

# 2009 ANSI A117.1 for Accessible Design

## CHAPTER 3: BUILDING BLOCKS

- 301 General
- 301.1 Scope. The provisions of Chapter 3 shall apply where required by Chapter 4 through 11.
- 301.2 Overlap. Unless otherwise specified, clear floor spaces, clearances of fixtures, maneuvering clearances at doors, and turning spaces shall be permitted to overlap.
- 302 Floor or Ground Surfaces
- 302.1 General. Floor and ground surfaces shall be stable, firm, and slip resistant and shall comply with 302.
- EXCEPTIONS:
1. Within animal containment areas, floor and ground surfaces shall not be required to be stable, firm, and slip resistant.
  2. Areas of sport activity shall not be required to comply with 302.
- 302.2 Carpet. Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. Pile height shall be 1/2 inch (13 mm) maximum. Exposed edges of carpet shall be fastened to floor surfaces and shall have trim on the entire length of the exposed edge. Carpet edge trim shall comply with 303.3.

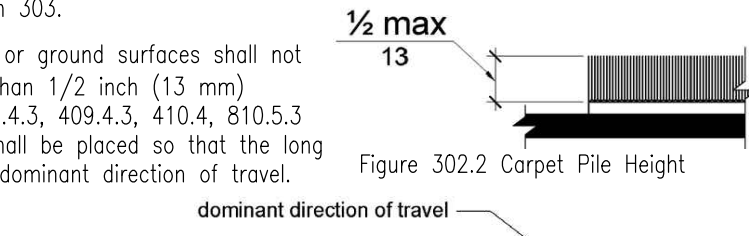


Figure 302.2 Carpet Pile Height

- 302.3 Openings. Openings in floor or ground surfaces shall not allow passage of a sphere more than 1/2 inch (13 mm) diameter except as allowed in 407.4.3, 409.4.3, 410.4, 810.5.3 and 810.10. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.
- 303 Changes in Level
- 303.1 General. Where changes in level are permitted in floor or ground surfaces, they shall comply with 303.
- EXCEPTIONS:
1. Animal containment areas shall not be required to comply with 303.
  2. Areas of sport activity shall not be required to comply with 303.
- 303.2 Vertical. Changes in level of 1/4 inch (6.4 mm) high maximum shall be permitted to be vertical.

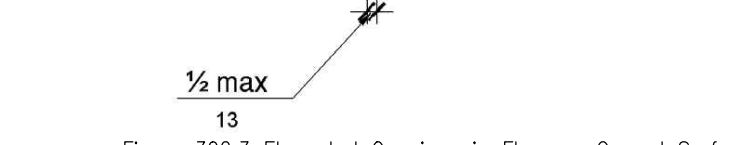


Figure 303.2 Elongated Openings in Floor or Ground Surfaces

- 303.3 Beveled. Changes in level between 1/4 inch (6.4 mm) high minimum and 1/2 inch (13 mm) high maximum shall be beveled with a slope not steeper than 1:2.
- 303.4 Ramps. Changes in level greater than 1/2 inch (13 mm) high shall be ramped, and shall comply with 405 or 406.

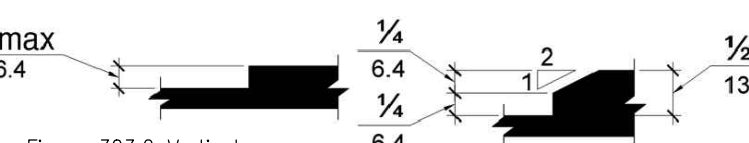


Figure 303.3 Beveled Change in Level

- 304 Turning Space
- 304.1 General. Turning space shall comply with 304.
- 304.2 Floor or Ground Surfaces. Floor or ground surfaces of a turning space shall comply with 302. Changes in level are not permitted.
- EXCEPTION: Slopes not steeper than 1:48 shall be permitted.
- 304.3 Size. Turning space shall comply with 304.3.1 or 304.3.2.

