public use is the provision of housing programs by, for or on behalf of a public entity.

PUBLIC-USE AREAS. *Interior or exterior rooms or spaces of a building that are made available to the general public and do not include common use areas. Public use areas may be provided at a building that is privately or publicly owned.*

[A] PUBLIC WAY. A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).

[F] PYROPHORIC. A chemical with an auto-ignition temperature in air, at or below a temperature of 130°F (54.4°C).

[F] PYROTECHNIC COMPOSITION. A chemical mixture that produces visible light displays or sounds through a self-propagating, heat-releasing chemical reaction which is initiated by ignition.

QUALIFIED HISTORIC BUILDING OR FACILITY. *[DSA-AC] A building or facility that is listed in or eligible for listing in the National Register of Historic Places, or designated as historic under an appropriate State or local law. See C.C.R. Title 24, Part 8.*

RAFTERTAIL. [SFM] *(See Chapter 7A, Section 702A for defined term.)*

RAMP. A walking surface that has a running slope steeper than one unit vertical in 20 units horizontal (5-percent slope).

RAMP-ACCESS OPEN PARKING GARAGES. Open parking garages employing a series of continuously rising floors or a series of interconnecting ramps between floors permitting the movement of vehicles under their own power from and to the street level.

REASONABLE PORTION [DSA-AC] *That segment of a building, facility, area, space or condition, which would normally be necessary if the activity therein is to be accessible by persons with disabilities.*

RECESSED STEPS. *A riser/tread or series of risers/treads extending down into the deck with the bottom riser or tread terminating at the pool wall (thus creating a "stairwell").*

RECESSED TREADS. *A series of vertically spaced cavities in the pool wall creating tread areas for step holes.*

RECIRCULATION SYSTEM. *The interconnected system traversed by the recirculated water from the pool until it is returned to the pool, i.e., from the pool through the collector or surge tank, recirculation pump, filters, chemical treatment and heater (if provided), and returned to the pool.*

RECOMMEND. [DSA-AC, HCD 1 & HCD 2] *Does not require mandatory acceptance, but identifies a suggested action that shall be considered for the purpose of providing a greater degree of accessibility to persons with disabilities.*

[F] RECORD DRAWINGS. Drawings ("as builts") that document the location of all devices, appliances, wiring sequences, wiring methods and connections of the components of a fire alarm system as installed.

REFLECTIVE PLASTIC CORE FOIL INSULATION. An insulation material packaged in rolls, that is less than 0.5 inches thick, with at least one exterior low emittance surface (0.1 or less) and a core material containing voids or cells.

[A] REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

[A] REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A registered design professional engaged by the owner to review and coordinate certain aspects of the project, as determined by the building official, for compatibility with the design of the building or structure, including submittal documents prepared by others, deferred submittal documents and phased submittal documents.

RELIGIOUS WORSHIP, PLACE OF. A building or portion thereof intended for the performance of religious services.

RELOCATABLE BUILDING (PUBLIC SCHOOL). *Any building with an integral floor structure which is capable of being readily moved. (See Education Code Section 17350.) Relocatable buildings that are to be placed on substandard foundations not complying with the requirements of Part 2, Title 24, C.C.R., require a statement from the school district stating that the durability requirements for those foundations may be waived and acknowledging the temporary nature of the foundations.*

REMODELING. [DSA-AC] *See "Alteration."*

[A] REPAIR. The reconstruction or renewal of any part of an existing building for the purpose of its maintenance.

REROOFING. The process of recovering or replacing an existing roof covering. See "Roof recover" and "Roof replacement."

RESIDENTIAL AIRCRAFT HANGAR. An accessory building less than 2,000 square feet (186 m^2) and 20 feet (6096 mm) in building height constructed on a one- or two-family property where aircraft are stored. Such use will be considered as a residential accessory use incidental to the dwelling.

RESIDENTIAL CARE FACILITY FOR THE CHRONICALLY ILL (RCF/CI). *As termed, means a housing arrangement with a maximum capacity of 25 residents that provides a range of services to residents who have chronic, life-threatening illnesses.*

RESIDENTIAL CARE FACILITY FOR THE ELDERLY (RCFE). *As defined in Health and Safety Code Section 1569.2, shall mean a facility with a housing arrangement chosen voluntarily by persons 60 years of age or over, or their authorized representative, where varying levels and intensities of care and supervision, protective supervision or personal care are provided, based on their varying needs, as determined in order to be admitted and to remain in the facility. Persons under 60 years of age with compatible needs, as determined by the Department of Social Services in regulations, may be allowed to be admitted or retained in a residential-care facility for the elderly.*

DIVISION 4: ACCESSIBLE ROUTES

11B-401 General

***11B*-401.1 Scope.** The provisions of *Division* 4 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter*.

11B-402 Accessible routes

***11B*-402.1 General.** Accessible routes shall comply with *11B*-402.

***11B*-402.2 Components.** Accessible routes shall consist of one or more of the following components: walking surfaces with a running slope not steeper than 1:20, doorways, ramps, curb ramps excluding the flared sides, elevators, and platform lifts. All components of an accessible route shall comply with the applicable requirements of *Division* 4.

11B-403 Walking surfaces

***11B*-403.1 General.** Walking surfaces that are a part of an accessible route shall comply with *Section 11B*-403.

***11B*-403.2 Floor or ground surface.** Floor or ground surfaces shall comply with *Section 11B*-302.

***11B*-403.3 Slope.** The running slope of walking surfaces shall not be steeper than 1:20. The cross slope of walking surfaces shall not be steeper than 1:48.

Exception: *The running slope of sidewalks shall not exceed the general grade established for the adjacent street or highway.*

***11B*-403.4 Changes in level.** Changes in level shall comply with *Section 11B*-303.

***11B*-403.5 Clearances.** Walking surfaces shall provide clearances complying with *Section 11B*-403.5.

Exception: Within employee work areas, clearances on common use circulation paths shall be permitted to be decreased by work area equipment provided that the decrease is essential to the function of the work being performed.

***11B*-403.5.1 Clear width.** Except as provided in *Sections 11B*-403.5.2 and *11B*-403.5.3, the clear width of walking surfaces shall be 36 inches (*914* mm) minimum.

Exceptions:

1. The clear width shall be permitted to be reduced to 32 inches (*813* mm) minimum for a length of 24 inches (610 mm) maximum provided that reduced width segments are separated by segments that are 48 inches (*1219* mm) long minimum and 36 inches (*914* mm) wide minimum.
2. *The clear width for walking surfaces in corridors serving an occupant load of 10 or more shall be 44 inches (1118 mm) minimum.*
3. *The clear width for sidewalks and walks shall be 48 inches (1219 mm) minimum. When, because of right-of-way restrictions, natural barriers or other existing conditions, the enforcing agency determines that compliance with the 48-inch (1219 mm) clear sidewalk width would create an unreasonable hardship, the clear width may be reduced to 36 inches (914 mm).*
4. *The clear width for aisles shall be 36 inches (914 mm) minimum if serving elements on only one side, and 44 inches (1118 mm) minimum if serving elements on both sides.*

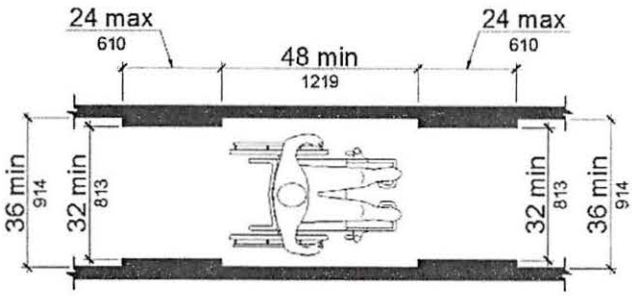


FIGURE *11B*-403.5.1
CLEAR WIDTH OF AN ACCESSIBLE ROUTE

***11B*-403.5.2 Clear width at turn.** Where the accessible route makes a 180 degree turn around an element which is less than 48 inches (*1219* mm) wide, clear width shall be 42 inches (*1067* mm) minimum approaching the turn, 48 inches (*1219* mm) minimum at the turn and 42 inches (*1067* mm) minimum leaving the turn.

Exception: Where the clear width at the turn is 60 inches (*1524* mm) minimum compliance with *Section 11B*-403.5.2 shall not be required.

***11B*-403.5.3 Passing spaces.** An accessible route with a clear width less than 60 inches (*1524* mm) shall provide passing spaces at intervals of 200 feet (*60,960 mm*) maximum. Passing spaces shall be either: a space 60 inches (*1524* mm) minimum by 60 inches (*1524* mm) minimum; or, an intersection of two walking surfaces providing a T-shaped space complying with *Section 11B*-304.3.2 where the base and arms of the T-shaped space extend 48 inches (*1219* mm) minimum beyond the intersection.

***11B*-403.6 Handrails.** Where handrails are provided along walking surfaces with running slopes not steeper than 1:20 they shall comply with *Section 11B*-505.

11B*-403.7 *Continuous gradient. *All walks with continuous gradients shall have resting areas, 60 inches (1524 mm) in length, at intervals of 400 feet (121,920 mm) maximum. The resting area shall be at least as wide as the walk. The slope of the resting area in all directions shall be 1:48 maximum.*

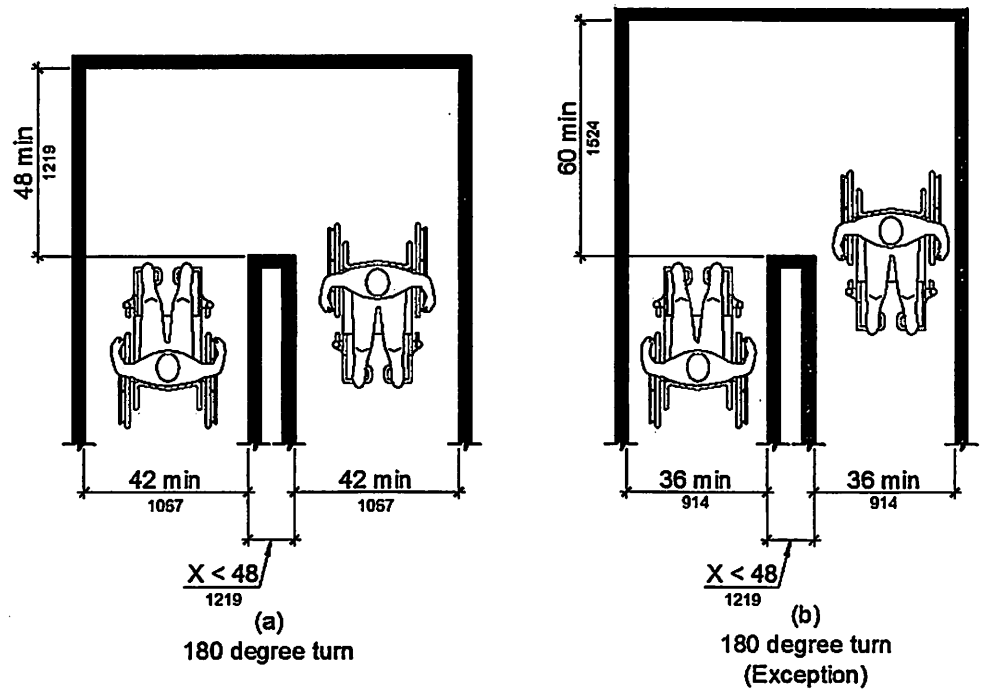


FIGURE *11B*-403.5.2
CLEAR WIDTH AT TURN

***11B*-404 Doors, doorways, and gates**

***11B*-404.1 General.** Doors, doorways, and gates that are part of an accessible route shall comply with *Section 11B*-404.

Exceptions:

1. Doors, doorways, and gates designed to be operated only by security personnel shall not be required to comply with *Sections 11B*-404.2.7, *11B*-404.2.8, *11B*-404.2.9, *11B*-404.3.2 and *11B*-404.3.4 through *11B*-404.3.7. *A sign visible from the approach side complying with Section 11B-703.5 shall be posted stating "Entry restricted and controlled by security personnel".*
2. *At detention and correctional facilities, doors, doorways, and gates designed to be operated only by security personnel shall not be required to comply with Sections 11B-404.2.7, 11B-404.2.8, 11B-404.2.9, 11B-404.3.2 and 11B-404.3.4 through 11B-404.3.7.*

***11B*-404.2 Manual doors, doorways, and manual gates** Manual doors and doorways and manual gates intended for user passage shall comply with *Section 11B*-404.2.

***11B*-404.2.1 Revolving doors, gates, and turnstiles.** Revolving doors, revolving gates, and turnstiles shall not be part of an accessible route.

***11B*-404.2.2 Double-leaf doors and gates.** At least one of the active leaves of doorways with two leaves shall comply with *Sections 11B*-404.2.3 and *11B*-404.2.4.

***11B*-404.2.3 Clear width.** Door openings shall provide a clear width of 32 inches (*813* mm) minimum. Clear openings of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees. Openings more than 24 inches (610 mm) deep shall provide a clear opening of 36 inches (*914* mm) minimum. There shall be no projections into the required clear opening width lower than 34 inches (*864* mm) above the finish floor or ground. Projections into the clear opening width between 34 inches (*864* mm) and 80 inches (*2032* mm) above the finish floor or ground shall not exceed 4 inches (*102* mm).

Exceptions:

1. In alterations, a projection of $^5/_8$ inch (*15.9* mm) maximum into the required clear width shall be permitted for the latch side stop.
2. Door closers and door stops shall be permitted to be 78 inches (*1981* mm) minimum above the finish floor or ground.
3. *Doors, doorways, and gates not providing full user passage shall provide a clear width of 20 inches (510 mm) minimum.*

***11B*-404.2.4 Maneuvering clearances.** Minimum maneuvering clearances at doors and gates shall comply with *Section 11B*-404.2.4. Maneuvering clearances shall extend the full width of the doorway and the required latch side or hinge side clearance.

Exception: ***Reserved.***

***11B*-404.2.4.1 Swinging doors and gates.** Swinging doors and gates shall have maneuvering clearances complying with Table *11B*-404.2.4.1.

