



## **Access – Ramps and Lifts**

The ADA provides Wheelchair Ramp Specifications and guidelines that most business must meet or risk penalties and legal action. Typically, residential applications are not required to comply with ADA guidelines. However, they are a good reference point for suitable ramp lengths. Contact your local building inspectors for local requirements and additional information. An overview of ADA Section 405: Ramps is listed at the end of this article.

**ADA Standards Require a 1:12 slope ratio which works out to be one foot of wheelchair ramp for each inch of rise. For instance, a 20 inch rise requires a 20 foot wheelchair ramp.**

**ADA Standards Require a Minimum 5' x 5' Flat area at the top and bottom of the ramp.**

**ADA Standards Require wheelchair ramps to have a Minimum 36 inches of clear space across the wheelchair ramp.**

**ADA Standards Require a Minimum Platform size of 5' x 5'.**

**ADA Guidelines for Wheelchair Ramps allow a Maximum run of 30 feet of wheelchair ramp before a rest or turn platform.**

**ADA Ramp Guidelines Require handrails that are between 34" and 38" in height on both sides of the wheelchair ramps.**

### **SAFETY ADVISORY:**

There may be a temptation to build a ramp that is steeper than the recommended 1 to 12 minimum in order to conserve space or reduce costs. Before deciding to build such a ramp, remember that the steeper the ramp is, the more dangerous it becomes to anyone using it.

Steep ramps have caused falls resulting in serious injuries and ramps can be so steep that the person needing it could not use it independently.

**DO NOT BUILD RAMPS THAT ARE STEEPER THAN 1 TO 12**



A ramp allows for independent access to areas both outside of and inside a home. There are several types from which to choose based on a user's specific need. Most homeowners will get a wheelchair ramp installed, without realizing that a vertical lift is an affordable option.

Whichever option you choose, remember to consider the entry from the porch into the house. Creating a zero barrier entry provides a flush entry for easy access into the home. Aluminum threshold ramps provide a solution for that last step into the house.

There are a few things to consider when weighing the options of a ramp or a lift:

### **Space Needed-**

Wheelchair ramps need a lot of space. The rise ratio is 12 inches horizontal for every inch of height. Which means if you only need to get up 24" you'll need a ramp that is 24 feet long, plus the landings.

The advantage of a vertical lift is that it doesn't take up nearly as much room. The maximum footprint of popular wheelchair lifts is approximately 54" x 54". They are available in different travel heights to suit your needs.

### **Resale Value-**

The other issue to consider when deciding which modification is best for you, is the resale value of your home. A ramp is very specific to your needs and if you need to resell your home, you may have a hard time as not every home buyer will find value in having a permanent ramp on a home they are considering buying.

Also, depending on where you are moving to, you may need to pay the expense of having another ramp installed again.

Vertical lifts can be disassembled and moved to a new location, or resold if they are not needed. The modifications required for a lift are minimal, depending on the height.

## Seasonal Maintenance-

Keep in mind also that ramps will need to be cleared if you live in a wintery climate. If you have a long ramp, they can still be difficult to roll yourself up in a wheelchair over a long distance, unless you have an electric scooter.

Wheelchair Lifts can be used independently and are weather proof and easy to use.

Make sure you do research and get quotes on both options before you decide which option is best for you

## Outdoor Ramp Types:

**Wooden and Concrete Ramps** – are site built and typically require a building permit. Site built ramps are the lower cost option for longer ramps.

These home improvement stores offer articles, videos, and a planning guide for building a wheelchair ramp:

Home Depot:

<http://community.homedepot.com/t5/Outdoors/How-to-build-a-residential-wheelchair-ramp-with-a-18-quot-rise/td-p/142231#.UwjAjGeYaeY>

Lowe's:

[http://www.lowes.com/cd\\_Build+a+Wheelchair+Ramp\\_1284487683\\_](http://www.lowes.com/cd_Build+a+Wheelchair+Ramp_1284487683_)

Remember: Check your local building department for permit requirements.

**Metal Ramps and Platforms** – metal ramps as well as combination metal/wood ramps are faster to install as building permits are typically not required. Concrete footers are generally not needed. Their modular design provides flexibility.

Remember: Check your local building department for permit requirements.

**Portable Aluminum Ramps** – can be used for short-term applications, or for areas that occasionally require a ramp. Great solution for transition from porch/ landing into house. These ramps can be easily stored when not in use.