- 304.3.1 Circular Space. The turning space shall be a space of 60 inches (1525 mm) diameter minimum. The space shall be permitted to include knee and toe clearance complying with 306.

- 304.3.2 T-Shaped Space. The turning space shall be a T-shaped space within a 60 inch (1525 mm) square minimum with arms and base 36 inches (915 mm) wide minimum. Each arm of the T shall be clear of obstructions 12 inches (305 mm) minimum in each direction and the base shall be clear of obstructions 24 inches (610 mm) minimum. The space shall be permitted to include knee and toe clearance complying with 306 only at the end of either the base or one arm.

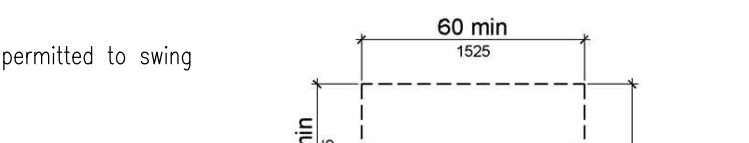


Figure 304.3.2 T-Shaped Turning Space

- 305 Clear Floor or Ground Space
- 305.1 General. Clear floor or ground space shall comply with 305.
- 305.2 Floor or Ground Surfaces. Floor or ground surfaces of a clear floor or ground space shall comply with 302. Changes in level are not permitted.
- EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

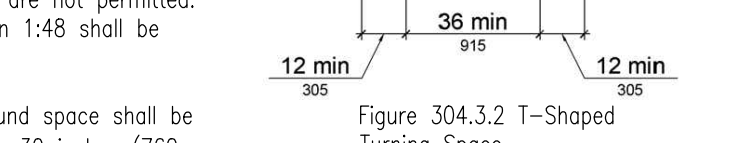


Figure 305.1 Forward Approach

- 305.3 Size. The clear floor or ground space shall be 48 inches (1220 mm) minimum by 30 inches (760 mm) minimum.
- 305.4 Knee and Toe Clearance. Unless otherwise specified, clear floor or ground space shall be permitted to include knee and toe clearance complying with 306.

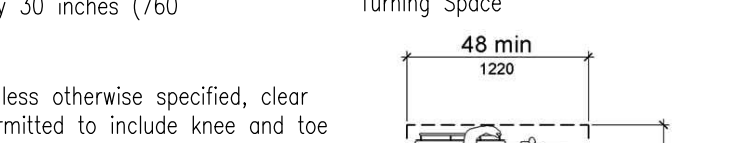


Figure 305.3 Clear Floor or Ground Space

- 305.5 Position. Unless otherwise specified, clear floor or ground space shall be positioned for either forward or parallel approach to an element.
- 305.6 Approach. One full unobstructed side of the clear floor or ground space shall adjoin an accessible route or adjoin another clear floor or ground space.

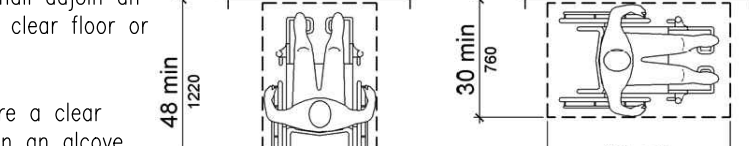


Figure 305.5 Position of Clear Floor or Ground Space

- 305.7 Maneuvering Clearance. Where a clear floor or ground space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearance shall be provided in accordance with 305.7.1 and 305.7.2.

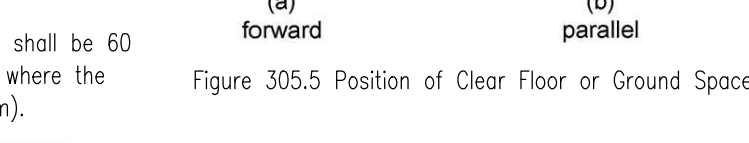


Figure 305.7.1 Forward Approach

- 305.7.1 Forward Approach. Alcoves shall be 60 inches (1525 mm) wide minimum where the depth exceeds 24 inches (610 mm).
- 305.7.2 Parallel Approach. Alcoves shall be 36 inches (915 mm) wide minimum where the depth exceeds 24 inches (610 mm).