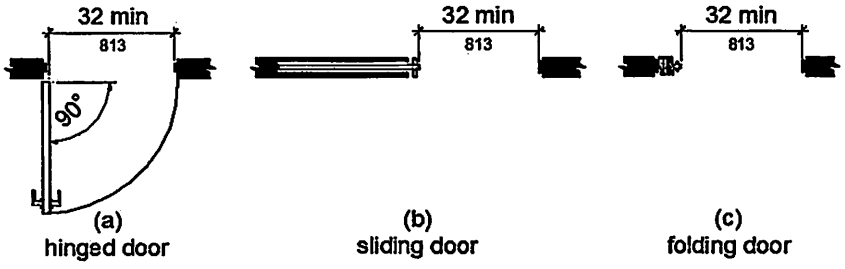
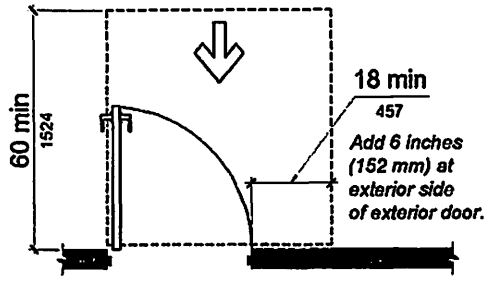


FIGURE *11B*-404.2.3
CLEAR WIDTH OF DOORWAYS

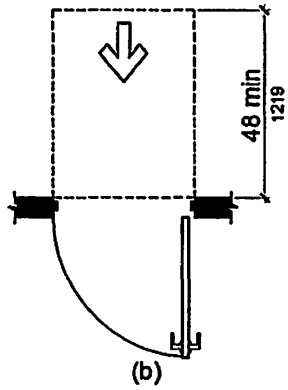
TABLE *11B*-404.2.4.1
MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES

TYPE OF USE		MINIMUM MANEUVERING CLEARANCE	
Approach direction	Door or gate side	Perpendicular to doorway	Parallel to doorway (beyond latch side unless noted)
From front	Pull	60 inches (*1524* mm)	18 inches (*457* mm)[5]
From front	Push	48 inches (*1219* mm)	0 inches (0 mm)[1]
From hinge side	Pull	60 inches (*1524* mm)	36 inches (*914* mm)
From hinge side	Push	*44 inches (1118 mm)*[2]	22 inches (*559* mm)[3]
From latch side	Pull	*60 inches (1524 mm)*	24 inches (610 mm)
From latch side	Push	*44 inches (1118 mm)*[4]	24 inches (610 mm)

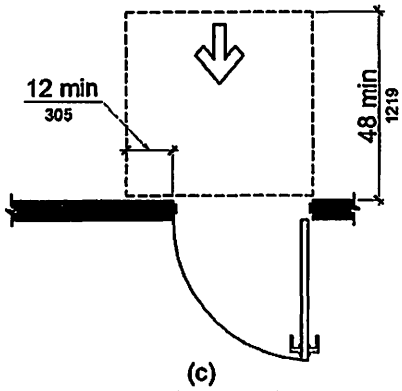
1. Add 12 inches (305 mm) if closer and latch are provided.
2. Add *4 inches (102 mm)* if closer and latch are provided.
3. Beyond hinge side.
4. Add *4 inches (102 mm)* if closer is provided.
5. *Add 6 inches (152 mm) at exterior side of exterior doors.*



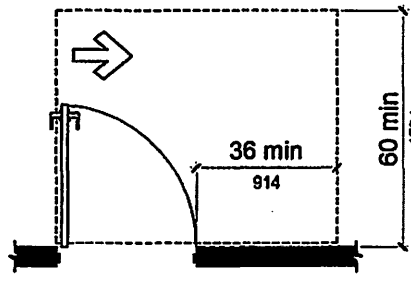
(a)
front approach, pull side



(b)
front approach, push side



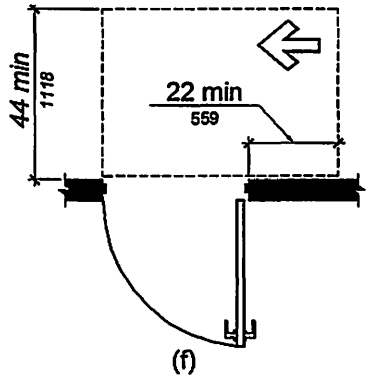
(c)
front approach, push side, door
provided with both closer and latch



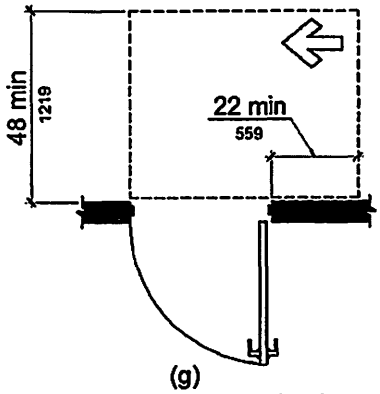
(d)
hinge approach, pull side

Model code
figure not
applicable

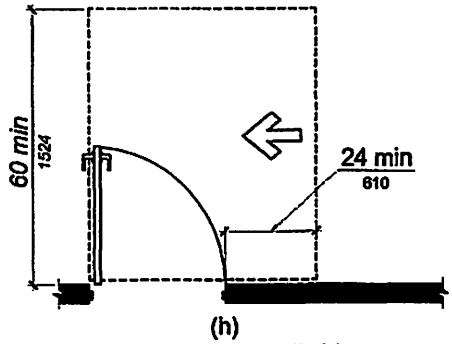
(e)
reserved



(f)
hinge approach, push side



(g)
hinge approach, push side, door
provided with both closer and latch

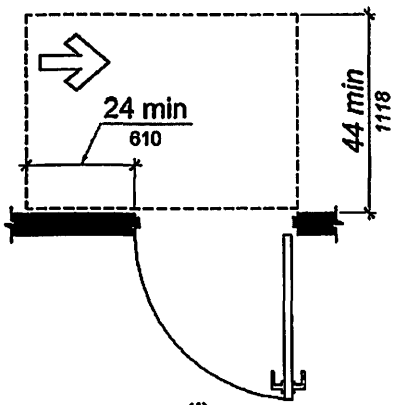


(h)
latch approach, pull side

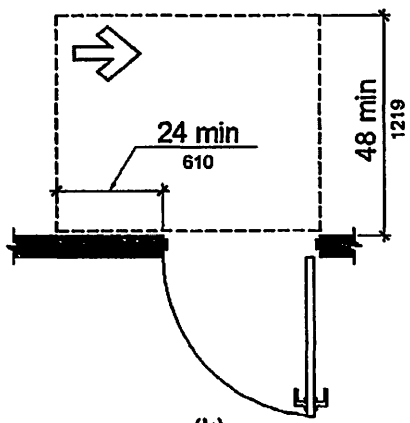
Model code
figure not
applicable

(i)
reserved

FIGURE *11B*-404.2.4.1
MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES



(j)
latch approach, push side



(k)
latch approach, push side, door provided with closer

FIGURE *11B*-404.2.4.1—continued
MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES

***11B*-404.2.4.2 Doorways without doors or gates, sliding doors, and folding doors.** Doorways less than 36 inches (*914* mm) wide without doors or gates, sliding doors, or folding doors shall have maneuvering clearances complying with Table *11B*-404.2.4.2.

***11B*-404.2.4.3 Recessed doors and gates.** Maneuvering clearances for forward approach shall be provided when any obstruction within 18 inches (*457* mm) of the latch side at *an interior* doorway, *or within 24 inches (610 mm) of the latch side of an exterior doorway,* projects more than 8 inches (*203* mm) beyond the face of the door, measured perpendicular to the face of the door or gate.

***11B*-404.2.4.4 Floor or ground surface.** Floor or ground surface within required maneuvering clearances shall comply with *Section 11B*-302. Changes in level are not permitted.

Exceptions:

1. Slopes not steeper than 1:48 shall be permitted.
2. Changes in level at thresholds complying with *Section 11B*-404.2.5 shall be permitted.

***11B*-404.2.5 Thresholds.** Thresholds, if provided at doorways, shall be $^1/_2$ inch (*12.7* mm) high maximum. Raised thresholds and changes in level at doorways shall comply with *Sections 11B*-302 and *11B*-303.

Exception: ***Reserved.***

***11B*-404.2.6 Doors in series and gates in series.** The distance between two hinged or pivoted doors in series and gates in series shall be 48 inches (*1219* mm) minimum plus the width of doors or gates swinging into the space.

***11B*-404.2.7 Door and gate hardware.** Handles, pulls, latches, locks, and other operable parts on doors and gates shall comply with *Section 11B*-309.4. Operable parts of such hardware shall be 34 inches (*864* mm) minimum and *44 inches (1118 mm)* maximum above the finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.

Exceptions:

1. Existing locks shall be permitted in any location at existing glazed doors without stiles, existing overhead rolling doors or grilles, and similar existing doors or grilles that are designed with locks that are activated only at the top or bottom rail.
2. Access gates in barrier walls and fences protecting pools, spas, and hot tubs shall be permitted to have operable parts of the release of latch on self-latching devices at 54 inches (*1372* mm) maximum above the finish floor or ground provided the self-latching devices are not also self-locking devices and operated by means of a key, electronic opener, or integral combination lock.

***11B*-404.2.8 Closing speed.** Door and gate closing speed shall comply with *Section 11B*-404.2.8.

***11B*-404.2.8.1 Door closers and gate closers.** Door closers and gate closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to a position of 12 degrees from the latch is 5 seconds minimum.

***11B*-404.2.8.2 Spring hinges.** Door and gate spring hinges shall be adjusted so that from the open position of 70 degrees, the door or gate shall move to the closed position in 1.5 seconds minimum.

TABLE *11B*-404.2.4.2
MANEUVERING CLEARANCES AT DOORWAYS WITHOUT DOORS OR GATES, MANUAL SLIDING DOORS, AND MANUAL FOLDING DOORS

	MINIMUM MANEUVERING CLEARANCE	
Approach direction	Perpendicular to doorway	Parallel to doorway (beyond stop/latch side unless noted)
From Front	48 inches (*1219* mm)	0 inches (0 mm)
From side[1]	42 inches (*1067* mm)	0 inches (0 mm)
From pocket/hinge side	42 inches (*1067* mm)	22 inches (*559* mm)[2]
From stop/latch side	42 inches (*1067* mm)	24 inches (610 mm)