**Rental Ramps** – can come in a variety of lengths to fit specific needs. Practical solution for short term needs. Some will be delivered and set up as part of the rental, so shop for the best option.

Once you have narrowed your selection, you will need to make some measurements before you start communicating with vendors. The last section of this chapter gives the ADA specifications for wheelchair ramps. It is a valuable resource tool. The ADA recommends 4.8 degrees of incline. You do not normally need to meet this standard for residential use (although it is recommended). In general, you do not want to go shorter than half of what ADA recommends (9.6 degrees of incline). Consult your user manual of your chair/scooter to confirm the maximum incline it is rated for and always stay within that standard.

#### **General Usage Guidelines:**

- **Manual wheelchair with the person rolling themselves, you should stay closer to ADA's recommendation**
- **Manual wheelchair with the patient being assisted, you may go as short as half of ADA's recommendation. Keep in mind the weight of the patient and the strength of the person assisting. The shorter the ramp, the more difficult it will be to push the wheelchair.**
- **Electric Scooter or Wheelchairs should always stay within their manufacture's slope restriction. Please consult your owner's manual or the equipment's manufacturer for this information.**

Also, you can go online and plug in measurements to get an idea of your total rise. Example of such websites:

DiscountRamps.com

888-651-3431 (toll free)

<http://www.discountramps.com/articles/correct-wheelchair-ramp-length.htm>

Express Ramps- ADA Modular Wheelchair Ramp Wizard:

866-491-1110 (toll free)

<http://www.modular-wheelchair-ramps.com/modular-ramps/ramp-wizard.asp>

Some Central Florida vendors:

Above and Beyond Services, Inc

888-240-1122 (toll free)

Amasincramps.com

Amramp Orlando, FL:

888-715-7598 (toll free)

<http://www.amramp.com/orlando-fl>

Mobility Superstore- Residential Wheelchair Lifts:

800-257-1776 (toll free)

[http://local.mobility-superstore.com/Residential\\_Wheelchair\\_Lifts\\_Orlando\\_FL-p1720430-Orlando\\_FL.html](http://local.mobility-superstore.com/Residential_Wheelchair_Lifts_Orlando_FL-p1720430-Orlando_FL.html)

Mobility Superstore: Residential Wheelchair Ramps:

800-257-1776 (toll free)

<http://www.mobility-superstore.com/ramps/?ref=leftcatnav>

### **Additional Resources -**

Wheelchair Ramps or Lifts:

[http://blog.freedomshowers.com/Wheelchair\\_Ramps\\_or\\_Lifts,\\_3\\_Things\\_to\\_Consider.asp](http://blog.freedomshowers.com/Wheelchair_Ramps_or_Lifts,_3_Things_to_Consider.asp)

Express Ramps- ADA Modular Wheelchair Ramp Wizard:  
866-491-1110 (toll free)

<http://www.modular-wheelchair-ramps.com/>

Extended Home Living Services:

<http://www.ehls.com/residential-wheelchair-ramps.html>

Making a Wheelchair Ramp: Easy Reference Guide

<http://voices.yahoo.com/making-wheelchair-ramp-according-ada-guidelines-3001674.html>

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**ADA Guidelines for Wheelchair Ramps allow a Maximum run of 30 feet of wheelchair ramp before a rest or turn platform.**

**ADA Ramp Guidelines Require handrails that are between 34" and 38" in height on both sides of the wheelchair ramps.**

## **ADA Overview: Codes for Wheelchair Ramps**

### **405 RAMPS**

**405.1 General.** Ramps on accessible routes shall comply with 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 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. **Advisory 405.2 Slope.** To accommodate the widest range of users, provide ramps with the least possible running slope and, wherever possible, accompany ramps with stairs for use by those individuals for whom distance presents a greater barrier than steps, e.g., people with heart disease or limited stamina.

**405.3 Cross Slope.** Cross slope of ramp runs shall not be steeper than 1:48. **Advisory 405.3 Cross Slope.** Cross slope is the slope of the surface perpendicular to the direction of travel. Cross slope is measured the same way as slope is measured (i.e., the rise over the run).

**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.

**405.5 Clear Width.** The clear width of a ramp run and, where handrails are provided, the clear width between handrails shall be 36 inches (915 mm) minimum. **EXCEPTION:** 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.