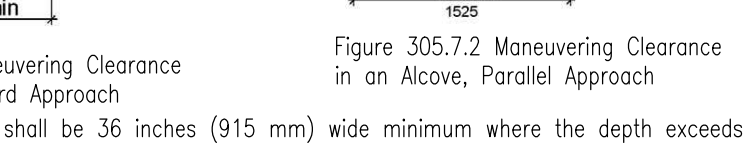


Figure 305.7.2 Parallel Approach

- 306 Knee and Toe Clearance
- 306.1 General. Where space beneath an element is included as part of clear floor or ground space or turning space, the space shall comply with 306. Additional space shall not be prohibited beneath an element but shall not be considered as part of the clear floor or ground space or turning space.
- 306.2 Toe Clearance. Space under an element between the finish floor or ground and 9 inches (230 mm) above the finish floor or ground shall be considered toe clearance and shall comply with 306.2.

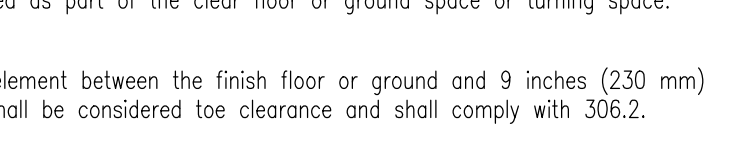


Figure 306.1 General

- 306.2.2 Maximum Depth. Toe clearance shall extend 25 inches (635 mm) maximum under an element.
- 306.2.3 Minimum Required Depth. Where toe clearance is required at an element as part of a clear floor space, the toe clearance shall extend 17 inches (430 mm) minimum under the element.

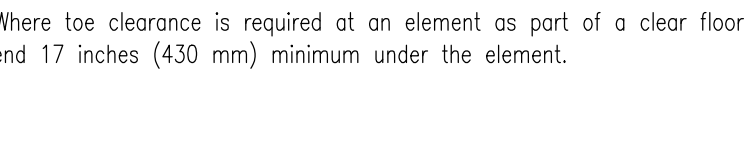


Figure 306.2.2 Maximum Depth

- 306.2.4 Additional Clearance. Space extending greater than 6 inches (150 mm) beyond the available knee clearance at 9 inches (230 mm) above the finish floor or ground shall not be considered toe clearance.

- 306.2.5 Width. Toe clearance shall be 30 inches (760 mm) wide minimum.
- 306.3 Knee Clearance
- 306.3.1 General. Space under an element between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground shall be considered knee clearance and shall comply with 306.3.



Figure 306.3.1 General

- 306.3.2 Maximum Depth. Knee clearance shall extend 25 inches (635 mm) maximum under an element at 9 inches (230 mm) above the finish floor or ground.
- 306.3.3 Minimum Required Depth. Where knee clearance is required under an element as part of a clear floor space, the knee clearance shall be 11 inches (280 mm) deep minimum at 9 inches (230 mm) above the finish floor or ground, and 8 inches (205 mm) deep minimum at 27 inches (685 mm) above the finish floor or ground.

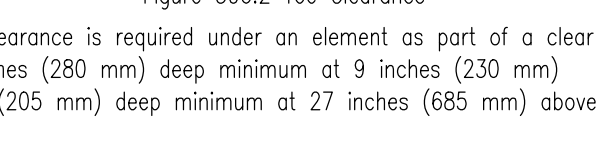


Figure 306.3.2 Maximum Depth

- 306.3.4 Clearance Reduction. Between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground, the knee clearance shall be permitted to reduce at a rate of 1 inch (25 mm) in depth for each 6 inches (150 mm) in height.