1. Doorway with no door only.
2. Beyond pocket/hinge side.

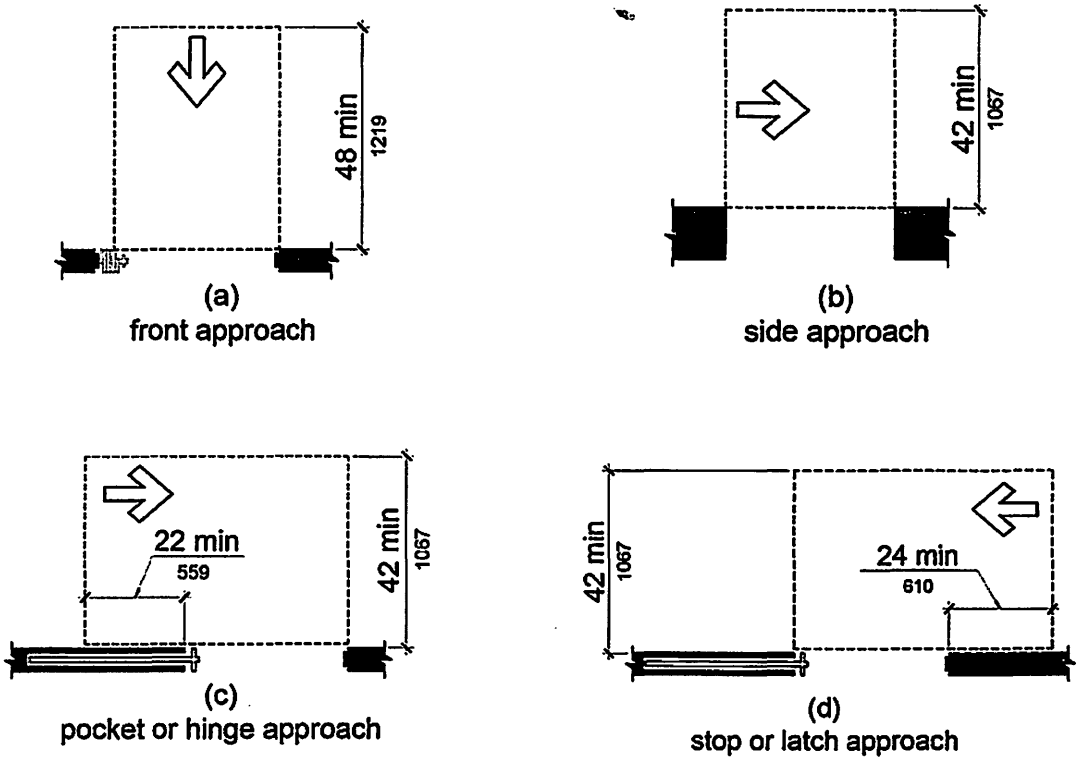


FIGURE *11B*-404.2.4.2
MANEUVERING CLEARANCES AT DOORWAYS WITHOUT DOORS, SLIDING DOORS, GATES, AND FOLDING DOORS

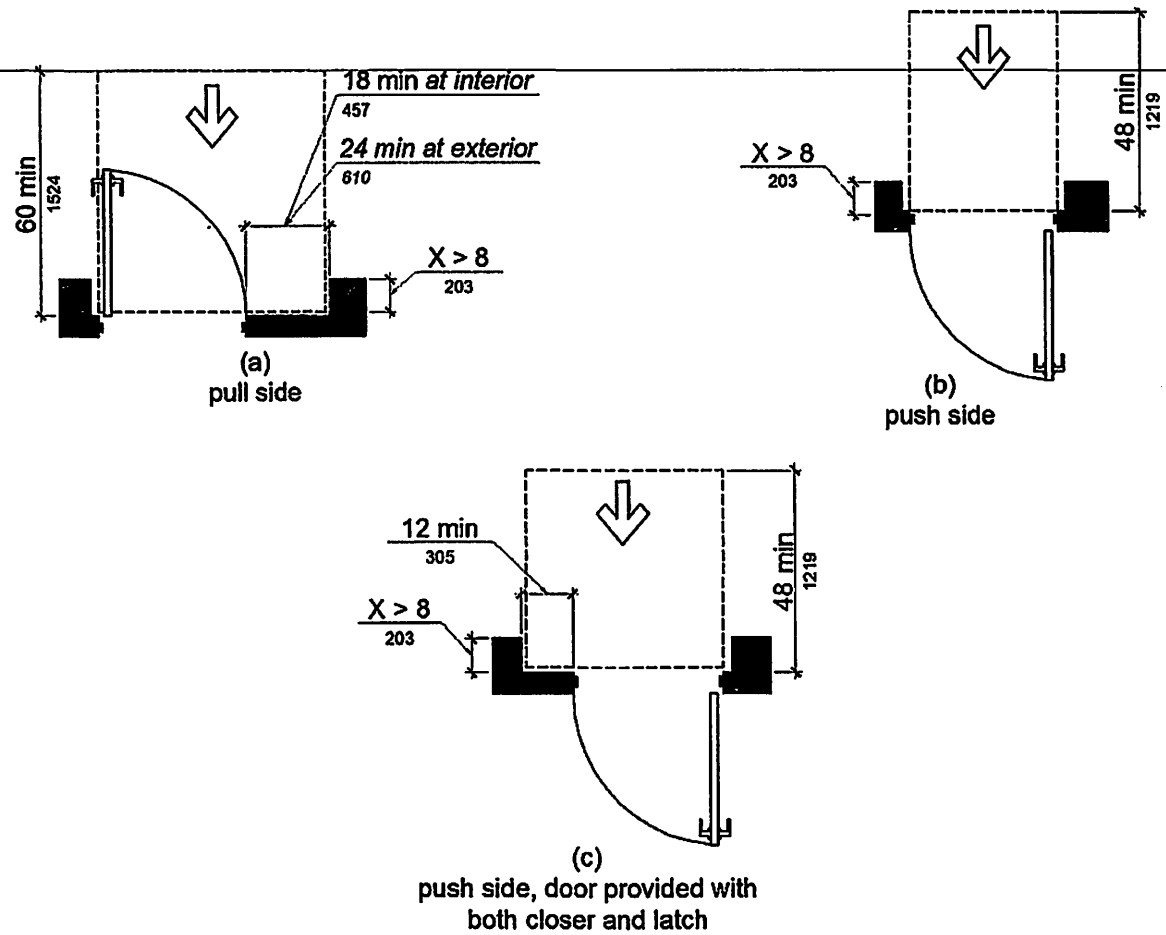


FIGURE *11B*-404.2.4.3
MANEUVERING CLEARANCES AT RECESSED DOORS AND GATES

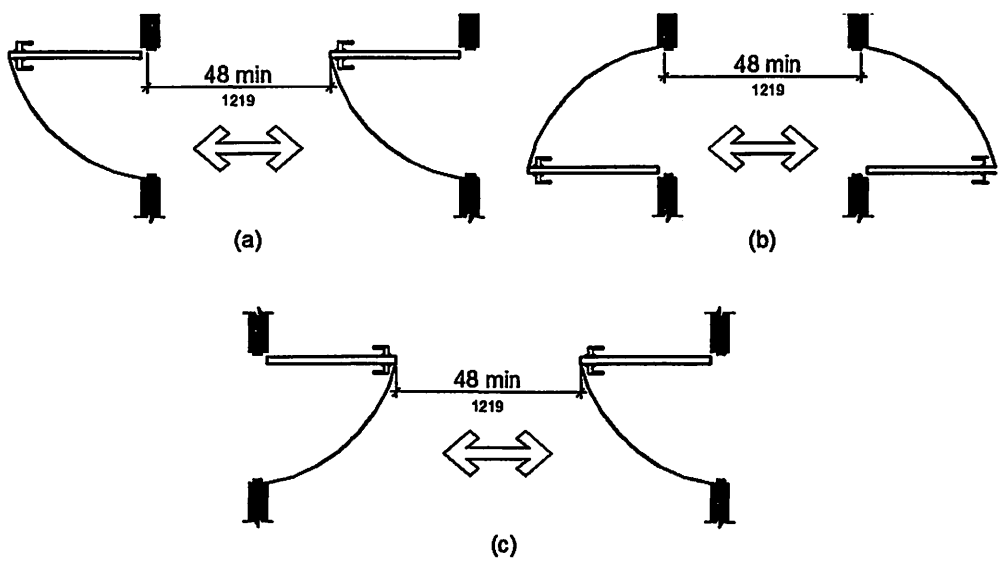


FIGURE *11B*-404.2.6
DOORS IN SERIES AND GATES IN SERIES

***11B*-404.2.9 Door and gate opening force.** The force for pushing or pulling open a door or gate other than fire doors shall be as follows:

1. Interior hinged doors and gates: 5 pounds (22.2 N) maximum.
2. Sliding or folding doors: 5 pounds (22.2 N) maximum.
3. *Required fire doors: the minimum opening force allowable by the appropriate administrative authority, not to exceed 15 pounds (66.7 N).*
4. *Exterior hinged doors: 5 pounds (22.2 N) maximum.*

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

Exceptions:

1. *Exterior doors to machinery spaces including, but not limited to, elevator pits or elevator penthouses; mechanical, electrical or communications equipment rooms; piping or equipment catwalks; electric substations and transformer vaults; and highway and tunnel utility facilities.*
2. *When, at a single location, one of every eight exterior door leafs, or fraction of eight, is a powered door, other exterior doors at the same location, serving the same interior space, may have a maximum opening force of 8.5 pounds (37.8 N). The powered leaf(s) shall be located closest to the accessible route.*
   a. *Powered doors shall comply with Section 11B-404.3. Powered doors shall be fully automatic doors complying with Builders Hardware Manufacturers' Association (BHMA) A156.10 or low energy operated doors complying with BHMA A156.19.*
   b. *Powered doors serving a building or facility with an occupancy of 150 or more shall be provided with a back-up battery or back-up generator. The back-up power source shall be able to cycle the door a minimum of 100 cycles.*
   c. *Powered doors shall be controlled on both the interior and exterior sides of the doors by sensing devices, push plates, vertical actuation bars or other similar operating devices complying with Sections 11B-304, 11B-305 and 11B-308.*

      At each location where push plates are provided there shall be two push plates; the centerline of one push plate shall be 7 inches (178 mm) minimum and 8 inches (203 mm) maximum above the floor or ground surface and the centerline of the second push plate shall be 30 inches (762 mm) minimum and 44 inches (1118 mm) maximum above the floor or ground surface. Each push plate shall be a minimum of 4 inches (102 mm) diameter or a minimum of 4 inches by 4 inches (102 mm by 102 mm) square and shall display the International Symbol of Accessibility complying with Section 11B-703.7.

      At each location where vertical actuation bars are provided the operable portion shall be located so the bottom is 5 inches (127 mm) maximum above the floor or ground surface and the top is 35 inches (889 mm) minimum above the floor or ground surface. The operable portion of each vertical actuation bar shall be a minimum of 2 inches (51 mm) wide and shall display the International Symbol of Accessibility complying with Section 11B-703.7.

      Where push plates, vertical actuation bars or other similar operating devices are provided, they shall be placed in a conspicuous location. A level and clear floor or ground space for forward or parallel approach complying with Section 11B-305 shall be provided, centered on the operating device. Doors shall not swing into the required clear floor or ground space.
   d. *Signage identifying the accessible entrance required by Section 11B-216.6 shall be placed on, or immediately adjacent to, each powered door. Signage shall be provided in compliance with BHMA A156.10 or BHMA A156.19, as applicable.*
   e. *In addition to the requirements of Item d, where a powered door is provided in buildings or facilities containing assembly occupancies of 300 or more, a sign displaying the International Symbol of Accessibility measuring 6 inches by 6 inches (152 mm by 152 mm), complying with Section 11B-703.7, shall be provided above the door on both the interior and exterior sides of each powered door.*

***11B*-404.2.10 Door and gate surfaces.** Swinging door and gate surfaces within 10 inches (*254* mm) of the finish floor or ground measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within $^{1}/_{16}$ inch (1.6 mm) of the same plane as the other *and be free of sharp or abrasive edges.* Cavities created by added kick plates shall be capped.

Exceptions:

1. Sliding doors shall not be required to comply with *Section 11B*-404.2.10.
2. Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at 60 degrees minimum from the horizon-

tal shall not be required to meet the 10 inch (*254* mm) bottom smooth surface height requirement.

3. Doors and gates that do not extend to within 10 inches (*254* mm) of the finish floor or ground shall not be required to comply with *Section 11B*-404.2.10.
4. ***Reserved.***

***11B*-404.2.11 Vision lights.** Doors, gates, and side lights adjacent to doors or gates, containing one or more glazing panels that permit viewing through the panels shall have the bottom of at least one glazed panel located 43 inches (*1092* mm) maximum above the finish floor.

Exception: *Glazing panels* with the lowest part more than 66 inches (*1676* mm) from the finish floor or ground shall not be required to comply with *Section 11B*-404.2.11.

***11B*-404.3 Automatic and power-assisted doors and gates.** Automatic doors and automatic gates shall comply with *Section 11B*-404.3. Full-powered automatic doors shall comply with ANSI/BHMA A156.10. Low-energy and power-assisted doors shall comply with ANSI/BHMA A156.19.

***11B*-404.3.1 Clear width.** Doorways shall provide a clear opening of 32 inches (*813* mm) minimum in power-on and power-off mode. The minimum clear width for automatic door systems in a doorway *shall provide a clear, unobstructed opening of 32 inches (813 mm) with one leaf positioned at an angle of 90 degrees from its closed position.*

***11B*-404.3.2 Maneuvering clearance.** Clearances at power-assisted doors and gates shall comply with *Section 11B*-404.2.4. Clearances at automatic doors and gates without standby power and serving an accessible means of egress shall comply with *Section 11B*-404.2.4.

Exception: Where automatic doors and gates remain open in the power-off condition, compliance with *Section 11B*-404.2.4 shall not be required.

***11B*-404.3.3 Thresholds.** Thresholds and changes in level at doorways shall comply with *Section 11B*-404.2.5.

***11B*-404.3.4 Doors in series and gates in series.** Doors in series and gates in series shall comply with *Section 11B*-404.2.6.

***11B*-404.3.5 Controls.** Manually operated controls shall comply with *Section 11B*-309. The clear floor space adjacent to the control shall be located beyond the arc of the door swing.

***11B*-404.3.6 Break out opening.** Where doors and gates without standby power are a part of a means of egress, the clear break out opening at swinging or sliding doors and gates shall be 32 inches (*813* mm) minimum when operated in emergency mode.

Exception: Where manual swinging doors and gates comply with *Section 11B*-404.2 and serve the same means of egress compliance with *Section 11B*-404.3.6 shall not be required.

***11B*-404.3.7 Revolving doors, revolving gates, and turnstiles.** Revolving doors, revolving gates, and turnstiles shall not be part of an accessible route.

11B-405 Ramps

***11B*-405.1 General.** Ramps on accessible routes shall comply with *Section 11B*-405.

Exception: In assembly areas, aisle ramps adjacent to seating and not serving elements required to be on an accessible route shall not be required to comply with *Section 11B*-405.

***11B*-405.2 Slope.** Ramp runs shall have a running slope not steeper than 1:12.

Exception: ***Reserved.***

***11B*-405.3 Cross slope.** Cross slope of ramp runs shall not be steeper than 1:48.

***11B*-405.4 Floor or ground surfaces.** Floor or ground surfaces of ramp runs shall comply with *Section 11B*-302. Changes in level other than the running slope and cross slope are not permitted on ramp runs.

***11B*-405.5 Clear width.** The clear width of a ramp run *shall be 48 inches (1219 mm)* minimum.

Exceptions:

1. Within employee work areas, the required clear width of ramps that are a part of common use circulation paths shall be permitted to be decreased by work area equipment provided that the decrease is essential to the function of the work being performed.
2. *Handrails may project into the required clear width of the ramp at each side $3^1/_2$ inches (89 mm) maximum at the handrail height.*
3. *The clear width of ramps in residential uses serving an occupant load of fifty or less shall be 36 inches (914 mm) minimum between handrails.*

***11B*-405.6 Rise.** The rise for any ramp run shall be 30 inches (*762* mm) maximum.

***11B*-405.7 Landings.** Ramps shall have landings at the top and the bottom of each ramp run. Landings shall comply with *Section 11B*-405.7.

***11B*-405.7.1 Slope.** Landings shall comply with *Section 11B*-302. Changes in level are not permitted.

Exception: Slopes not steeper than 1:48 shall be permitted.

***11B*-405.7.2 Width.** The landing clear width shall be at least as wide as the widest ramp run leading to the landing.

11B-405.7.2.1: Top landings shall be 60 inches (1524 mm) wide minimum.

***11B*-405.7.3 Length.** The landing clear length shall be 60 inches (1524 mm) long minimum.

11B-405.7.3.1: Bottom landings shall extend 72 inches (1829 mm) minimum in the direction of ramp run.

***11B*-405.7.4 Change in direction.** Ramps that change direction between runs at landings shall have a clear landing 60 inches (1525 mm) minimum by *72 inches (1829 mm)* minimum *in the direction of downward travel from the upper ramp run.*

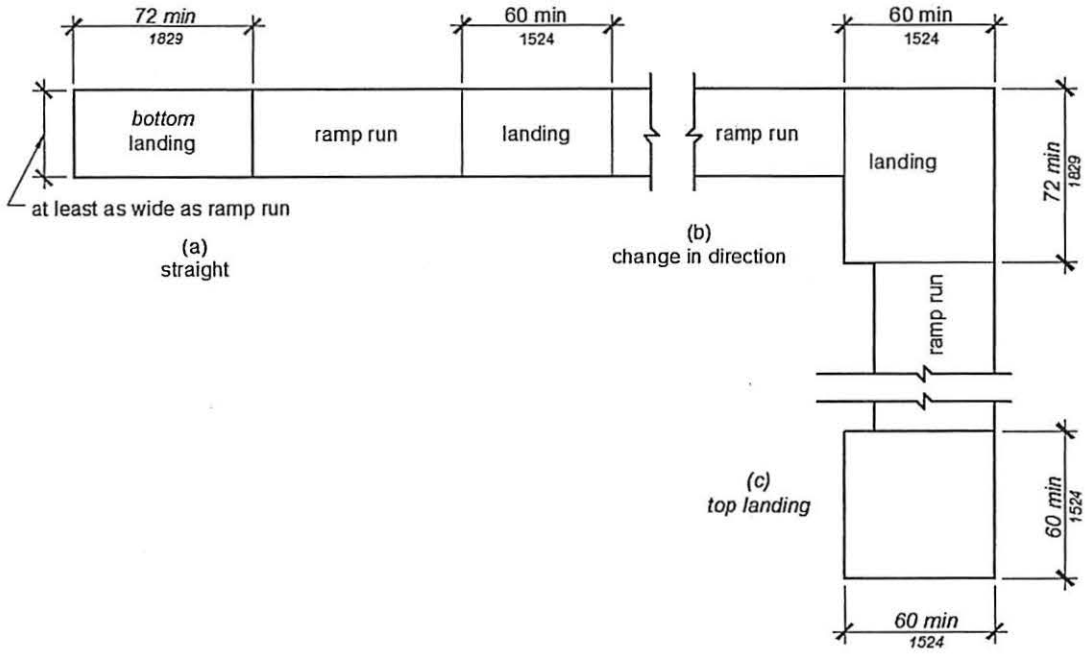


FIGURE *11B*-405.7
RAMP LANDINGS

***11B*-405.7.5 Doorways.** Where doorways are located adjacent to a ramp landing, maneuvering clearances required by *Sections 11B*-404.2.4 and *11B*-404.3.2 shall be permitted to overlap the required landing area. *Doors, when fully open, shall not reduce the required ramp landing width by more than 3 inches (76 mm). Doors, in any position, shall not reduce the minimum dimension of the ramp landing to less than 42 inches (1067 mm).*

***11B*-405.8 Handrails.** Ramp runs shall have handrails complying with *Section 11B*-505.

Exceptions:

1. *Reserved.*
2. *Handrails are not required at ramps immediately adjacent to fixed seating in assembly areas.*
3. *Curb ramps do not require handrails.*
4. *At door landings, handrails are not required on ramp runs less than 6 inches (152 mm) in rise or 72 inches (1829 mm) in length.*

***11B*-405.9 Edge protection.** Edge protection complying with *Section 11B*-405.9.2 shall be provided on each side of ramp runs and at each side of ramp landings.