**405.6 Rise.** The rise for any ramp run shall be 30 inches (760 mm) maximum.

**405.7 Landings.** Ramps shall have landings at the top and the bottom of each ramp run. Landings shall comply with 405.7 **Advisory 405.7 Landings.** Ramps that do not have level landings at changes in direction can create a compound slope that will not meet the requirements of this document. Circular or curved ramps continually change direction. Curvilinear ramps with small radii also can create compound cross slopes and cannot, by their nature, meet the requirements for accessible routes. A level landing is needed at the accessible door to permit maneuvering and simultaneously door operation.

- **405.7.1 Slope.** Landings shall comply with 302. Changes in level are not permitted. **EXCEPTION:** Slopes not steeper than 1:48 shall be permitted.
- **405.7.2 Width.** The landing clear width shall be at least as wide as the widest ramp run leading to the landing.
- **405.7.3 Length.** The landing clear length shall be 60 inches (1525 mm) long minimum.
- **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 60 inches (1525 mm) minimum.
- **405.7.5 Doorways.** Where doorways are located adjacent to a ramp landing, maneuvering clearances required by 404.2.4 and 404.3.2 shall be permitted to overlap the required landing area.

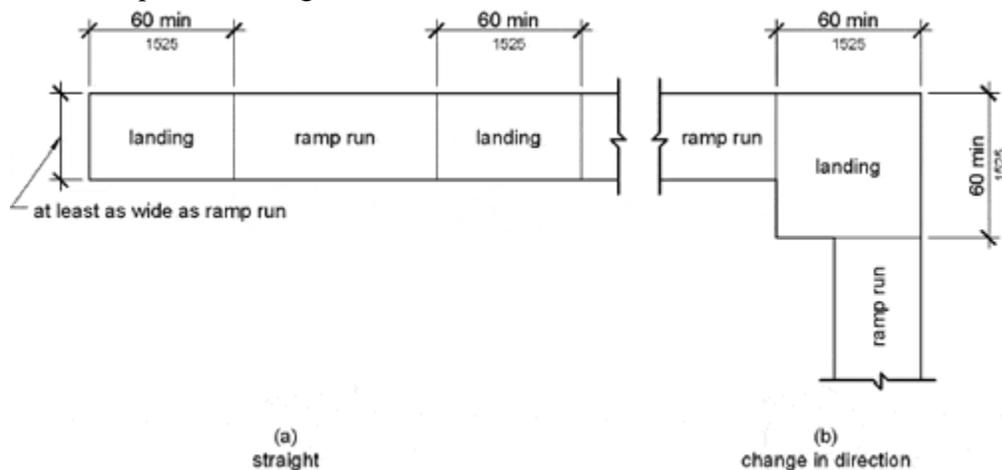


Figure 405.7 Ramp Landings

**405.8 Handrails.** Ramp runs with a rise greater than 6 inches (150 mm) shall have handrails complying with 505. **EXCEPTION:** Within employee work areas, handrails shall not be required where ramps that are part of common use circulation paths are designed to permit the installation of handrails complying with 505. Ramps not subject to the exception to 405.5 shall be designed to maintain a 36 inch (915 mm) minimum clear width when handrails are installed.

**405.9 Edge Protection.** Edge protection complying with 405.9.1 or 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 406.3. **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 (13 mm) maximum within 10 inches (255 mm) horizontally of the minimum landing area specified in 405.7.

- **405.9.1 Extended Floor or Ground Surface.** The floor or ground surface of the ramp run or landing shall extend 12 inches (305 mm) minimum beyond the inside face of a handrail complying with 505. **Advisory 405.9.1 Extended Floor or Ground Surface.** The extended surface prevents wheelchair casters and crutch tips from slipping off the ramp surface.
- **405.9.2 Curb or Barrier.** A curb or barrier shall be provided that prevents the passage of a 4 inch (100 mm) diameter sphere, where any portion of the sphere is within 4 inches (100 mm) of the finish floor or ground surface.
- **405.10 Wet Conditions.** Landings subject to wet conditions shall be designed to prevent the accumulation of water.