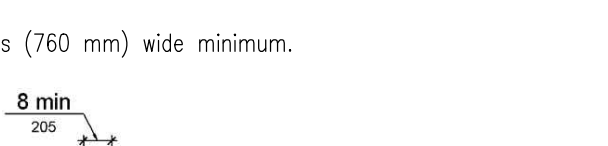


Figure 306.3.4 Clearance Reduction

- 306.3.5 Width. Knee clearance shall be 30 inches (760 mm) wide minimum.

- 307 Protruding Objects
- 307.1 General. Protruding objects shall comply with 307.

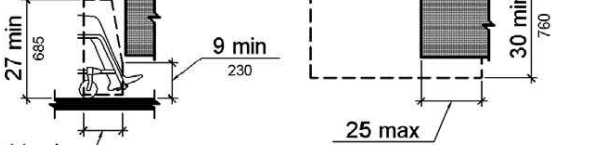


Figure 307.1 General

- 307.2 Protrusion Limits. Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the finish floor or ground shall protrude 4 inches (100 mm) maximum horizontally into the circulation path.
- EXCEPTION: Handrails shall be permitted to protrude 4 1/2 inches (115 mm) maximum.

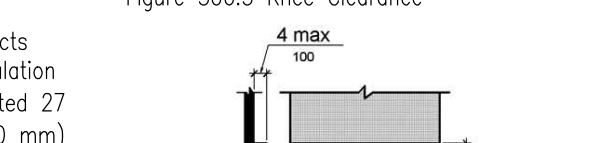


Figure 307.2 Protrusion Limits

- 307.3 Post-Mounted Objects. Free-standing objects mounted on posts or pylons shall overhang circulation paths 12 inches (305 mm) maximum when located 27 inches (685 mm) minimum and 80 inches (2030 mm) maximum above the finish floor or ground. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (685 mm) maximum or 80 inches (2030 mm) minimum above the finish floor or ground.
- EXCEPTION: The sloping portions of handrails serving stairs and ramps shall not be required to comply with 307.3.



Figure 307.3 Post-Mounted Objects

- 307.4 Vertical Clearance. Vertical clearance shall be 80 inches (2030 mm) high minimum. Guardrails or other barriers shall be provided where the vertical clearance is less than 80 inches (2030 mm) high. The leading edge of such guardrail or barrier shall be located 27 inches (685 mm) maximum above the finish floor or ground.
- EXCEPTION: Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the finish floor or ground.



Figure 307.4 Vertical Clearance

- 307.5 Required Clear Width. Protruding objects shall not reduce the clear width required for accessible routes.

- 308 Reach Ranges
- 308.1 General. Reach ranges shall comply with 308.

- 308.2 Forward Reach.

- 308.2.1 Unobstructed. Where a forward reach is unobstructed, the high forward reach shall be 48 inches (1220 mm) maximum and the low forward reach shall be 15 inches (380 mm) minimum above the finish floor or ground.

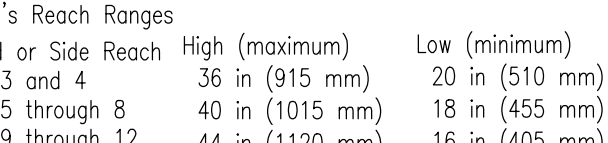


Figure 308.2.1 Unobstructed Forward Reach

- 308.2.2 Obstructed High Forward Reach. Where a high forward reach is over an obstruction, the clear floor space shall extend beneath the element for a distance not less than the required reach depth over the obstruction. The high forward reach shall be 48 inches (1220 mm) maximum where the reach depth is 20 inches (510 mm) maximum. Where the reach depth exceeds 20 inches (510 mm), the high forward reach shall be 44 inches (1120 mm) maximum and the reach depth shall be 25 inches (635 mm) maximum.