Exceptions:

1. Edge protection shall not be required on ramps that are not required to have handrails and have sides complying with *Section 11B*-406.2.2.
2. Edge protection shall not be required on the sides of ramp landings serving an adjoining ramp run or stairway.
3. Edge protection shall not be required on the sides of ramp landings having a vertical drop-off of $^1/_2$ inch (*12.7* mm) maximum within 10 inches (*254* mm) horizontally of the minimum landing area specified in *Section 11B*-405.7.

11B*-405.9.1 *Reserved.

***11B*-405.9.2 Curb or barrier.** A curb, *2 inches (51 mm) high minimum*, or barrier shall be provided that prevents the passage of a 4 inch (*102* mm) diameter sphere, where any portion of the sphere is within 4 inches (*102* mm) of the finish floor or ground surface. *To prevent wheel entrapment, the curb or barrier shall provide a continuous and uninterrupted barrier along the length of the ramp.*

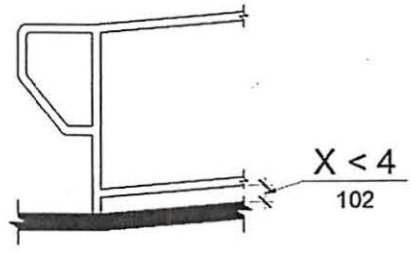


FIGURE *11B*-405.9.2
CURB OR BARRIER EDGE PROTECTION

***11B*-405.10 Wet conditions.** Landings subject to wet conditions shall be designed to prevent the accumulation of water.

11B*-406 *Curb ramps, blended transitions and islands

***11B-406.1 General.** Curb ramps, blended transitions and islands on accessible routes shall comply with Section 11B-406. Curb ramps may be perpendicular, parallel, or a combination of perpendicular and parallel.*

11B-406.1.1 Perpendicular curb ramps. Perpendicular curb ramps shall comply with Section 11B-406.2.

11B-406.1.2 Parallel curb ramps. Parallel curb ramps shall comply with Section 11B-406.3.

11B-406.1.3 Blended transitions. Blended transitions shall comply with Section 11B-406.4.

11B-406.1.4 Islands. Islands shall comply with Section 11B-406.6.

11B-406.2 Perpendicular curb ramps. Perpendicular curb ramps shall comply with Sections 11B-406.2 and 11B-406.5.

11B-406.2.1 Slope. Ramp runs shall have a running slope not steeper than 1:12.

11B-406.2.2 Sides of curb ramps. Where provided, curb ramp flares shall not be steeper than 1:10.

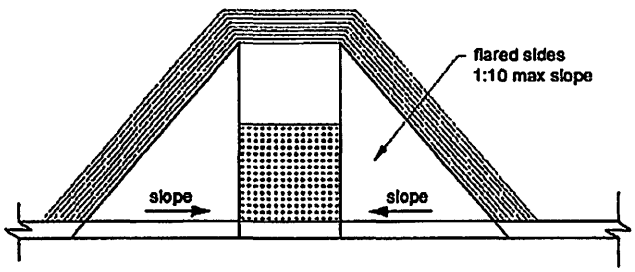


FIGURE 11B-406.2.2
SIDES OF CURB RAMPS

11B-406.3 Parallel curb ramps. Parallel curb ramps shall comply with Sections 11B-406.3 and 11B-406.5.

11B-406.3.1 Slope. The running slope of the curb ramp segments shall be in-line with the direction of sidewalk travel. Ramp runs shall have a running slope not steeper than 1:12.

11B-406.3.2 Turning space. A turning space 48 inches (1219 mm) minimum by 48 inches (1219 mm) minimum shall be provided at the bottom of the curb ramp. The slope of the turning space in all directions shall be 1:48 maximum.

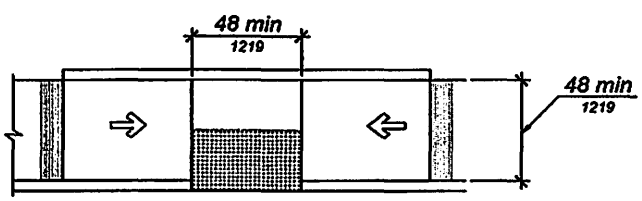


FIGURE 11B-406.3.2
PARALLEL CURB RAMPS

11B-406.4 Blended transitions. Blended transitions shall comply with Sections 11B-406.4 and 11B-406.5.

11B-406.4.1 Slope. Blended transitions shall have a running slope not steeper than 1:20.

11B-406.5 Common requirements. Curb ramps and blended transitions shall comply with Section 11B-406.5.

11B-406.5.1 Location. Curb ramps and the flared sides of curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides.

***Exception:** Diagonal curb ramps shall comply with Section 11B-406.5.9.*

11B-406.5.2 Width. The clear width of curb ramp runs (excluding any flared sides), blended transitions, and turning spaces shall be 48 inches (1219 mm) minimum.

11B-406.5.3 Landings. Landings shall be provided at the tops of curb ramps and blended transitions. The landing clear length shall be 48 inches (1219 mm) minimum. The landing clear width shall be at least as wide as the curb ramp, excluding any flared sides, or the blended transition leading to the landing. The slope of the landing in all directions shall be 1:48 maximum.

***Exception:** Parallel curb ramps shall not be required to comply with Section 11B-406.5.3.*

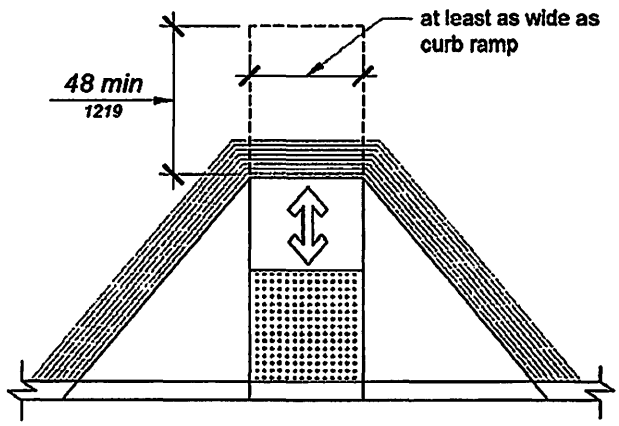


FIGURE 11B-406.5.3
LANDINGS AT THE TOP OF CURB RAMPS

11B-406.5.4 Floor or ground surfaces. Floor or ground surfaces of curb ramps and blended transitions shall comply with Section 11B-405.4.

11B-406.5.5 Wet conditions. Curb ramps and blended transitions shall comply with Section 11B-405.10.

11B-406.5.6 Grade breaks. Grade breaks at the top and bottom of curb ramp runs shall be perpendicular to the direction of the ramp run. Grade breaks shall not be permitted on the surface of ramp runs and turning spaces. Surface slopes that meet at grade breaks shall be flush.

11B-406.5.7 Cross slope. The cross slope of curb ramps and blended transitions shall be 1:48 maximum.

11B-406.5.8 Counter slope. Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches (610 mm) of the curb ramp shall not be steeper than 1:20. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.

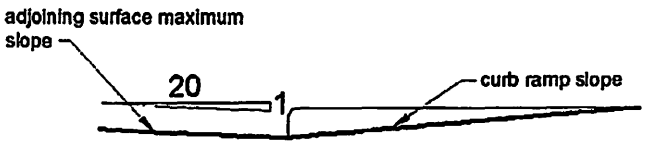


FIGURE *11B*-406.5.7
COUNTER SLOPE OF SURFACES ADJACENT TO CURB RAMPS

11B-406.5.9 Clear space at diagonal curb ramps. *The bottom of diagonal curb ramps shall have a clear space 48 inches (1219 mm) minimum outside active traffic lanes of the roadway. Diagonal curb ramps provided at marked crossings shall provide the 48 inches (1219 mm) minimum clear space within the markings.*

11B-406.5.10 Diagonal curb ramps. *Diagonal or corner type curb ramps with returned curbs or other well-defined edges shall have the edges parallel to the direction of pedestrian flow. Diagonal curb ramps with flared sides shall have a segment of curb 24 inches (610 mm) long minimum located on each side of the curb ramp and within the marked crossing.*

11B-406.5.11 Grooved border. *Curb ramps shall have a grooved border 12 inches (305 mm) wide along the top of the curb ramp at the level surface of the top landing and at the outside edges of the flared sides. The grooved border shall consist of a series of grooves $^1/_4$ inch (6.4 mm) wide by $^1/_4$ inch (6.4 mm) deep, at $^3/_4$ inch (19 mm) on center.*

Exceptions:

1. *At parallel curb ramps, the grooved border shall be on the upper approach immediately adjacent to the curb ramp across the full width of the curb ramp.*
2. *A grooved border shall not be required at blended transitions.*

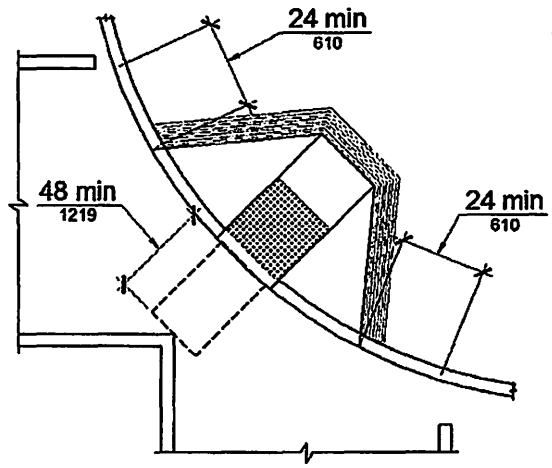


FIGURE *11B*-406.5.10
DIAGONAL OR CORNER TYPE CURB RAMPS

11B-406.5.12 Detectable warnings. *Curb ramps and blended transitions shall have detectable warnings complying with Section 11B-705.*

11B-406.6 Islands. *Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides. The clear width of the accessible route at islands shall be 60 inches (1524 mm) wide minimum. Where curb ramps are provided, they shall comply with Section 11B-406. Landings complying with Section 11B-406.5.3 and the accessible route shall be permitted to overlap. Islands shall have detectable warnings complying with Section 11B-705.*

11B-407 Elevators

***11B*-407.1 General.** Elevators shall comply with *Section 11B*-407 and with ASME A17.1 They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.

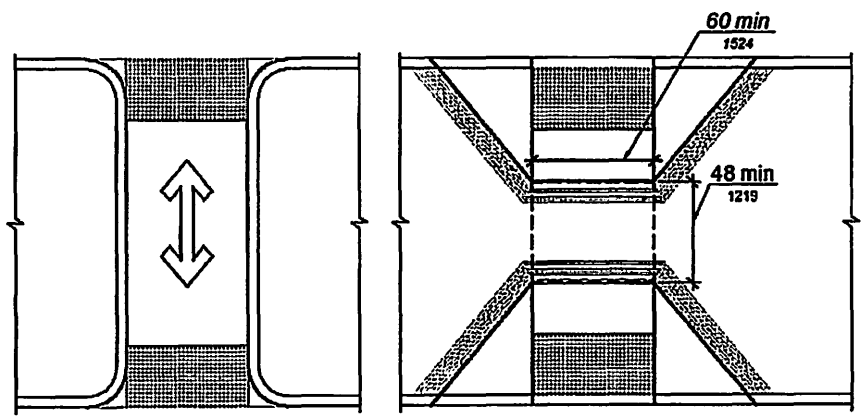


FIGURE *11B*-406.6
ISLANDS IN CROSSINGS

11B-407.1.1 Combined passenger and freight elevators. When the only elevators provided for use by the public and employees are combination passenger and freight elevators, they shall comply with Section 11B-407 and with ASME A17.1.

11B-407.2 Elevator landing requirements. Elevator landings shall comply with *Section 11B*-407.2.

11B-407.2.1 Call controls. Where elevator call buttons or keypads are provided, they shall comply with *Sections 11B*-407.2.1 and *11B*-309.4.

Exception: ***Reserved.***

11B-407.2.1.1 Height. Call buttons and keypads shall be located within one of the reach ranges specified in *Section 11B*-308, measured to the centerline of the highest operable part.

Exception: ***Reserved.***

11B-407.2.1.2 Size *and shape*. Call buttons shall *have square shoulders*, be $^3/_4$ inch (*19.1* mm) minimum in the smallest dimension *and shall be raised $^1/_8$ inch (3.2 mm) plus or minus $^1/_{32}$ inch (0.8 mm) above the surrounding surface. The buttons shall be activated by a mechanical motion that is detectable.*

Exception: ***Reserved.***

11B-407.2.1.3 Clear floor or ground space. A clear floor or ground space complying with *Section 11B*-305 shall be provided at call controls.

11B-407.2.1.4 Location. The call button that designates the up direction shall be located above the call button that designates the down direction.

Exception: Destination-oriented elevators shall not be required to comply with *Section 11B*-407.2.1.4.

11B-407.2.1.5 Signals. Call buttons shall have visible signals *that will activate* when each call is registered and *will extinguish* when each call is answered. *Call buttons shall be internally illuminated with a white light over the entire surface of the button.*

Exceptions:

1. Destination-oriented elevators shall not be required to comply with *Section 11B*-407.2.1.5 provided that visible and audible signals complying with *Section 11B*-407.2.2 indicating which elevator car to enter are provided.
2. ***Reserved.***

11B-407.2.1.6 Keypads. Where keypads are provided, keypads shall be in a standard telephone keypad arrangement and shall comply with *Section 11B*-407.4.7.2.

11B-407.2.2 Hall signals. Hall signals, including in-car signals, shall comply with *Section 11B*-407.2.2.

11B-407.2.2.1 Visible and audible signals. A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call and the car's direction of travel. Where in-car signals are provided, they shall be visible from the floor area adjacent to the hall call buttons.

Exceptions:

1. Visible and audible signals shall not be required at each destination-oriented elevator where a visible and audible signal complying with *Section 11B*-407.2.2 is provided indicating the elevator car designation information.
2. ***Reserved.***

11B-407.2.2.2 Visible signals. Visible signal fixtures shall be centered at 72 inches (*1829* mm) minimum above the finish floor or ground. The visible signal elements shall be a minimum $2^1/_2$ inches (64 mm) *high by $2^1/_2$ inches (64 mm) wide*. Signals shall be visible from the floor area adjacent to the hall call button.

