 mm) minimum and 34 inches (865 mm) maximum above the floor.



CHAPTER 7: COMMUNICATION ELEMENTS AND FEATURES

701 General

701.1 Scope. Communications features and *elements* required to be *accessible* by Chapter 2 shall comply with the applicable provisions of this chapter.

702 Fire Alarm Systems

702.1 General. Fire alarm systems required to be *accessible* shall have audible alarms complying with 702.2 and visual alarms complying with 702.3.

EXCEPTION: Fire alarm systems in medical care *facilities* shall be permitted to be modified to suit standard health care alarm practice.

702.2 Audible Alarms. Audible alarms shall produce a sound that exceeds the prevailing equivalent sound level in the room or *space* by 15 dBA minimum 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 110 dBA.

702.3 Visual Alarms. Visual alarms shall comply with 702.3.

702.3.1 Light Pulse Characteristics.

702.3.1.1 Type. The lamp shall be a xenon strobe type or equivalent.

702.3.1.2 Color. The color shall be clear or nominal white.

702.3.1.3 Flash Rate. The flash rate for an individual appliance shall be 1 Hz minimum and 2 Hz maximum over its rated voltage range.

Advisory 702.3.1.3
Flash rates that exceed five flashes per second may be disturbing to persons with a photosensitivity, particularly those with certain forms of epilepsy. Multiple, unsynchronized visual signals within a single <i>space</i> may produce a composite flash rate that could trigger a photoconvulsive response in such persons. Therefore, installations that may produce a composite rate in excess of 5 Hz should be avoided by decreasing the number of fixtures and raising the intensity of lamps they contain, by decreasing the flash rate of multiple lamps, or by synchronizing the flash rates of multiple fixtures.

702.3.1.4 Pulse Duration. The maximum pulse duration shall be two-tenths of one second 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.

702.3.2 Dispersion. Light dispersion of wall installed appliances shall comply with Table 702.3.2.1. Light dispersion of ceiling installed appliances shall comply with Table 702.3.2.2.

Table 702.3.2.1 Light Dispersion for Wall-Installed Visual Alarm Appliances

Vertical Dispersion		Horizontal Dispersion	
Degrees from Horizontal	Percent of Rated	Degrees from Vertical	Percent of Rated
0	100	0	100
5 to 30	90	5 to 25	90
35	65	30 to 45	75
40	46	50	55
45	34	55	45
50	27	60	40
55	22	65	35
60	18	70	35
65	16	75	30
70	15	80	30
75	13	85	25
80	12	90	25
85	12		
90	12		

Table 702.3.2.2 Light Dispersion for Ceiling-Installed Visual Alarm Appliances

Degrees from Vertical	Percent of Rated
0	100
5 to 25	90
30 to 45	75

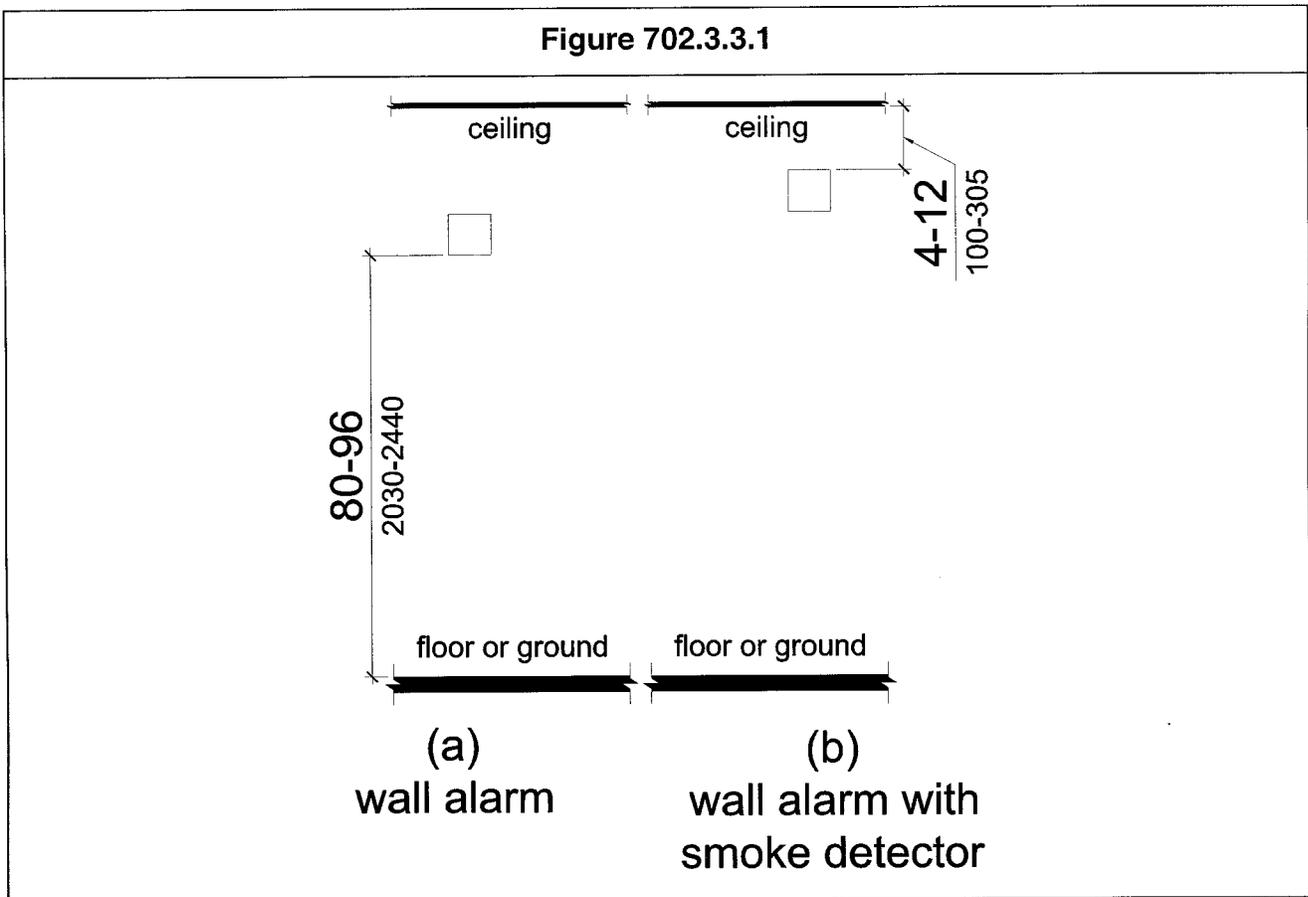
Table 702.3.2.2 Light Dispersion for Ceiling-Installed Visual Alarm Appliances

Degrees from Vertical	Percent of Rated
50	55
55	45
60	40
65	35
70	35
75	30
80	30
85	25
90	25

702.3.3 Location. Appliances shall be located in accordance with 702.3.3.1 or 702.3.3.2.

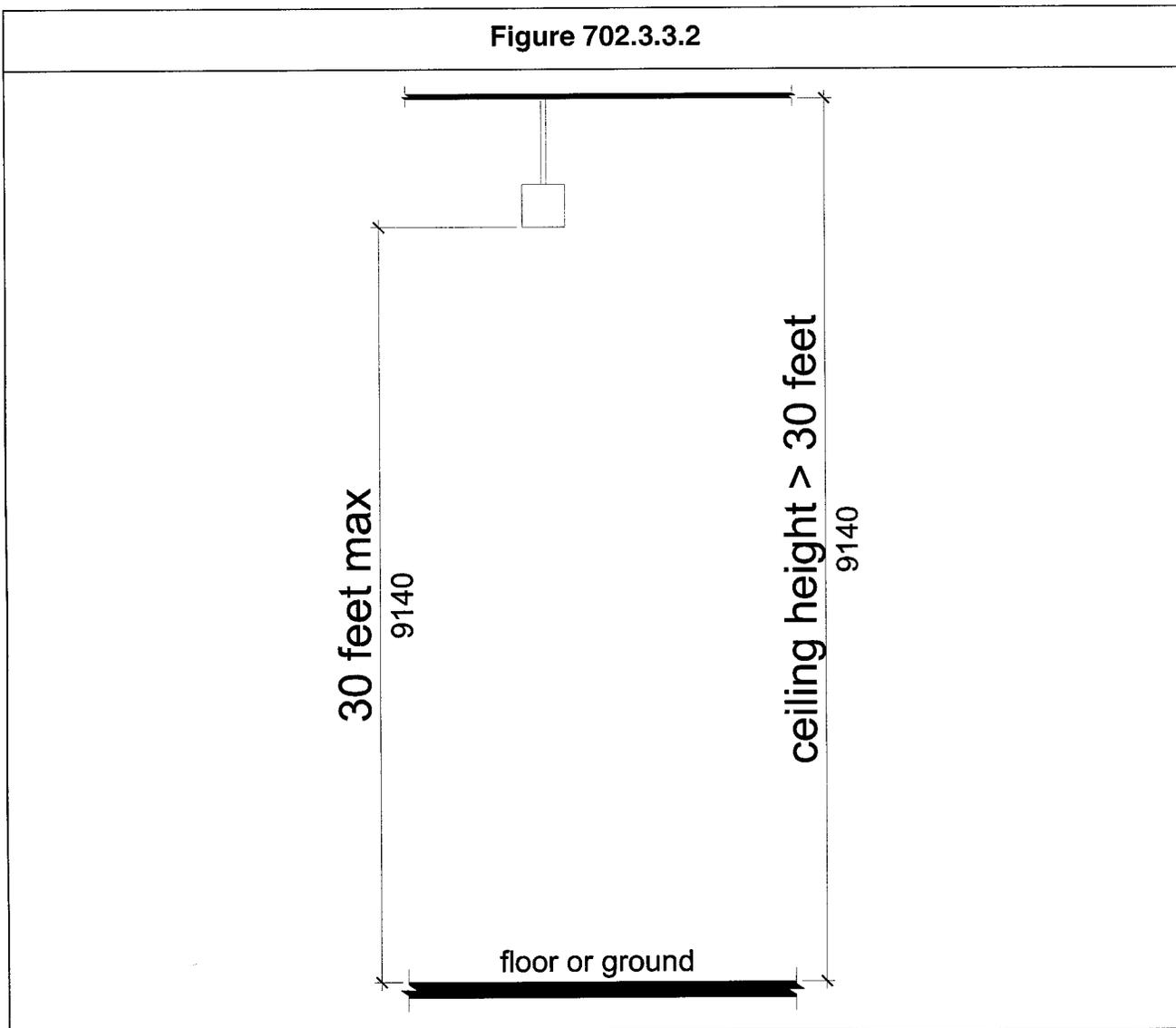
EXCEPTION: Appliances in guest rooms shall comply with 702.3.6.

