

Universal Design and Inclusive Design

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What is Universal Design?

- Universal design, also known as inclusive design, is producing a product or space that accommodates everyone.
- Universal and inclusive design acknowledges the fact that everyone will have set backs at some point in their life, whether it be a temporary illness, injury, or old age.
- The goal of both types of design is to not exclude any specific group of people.

“Universal design makes things safer, easier and more convenient for everyone”

What is the Difference?

- There is no precise difference between the two types of design.
- Universal design is a term often used in the United States, while Inclusive design is used in the United Kingdom.
- Inclusive design originated with product design and focuses on choosing a specific target market for a particular design.



- A. ADA ramp
- B. Universal ramp
- C. Walk-in shower
- D. Universal water fountain
- E. Front loading washer/dryer
- F. Universal handle
- G. Clearance under sink



PATRICIA MOORE

By: Meredith Payne

Toyin Adebisi

REASERCH



- In her 20's, Pattie dressed as an elderly woman to understand what handicap people face everyday of their lives.
- For 3 years she went to 116 cities in America and Canada, dressed as an 80 yr old
- Wore tight clothes for movement restriction
- Thick glasses for impaired vision
- Layers of gloves for the feel of arthritis
- Thick shoes that were uncomfortable
- And uses of a cane, wheelchair etc
- She would change her class status to see the difference of how she would be treated
 - Homeless vs Wealthy woman

RESULTS

- Robbed and Beaten by a Gang of Youth
 - Severe injuries including not being able to have kids
- Invented OXO grips for kitchen items
 - Making it easier for arthritic hands to use them
- Realized that nobody really designed for those with disabilities
- When offered to study and work with Ramon Lowey in New York among 300+ other men of architecture and industrial design. As the only female she always had a voice that was different from what they were use to:
- “What about people with arthritis, people without feet to walk that use wheels and etc.”
- And was constantly told: “Well Patty we don’t design for those people.”

UNIVERSAL DESIGN CHECKLIST

USE WHILE REFERENCING ANSI A117.1-2009

KITCHEN

- ✓ Clearance between all cabinets, countertops, appliances, and walls should be a minimum of 40"-60" depending of kitchen layout.
- ✓ Countertop height should be no more than 34" above finished floor
- ✓ Knee clearance shall be provided for a forward approach at work surfaces and sink
- ✓ Operable parts on appliances shall be accessible
- ✓ Provide a clear floor space in front of all appliances
- ✓ Cabinet doors and drawers should be easy to open and have easy-to-grasp handles or knobs
- ✓ Floors, walls, and cabinet sides under sink and cook-top to have finished surfaces

BATH

- ✓ Use blocking where grab bars and shower sheets would be needed
- ✓ Provide a turning space complying with ANSI sec. 304
- ✓ Bottom edge of mirrors should not exceed 40" above finish floor
- ✓ Lavatory cabinetry should be removable and exposed elements should be finished
- ✓ Toilet centerline should be 16"-18" from adjacent fixtures
- ✓ Minimum 60"x56" clearance around toilet
- ✓ Toilet height to be between 15"-19" above finished floor
- ✓ Allow for one accessible bathing fixture either a 60"x30" roll in shower or a tub with clearance and one end