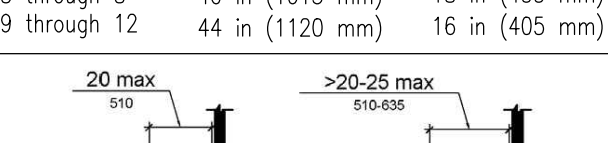


Figure 308.2.2 Obstructed High Forward Reach

- 308.3 Side Reach
- 308.3.1 Unobstructed. Where a clear floor or ground space allows a parallel approach to an element and the side reach is unobstructed, the high side reach shall be 48 inches (1220 mm) maximum and the low side reach shall be 15 inches (380 mm) minimum above the finish floor or ground.
- EXCEPTIONS:
1. An obstruction shall be permitted between the clear floor or ground space and the element where the depth of the obstruction is 10 inches (255 mm) maximum.
  2. Operable parts of fuel dispensers shall be permitted to be 54 inches (1370 mm) maximum measured from the surface of the vehicular way where fuel dispensers are installed on existing curbs.

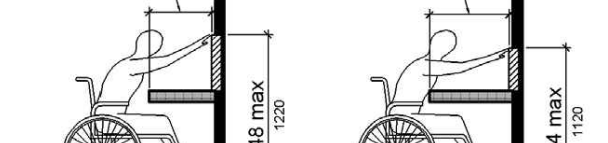


Figure 308.3.1 Unobstructed Side Reach

- 308.3.2 Obstructed High Side Reach. Where a clear floor or ground space allows a parallel approach to an element and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (865 mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum. The high side reach shall be 48 inches (1220 mm) maximum for a reach depth of 10 inches (255 mm) maximum. Where the reach depth exceeds 10 inches (255 mm), the high side reach shall be 46 inches (1170 mm) maximum for a reach depth of 24 inches (610 mm) maximum.

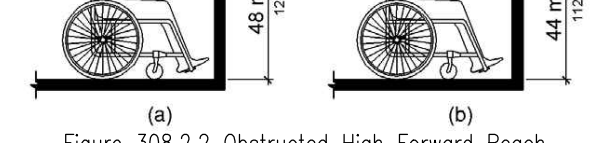


Figure 308.3.2 Obstructed High Side Reach

- 308.3.2 EXCEPTIONS:
1. The top of washing machines and clothes dryers shall be permitted to be 36 inches (915 mm) maximum above the finish floor.
  2. Operable parts of fuel dispensers shall be permitted to be 54 inches (1370 mm) maximum measured from the surface of the vehicular way where fuel dispensers are installed on existing curbs.
- 309 Operable Parts
- 309.1 General. Operable parts shall comply with 309.

- 309.2 Clear Floor Space. A clear floor or ground space complying with 305 shall be provided.
- 309.3 Height. Operable parts shall be placed within one or more of the reach ranges specified in 308.

- 309.4 Operation. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.
- EXCEPTION: Gas pump nozzles shall not be required to provide operable parts that have an activating force of 5 pounds (22.2 N) maximum.

## CHAPTER 4: ACCESSIBLE ROUTES

- 401 General
- 401.1 Scope. The provisions of Chapter 4 shall apply where required by Chapter 2 or where referenced by a requirement in this document.

- 402 Accessible Routes
- 402.1 General. Accessible routes shall comply with 402.

- 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 Chapter 4.

- 402.3 Revolving Doors, Revolving Gates and Turnstiles. Revolving doors, revolving gates and turnstiles shall not be part of an accessible route.
- 403 Walking Surfaces
- 403.1 General. Walking surfaces that are a part of an accessible route shall comply with 403.

- 403.2 Floor or Ground Surface. Floor or ground surfaces shall comply with 302.
- 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.
- 403.4 Changes in Level. Changes in level shall comply with 303.