Exceptions:

1. Destination-oriented elevators shall be permitted to have signals visible from the floor area adjacent to the hoistway entrance.
2. ***Reserved.***

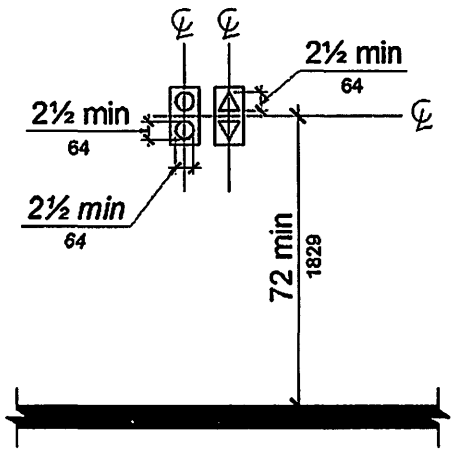


FIGURE *11B*-407.2.2.2
VISIBLE HALL SIGNALS

11B-407.2.2.3 Audible signals. Audible signals shall sound once for the up direction and twice for the down direction, or shall have verbal annunciators that indicate the direction of elevator car travel. Audible signals shall have a frequency of 1500 Hz maximum. Verbal annunciators shall have a frequency of 300 Hz minimum and 3000 Hz maximum. The audible signal and verbal annunciator shall be 10 dB minimum above ambient, but shall not exceed 80 dB, measured at the hall call button.

Exceptions:

1. Destination-oriented elevators shall not be required to comply with *Section 11B*-407.2.2.3 provided that the audible tone and verbal announcement is the same as those given at the call button or call button keypad.
2. ***Reserved.***

***11B*-407.2.2.4 Differentiation.** Each destination-oriented elevator in a bank of elevators shall have audible and visible means for differentiation.

***11B*-407.2.3 Hoistway signs.** Signs at elevator hoistways shall comply with *Section 11B*-407.2.3.

***11B*-407.2.3.1 Floor designation.** Floor designations complying with *Sections 11B*-703.2 and *11B*-703.4.1 shall be provided on both jambs of elevator hoistway entrances. Floor designations shall be provided in both *raised* characters and Braille. *Raised* characters shall be 2 inches (51 mm) high. A *raised* star, *placed to the left of the floor designation,* shall be provided on both jambs at the main entry level. *The outside diameter of the star shall be 2 inches (51 mm) and all points shall be of equal length. Raised characters, including the star, shall be white on a black background. Braille complying with Section 11B-703.3 shall be placed below the corresponding raised characters and the star. The Braille translation for the star shall be "MAIN". Applied plates are acceptable if they are permanently fixed to the jamb.*

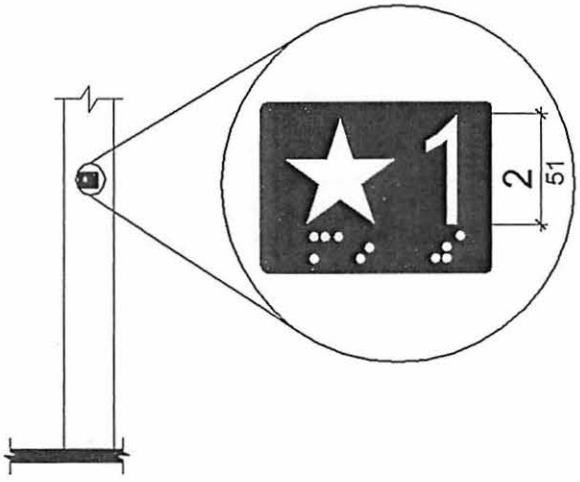


FIGURE *11B*-407.2.3.1
FLOOR DESIGNATIONS ON JAMBS OF ELEVATOR HOISTWAY ENTRANCE

***11B*-407.2.3.2 Car designations.** Destination-oriented elevators shall provide tactile car identification complying with *Sections 11B*-703.2 *and 11B-703.4.1* on both jambs of the hoistway immediately below the floor designation. Car designations shall be provided in both *raised* characters and Braille. *Raised* characters shall be 2 inches (51 mm) high. *Raised characters shall be white on a black background. Braille complying with Section 11B-703.3 shall be placed below the corresponding raised characters. Applied plates are acceptable if they are permanently fixed to the jamb.*

***11B*-407.3 Elevator door requirements.** Hoistway and car doors shall comply with *Section 11B*-407.3.

***11B*-407.3.1 Type.** Elevator doors shall be the horizontal sliding type. Car gates shall be prohibited.

***11B*-407.3.2 Operation.** Elevator hoistway and car doors shall open and close automatically.

Exception: Existing manually operated hoistway swing doors shall be permitted provided that they comply with *Sections 11B*-404.2.3 and *11B*-404.2.9. Car door closing shall not be initiated until the hoistway door is closed.

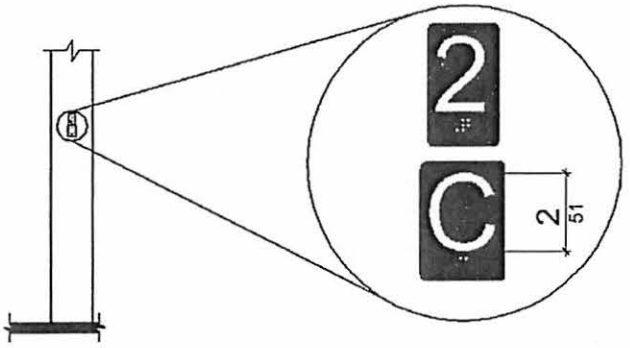


FIGURE *11B*-407.2.3.2
CAR DESIGNATIONS ON JAMBS OF DESTINATION-ORIENTED ELEVATOR HOISTWAY ENTRANCES

***11B*-407.3.3 Reopening device.** Elevator doors shall be provided with a reopening device complying with *Section 11B*-407.3.3 that shall stop and reopen a car door and hoistway door automatically if the door becomes obstructed by an object or person.

Exception: Existing elevators with manually operated doors shall not be required to comply with *Section 11B*-407.3.3.

***11B*-407.3.3.1 Height.** The device shall be activated by sensing an obstruction passing through the opening at 5 inches (*127* mm) nominal and 29 inches (*737* mm) nominal above the finish floor.

***11B*-407.3.3.2 Contact.** The device shall not require physical contact to be activated, although contact is permitted to occur before the door reverses.

***11B*-407.3.3.3 Duration.** Door reopening devices shall remain effective for 20 seconds minimum.

***11B*-407.3.4 Door and signal timing.** The minimum acceptable time from notification that a car is answering a call or notification of the car assigned at the means for the entry of destination information until the doors of that car start to close shall be calculated from the following equation:

$T = D/(1.5 \text{ ft/s})$ or $T = D/(455 \text{ mm/s}) = 5$ seconds minimum where T equals the total time in seconds and D equals the distance (in feet or millimeters) from the point in the lobby or corridor 60 inches (*1524* mm) directly in front of the farthest call button controlling that car to the centerline of its hoistway door.

Exceptions:

1. For cars with in-car lanterns, T shall be permitted to begin when the signal is visible from the point

60 inches (*1524* mm) directly in front of the farthest hall call button and the audible signal is sounded.

2. Destination-oriented elevators shall not be required to comply with *Section 11B*-407.3.4.

***11B*-407.3.5 Door delay.** Elevator doors shall remain fully open in response to a car call for 5 seconds minimum.

***11B*-407.3.6 Width.** The width of elevator doors shall comply with Table *11B*-407.4.1.

Exception: In existing elevators, a power-operated car door complying with *Section 11B*-404.2.3 shall be permitted.

***11B*-407.4 Elevator car requirements.** Elevator cars shall comply with *Section 11B*-407.4.

***11B*-407.4.1 Car dimensions.** Inside dimensions of elevator cars and clear width of elevator doors shall comply with Table *11B*-407.4.1.

Exception: *In existing buildings, where existing shaft configuration or technical infeasibility prohibits strict compliance with Section 11B-407.4.1, existing* elevator car configurations that provide a clear floor area of *18 square feet (1.67 m^2)* minimum and also provide an inside clear depth 54 inches (*1372* mm) minimum and a clear width *48 inches (1219 mm)* minimum shall be permitted.

***11B*-407.4.2 Floor surfaces.** Floor surfaces in elevator cars shall comply with *Sections 11B*-302 and *11B*-303.

***11B*-407.4.3 Platform to hoistway clearance.** The clearance between the car platform sill and the edge of any hoistway landing shall be 1¼ inch (32 mm) maximum.

***11B*-407.4.4 Leveling.** Each car shall be equipped with a self-leveling feature that will automatically bring and maintain the car at floor landings within a tolerance of ½ inch (*12.7* mm) under rated loading to zero loading conditions.

***11B*-407.4.5 Illumination.** The level of illumination at the car controls, platform, car threshold and car landing sill shall be 5 foot candles (54 lux) minimum.

***11B*-407.4.6 Elevator car controls.** Where provided, elevator car controls shall comply with *Sections 11B*-407.4.6 and *11B*-309.4.

Exception: In existing elevators, where a new car operating panel complying with *Section 11B*-407.4.6 is provided, existing car operating panels *may remain operational and* shall not be required to comply with *Section 11B*-407.4.6.

***11B*-407.4.6.1 Location.** Controls shall be located within one of the reach ranges specified in *Section 11B*-308.

Exceptions:

1. Where the elevator panel serves more than 16 openings and a parallel approach is provided, buttons with floor designations shall be permitted to be 54 inches (*1372* mm) maximum above the finish floor.
2. In existing elevators, car control buttons with floor designations shall be permitted to be located 54 inches (*1372* mm) maximum above the finish floor where a parallel approach is provided.

***11B*-407.4.6.2 Buttons.** Car control buttons with floor designations shall comply with *Section 11B*-407.4.6.2.

Exception: ***Reserved.***

***11B*-407.4.6.2.1 Size *and shape*.** Buttons shall *have square shoulders*, be $^3/_4$ inch (*19.1* mm) minimum in their smallest dimension *and be raised $^1/_8$ inch (3.2 mm) plus or minus $^1/_{32}$ inch (0.8 mm) above the surrounding surface.*

***11B*-407.4.6.2.2 Arrangement.** Buttons shall be arranged with numbers in ascending order. When two or more columns of buttons are provided they shall read from left to right.

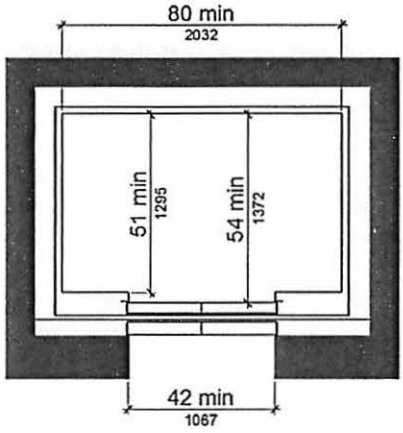
***11B-407.4.6.2.3 Illumination.** Car control buttons shall be illuminated.*

***11B-407.4.6.2.4 Operation.** Car control buttons shall be activated by a mechanical motion that is detectable.*

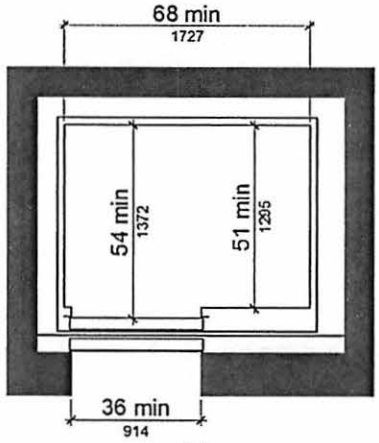
TABLE *11B*-407.4.1
ELEVATOR CAR DIMENSIONS

	MINIMUM DIMENSIONS			
DOOR LOCATION	Door clear width	Inside car, side to side	Inside car, back wall to front return	Inside car, back wall to inside face of door
Centered	42 inches (*1067* mm)	80 inches (*2032* mm)	51 inches (1295 mm)	54 inches (*1372* mm)
Side (off-centered)	36 inches (*914* mm)[1]	68 inches (*1727* mm)	51 inches (1295 mm)	54 inches (*1372* mm)
Any	36 inches (*914* mm)[1]	54 inches (*1372* mm)	80 inches (*2032* mm)	80 inches (*2032* mm)
Any	36 inches (*914* mm)[2]	60 inches (*1524* mm)[2]	60 inches (*1524* mm)[2]	60 inches (*1524* mm)[2]

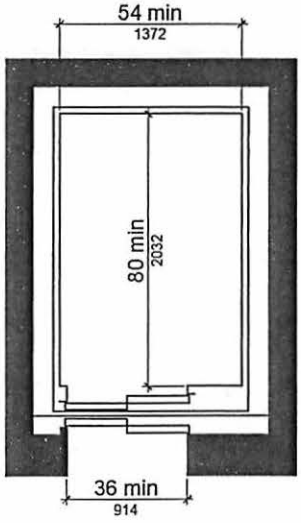
1. A tolerance of minus $^5/_8$ inch (15.9 mm) is permitted.
2. Other car configurations that provide a turning space complying with *Section 11B*-304 with the door closed shall be permitted.



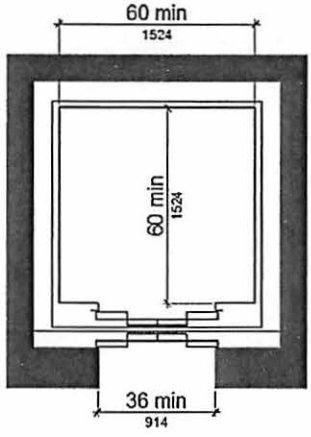
(a)
centered door



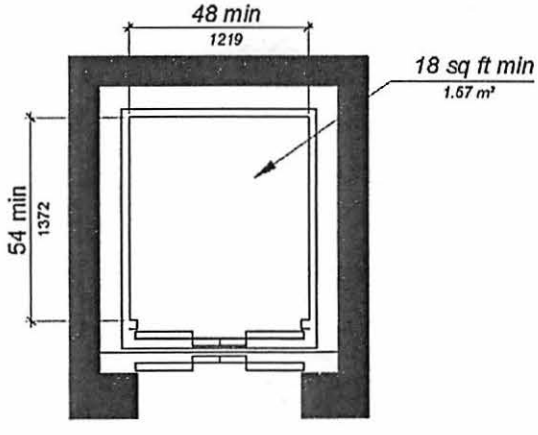
(b)
side (off-centered) door



(c)
any door location



(d)
any door location



(e)
Exception
existing elevator car configuration

FIGURE *11B*-407.4.1
ELEVATOR CAR DIMENSIONS

***11B*-407.4.6.3 Keypads.** Car control keypads shall be in a standard telephone keypad arrangement and shall comply with *Section 11B*-407.4.7.2.

***11B*-407.4.6.4 Emergency controls.** Emergency controls shall comply with *Section 11B*-407.4.6.4.

***11B*-407.4.6.4.1 Height.** Emergency control buttons shall have their centerlines 35 inches (*889* mm) minimum above the finish floor.

***11B*-407.4.6.4.2 Location.** Emergency controls, including the emergency alarm, shall be grouped at the bottom of the panel.

***11B*-407.4.7 Designations and indicators of car controls.** Designations and indicators of car controls shall comply with *Section 11B*-407.4.7.

Exception: In existing elevators, where a new car operating panel complying with *Section 11B*-407.4.7 is provided, existing car operating panels *may remain operational and* shall not be required to comply with *Section 11B*-407.4.7.