702.3.3.1 Wall Installed Appliances. Appliances shall be located 80 inches (2030 mm) minimum and 96 inches (2440 mm) maximum above the finished floor or ground measured to the bottom of the appliance.



EXCEPTION: Wall installed appliances which are part of a smoke detector shall be located 4 inches (100 mm) minimum and 12 inches (305 mm) maximum below the ceiling measured to the top of the smoke detector.

702.3.3.2 Ceiling-Installed Appliances. Appliances shall be on the ceiling. Where ceiling height exceeds 30 feet (9140 mm), appliances shall be suspended from the ceiling to a height of 30 feet (9140 mm) maximum above the finished floor or ground.



702.3.4 Spacing Allocation and Minimum Intensity. Spacing and minimum effective intensity for appliances shall comply with 702.3.4.

- EXCEPTIONS:**
1. Appliances in corridors not more than 20 feet (6100 mm) in width shall comply with 702.3.5.
 2. Appliances in guest rooms shall comply with 702.3.6.

702.3.4.1 General. The signal provided by the appliance or appliances shall be visible either by direct view or by reflection from all parts of the covered area. Multiple appliances within an area are permitted only where size, shape, *building* construction or furnishings prohibit total coverage by a single appliance. Where multiple appliances are provided in a single area to provide total area coverage, the appliances shall comply with one of the following: a maximum of two appliances located on opposite walls; the appliances shall have synchronized flashes; or, in rooms 80 feet (24 m) by 80 feet (24 m) or greater in size, more than two appliances located such that all appliances in any 135-degree field of view are spaced a minimum of 55 feet (17 m) from each other.

702.3.4.2 Wall Installed Appliances. Spacing and minimum effective intensity for wall installed appliances shall be in accordance with Table 702.3.4.2 provided the appliance is located at the midpoint of the longest side of the area served. Where the appliance is not located at the midpoint, the minimum effective intensity shall be based on a maximum area of coverage equal to the distance to the opposite side of the area served or double the distance to the farthest adjacent side of the area served, whichever is greater.

Table 702.3.4.2 Spacing Allocation for Wall-Installed Visual Alarm Appliances

Maximum Area of Coverage in Feet	Minimum Required Light Output (Effective Intensity) (candela)		
	One Light per Area	Two Lights per Area	Four Lights per Area
20 X 20 (6100 X 6100 mm)	15	Not Permitted	Not Permitted
30 X 30 (9140 X 9140 mm)	30	15	Not Permitted
40 X 40 (12 X 12 m)	60	30	Not Permitted
50 X 50 (15 X 15 m)	95	60	Not Permitted
60 X 60 (18 X 18 m)	135	95	Not Permitted
70 X 70 (21 X 21 m)	185	95	Not Permitted
80 X 80 (24 X 24 m)	240	135	60
90 X 90 (27 X 27 m)	305	185	95

Table 702.3.4.2 Spacing Allocation for Wall-Installed Visual Alarm Appliances

Maximum Area of Coverage in Feet	Minimum Required Light Output (Effective Intensity) (candela)		
	One Light per Area	Two Lights per Area	Four Lights per Area
100 X 100 (30 X 30 m)	375	240	95
110 X 110 (34 X 34 m)	455	240	135
120 X 120 (37 X 37 m)	540	305	135
130 X 130 (40 X 40 m)	635	375	185

702.3.4.3 Ceiling Installed Appliances. Spacing and minimum effective intensity for ceiling installed appliances shall be in accordance with Table 702.3.4.3 provided the appliance is located at the centerpoint of the area served. Where the appliance is not located at the centerpoint, the minimum effective intensity shall be based on a maximum area of coverage equal to two times the distance from the appliance to the farthest side of the area served.

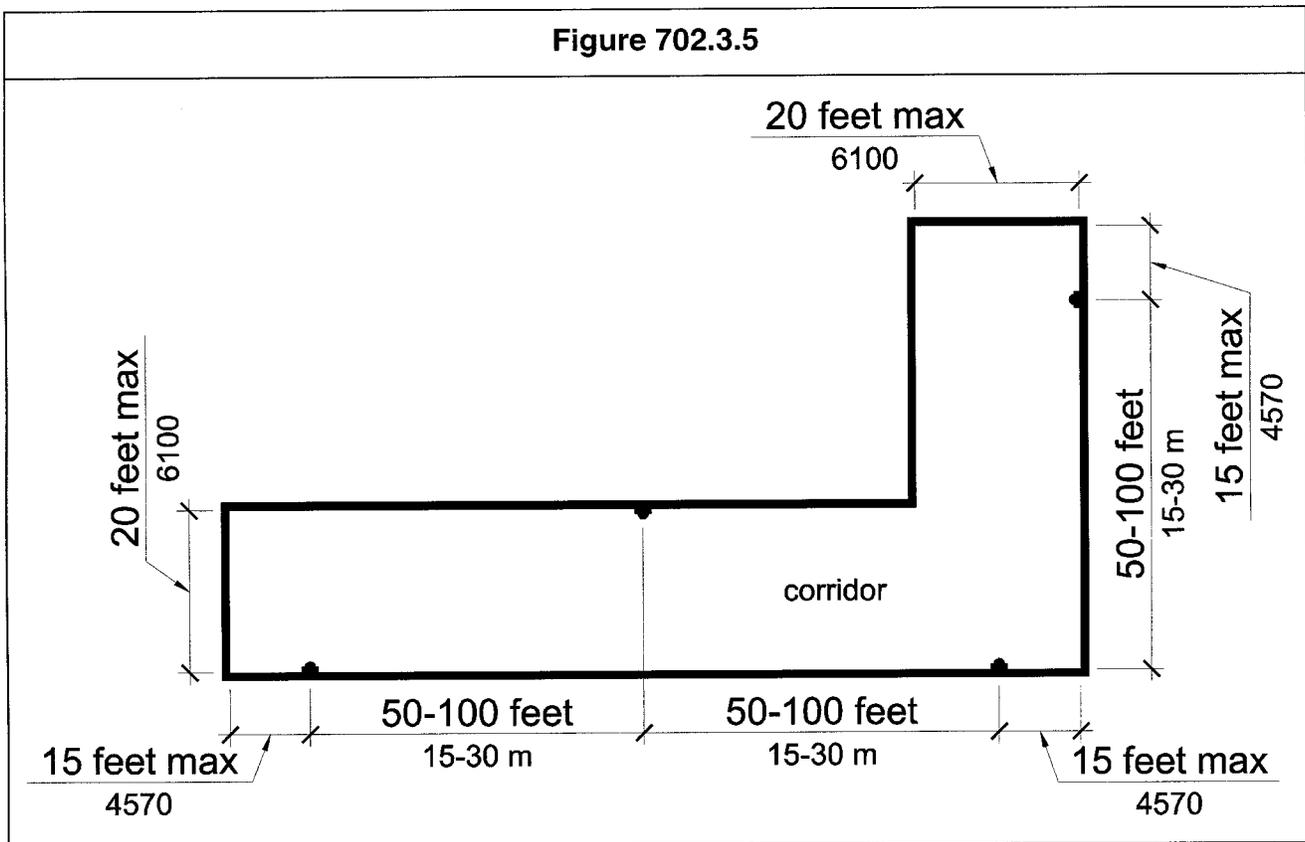
Table 702.3.4.3 Spacing Allocation for Ceiling-Installed Visual Alarm Appliances