- 403.5 Clear Width. Except as provided in 403.5.2 and 403.5.3, the clear width of walking surfaces shall be 36 inches (915 mm) minimum.
- EXCEPTION: The clear width of walking surfaces shall be reduced to 32 inches (815 mm) minimum for a length of 24 inches (610 mm) maximum provided that reduced width segments are separated by segments that are 48 inches (1220 mm) long minimum and 36 inches (915 mm) wide minimum.
- 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 (1220 mm) wide, clear width shall be 42 inches (1065 mm) minimum approaching the turn, 48 inches (1220 mm) minimum at the turn and 42 inches (1065 mm) minimum leaving the turn.
- EXCEPTION: Where the clear width at the turn is 60 inches (1525 mm) minimum compliance with 403.5.1 shall not be required.

- 403.5.3 Passing Spaces. An accessible route with a clear width less than 60 inches (1525 mm) shall provide passing spaces at intervals of 200 feet (61 m) maximum. Passing spaces shall be either: a space 60 inches (1525 mm) minimum by 60 inches (1525 mm) minimum; or, an intersection of two walking surfaces providing a T-shaped space complying with 304.3.2 where the base and arms of the T-shaped space extend 48 inches (1220 mm) minimum beyond the intersection.

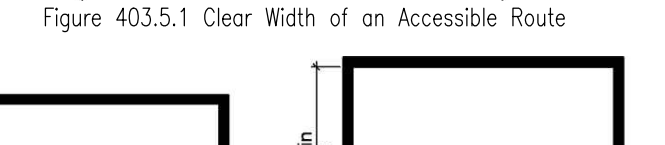


Figure 403.5.1 Clear Width of an Accessible Route

- 403.6 Handrails. Where handrails are provided along walking surfaces with running slopes not steeper than 1:20 they shall comply with 505.4 through 505.9.

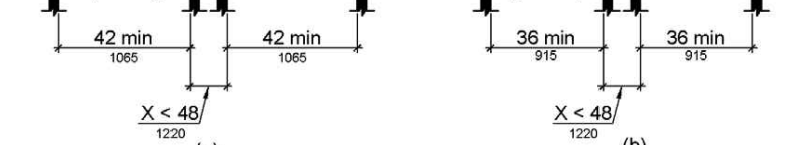


Figure 403.6 Handrails

- 404 Doors, Doorways, and Gates

- 404.1 General. Doors, doorways, and gates that are part of an accessible route shall comply with 404.
- EXCEPTION: Doors, doorways, and gates designed to be operated only by security personnel shall not be required to comply with 404.2.6, 404.2.7, 404.2.8.

- 404.2 Manual Doors, Doorways, and Manual Gates. Manual doors and doorways and manual gates intended for foot passage shall comply with 404.2.

- 404.2.1 Double-Leaf Doors and Gates. At least one of the active leaves of doorways with two leaves shall comply with 404.2.3 and 404.2.4.

- 404.2.2 Clear Width. Door openings shall provide a clear width of 32 inches (815 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 (915 mm) minimum. There shall be no projections into the required clear opening with lower than 34 inches (865 mm) above the finish floor or ground. Projections into the clear opening with between 34 inches (865 mm) and 80 inches (2030 mm) above the finish floor or ground shall not exceed 4 inches (100 mm).

- EXCEPTIONS:
1. In alterations, a projection of 5/8 inch (16 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 (1980 mm) minimum above the finish floor or ground.

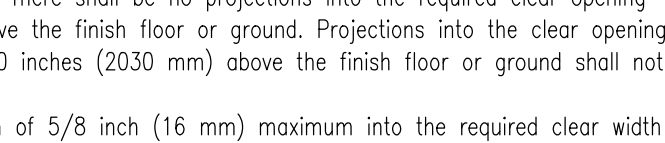


Figure 404.2.2 Clear Width of Doorways

- 404.2.3 Maneuvering Clearances. Minimum maneuvering clearances at doors and gates shall comply with 404.2.3.1. Maneuvering clearances shall extend the full width of the doorway and the required latch side or hinge side clearance.
- 404.2.3.1 Floor Surface. Floor surface within the maneuvering clearances shall have a slope not steeper than 1:48 and shall comply with Section 302.