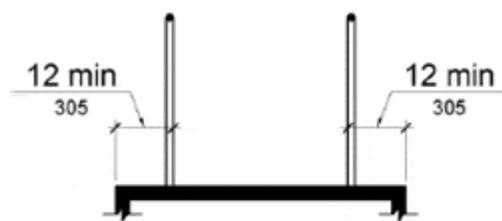


Figure 405.9.1 Extended Floor or Ground Surface Edge Protection

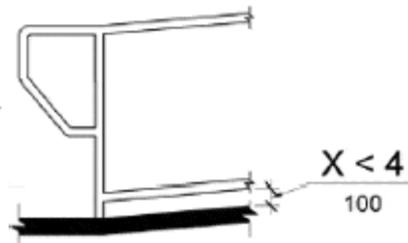


Figure 405.9.2 Curb or Barrier Edge Protection

## 505 HANDRAILS

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

**Advisory 505.1 General.** Handrails are required on ramp runs with a rise greater than 6 inches (150 mm) (see 405.8) and on certain stairways (see 504). Handrails are not required on walking surfaces with running slopes less than 1:20. However, handrails are required to comply with 505 when they are provided on walking surfaces with running slopes less than 1:20 (see 403.6). Sections 505.2, 505.3, and 505.10 do not apply to handrails provided on walking surfaces with running slopes less than 1:20 as these sections only reference requirements for ramps and stairs.

**505.2 Where Required.** Handrails shall be provided on both sides of stairs and ramps.

**EXCEPTION:** 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.

**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, handrails on ramps shall not be required to be continuous in aisles serving seating.

**505.4 Height.** Top of gripping surfaces of handrails shall be 34 inches (865 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. **Advisory 505.4 Height.** The requirements for stair and ramp handrails in this document are for adults. When children are the principal users in a building or facility (e.g., elementary schools), a second set of handrails at an appropriate height can assist them and aid in preventing accidents. A maximum height of 28 inches (710 mm) measured to the top of the gripping surface from the ramp surface or stair nosing is recommended for handrails designed for children. Sufficient vertical clearance between upper and lower handrails, 9 inches (230 mm) minimum, should be provided to help prevent entrapment.

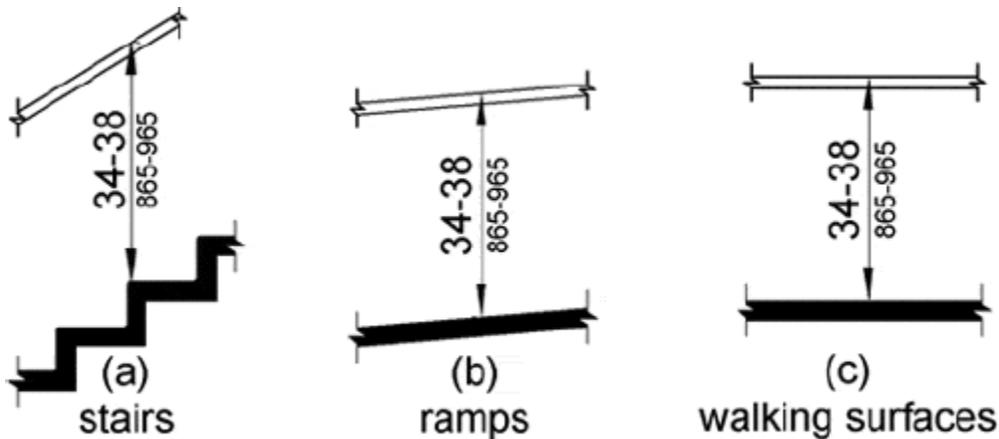


Figure 505.4 Handrail Height

**505.5 Clearance.** Clearance between handrail gripping surfaces and adjacent surfaces shall be 1 1/2 inches (38 mm) minimum.

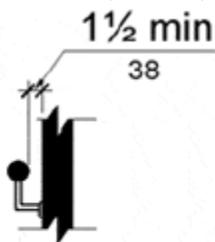


Figure 505.5 Handrail Clearance

**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 1/2 inch (13 mm) of additional handrail perimeter dimension that exceeds 4 inches (100 mm). **Advisory 505.6 Gripping Surface.** People with disabilities, older people, and others benefit from continuous gripping surfaces that permit users to reach the fingers outward or downward to grasp the handrail, particularly as the user senses a loss of equilibrium or begins to fall.