Maximum Area of Coverage in Feet	Minimum Required Light Output (Effective Intensity) (candela)	
	Maximum Ceiling Height in Feet	One Light
20 X 20 (6100 X 6100 mm)	10 (3050 mm)	15
30 X 30 (9140 X 9140 mm)	10 (3050 mm)	30
40 X 40 (12 X 12 m)	10 (3050 mm)	60
50 X 50 (15 X 15 m)	10 (3050 mm)	95
20 X 20 (6100 X 6100 mm)	20 (6100 mm)	30
30 X 30 (9140 X 9140 mm)	20 (6100 mm)	45
40 X 40 (12 X 12 m)	20 (6100 mm)	80
50 X 50 (15 X 15 m)	20 (6100 mm)	115
20 X 20 (6100 X 6100 mm)	30 (9140 mm)	55
30 X 30 (9140 X 9140 mm)	30 (9140 mm)	75

Table 702.3.4.3 Spacing Allocation for Ceiling-Installed Visual Alarm Appliances

Maximum Area of Coverage in Feet	Minimum Required Light Output (Effective Intensity) (candela)	
	Maximum Ceiling Height in Feet	One Light
40 X 40 (12 X 12 m)	30 (9140 mm)	115
50 X 50 (15 X 15 m)	30 (9140 mm)	150

702.3.5 Corridor Spacing Allocation and Minimum Intensity. Appliances in corridors that are 20 feet (6100 mm) maximum in width shall comply with 702.3.5. Corridors exceeding 20 feet (6100 mm) in width shall comply with 702.3.4.



702.3.5.1 Appliance Spacing. Appliances shall be located 15 feet (4570 mm) maximum from each end of the corridor and shall be located 50 feet (15 m) minimum and 100 feet (30 m) maximum apart along the corridor. Interruptions to the concentrated viewing path by doors, elevation changes or other obstructions shall constitute the end of a corridor for purposes of this section.

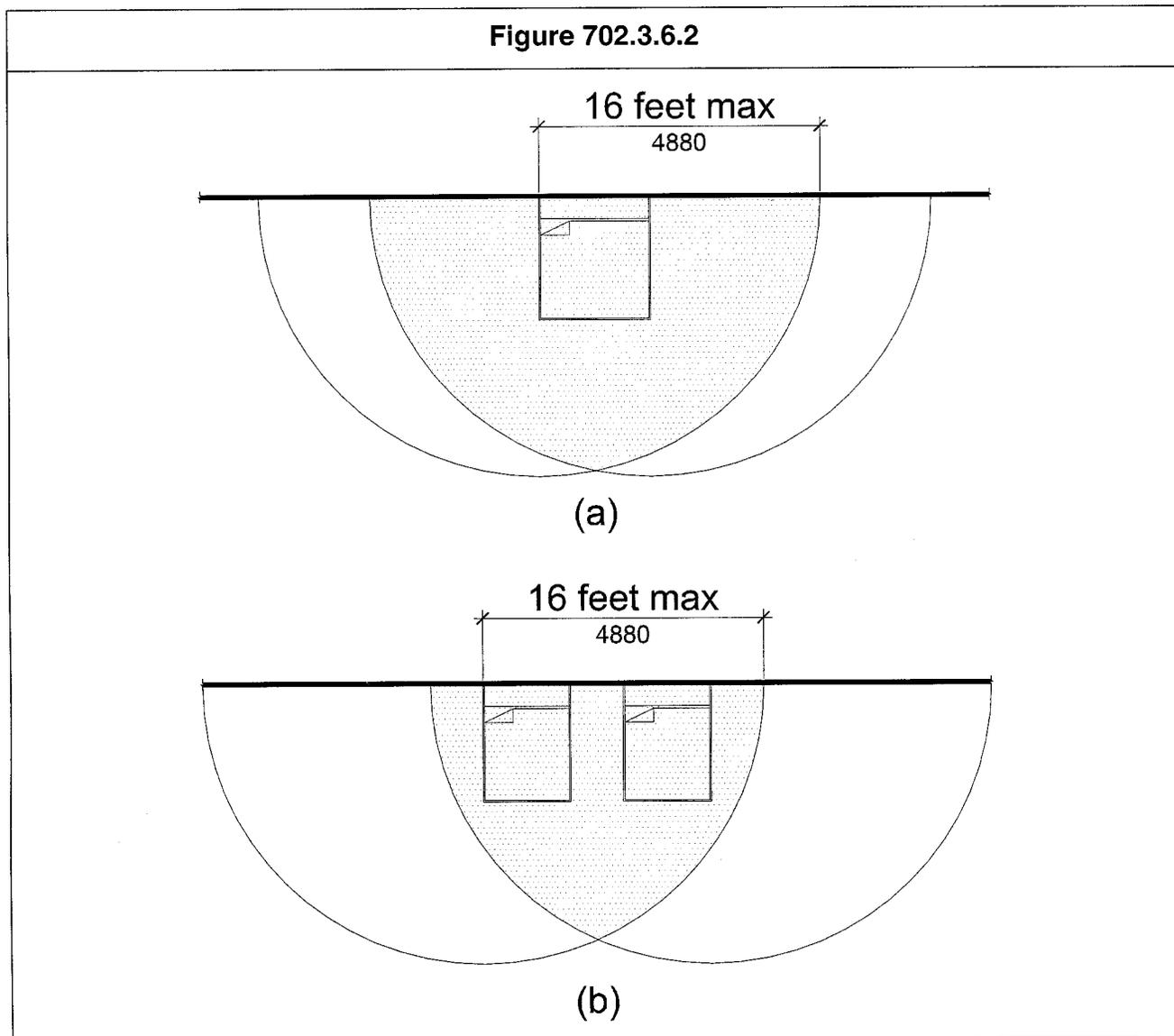
702.3.5.2 Minimum Effective Intensity. Appliances shall have a minimum effective intensity of 15 candela.

702.3.6 Guest Rooms. Guest rooms required to have visual alarms shall comply with 702.3.6.

702.3.6.1 Activation. Where single or multiple-station smoke detectors are provided in the sleeping room or suite, a visual alarm that is activated upon activation of the smoke detectors shall be provided within the room or suite. Where a *building* fire alarm system is provided, a visual alarm that is activated upon activation of the *building* fire alarm system shall be provided within the room or suite. The signaling line or channel between the activating device of the appliance and the *building* fire alarm system shall be monitored for integrity by the *building* fire alarm system. Where the same appliance is used for visual notification of smoke detector and fire alarm system activation, activation of the room or suite smoke detectors shall not activate the *building* fire alarm system.

702.3.6.2 Location. In sleeping rooms or suites, appliances shall be permanently installed at a location where alarm signals shall be visible, directly or by reflection, in all parts of the room or suite. In sleeping rooms the appliance shall be located 16 feet (4880 mm) maximum from the

head end of the bed location, measured horizontally. Where a suite contains more than one sleeping room, an appliance shall be provided in each sleeping room.



702.3.6.3 Minimum Effective Intensity and Mounting Height. Wall installed appliances located 24 inches (610 mm) minimum below the ceiling shall have a minimum effective intensity of 110 candela. Ceiling installed appliances and wall installed appliances located less than 24 inches (610 mm) below the ceiling shall have a minimum effective intensity of 177 candela.

703 Signs

703.1 General. *Signs* required to be *accessible* shall comply with 703.

703.2 Characters that are Both Tactile and Visual. *Characters* required to be *tactile* shall comply with 703.2. *Tactile characters* shall be duplicated in Braille complying with 703.5.

EXCEPTION: *Tactile characters* shall be permitted to comply with 703.3, where separate visual *characters* complying with 703.4 provide the same information.

703.2.1 Finish and Contrast. *Characters* and their background shall have a non-glare finish. *Characters* shall contrast with their background with either light *characters* on a dark background or dark *characters* on a light background.

703.2.2 Tactile Characters. *Tactile characters* shall be raised 1/32 inch (0.8 mm) minimum above their background. Raised borders and decorative *elements* that are not required shall be separated 3/8 inch (9.5 mm) minimum from *tactile characters*.