- 404.2.3.2 Swinging Doors and Gates. Swinging doors and gates shall have maneuvering clearances complying with Table 404.2.3.2. (as illustrated on Figures 404.2.3.2)



Figure 404.2.3.2 Swinging Doors and Gates

- 404.2.4 Two Doors in A Series. The distance between two hinged or pivoted doors in series and gates in series shall be 48 inches (1220 mm) minimum plus the width of doors or gates swinging into the space.

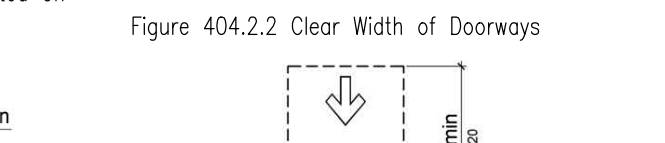


Figure 404.2.4 Two Doors in A Series

- 404.2.6 Door and Gate Hardware. Handles, pulls, latches, locks, and other operable parts on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, pinching, or twisting of the wrist to operate. Operable parts of such hardware shall be 34 inches (865 mm) minimum and 48 inches (1220 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.

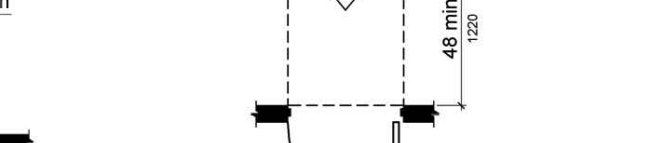


Figure 404.2.6 Door and Gate Hardware

- EXCEPTION: Locks used only for security purposes and not used for normal operation shall not be required to comply with Section 404.2.6.

- 404.2.7 Closing Speed. Door and gate closing speed shall comply with 404.2.7.

- 404.2.7.1. Door Closers. Door closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to an open position of 12 degrees shall be 5 seconds minimum.

- 404.2.7.2. Spring Hinges. Door spring hinges shall be adjusted so that from an open position of 70 degrees, the door shall move to the closed position in 1.5 seconds minimum.

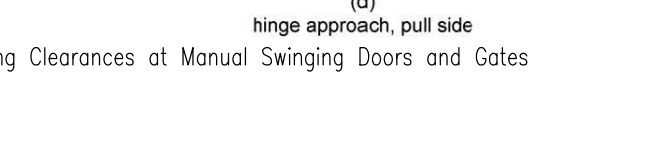


Figure 404.2.7.2 Spring Hinges

- 404.2.8 Door-Opening Force. Fire doors shall have a minimum opening force allowable by the appropriate administrative authority. 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.
- 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.

- 404.2.9 Door and Gate Surfaces. Swinging door and gate surfaces within 10 inches (255 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. Cavities created by added kick plates shall be coped.

- EXCEPTIONS:
1. Sliding doors shall not be required to comply with 404.2.9.
  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 horizontal shall not be required to meet the 10 inch (255 mm) bottom smooth surface height requirement.
  3. Doors that do not extend within 10 inches (255 mm) of the floor shall not be required to comply with Section 404.2.9.

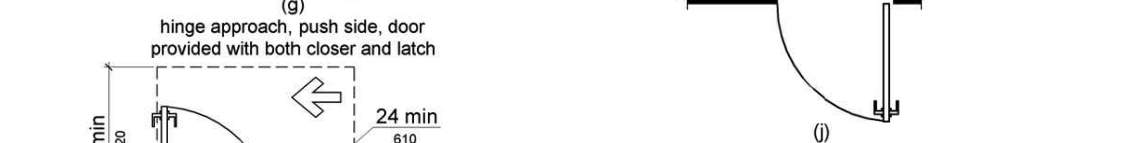


Figure 404.2.9 Door and Gate Surfaces

- 404.2.10 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 (1090 mm) maximum above the finish floor.
- EXCEPTION: Vision lights with the lowest part more than 66 inches (1675 mm) from the finish floor or ground shall not be required to comply with 404.2.11.