***11B*-407.4.7.1 Buttons.** Car control buttons shall comply with *Section 11B*-407.4.7.1.

***11B*-407.4.7.1.1 Type.** Control buttons shall be identified by *raised characters or symbols, white on a black background, complying with Section 11B-703.2 and Braille complying with Section 11B-703.3.*

***11B*-407.4.7.1.2 Location.** Raised *characters or symbols* and Braille designations shall be placed immediately to the left of the control button to which the designations apply.

***11B*-407.4.7.1.3 Symbols.** The control button for the emergency stop, alarm, door open, door close, main entry floor, and phone, shall be identified with *raised* symbols *and Braille* as shown in Table *11B*-407.4.7.1.3.

***11B*-407.4.7.1.4 Visible indicators.** Buttons with floor designations shall be provided with visible indicators to show that a call has been registered. The visible indication shall extinguish when the car arrives at the designated floor.

***11B-407.4.7.1.5 Button spacing.** A minimum clear space of $^3/_8$ inch (9.5 mm) or other suitable means of separation shall be provided between rows of control buttons.*

***11B*-407.4.7.2 Keypads.** Keypads shall be identified by characters complying with *Section 11B*-703.5 and shall be centered on the corresponding keypad button. The number five key shall have a single raised dot. The dot shall be 0.118 inch (3 mm) to 0.120 inch (3.05 mm) base diameter and in other aspects comply with Table *11B*-703.3.1.

***11B*-407.4.8 Car position indicators.** Audible and visible car position indicators shall be provided in elevator cars.

***11B*-407.4.8.1 Visible indicators.** Visible indicators shall comply with *Section 11B*-407.4.8.1.

***11B*-407.4.8.1.1 Size.** Characters shall be ½ inch (*12.7* mm) high minimum.

***11B*-407.4.8.1.2 Location.** Indicators shall be located above the car control panel or above the door.

***11B*-407.4.8.1.3 Floor arrival.** As the car passes a floor and when a car stops at a floor served by the elevator, the corresponding character shall illuminate.

Exception: Destination-oriented elevators shall not be required to comply with *Section 11B*-407.4.8.1.3 provided that the visible indicators extinguish when the call has been answered.

Control Button	Raised Symbol	Braille Message
Emergency Stop		"ST"OP Three Cells
Alarm		AL"AR"M Four Cells
Door Open		OP"EN" Three Cells
Door Close		CLOSE Five Cells
Main Entry Floor		MA"IN" Three Cells
Phone		PH"ONE" Four Cells

TABLE *11B*-407.4.7.1.3
ELEVATOR CONTROL BUTTON IDENTIFICATION

11B-407.4.8.1.4 **Destination indicator.** In destination-oriented elevators, a display shall be provided in the car with visible indicators to show car destinations.

11B-407.4.8.2 **Audible indicators.** Audible indicators shall comply with *Section 11B*-407.4.8.2.

11B-407.4.8.2.1 **Signal type.** The signal shall be an automatic verbal annunciator which announces the floor at which the car is about to stop.

Exception: For elevators other than destination-oriented elevators that have a rated speed of 200 feet per minute (1 m/s) or less, a non-verbal audible signal with a frequency of 1500 Hz maximum which sounds as the car passes or is about to stop at a floor served by the elevator shall be permitted.

11B-407.4.8.2.2 **Signal level.** The verbal annunciator shall be 10 dB minimum above ambient, but shall not exceed 80 dB, measured at the annunciator.

11B-407.4.8.2.3 **Frequency.** The verbal annunciator shall have a frequency of 300 Hz minimum to 3000 Hz maximum.

11B-407.4.9 **Emergency communication.** Emergency two-way communication systems shall comply with *Section 11B*-308. *Raised* symbols *or* characters, *white on a black background, and Braille* shall be provided adjacent to the device and shall comply with *Sections 11B*-703.2 *and 11B-703.3. Emergency two-way communication systems between the elevator and a point outside the hoistway shall comply with ASME A17.1.*

11B-407.4.10 Support rail. Support rails shall be provided on at least one wall of the car.

11B-407.4.10.1 Location. Clearance between support rails and adjacent surfaces shall be 1½ inches (38 mm) minimum. Top of support rails shall be 31 inches (787 mm) minimum to 33 inches (838 mm) maximum above the floor of the car. The ends of the support rail shall be 6 inches (152 mm) maximum from adjacent walls.

11B-407.4.10.2 Surfaces. Support rails shall be smooth and any surface adjacent to them shall be free of sharp or abrasive elements.

11B-407.4.10.3 Structural strength. Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the support rail, fastener, mounting device, or supporting structure.

11B-408 **Limited-use/limited-application elevators**

11B-408.1 **General.** Limited-use/limited-application elevators shall comply with *Section 11B*-408 and with ASME A17.1. They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.

11B-408.2 **Elevator landings.** Landings serving limited-use/limited-application elevators shall comply with *Section 11B*-408.2.

11B-408.2.1 **Call buttons.** Elevator call buttons and keypads shall comply with *Section 11B*-407.2.1.

11B-408.2.2 **Hall signals.** Hall signals shall comply with *Section 11B*-407.2.2.

11B-408.2.3 **Hoistway signs.** Signs at elevator hoistways shall comply with *Section 11B*-407.2.3.1.

11B-408.3 **Elevator doors.** Elevator hoistway doors shall comply with *Section 11B*-408.3.

11B-408.3.1 **Sliding doors.** Sliding hoistway and car doors shall comply with *Sections 11B*-407.3.1 through *11B*-407.3.3 and *11B*-408.4.1.

11B-408.3.2 **Swinging doors.** Swinging hoistway doors shall open and close automatically and shall comply with *Sections 11B*-404, *11B*-407.3.2 and *11B*-408.3.2.

11B-408.3.2.1 **Power operation.** Swinging doors shall be power-operated and shall comply with ANSI/ BHMA A156.19 (1997 or 2002 edition).

11B-408.3.2.2 **Duration.** Power-operated swinging doors shall remain open for 20 seconds minimum when activated.

11B-408.4 **Elevator cars.** Elevator cars shall comply with *11B*-408.4.

11B-408.4.1 **Car dimensions and doors.** Elevator cars shall provide a clear width 42 inches (*1067* mm) minimum and a clear depth 54 inches (*1372* mm) minimum. Car doors shall be positioned at the narrow ends of cars and shall provide 32 inches (*813* mm) minimum clear width.

Exceptions:

1. Cars that provide a clear width 51 inches (1295 mm) minimum shall be permitted to provide a clear depth 51 inches (1295 mm) minimum provided that car doors provide a clear opening 36 inches (*914* mm) wide minimum.
2. ***Reserved.***

11B-408.4.2 **Floor surfaces.** Floor surfaces in elevator cars shall comply with *Sections 11B*-302 and *11B*-303.

11B-408.4.3 **Platform to hoistway clearance.** The platform to hoistway clearance shall comply with *Section 11B*-407.4.3.

11B-408.4.4 **Leveling.** Elevator car leveling shall comply with *Section 11B*-407.4.4.

11B-408.4.5 **Illumination.** Elevator car illumination shall comply with *Section 11B*-407.4.5.

11B-408.4.6 **Car controls.** Elevator car controls shall comply with *Section 11B*-407.4.6. Control panels shall be centered on a side wall.

11B-408.4.7 **Designations and indicators of car controls.** Designations and indicators of car controls shall comply with *Section 11B*-407.4.7.

11B-408.4.8 **Emergency communications.** Car emergency signaling devices complying with *Section 11B*-407.4.9 shall be provided.

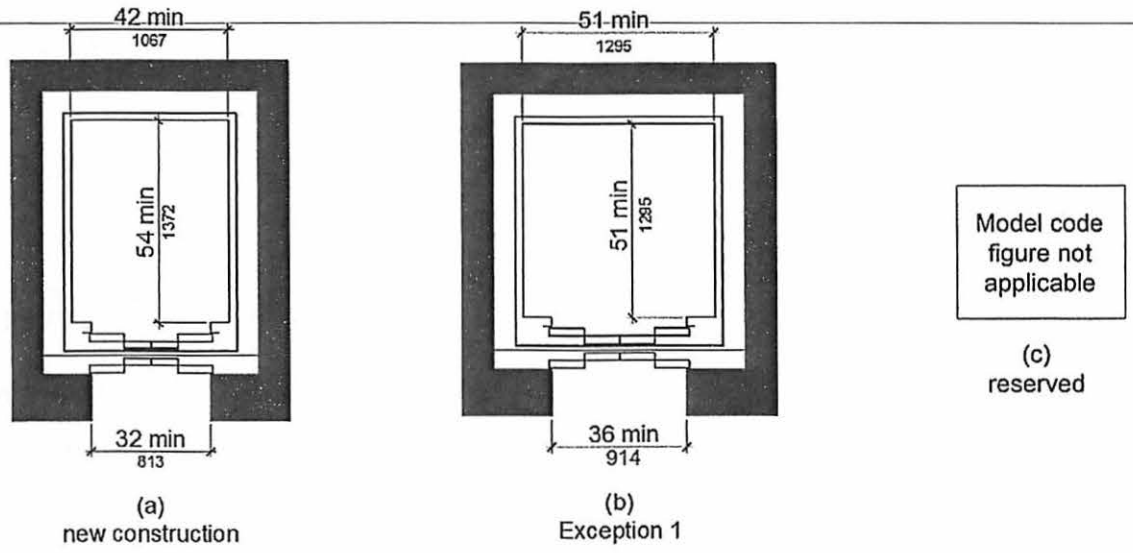


FIGURE *11B*-408.4.1
LIMITED-USE/LIMITED-APPLICATION (LULA) ELEVATOR CAR DIMENSIONS

11B-409 Private residence elevators

***11B*-409.1 General.** Private residence elevators that are provided within a residential dwelling unit required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4 shall comply with *Section 11B*-409 and with ASME A17.1. They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.

***11B*-409.2 Call buttons.** Call buttons shall be $^3/_4$ inch (*19.1* mm) minimum in the smallest dimension and shall comply with *Section 11B*-309.

***11B*-409.3 Elevator doors.** Hoistway doors, car doors, and car gates shall comply with *Sections 11B*-409.3 and *11B*-404.

Exception: Doors shall not be required to comply with the maneuvering clearance requirements in *Section 11B*-404.2.4.1 for approaches to the push side of swinging doors.

***11B*-409.3.1 Power operation.** Elevator car and hoistway doors and gates shall be power operated and shall comply with ANSI/BHMA A156.19. Power operated doors and gates shall remain open for 20 seconds minimum when activated.

Exception: In elevator cars with more than one opening, hoistway doors and gates shall be permitted to be of the manual-open, self-close type.

***11B*-409.3.2 Location.** Elevator car doors or gates shall be positioned at the narrow end of the clear floor spaces required by *Section 11B*-409.4.1.

***11B*-409.4 Elevator cars.** Private residence elevator cars shall comply with *Section 11B*-409.4.

***11B*-409.4.1 Inside dimensions of elevator cars.** Elevator cars shall provide a clear floor space of 36 inches (*914* mm) minimum by 48 inches (*1219* mm) minimum and shall comply with *Section 11B*-305.

***11B*-409.4.2 Floor surfaces.** Floor surfaces in elevator cars shall comply with *Sections 11B*-302 and *11B*-303.

***11B*-409.4.3 Platform to hoistway clearance.** The clearance between the car platform and the edge of any landing sill shall be 1½ inch (38 mm) maximum.

***11B*-409.4.4 Leveling.** Each car shall automatically stop at a floor landing within a tolerance of ½ inch (*12.7* mm) under rated loading to zero loading conditions.

***11B*-409.4.5 Illumination levels.** Elevator car illumination shall comply with *Section 11B*-407.4.5.

***11B*-409.4.6 Car controls.** Elevator car control buttons shall comply with *Sections 11B*-409.4.6, *11B*-309.3, *11B*-309.4, and shall be raised or flush.

***11B*-409.4.6.1 Size.** Control buttons shall be $^3/_4$ inch (*19.1* mm) minimum in their smallest dimension.

***11B*-409.4.6.2 Location.** Control panels shall be on a side wall, 12 inches (305 mm) minimum from any adjacent wall.

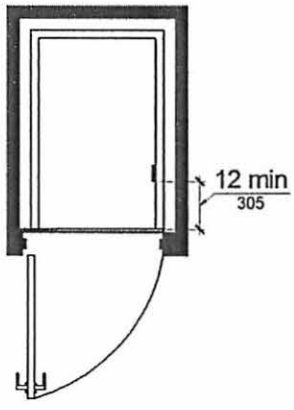


FIGURE *11B*-409.4.6.2
LOCATION OF PRIVATE RESIDENCE ELEVATOR CONTROL PANEL

***11B*-409.4.7 Emergency communications.** Emergency two-way communication systems shall comply with *Section 11B*-409.4.7.

***11B*-409.4.7.1 Type.** A telephone and emergency signal device shall be provided in the car.

***11B*-409.4.7.2 Operable parts.** The telephone and emergency signaling device shall comply with *Sections 11B*-309.3 and *11B*-309.4.

***11B*-409.4.7.3 Compartment.** If the telephone or device is in a closed compartment, the compartment door hardware shall comply with *Section 11B*-309.

***11B*-409.4.7.4 Cord.** The telephone cord shall be 29 inches (*737* mm) long minimum.

11B-410 Platform lifts

***11B*-410.1 General.** Platform lifts shall comply with ASME A18.1 (1999 edition or 2003 edition). Platform lifts shall not be attendant-operated and shall provide unassisted entry and exit from the lift.

***11B*-410.2 Floor surfaces.** Floor surfaces in platform lifts shall comply with *Sections 11B*-302 and *11B*-303.

***11B*-410.3 Clear floor space.** Clear floor space in platform lifts shall comply with *Section 11B*-305.

***11B*-410.4 Platform to runway clearance.** The clearance between the platform sill and the edge of any runway landing shall be $1^1/_4$ inch (32 mm) maximum.

***11B*-410.5 Operable parts.** Controls for platform lifts shall comply with *Section 11B*-309.

***11B*-410.6 Doors and gates.** Platform lifts shall have low-energy power-operated doors or gates complying with *Section 11B*-404.3. Doors shall remain open for 20 seconds minimum. End doors and gates shall provide a clear width 32 inches (*813* mm) minimum. Side doors and gates shall provide a clear width 42 inches (*1067* mm) minimum.

Exception: Platform lifts serving two landings maximum and having doors or gates on opposite sides shall be permitted to have self-closing manual doors or gates.