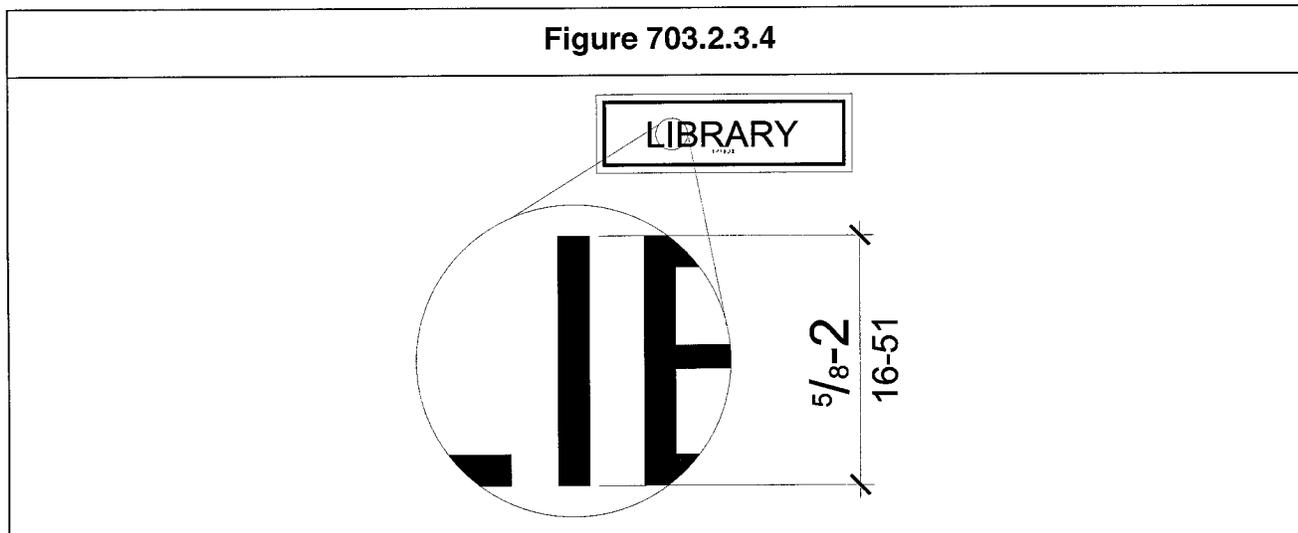
703.2.3 Character Forms. Fonts shall have *characters* complying with 703.2.3.

703.2.3.1 Case. *Characters* shall be uppercase.

703.2.3.2 Style. *Characters* shall be sans serif. *Characters* shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.2.3.3 Width. *Character* width shall be 55 percent minimum and 110 percent maximum the height of the *character* with the width based on the uppercase letter "O" and the height based on the uppercase letter "I".

703.2.3.4 Height. *Character* height measured vertically from the baseline of the *character* shall be 5/8 inch (16 mm) minimum and 2 inches (51 mm) maximum based on the uppercase letter "I".

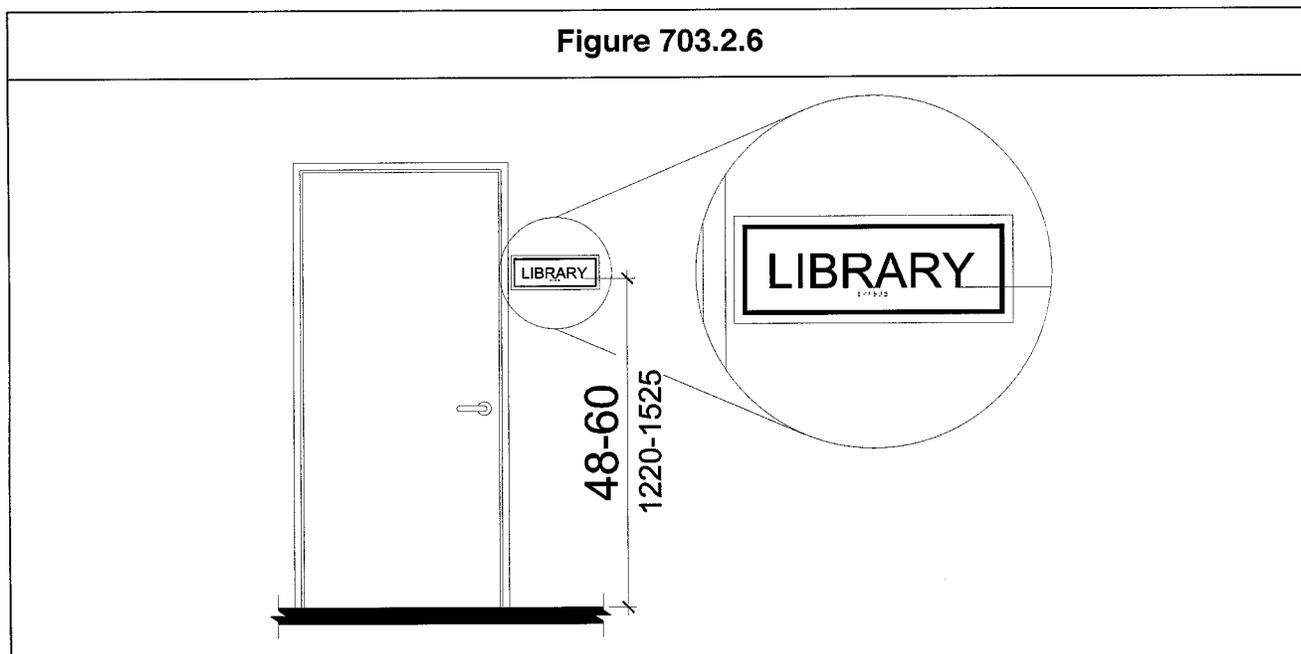


703.2.3.5 Stroke Thickness. For *characters* with rectangular cross sections, the stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 15 percent maximum of the height of the *character*. For *characters* with other cross sections, the stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 30 percent maximum of the height of the *character* measured at the base of the cross section. Stroke thickness at the top of the cross section shall be 15 percent maximum of the height of the *character*.

703.2.4 Character Spacing. *Character* spacing shall be measured between the two closest points of adjacent *characters* within a message, excluding word *spaces*. Where *characters* have rectangular cross sections, spacing between individual *characters* shall be 1/8 inch (3 mm) minimum to 3/8 inch (10 mm) maximum. Where *characters* have other cross sections, spacing between individual *characters* shall be 1/16 inch (2 mm) minimum to 3/8 inch (10 mm) maximum at the base of the cross sections and 1/8 inch (3 mm) to 3/8 inch (10 mm) maximum at the top of the cross sections.

703.2.5 Line Spacing. Spacing between the baselines of separate lines of *characters* in a sentence or paragraph shall be 135 percent minimum and 170 percent maximum of the *character* height.

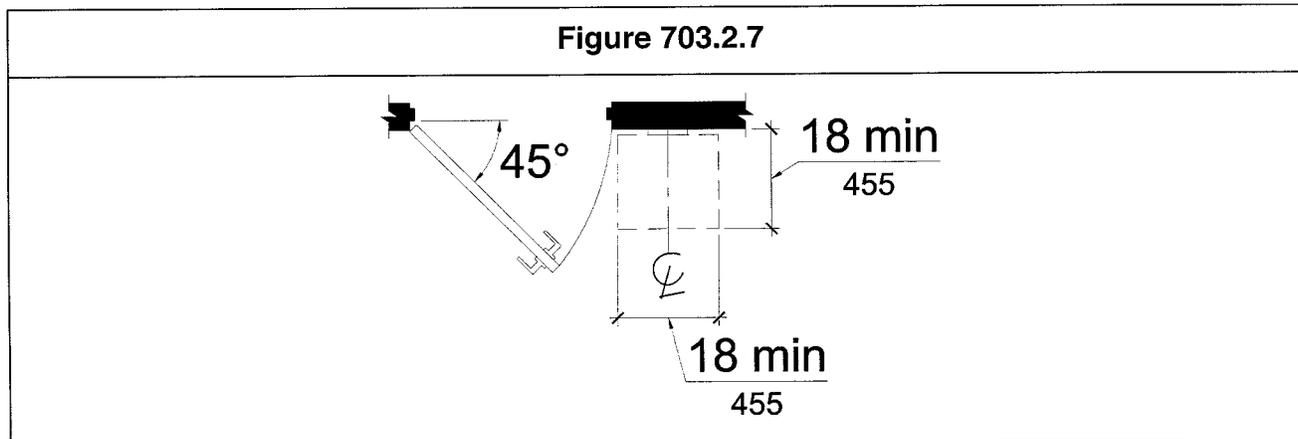
703.2.6 Mounting Height. *Characters* shall be located 48 inches (1220 mm) minimum and 60 inches (1525 mm) maximum above the adjacent floor or ground surface measured from the baseline of the *characters*.



EXCEPTION: This requirement shall not apply to elevator car controls.

703.2.7 Mounting Location. Where a *sign* containing *tactile characters* is provided at a door, the *sign* shall be located alongside the door at the latch side. Where a *tactile sign* is provided at double doors, the *sign* shall be located to the right of the right hand door. Where there is no wall *space* at the latch side of a single door or to the right side of double doors, *signs* shall be located on the nearest adjacent wall. *Signs* containing *tactile characters* shall be located so that a clear floor *space*

of 18 inches (455 mm) minimum by 18 inches (455 mm) minimum, centered on the *sign*, is provided beyond the arc of any door swing between the closed position and 45 degree open position.



EXCEPTION: *Signs* shall be permitted on the push side of doors with closers and without hold-open devices.

703.3 Tactile Characters. Where *tactile characters* are required and separate *tactile* and visual *characters* with the same information are provided, *tactile characters* shall comply with 703.3 and visual *characters* shall comply with 703.4. *Tactile characters* shall be duplicated in Braille complying with 703.5.

703.3.1 Tactile Characters. *Tactile characters* shall be raised 1/32 inch (0.8 mm) minimum above their background. Raised borders and decorative *elements* that are not required shall be separated 3/8 inch (9.5 mm) minimum from *tactile characters*.