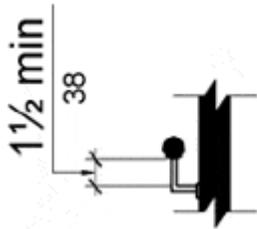


Figure 505.6 Horizontal Projections Below Gripping Surface

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

- **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.
- **505.7.2 Non-Circular Cross Sections.** Handrail gripping surfaces with a non-circular cross section shall have a perimeter dimension of 4 inches (100 mm) minimum and 6 1/4 inches (160 mm) maximum, and a cross-section dimension of 2 1/4 inches (57 mm) maximum.

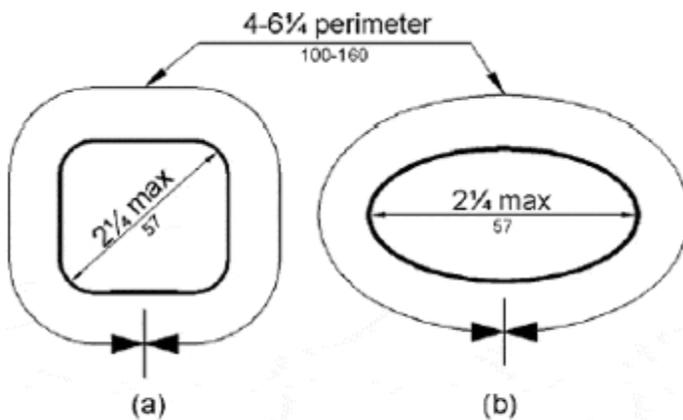


Figure 505.7.2 Handrail Non-Circular Cross Section

**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.

**505.9 Fittings.** Handrails shall not rotate within their fittings.

**505.10 Handrail Extensions.** Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with 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, full extensions of handrails shall not be required where such extensions would be hazardous due to plan configuration.

- **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.
- **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.
- **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 at least equal to one tread depth beyond the last riser nosing. Extension shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

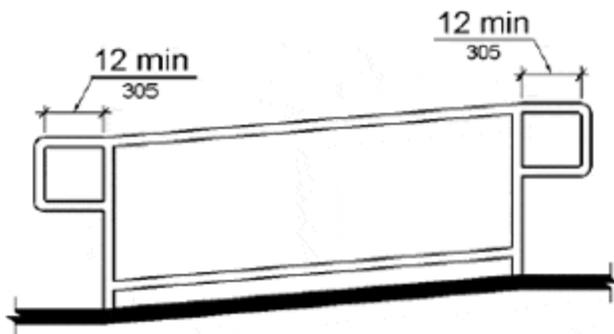


Figure 505.10.1 Top and Bottom Handrail Extension at Ramps

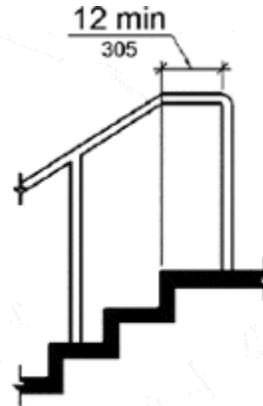
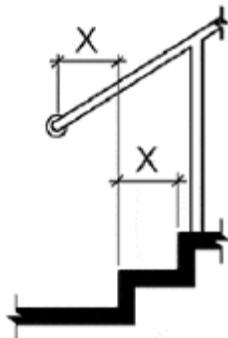


Figure 505.10.2 Top Handrail Extension at Stairs



Note: X = tread depth

Figure 505.10.3 Bottom Handrail Extension at Stairs

## 404 DOORS, DOORWAYS, AND GATES

**404.2.4 Maneuvering Clearances.** Minimum maneuvering clearances at doors and gates shall comply with 404.2.4. Maneuvering clearances shall extend the full width of the doorway and the required latch side or hinge side clearance. **EXCEPTION:** Entry doors to hospital patient rooms shall not be required to provide the clearance beyond the latch side of the door.

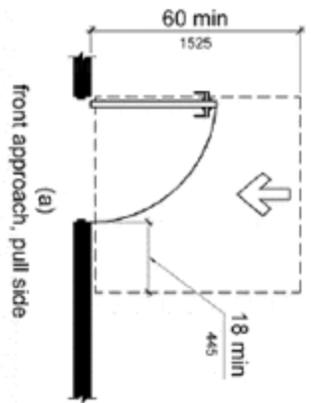
- **404.2.4.1 Swinging Doors and Gates.** Swinging doors and gates shall have maneuvering clearances complying with Table 404.2.4.1.