Figure 404.2.10 Vision Lights

- 404.3 Automatic and Power-Assisted Doors and Gates. Automatic doors and automatic gates shall comply with 404.3. Full-powered automatic doors shall comply with ANSI/BHMA A156.10 listed in Section 105.2.4. power-assist and low-energy doors shall comply with ANSI/BHMA A156.19 listed in Section 105.2.3.
- EXCEPTION: Doors, doorways, and gates designed to be operated by security personnel shall not be required to comply with Sections 404.3.2, 404.3.4., and 404.3.5.



Figure 404.3 Automatic and Power-Assisted Doors and Gates

- 404.3.1 Clear Width. Doorways shall provide a clear opening of 32 inches (815 mm) minimum in power-on and power-off mode. The minimum clear width for automatic door systems in a doorway shall be based on the clear opening provided by all leaves in the open position.

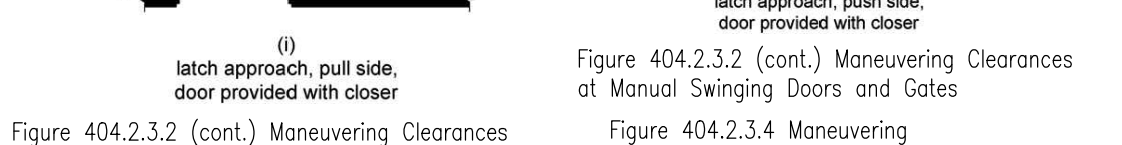


Figure 404.3.1 Clear Width

- 404.3.2 Maneuvering Clearance. Clearances at power-assisted doors and gates shall comply with 404.2.4. Clearances at automatic doors and gates without standby power and serving an accessible means of egress shall comply with 404.2.3.

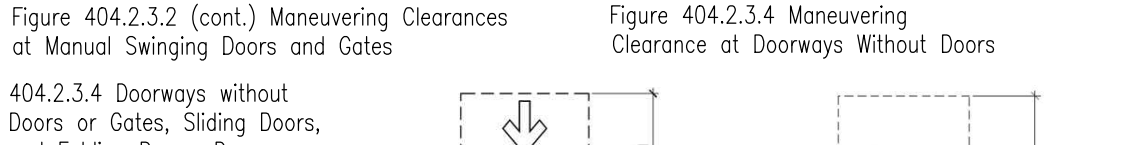


Figure 404.3.2 Maneuvering Clearance

- 404.3.3 Thresholds. Thresholds and changes in level at doorways shall comply with 404.2.4.

- 404.3.4 Two Doors in Series. Doors in series shall comply with Section 404.2.5.

- 404.3.5 Control Switches. Manually operated control switches shall comply with Section 309. The clear floor space adjacent to the control switch shall be located beyond the arc of the door swing.



Figure 404.3.5 Control Switches

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

- 405.2 Slope. Ramp runs shall have a running slope greater than 1:20 and not steeper than 1:12.
- EXCEPTION: In existing sites, buildings, and facilities, ramps shall be permitted to have running slopes steeper than 1:12 complying with Table 405.2 where such slopes are necessary due to space limitations.

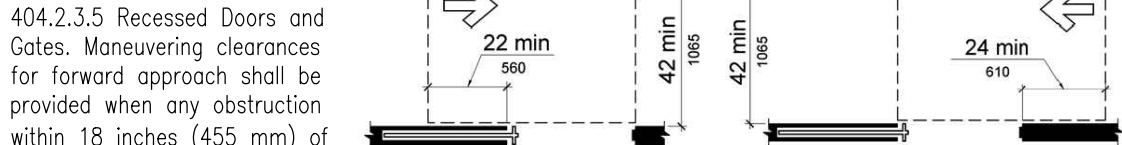


Figure 405.2 Slope

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

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