703.3.2 Character Forms. Fonts shall have *characters* complying with 703.3.2.

703.3.2.1 Case. *Characters* shall be uppercase.

703.3.2.2 Style. *Characters* shall be sans serif. *Characters* shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.3.2.3 Width. *Character* width shall be 55 percent minimum and 110 percent maximum the height of the *character* with the width based on the uppercase letter "O" and the height based on the uppercase letter "I".

703.3.2.4 Height. *Character* height measured vertically from the baseline of the *character* shall be 1/2 inch (13 mm) minimum and 3/4 inch (19 mm) maximum based on the height of the uppercase letter "I".

703.3.2.5 Stroke Thickness. Stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the *character*.

703.3.3 Character Spacing. *Character* spacing shall be measured between the two closest points of adjacent *character* within a message, excluding word *spaces*. Spacing between individual *characters* shall be 1/8 inch (3 mm) minimum to 1/4 inch (6 mm) maximum.

703.3.4 Line Spacing. Spacing between the baselines of separate lines of *characters* within a message shall be 135 percent minimum and 170 percent maximum of the *character* height.

703.3.5 Mounting Height. *Characters* shall be located 48 inches (1220 mm) minimum and 60 inches (1525 mm) maximum above the adjacent floor or ground surface, measured from the baseline of the *characters*.

EXCEPTION: This requirement shall not apply to elevator car controls.

703.3.6 Mounting Location. Where a *tactile sign* is provided at a door, the *sign* shall be located alongside the door at the latch side. Where a *tactile sign* is provided at double doors, the *sign* shall be located to the right of the right hand door. Where there is no wall *space* at the latch side of a single door or to the right side of double doors, *signs* shall be located on the nearest adjacent wall. *Signs* containing *tactile characters* shall be located so that a clear floor *space* of 18 inches (455 mm) by 18 inches (455 mm) minimum, centered on the *sign*, is provided beyond the arc of any door swing between the closed position and 45 degree open position.

EXCEPTION: *Signs* shall be permitted on the push side of doors with closers and without hold-open devices.

703.4 Visual Characters. Visual *characters* required to be *accessible* shall comply with 703.4.

703.4.1 Finish and Contrast. *Characters* and their background shall have a non-glare finish. *Characters* shall contrast with their background with either light *characters* on a dark background or dark *characters* on a light background.

Advisory 703.4.1

Signs are more legible for persons with low vision when *characters* contrast with their background by approximately 70 percent.

Contrast in percent can be determined by: $\text{contrast} = [(B1 - B2) / B1] \times 100$ where B1=light reflectance value (LRV) of the lighter area and B2=light reflectance value (LRV) of the darker area.

Note: in any application both white and black are never absolute; thus B1 never equals 100 and B2 is always greater than zero.

703.4.2 Character Forms. Fonts shall have *characters* complying with 703.4.2.

703.4.2.1 Case. *Characters* shall be uppercase or lowercase or a combination of both.

703.4.2.2 Style. *Characters* shall be conventional in form. *Characters* shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.4.2.3 Width. *Character* width shall be 55 percent minimum and 110 percent maximum the height of the *character* with the width based on the uppercase letter "O" and the height based on the uppercase letter "I".

703.4.2.4 Height. Minimum *character* height measured from the baseline of the *character* shall comply with Table 703.4.2.4 based on the height of the *characters* above the finished floor of the viewing location and the minimum viewing distance. *Character* height shall be based on the uppercase letter "I". Minimum viewing distance shall be measured as the horizontal distance where an obstruction prevents further approach towards the *sign*.

Table 703.4.2.4 Visual Character Dimensions

Height of Floor to Baseline of Character	Minimum Viewing Distance	Minimum Character Height
less than 40 inches (100 mm) ¹		
40 inches (100 mm) to less than or equal to 70 inches (1780 mm)	less than 6 feet (1830 mm)	5/8 inch (16 mm)
	6 feet (1830 mm) and greater	5/8 inch (16 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 6 feet (1830 mm)
70 inches (1780 mm) to less than or equal to 120 inches (3050 mm)	less than 15 feet (4570 mm)	2 inches (51 mm)
	15 feet (4570 mm) and greater	2 inches (51 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 15 feet (4570 mm)
greater than 120 inches (3050 mm)	less than 21 feet (6400 mm)	3 inches (75 mm)
	21 feet (6400 mm) and greater	3 inches (75 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 21 feet (6400 mm)

1. not permitted except in elevators

703.4.2.5 Stroke Thickness. Stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 30 percent maximum of the height of the *character*.

703.4.3 Character Spacing. *Character* spacing shall be measured between the two closest points of adjacent *characters*, excluding word *spaces*. Spacing between individual *characters* shall be 10 percent minimum and 35 percent maximum of *character* height.

TECHNICAL

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703.4.4 Line Spacing. Spacing between the baselines of separate lines of *characters* shall be 135 percent minimum and 170 percent maximum of the *character* height.

703.4.5 Mounting Height. Visual *characters* shall be located 40 inches (1015 mm) minimum above the floor of the viewing position. Mounting heights shall comply with Table 703.4.2.4 based on the size of the *characters* on the *sign*.

703.5 Braille. *Tactile characters* shall be accompanied by Grade II Braille complying with Table 703.5 and 703.5. Braille dots shall have a domed or rounded shape.

Table 703.5 Braille Dimensions

Measurement Range	Minimum in Inches	Maximum in Inches
Dot base diameter	0.059 (1.5 mm)	0.063 (1.6 mm)
Distance between two dots in the same cell ¹	0.090 (2.3 mm)	0.100 (2.5 mm)
Distance between corresponding dots in adjacent cells ¹	0.241 (6.1 mm)	0.300 (7.6 mm)
Dot height	0.025 (0.6 mm)	0.037 (0.9 mm)
Distance between corresponding dots from one cell directly below ¹	0.395 (10 mm)	0.400 (10.2 mm)

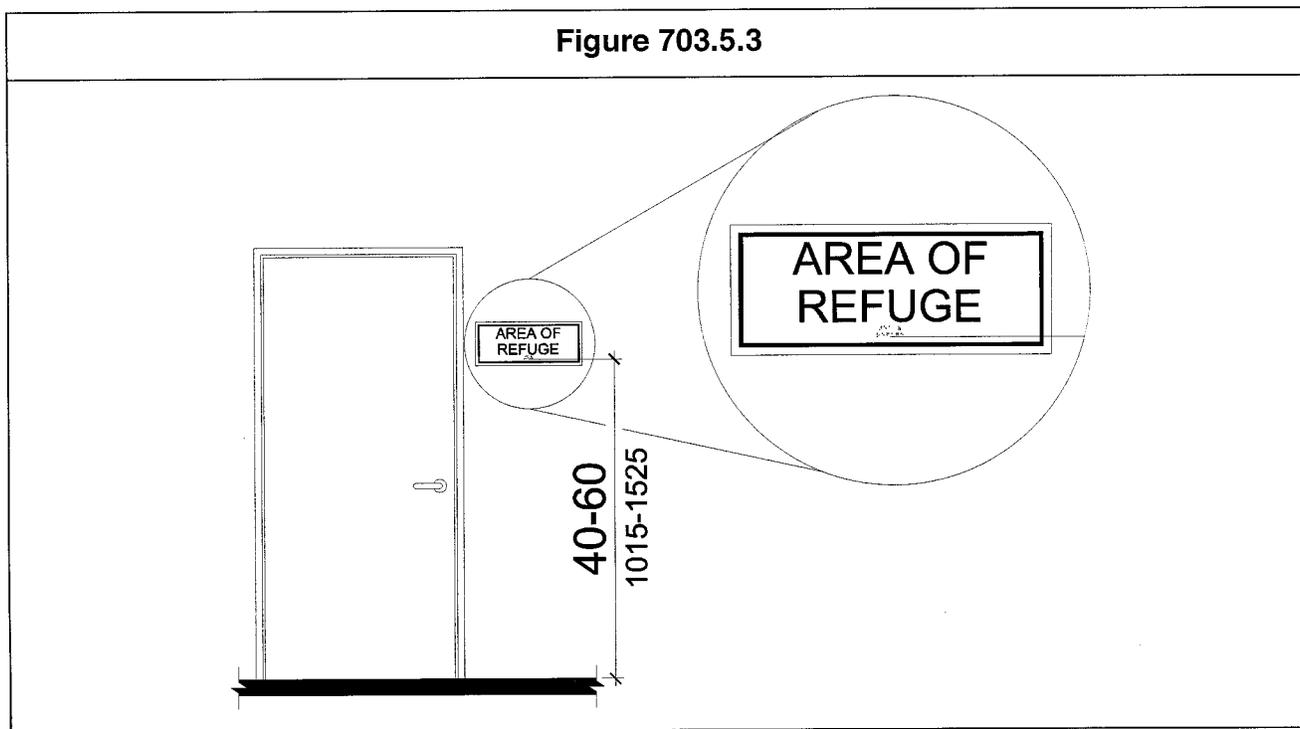
1. measured center to center

703.5.1 Location. Braille shall be located below the corresponding text. If text is multi-lined, Braille shall be placed below the entire text. Braille shall be separated 1/4 inch (6.4 mm) minimum from any other *tactile characters*.