Approach	Door or	Perpendicular to	Parallel to Doorway (beyond

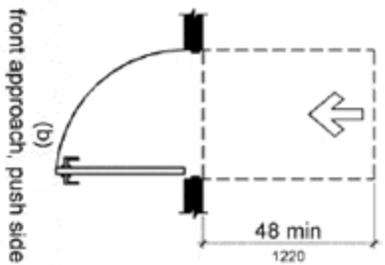
From hinge side Push	42 inches (1065 mm)	22 inches (560 mm) 3
From latch side Pull	48 inches (1220 mm)	24 inches (610 mm)
From latch side Push	42 inches (1065 mm)	24 inches (610 mm)

1. Add 12 inches (305 mm) if closer and latch are provided.
2. Add 6 inches (150 mm) if closer and latch are provided.
3. Beyond hinge side.

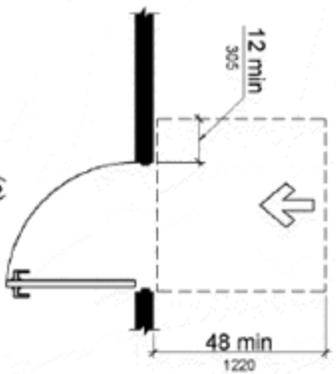
• **Figure 404.2.4.2 Maneuvering Clearances at Doorways without Doors or Gates, Manual Sliding Doors, and Manual Folding Doors:**



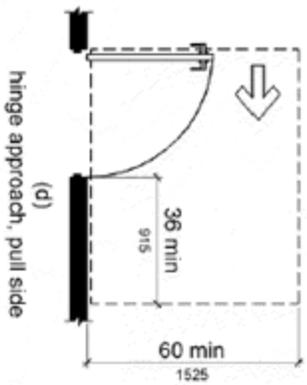
front approach, pull side



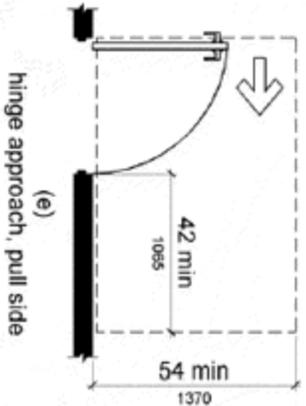
front approach, push side



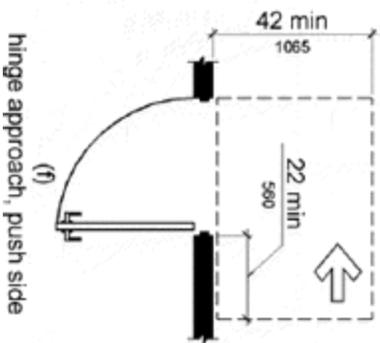
front approach, push side, door provided with both closer and latch