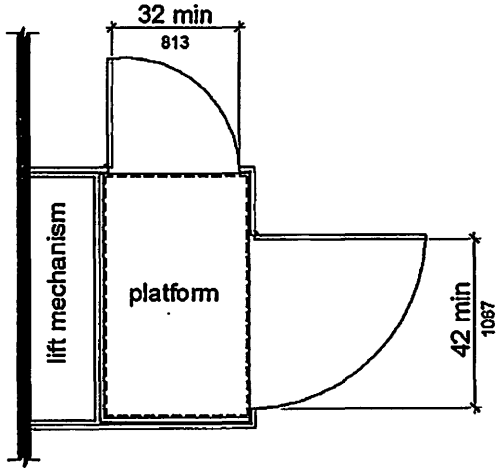


FIGURE *11B*-410.6
PLATFORM LIFT DOORS AND GATES

***11B*-410.7 Landing size.** *The minimum size of landings at platform lifts shall be 60 inches by 60 inches (1524 mm by 1524 mm).*

***11B*-410.8 Restriction sign.** *A sign complying with Section 11B-703.5 shall be posted in a conspicuous place at each landing and within the platform enclosure stating "No Freight" and include the International Symbol of Accessibility complying with Section 11B-703.7.2.1.*

DIVISION 5:
GENERAL SITE AND BUILDING ELEMENTS

11B-501 General

***11B*-501.1 Scope.** The provisions of *Division* 5 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter*.

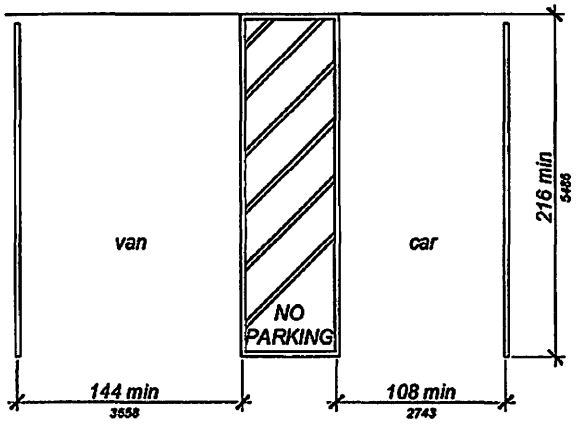
11B-502 Parking spaces

***11B*-502.1 General.** Car and van parking spaces shall comply with *Section 11B*-502. Where parking spaces are marked with lines, width measurements of parking spaces and access aisles shall be made from the centerline of the markings.

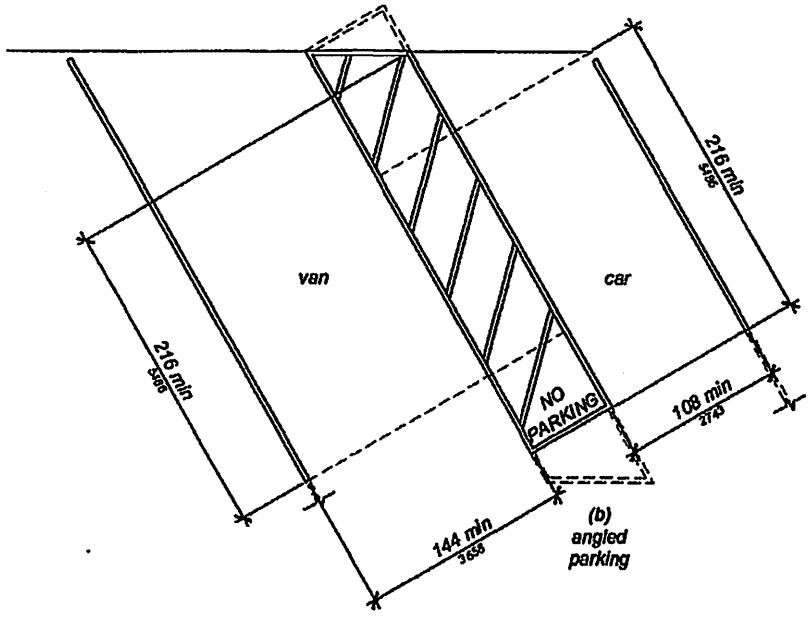
Exception: Where parking spaces or access aisles are not adjacent to another parking space or access aisle, measurements shall be permitted to include the full width of the line defining the parking space or access aisle.

***11B*-502.2 Vehicle spaces.** *Car and van parking spaces shall be 216 inches (5486 mm) long minimum.* Car parking spaces shall be *108 inches (2743 mm)* wide minimum and van parking spaces shall be *144 inches (3658 mm)* wide minimum, shall be marked to define the width, and shall have an adjacent access aisle complying with *Section 11B*-502.3.

Exception: Van parking spaces shall be permitted to be *108 inches (2743 mm)* wide minimum where the access aisle is 96 inches (*2438* mm) wide minimum.



(a)
perpendicular
parking



(b)
angled
parking

FIGURE *11B*-502.2
VEHICLE PARKING SPACES

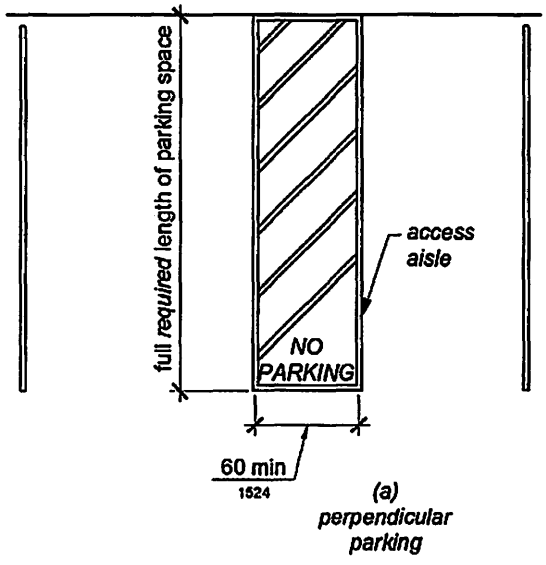
***11B*-502.3 Access aisle.** Access aisles serving parking spaces shall comply with *Section 11B*-502.3. Access aisles shall adjoin an accessible route. Two parking spaces shall be permitted to share a common access aisle.

***11B*-502.3.1 Width.** Access aisles serving car and van parking spaces shall be 60 inches (*1524* mm) wide minimum.

***11B*-502.3.2 Length.** Access aisles shall extend the full *required* length of the parking spaces they serve.

***11B*-502.3.3 Marking.** Access aisles shall be marked *with a blue painted borderline around their perimeter. The area within the blue borderlines shall be marked with hatched lines a maximum of 36 inches (914 mm) on center in a color contrasting with that of the aisle surface, preferably blue or white. The words "NO PARKING" shall be painted on the surface within each access aisle in white letters a minimum of 12 inches (305 mm) in height and located to be visible from the adjacent vehicular way. Access aisle markings may extend beyond the minimum required length.*

***11B*-502.3.4 Location.** Access aisles shall not overlap the vehicular way. Access aisles shall be permitted to be placed on either side of the parking space except for van parking spaces which shall have access aisles located on the passenger side of the parking spaces.



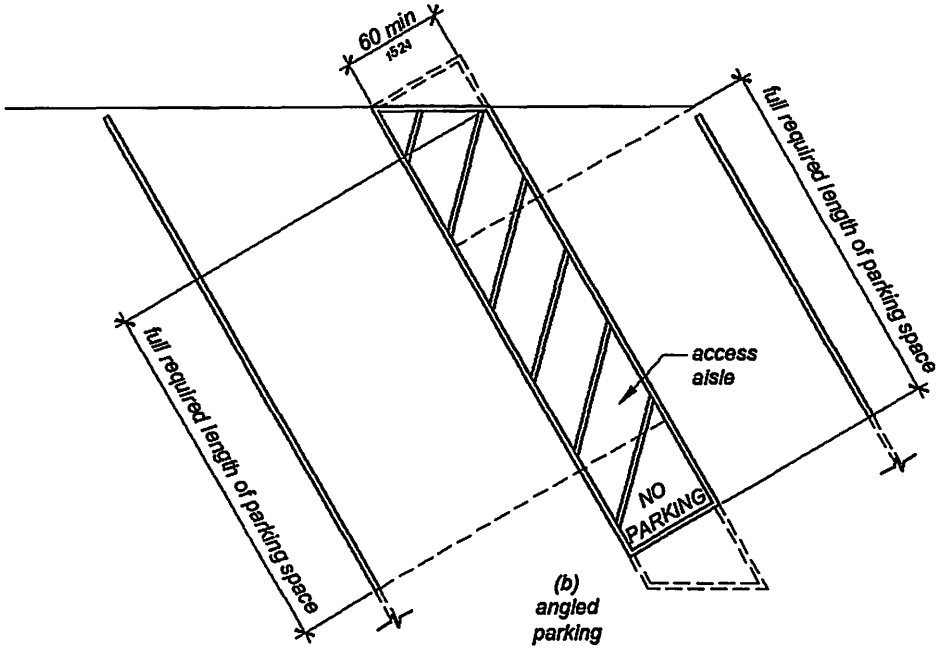


FIGURE *11B*-502.3
PARKING SPACE ACCESS AISLE

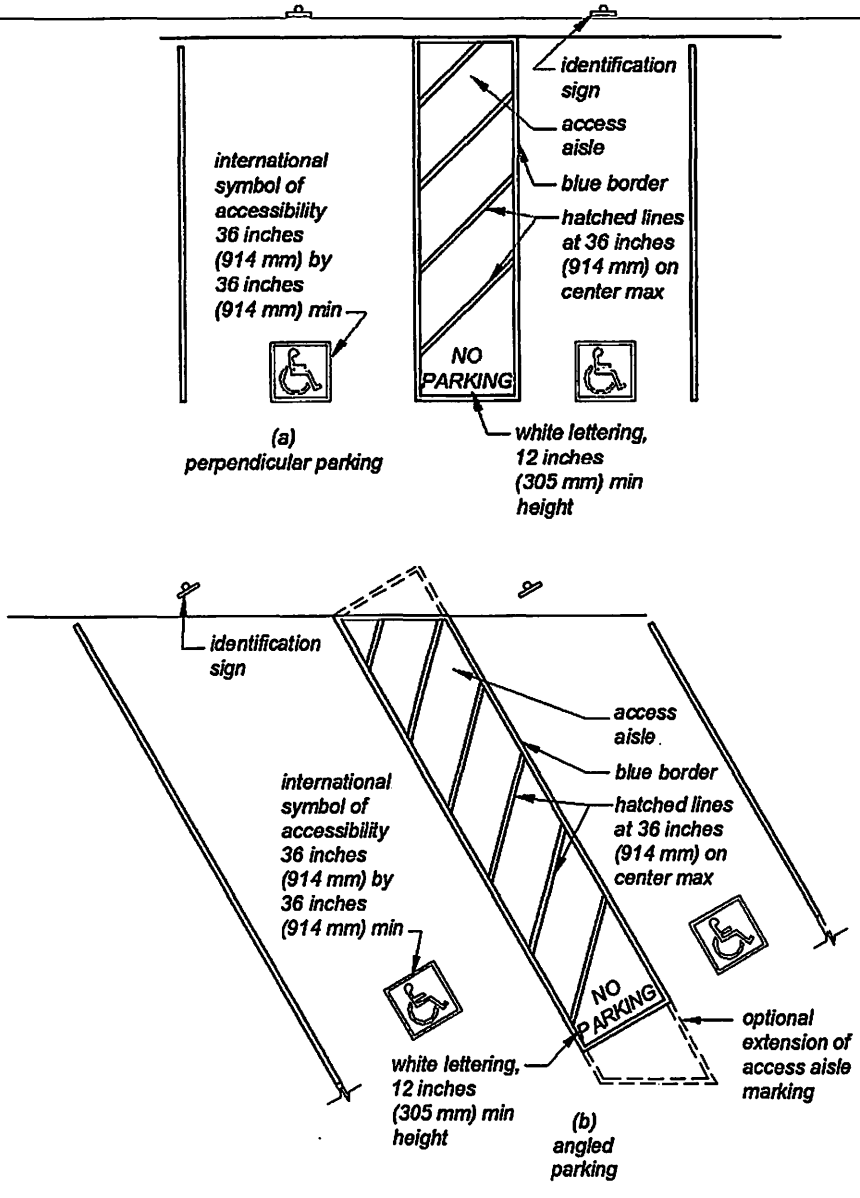


FIGURE 11B-502.3.3
ANGLED AND PERPENDICULAR PARKING IDENTIFICATION

***11B*-502.4 Floor or ground surfaces.** Parking spaces and access aisles serving them shall comply with *Section 11B*-302. Access aisles shall be at the same level as the parking spaces they serve. Changes in level are not permitted.

Exception: Slopes not steeper than 1:48 shall be permitted.

***11B*-502.5 Vertical clearance.** Parking *spaces*, access aisles and vehicular routes serving them shall provide a vertical clearance of 98 inches (*2489* mm) minimum.

***11B*-502.6 Identification.** Parking space identification signs shall include the International Symbol of Accessibility complying with *Section 11B*-703.7.2.1. Signs identifying van parking spaces shall contain *additional language or an additional sign with* the designation "van accessible." Signs shall be 60 inches (*1524* mm) minimum above the finish floor or ground surface measured to the bottom of the sign.

***Exception:** Signs located within an accessible route shall be a minimum of 80 inches (2032 mm) above the finish floor or ground surface measured to the bottom of the sign.*

***11B-502.6.1 Finish and size.** Parking identification signs shall be reflectorized with a minimum area of 70 square inches (45,161 mm^2).*

***11B-502.6.2 Minimum fine.** Additional language or an additional sign below the International Symbol of Accessibility shall state "Minimum Fine $250."*

***11B-502.6.3 Location.** A parking space identification sign shall be visible from each parking space. Signs shall be*

permanently posted either immediately adjacent to the parking space or within the projected parking space width at the head end of the parking space. Signs may also be permanently posted on a wall at the interior end of the parking space.

11B-502.6.4 Marking. Each accessible car and van space shall have surface identification complying with either Sections 11B-502.6.4.1 or 11B-502.6.4.2.

11B-502.6.4.1 The parking space shall be marked with an International Symbol of Accessibility complying with Section 11B-703.7.2.1 in white on a blue background a minimum 36 inches wide by 36 inches high (914 mm by 914 mm). The centerline of the International Symbol of Accessibility shall be a maximum of 6 inches (152 mm) from the centerline of the parking space, its sides parallel to the length of the parking space and its lower corner at, or lower side aligned with, the end of the parking space length.

11B-502.6.4.2 The parking space shall be outlined or painted blue and shall be marked with an International Symbol of Accessibility complying with Section 11B-703.7.2.1 a minimum 36 inches wide by 36 inches high (914 mm by 914 mm) in white or a suitable contrasting color. The centerline of the International Symbol of Accessibility shall be a maximum of 6 inches (152 mm) from the centerline of the parking space, its sides parallel to the length of the parking space and its lower corner at, or lower side aligned with, the end of the parking space.

***11B-502.7* Relationship to accessible routes.** Parking spaces and access aisles shall be designed so that cars and vans, when parked, cannot obstruct the required clear width of adjacent accessible routes.

11B-502.7.1 Arrangement. Parking spaces and access aisles shall be designed so that persons using them are not required to travel behind parking spaces other than to pass behind the parking space in which they parked.