EXCEPTION: Braille provided on elevator car controls shall be separated 3/16 inch (4.8 mm) minimum and shall be located either directly below or adjacent to the corresponding *tactile characters* or symbols.

703.5.2 Raised Borders and Decorative Elements. Raised borders and decorative *elements* that are not required, shall be separated 3/8 inch (9.5 mm) minimum from Braille.

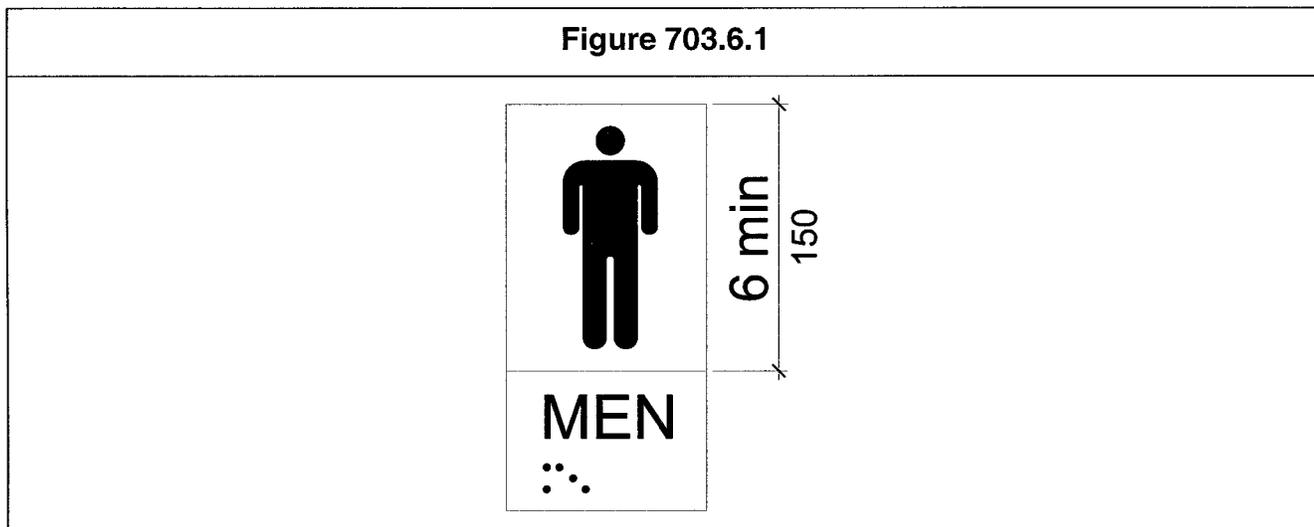
703.5.3 Height. Braille shall be located 40 inches (1015 mm) minimum and 60 inches (1525 mm) maximum above the floor measured from the baseline of the Braille cells.



EXCEPTION: This requirement shall not apply to elevator car controls.

703.6 Pictograms. Where *pictograms* are required to be *accessible*, they shall comply with 703.6.

703.6.1 Pictogram Field. *Pictograms* shall have a field height of 6 inches (150 mm) minimum. *Characters* or Braille shall not be located in the *pictogram* field.



703.6.2 Finish and Contrast. *Pictograms* and their field shall have a non-glare finish. *Pictograms* shall contrast with their field with either a light *pictogram* on a dark field or a dark *pictogram* on a light field.

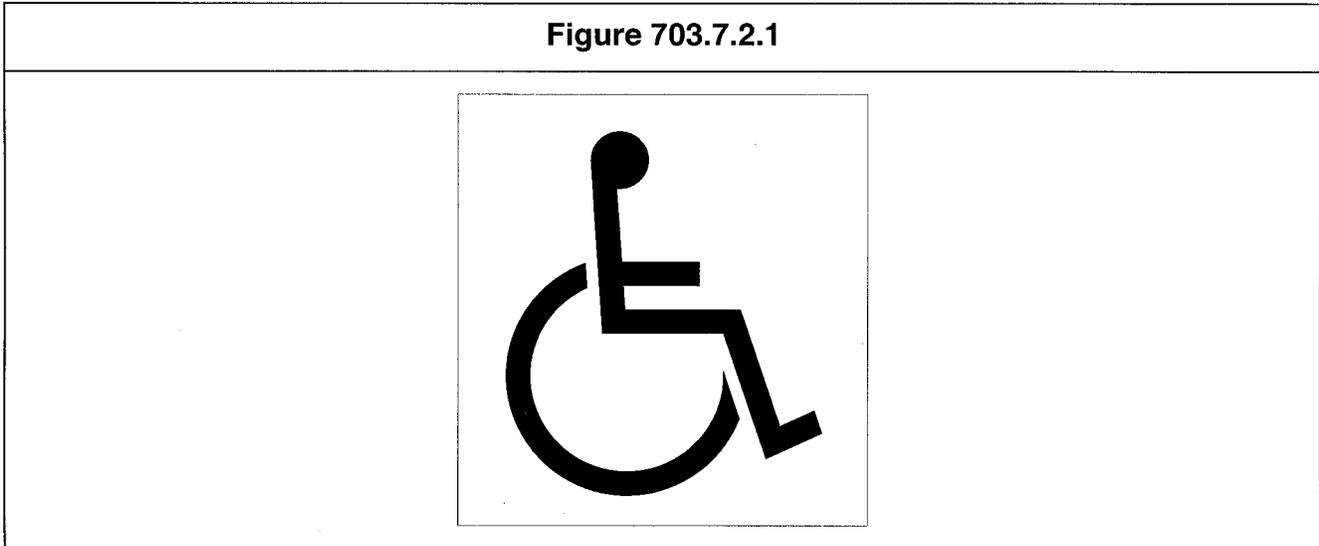
703.6.3 Text Descriptors. Where text descriptors for *pictograms* are required, they shall be located directly below or adjacent to the *pictogram* and shall comply with 703.2.

703.7 Symbols of Accessibility. Where symbols of accessibility are required, they shall comply with 703.7.

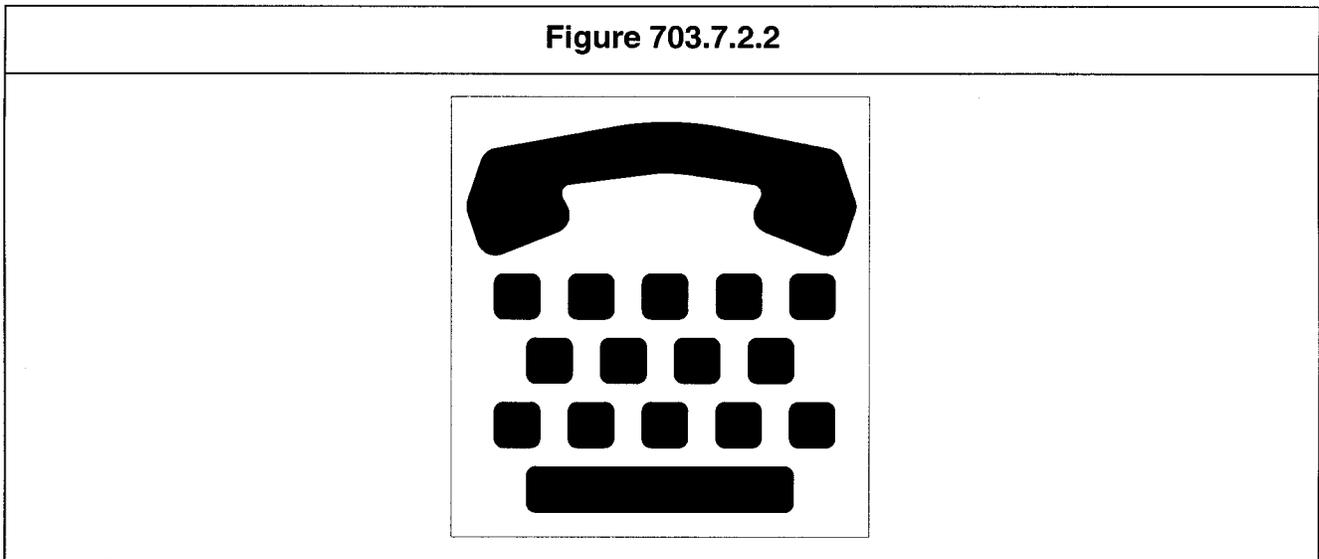
703.7.1 Finish and Contrast. Symbols of accessibility and their background shall have a non-glare finish. Symbols of accessibility shall contrast with their background with either a light symbol on a dark background or a dark symbol on a light background.

703.7.2 Symbols.

703.7.2.1 International Symbol of Accessibility. Where the International Symbol of Accessibility is required, it shall comply with Figure 703.7.2.1.



703.7.2.2 International Symbol of TTY. Where the International Symbol of TTY is required, it shall comply with Figure 703.7.2.2.