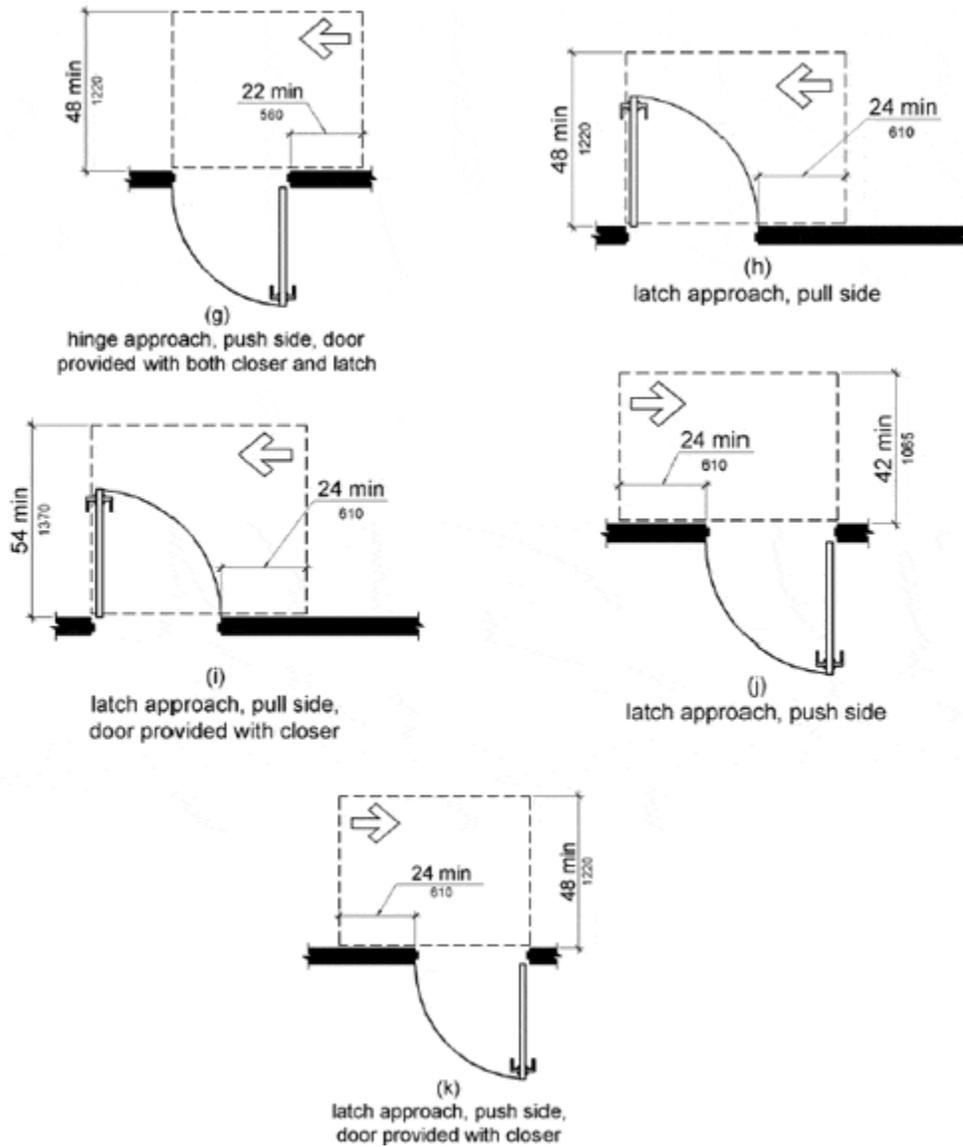
hinge approach, pull side



hinge approach, pull side



hinge approach, push side



- 404.2.4.2 Doorways without Doors or Gates, Sliding Doors, and Folding Doors.**  
 Doorways less than 36 inches (915 mm) wide without doors or gates, sliding doors, or folding doors shall have maneuvering clearances complying with Table 404.2.4.2.

Table 404.2.4.2 Maneuvering Clearances at Doorways without Doors or Gates, Manual

Approach	Perpendicular to	Parallel to Doorway (beyond stop/latch)
From pocket/hinge	42 inches (1065 mm)	22 inches (560 mm) 2

1. Doorway with no door only.

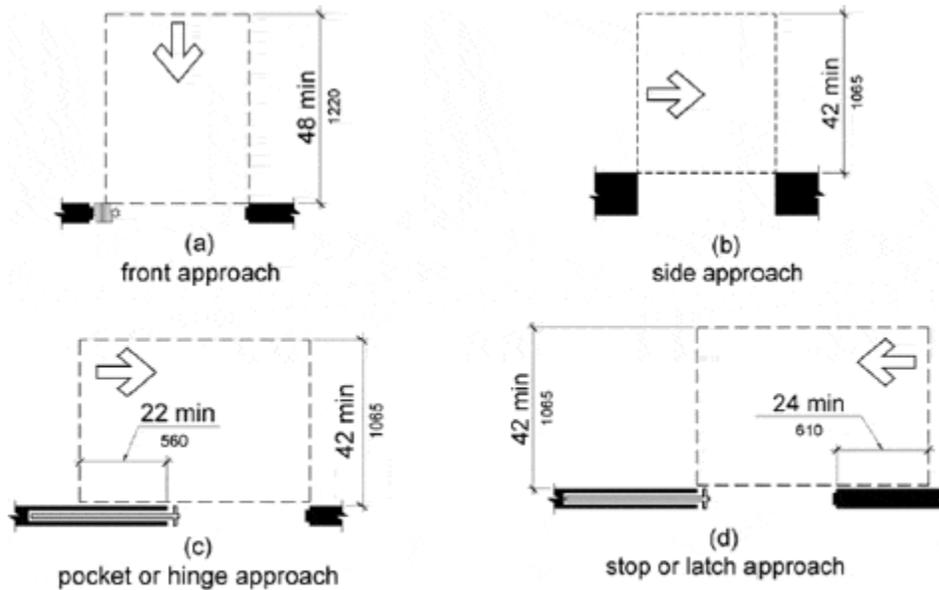


Figure 404.2.4.2 Maneuvering Clearances at Doorways without Doors, Sliding Doors, Gates, and Folding Doors