11B-502.7.2 Wheel stops. A curb or wheel stop shall be provided if required to prevent encroachment of vehicles over the required clear width of adjacent accessible routes.

11B-502.8 Additional signage. An additional sign shall be posted either; 1) in a conspicuous place at each entrance to an off-street parking facility or 2) immediately adjacent to on-site accessible parking and visible from each parking space.

11B-502.8.1 Size. The additional sign shall not be less than 17 inches (432 mm) wide by 22 inches (559 mm) high.

11B-502.8.2 Lettering. The additional sign shall clearly state in letters with a minimum height of 1 inch (25 mm) the following:

"Unauthorized vehicles parked in designated accessible spaces not displaying distinguishing placards or special license plates issued for persons with disabilities will be towed away at the owner's expense. Towed vehicles may be reclaimed at: _____ or by telephoning _____."

Blank spaces shall be filled in with appropriate information as a permanent part of the sign.

11B-503 Passenger *drop-off and* loading zones

***11B-503.1* General.** Passenger *drop-off and* loading zones shall comply with *Section 11B-503*.

***11B-503.2* Vehicle pull-up space.** Passenger *drop-off and* loading zones shall provide a vehicular pull-up space 96 inches (*2438* mm) wide minimum and 20 feet (*6096* mm) long minimum.

***11B-503.3* Access aisle.** Passenger *drop-off and* loading zones shall provide access aisles complying with *Section 11B-503* adjacent *and parallel* to the vehicle pull-up space. Access aisles shall adjoin an accessible route and shall not overlap the vehicular way.

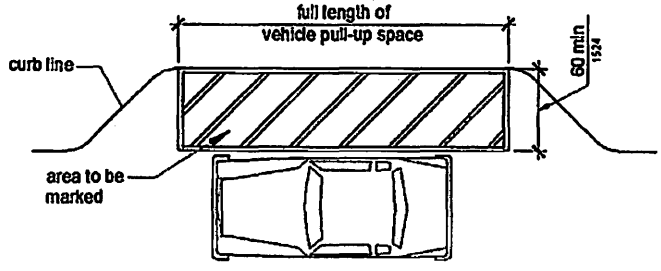


FIGURE *11B-503.3*
PASSENGER *DROP-OFF AND* LOADING ZONE ACCESS AISLE

***11B-503.3.1* Width.** Access aisles serving vehicle pull-up spaces shall be 60 inches (*1524* mm) wide minimum.

***11B-503.3.2* Length.** Access aisles shall extend the full length of the vehicle pull-up spaces they serve.

***11B-503.3.3* Marking.** Access aisles shall be marked *with a painted borderline around their perimeter. The area within the borderlines shall be marked with hatched lines a maximum of 36 inches (914 mm) on center in a color contrasting with that of the aisle surface.*

***11B-503.4* Floor and ground surfaces.** Vehicle pull-up spaces and access aisles serving them shall comply with *Section 11B-302*. Access aisles shall be at the same level as the vehicle pull-up space they serve. Changes in level are not permitted.

Exception: Slopes not steeper than 1:48 shall be permitted.

***11B-503.5* Vertical clearance.** Vehicle pull-up spaces, access aisles serving them, and a vehicular route from an entrance to the passenger loading zone and from the passenger loading zone to a vehicular exit shall provide a vertical clearance of 114 inches (*2896* mm) minimum.

11B-503.6 Identification. Each passenger loading zone designated for persons with disabilities shall be identified with a reflectorized sign complying with Section 11B-703.5. It shall be permanently posted immediately adjacent to and visible from the passenger loading zone stating "Passenger Loading

Zone Only" and including the International Symbol of Accessibility complying with Section 11B-703.7.2.1 in white on a dark blue background.

11B-504 Stairways

***11B*-504.1 General.** Stairs shall comply with *Section 11B*-504.

***11B*-504.2 Treads and risers.** All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Risers shall be 4 inches (*102* mm) high minimum and 7 inches (*178* mm) high maximum. Treads shall be 11 inches (*279* mm) deep minimum.

***11B*-504.3 Open risers.** Open risers are not permitted.

Exceptions:

1. *On exterior stairways, an opening of not more than $^1/_2$ inch (12.7 mm) may be permitted between the base of the riser and the tread.*
2. *On exterior stairways, risers constructed of grating containing openings of not more than $^1/_2$ inch (12.7 mm) may be permitted.*

***11B*-504.4 Tread surface.** Stair treads shall comply with *Section 11B*-302. Changes in level are not permitted.

Exception: Treads shall be permitted to have a slope not steeper than 1:48.

***11B-504.4.1 Contrasting stripe.** Interior stairs shall have the upper approach and lower tread marked by a stripe providing clear visual contrast. Exterior stairs shall have the upper approach and all treads marked by a stripe providing clear visual contrast.*

The stripe shall be a minimum of 2 inches (51 mm) wide to a maximum of 4 inches (102 mm) wide placed parallel to, and not more than 1 inch (25 mm) from, the nose of the step or upper approach. The stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.

***11B*-504.5 Nosings.** The radius of curvature at the leading edge of the tread shall be $^1/_2$ inch (*12.7* mm) maximum. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. Risers shall be permitted to slope under the tread at an angle of 30 degrees maximum from vertical. The permitted projection of the nosing shall extend *$1^1/_4$ inches (32 mm)* maximum over the tread below.

***Exception:** In existing buildings there is no requirement to retroactively alter existing nosing projections of $1^1/_2$ inches (38 mm) which were constructed in compliance with the building code in effect at the time of original construction.*

***11B*-504.6 Handrails.** Stairs shall have handrails complying with *Section 11B*-505.

***11B*-504.7 Wet conditions.** Stair treads and landings subject to wet conditions shall be designed to prevent the accumulation of water.

***11B-504.8 Floor identification.** Floor identification signs required by Chapter 10, Section 1022.9 complying with Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5 shall be located at the landing of each floor level, placed adjacent to the door on the latch side, in all enclosed stairways in buildings two or more stories in height to identify the floor level. At the exit discharge level, the sign shall include a raised five pointed star located to the left of the identifying floor level. The outside diameter of the star shall be the same as the height of the raised characters.*

11B-505 Handrails

***11B*-505.1 General.** Handrails provided along walking surfaces complying with *Section 11B*-403, required at ramps complying with *Section 11B*-405, and required at stairs complying with *Section 11B*-504 shall comply with *Section 11B*-505.

***11B*-505.2 Where required.** Handrails shall be provided on both sides of stairs and ramps.

Exceptions:

1. *In assembly areas, handrails shall not be required on both sides of aisle ramps where a handrail is provided at either side or within the aisle width.*
2. *Curb ramps do not require handrails.*
3. *At door landings, handrails are not required when the ramp run is less than 6 inches (152 mm) in rise or 72 inches (1829 mm) in length.*

***11B*-505.3 Continuity.** Handrails shall be continuous within the full length of each stair flight or ramp run. Inside handrails on switchback or dogleg stairs and ramps shall be continuous between flights or runs.

Exception: In assembly areas, *ramp* handrails *adjacent to seating or within the aisle width* shall not be required to be continuous in aisles serving seating.

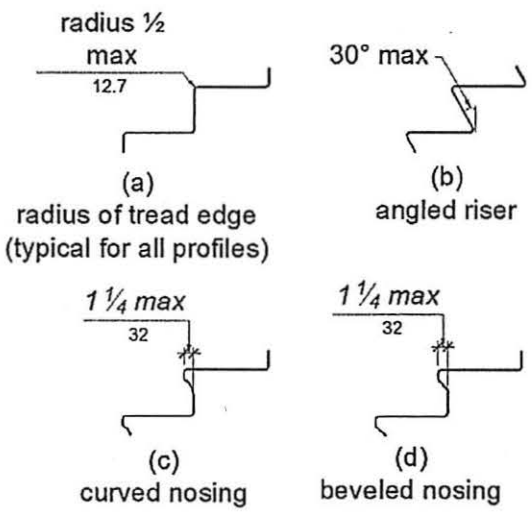


FIGURE *11B*-504.5
STAIR NOSINGS

***11B*-505.4 Height.** Top of gripping surfaces of handrails shall be 34 inches (*864* mm) minimum and 38 inches (965 mm) maximum vertically above walking surfaces, stair nosings, and ramp surfaces. Handrails shall be at a consistent height above walking surfaces, stair nosings, and ramp surfaces.

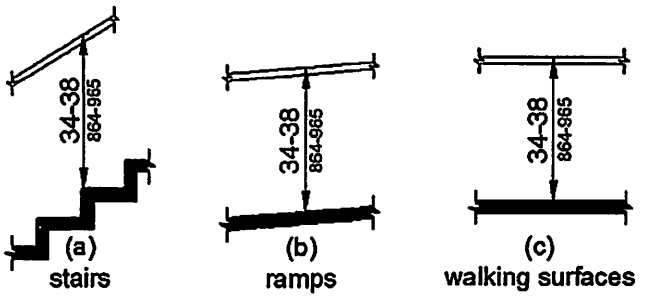


FIGURE *11B*-505.4
HANDRAIL HEIGHT

***11B*-505.5 Clearance.** Clearance between handrail gripping surfaces and adjacent surfaces shall be $1^1/_2$ inches (38 mm) minimum. *Handrails may be located in a recess if the recess is 3 inches (76 mm) maximum deep and 18 inches (457 mm) minimum clear above the top of the handrail.*

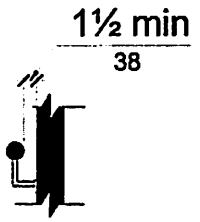


FIGURE *11B*-505.5
HANDRAIL CLEARANCE

***11B*-505.6 Gripping surface.** Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. Where provided, horizontal projections shall occur $1^1/_2$ inches (38 mm) minimum below the bottom of the handrail gripping surface.

Exceptions:

1. Where handrails are provided along walking surfaces with slopes not steeper than 1:20, the bottoms of handrail gripping surfaces shall be permitted to be obstructed along their entire length where they are integral to crash rails or bumper guards.
2. The distance between horizontal projections and the bottom of the gripping surface shall be permitted to be reduced by $^1/_8$ inch (3.2 mm) for each ½ inch (*12.7* mm) of additional handrail perimeter dimension that exceeds 4 inches (*102* mm).

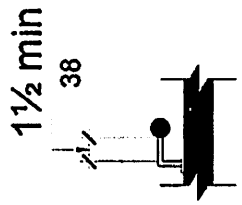


FIGURE *11B*-505.6
HORIZONTAL PROJECTIONS BELOW GRIPPING SURFACE

***11B*-505.7 Cross section.** Handrail gripping surfaces shall have a cross section complying with *Section 11B*-505.7.1 or *11B*-505.7.2.

***11B*-505.7.1 Circular cross section.** Handrail gripping surfaces with a circular cross section shall have an outside diameter of $1^1/_4$ inches (32 mm) minimum and 2 inches (51 mm) maximum.

***11B*-505.7.2 Non-circular cross sections.** Handrail gripping surfaces with a non-circular cross section shall have a perimeter dimension of 4 inches (*102* mm) minimum and $6^1/_4$ inches (*159* mm) maximum, and a cross-section dimension of $2^1/_4$ inches (57 mm) maximum.

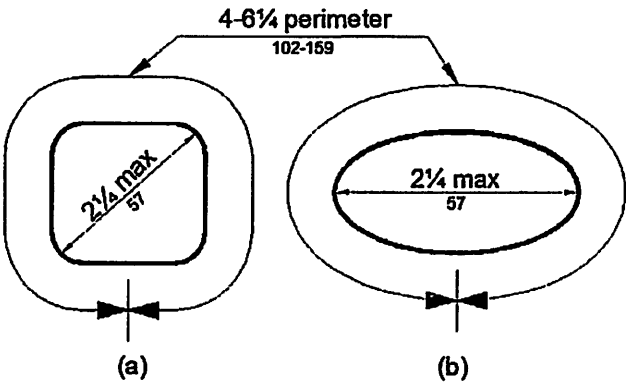


FIGURE *11B*-505.7.2
HANDRAIL NON-CIRCULAR CROSS SECTION

***11B*-505.8 Surfaces.** Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.

***11B*-505.9 Fittings.** Handrails shall not rotate within their fittings.

***11B*-505.10 Handrail extensions.** Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with *Section 11B*-505.10.

Exceptions:

1. Extensions shall not be required for continuous handrails at the inside turn of switchback or dogleg stairs and ramps.
2. In assembly areas, extensions shall not be required for ramp handrails in aisles serving seating where the handrails are discontinuous to provide access to seating and to permit crossovers within aisles.
3. In alterations, *where the extension of the handrail in the direction of ramp run would create a hazard, the extension of the handrail may be turned 90 degrees from the ramp run.*

***11B*-505.10.1 Top and bottom extension at ramps.** Ramp handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent ramp run.

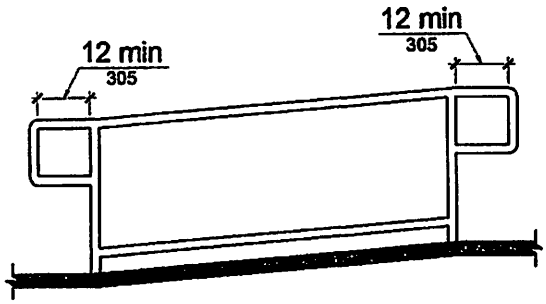


FIGURE *11B*-505.10.1
TOP AND BOTTOM HANDRAIL EXTENSION AT RAMPS

***11B*-505.10.2 Top extension at stairs.** At the top of a stair flight, handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beginning directly above the first riser nosing. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

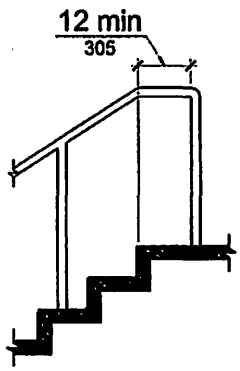
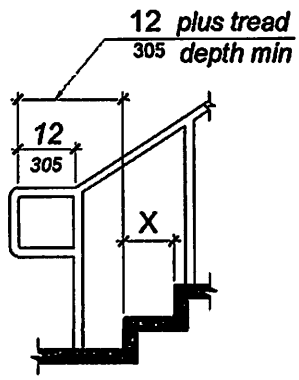


FIGURE *11B*-505.10.2
TOP HANDRAIL EXTENSION AT STAIRS

***11B*-505.10.3 Bottom extension at stairs.** At the bottom of a stair flight, handrails shall extend at the slope of the stair flight for a horizontal distance equal to one tread depth beyond the last riser nosing. *Such extension shall continue with a horizontal extension or shall be continuous to the handrail of an adjacent stair flight or shall return to a wall, guard, or the walking surface. At the bottom of a stair flight, a horizontal extension of a handrail shall be 12 inches (305 mm) long minimum and a height equal to that of the sloping portion of the handrail as measured above the stair nosings.* Extension shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.



Note: X = tread depth

FIGURE *11B*-505.10.3
BOTTOM HANDRAIL EXTENSION AT STAIRS