703.7.2.3 Volume Controlled Telephones. Telephones required to have a volume control shall be identified by a *sign* containing a *pictogram* of a telephone handset with radiating sound waves on a square field such as shown in Figure 703.7.2.3.

Figure 703.7.2.3



703.7.2.4 Assistive Listening Systems. Where assistive listening systems are required to be identified by the International Symbol of Access for Hearing Loss, it shall comply with Figure 703.7.2.4.

Figure 703.7.2.4

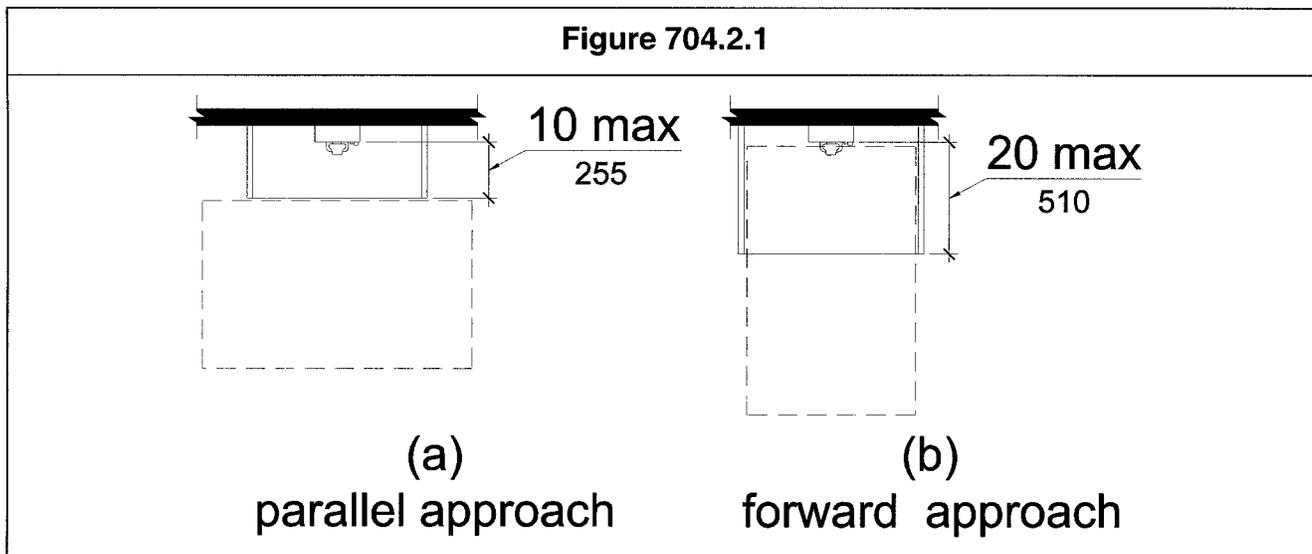


704 Telephones

704.1 General. Public telephones required to be *accessible* shall comply with 704.

704.2 Wheelchair Accessible Telephones. Public telephones required to be *wheelchair accessible* shall comply with 704.2.

704.2.1 Clear Floor or Ground Space. A clear floor or ground *space* complying with 305 shall be provided. The clear floor or ground *space* shall not be restricted by bases, enclosures or seats.



704.2.1.1 Parallel Approach. Where a parallel approach is provided, the distance from the edge of the telephone enclosure to the face of the telephone unit shall be 10 inches (255 mm) maximum.

704.2.1.2 Forward Approach. Where a forward approach is provided, the distance from the front edge of a counter within the telephone enclosure to the face of the telephone unit shall be 20 inches (510 mm) maximum.

704.2.2 Operable Parts. *Operable parts* shall comply with 309. Telephones shall have push-button controls where service for such equipment is available.

704.2.3 Protruding Objects. Telephones, enclosures and related equipment shall comply with 307.

704.2.4 Telephone Directories. Telephone directories, where provided, shall be located in accordance with 309.

704.2.5 Cord Length. The cord from the telephone to the handset shall be 29 inches (735 mm) long minimum.

704.3 Volume Control Telephones. Public telephones required to have volume controls shall be equipped with a receive volume control that provides a gain adjustable up to a minimum of 20 dB. For incremental volume control, provide at least one intermediate step of 12 dB of gain. An automatic reset shall be provided.

Advisory 704.3

Amplifiers on pay phones are located in either the base or the handset and are built into the telephone. Most are located in the base and are operated by pressing a button or key. If the microphone in the handset is not being used, a mute button that temporarily turns it off also reduces the amount of background noise which the person hears in the earpiece. If a volume adjustment is provided that allows the user to set the level anywhere from zero to the upper requirement of 20 dB, there is no need to specify a lower limit. If a stepped volume control is provided, one of the intermediate levels must provide 12 dB of gain. Consider compatibility issues when matching an amplified handset with a phone or phone system. Amplified handsets that can be switched with pay telephone handsets are available. Portable and in-line amplifiers can be used with some phones but are not practical at most public phones covered by this document.

704.4 TTYs. TTYs required at a public pay telephone shall be permanently affixed within or adjacent to the telephone enclosure. Where an acoustic coupler is used, the telephone cord shall be sufficiently long to allow connection of the TTY and the telephone receiver. *Operable parts* of TTYs and the telephones they serve shall comply with 309.

Advisory 704.4

Designers are encouraged to ensure that sufficient electrical service is available where TTYs are to be installed.

704.4.1 Clearances. Clear floor *space* positioned for a forward approach shall be provided. Knee and toe clearance complying with 306 shall be provided below the TTY. When in use, the touch surface of TTY keypads shall be 30 inches (760 mm) minimum and 34 inches (865 mm) maximum above the finish floor.

EXCEPTION: In assembly occupancies, 50 percent plus or minus one TTY, shall not be required to comply with 704.4.1 provided that the TTY has a seat.

Advisory 704.1.1 Exception

Facilities covered by this section may include, but are not limited to, airports and other passenger terminals or stations, courts, art galleries and convention centers.

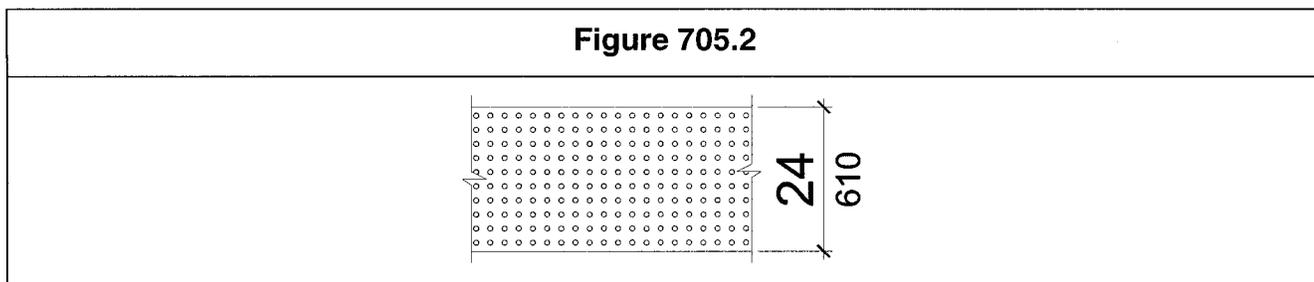
704.5 TTY Shelf. Public pay telephones required to accommodate portable TTYs shall be equipped with a shelf and an electrical outlet within or adjacent to the telephone enclosure. The telephone handset shall be capable of being placed flush on the surface of the shelf. The shelf shall be capable of

accommodating a TTY and shall have 6-inch (150 mm) minimum vertical clearance in the area where the TTY is to be placed.

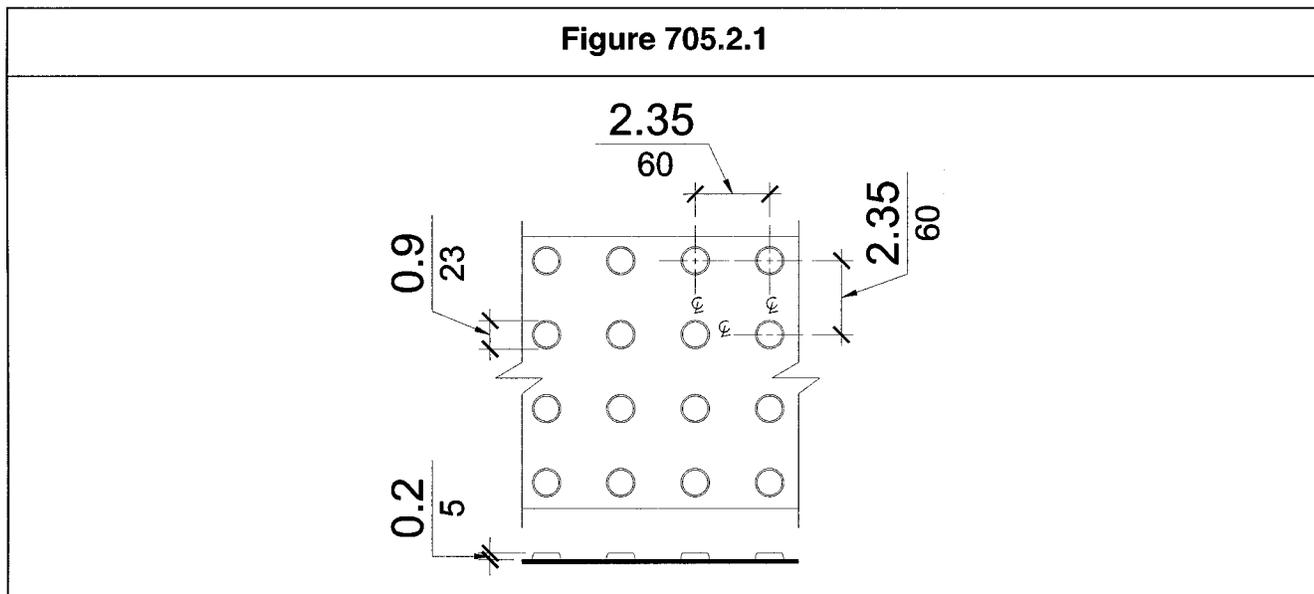
705 Detectable Warnings

705.1 General. Detectable warnings required on platform edges shall comply with 705.2, 705.3 or 705.4.

705.2 Truncated Domes. A 24-inch (610 mm) wide truncated dome surface complying with 705.2 shall be provided on the walking surface at the platform edge.