- **404.2.4.3 Recessed Doors and Gates.** Maneuvering clearances for forward approach shall be provided when any obstruction within 18 inches (455 mm) of the latch side of a doorway projects more than 8 inches (205 mm) beyond the face of the door, measured perpendicular to the face of the door or gate. **Advisory 404.2.4.3 Recessed Doors and Gates.** A door can be recessed due to wall thickness or because of the placement of casework and other fixed elements adjacent to the doorway. This provision must be

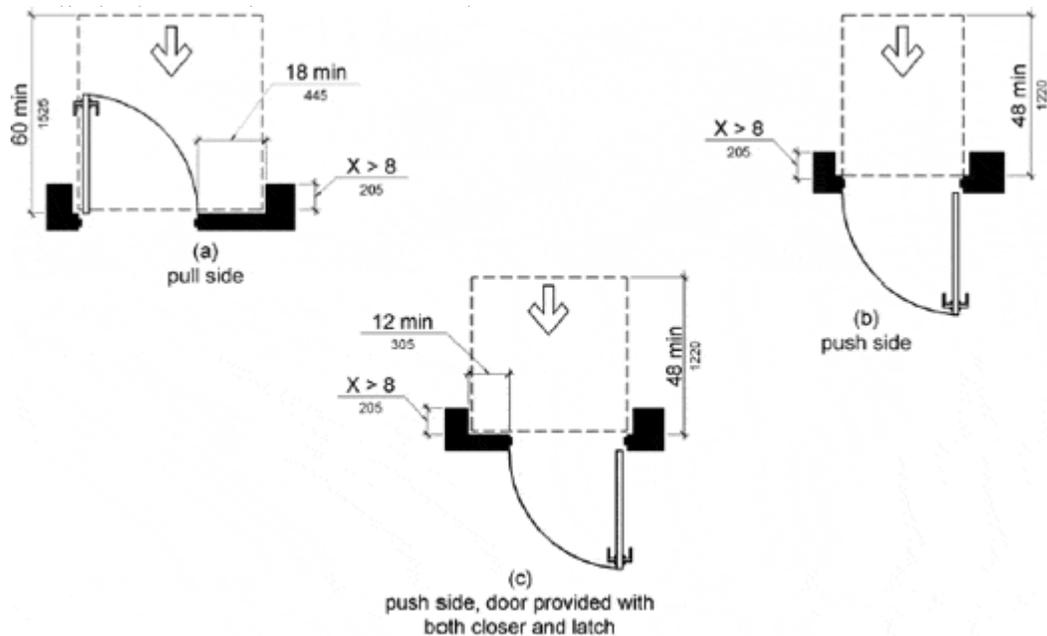


Figure 404.2.4.3 Maneuvering Clearances at Recessed Doors and Gates

- 404.2.4.4 Floor or Ground Surface.** Floor or ground surface within required maneuvering clearances shall comply with 302. Changes in level are not permitted.
 **EXCEPTIONS:**
  - Slopes not steeper than 1:48 shall be permitted.
  - Changes in level at thresholds complying with 404.2.5 shall be permitted.

#### More information on ADA codes and requirements

- [A Guide to Disability Rights Laws \(html format\)](#)
- [A Guide to Disability Rights Laws \(pdf format\)](#)
- [Complete 2010 ADA Accessibility Guidelines \(html format\)](#)
- [Complete 2010 ADA Accessibility Guidelines \(pdf format\)](#)
- [Disability Rights Online News](#)
- [White House Report on Disabilities](#)
- [Disability.gov - Connecting the Disability Community to Info and Opportunities](#)
- [ADA Questions and Answers](#)
- [ADA Tax Incentive Packet for Businesses](#)
- [ADA Myths and Facts](#)