705.2.1 Dome Size. Domes shall have a diameter of 0.9 inch (23 mm), a height of 0.2 inch (5 mm) and a center-to-center spacing of 2.35 inches (60 mm).



705.2.2 Contrast. The truncated dome surface shall contrast visually with adjoining walking surfaces either light-on-dark, or dark-on-light. The material used to provide contrast shall be an integral part of the truncated dome surface.

705.2.3 Interior Locations. *Detectable warnings* in interior locations shall differ from adjoining walking surfaces in resiliency or sound-on-cane contact.

705.3 Equivalent Tactile Surface. A 24 inch (610 mm) wide *tactile* surface shall be provided on the walking surface at the platform edge. The *tactile* surface shall provide equivalent detectability underfoot to that provided by 705.2.1 and shall provide contrast in accordance with 705.2.2.

705.4 Equivalent Detectability. Equivalent detectability of the platform edge by other construction, technology, or means that will ensure equivalent or superior and reliable communication of the impending change to pedestrians who are blind or visually impaired shall be permitted. The information to be communicated must include 24 inches (610 mm) of advance warning of the platform edge and the precise orientation of the platform edge in relation to the pedestrian.

706 Assistive Listening Systems

706.1 General. Assistive listening systems required in *assembly areas* shall comply with 706.

706.2 Types of Listening Systems. Induction loops, infrared systems, FM and AM radio frequency systems, hard-wired earphones, and other equivalent devices shall be permitted as acceptable assistive listening systems.

Advisory 706.2

Assistive listening systems are generally categorized by their mode of transmission. There are hard-wired systems and three types of wireless systems: induction loop, infrared, and FM radio transmission. Each has different advantages and disadvantages that can help determine which system is best for a given application. For example, an FM system, which is broadcast to an entire area, may be better than an infrared system, which is directional in transmission, in some open-air assemblies since infrared signals can be overpowered by the sun or by movement of people. On the other hand, an infrared system is typically a better choice than an FM system where confidential transmission is important because it is directional.

706.3 Receiver Jacks. Receivers required for use with an assistive listening system shall include a 1/8-inch (3 mm) standard mono jack. Where other jack types are used, adapters shall be provided to comply with this provision.

Advisory 706.3

Earphone jacks with variable volume controls benefit only people who have slight hearing loss and do not help people who use hearing aids.

706.4 Receiver Hearing-Aid Compatibility. Receivers required to be hearing-aid compatible shall interface with T-coils in hearing aids through the provision of neck loops.

Advisory 706.4

Neckloops and headsets that can be worn as neckloops are compatible with hearing aids. Receivers that are not compatible include earbuds, which may require removal of hearing aids, silhouette transducers, earphones, and headsets that must be worn over the ear, which can create disruptive interference in the transmission and can be uncomfortable for people wearing hearing aids.

707 Automatic Teller Machines and Fare Machines

707.1 General. Automatic teller machines and fare machines required to be *accessible* shall comply with 707.

Advisory 707.1

If farecards have one tactually distinctive corner they may be inserted with greater ease. Token collection devices that are designed to accommodate tokens which are perforated can allow a person to distinguish more readily between tokens and common coins. Place *accessible* gates and fare vending machines in close proximity to other *accessible elements* when feasible so the *facility* is easier to use.

707.2 Clear Floor or Ground Space. A clear floor or ground *space* complying with 305 shall be provided.

EXCEPTION: Clear floor or ground *space* is not required at drive-up only automatic teller machines.

707.3 Operable Parts. *Operable parts* shall comply with 309. Each *operable part* shall be able to be differentiated by sound or touch without activation.

EXCEPTION: Drive-up only automatic teller machines shall not be required to comply with 309.2 and 309.3.

707.4 Input. Input devices shall comply with 707.4.

707.4.1 Privacy. The opportunity for the same degree of privacy of input shall be available to all individuals utilizing the equipment.

707.4.2 Key Surfaces. All keys used to operate a machine shall be tactually discernible. Key surfaces shall be raised above the surrounding surface by 1/25 inch (1 mm) minimum. The outer edge of key surfaces shall have a radius of 1/50 inch (0.5 mm) maximum.

EXCEPTION: The touch areas of video display screens shall not be required to be tactually discernible.

707.4.3 Separation Between Keys. Any key surface shall be separated from other key surfaces by 1/8 inch (3.2 mm) minimum. Function keys shall be separated from numeric keys by a distance that is not less than three times greater the distance between the numeric keys.

707.4.4 Numeric Keys. Where provided, numeric keys shall comply with 707.4.4.1 and 707.4.4.2.

707.4.4.1 Arrangement. Numeric keys shall be arranged in a 12-key telephone keypad layout with the number one key in the upper left hand corner.

707.4.4.2 Marking. The number five key shall have a single raised dot.

707.4.5 Function Keys. Where provided, function keys shall comply with 707.4.5.

707.4.5.1 Arrangement. Function keys shall be arranged in the order of enter, clear, cancel, add value and decrease value horizontally from left to right or vertically from top to bottom. Where provided, add value and decrease value function keys shall be grouped with other function keys.

707.4.5.2 Marking. Function keys shall be marked with *tactile characters* as follows: Enter or proceed key: raised circle; Clear or correct key: raised vertical line or bar; Cancel key: raised ex; Add value key: raised plus *sign*; Decrease value key: raised minus *sign*.

707.4.5.3 Color Coding. Where function keys are color coded, they shall be colored as follows: Enter or proceed key: green; Clear or correct key: black; Cancel key: red; Add value key: blue; Decrease value key: yellow.

707.5 Output. Output devices shall comply with 707.5.

Advisory 707.5

Speech output should be supplied for all displayed text and labels. For information which is presented in non-text form (e.g., a picture or graphic), consider using a verbal description unless the graphic is just decorative. When speech output is utilized, allow for the spoken message to be repeated if the message is very long.

707.5.1 Privacy. The opportunity for the same degree of privacy of output shall be available to all individuals utilizing the equipment.

707.5.2 Transaction Prompts. All transaction prompts within each operation shall be provided.

707.5.3 Input Verification. Verification of all user inputs shall be provided.

Advisory 707.5.3

An audible beep may be used to indicate that personal identification numbers have been entered.

707.5.4 Operating Instructions. Machines shall provide visual and audible instructions for operation. Visual and audible instructions shall include all information required by 707.5.4.

707.5.4.1 Initiation. Instructions shall be able to be initiated by the user of the machine.

707.5.4.2 Expedited Process. After initiation, instructions shall be available for the experienced user to expedite the transaction.

707.5.4.3 Orientation. Orientation and assistance for unfamiliar users to the physical features of the machine, operational options, and details for each function shall be provided.

707.5.5 Audible Instruction. Audible instructions shall be provided through a standard audio mini jack, a telephone handset, a wireless transmission system or another mechanism that is readily available to all customers.

707.5.6 Video Display Screen. The video display screen shall comply with 707.5.6.

Advisory 707.5.6

For video display screens required to be *accessible*, the screen should be visible and usable by persons standing and sitting.

707.5.6.1 Visibility. The screen shall be visible from a point located 40 inches (1015 mm) above the center of the clear floor *space* in front of the machine.

EXCEPTION: This requirement shall not apply to drive-up only automatic teller machines.

707.5.6.2 Characters. *Characters* displayed on the screen shall be in a sans serif font. *Characters* shall be 3/16 inch (4.8 mm) minimum in height based on the uppercase letter "I". *Characters* shall contrast with their background with either light *characters* on a dark background or dark *characters* on a light background.

707.5.7 Dispensing of Bills. Machines that dispense paper currency shall dispense the currency in descending order with the lowest denomination on top.

707.5.8 Receipts and Verification. Where a receipt is available and is requested, the following options shall be provided: a printed receipt, audible presentation of the transaction information provided on the receipt, or both.