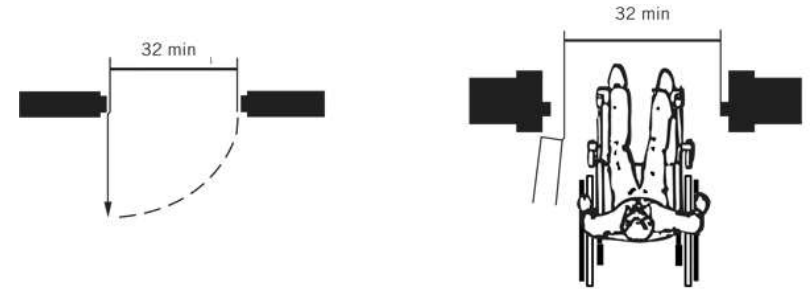
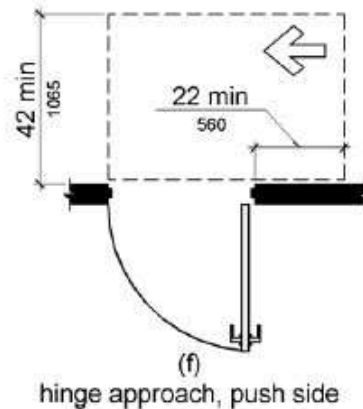
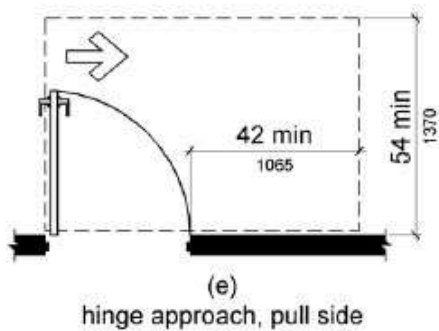
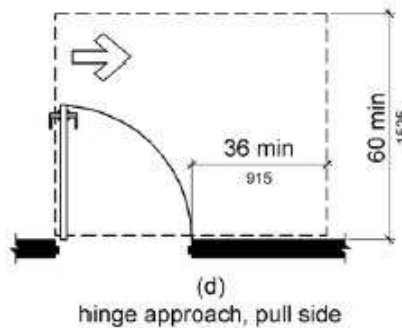
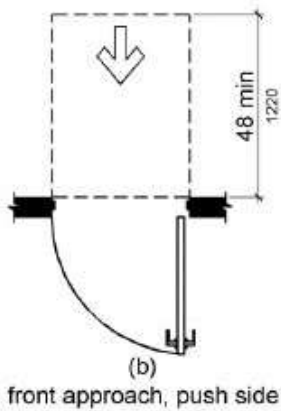
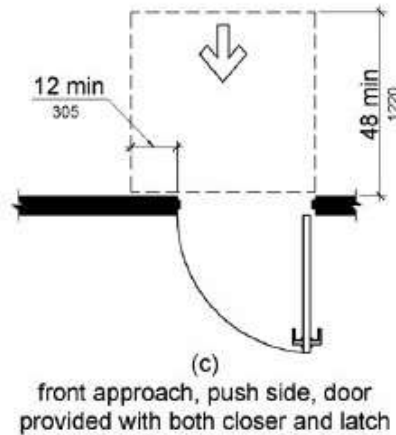
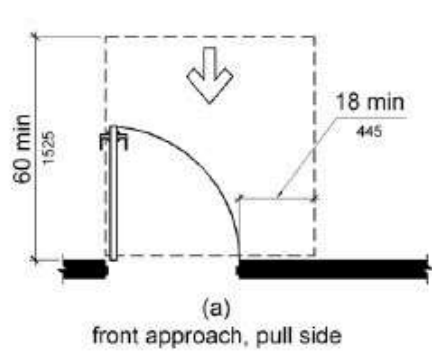
BEDROOM

- ✓ All closets should have height adjustable poles and shelving
- ✓ Closet doorway to be at least 36" clear opening width minimum
- ✓ Provide 36 "clear space on two sides of the bed
- ✓ Bed mattress height should not exceed 22" from finished floor to mattress top for easy entry and exit
- ✓ Avoid small throw rugs. Large area rugs should have anti-slip backing
- ✓ Select furniture that has rounded corners, and properly scaled for each room to allow easy movement

GENERAL

- ✓ All doors to rooms and closets to be 34" to 36" minimum width
- ✓ Floor Surfaces should be stable, firm, and slip resistant. Any carpeted surfaces have a pile no greater than ½"
- ✓ Install secure handrails on steps and porches where needed
- ✓ Provide a clear obstacle free at least 36" wide walkway to residence and within residence
- ✓ Changes in level greater than ¼ inch should be beveled or ramped to a slope greater than 1:20 and not steeper than 1:12
- ✓ Accessible routes shall be located in the same area as a general circulation path
- ✓ A reaching distance of 15" to 48" is best for things like light controls, outlets, storage, shelving, telephone jack and Internet connection

ADA: PASSAGEWAYS AND DOORS



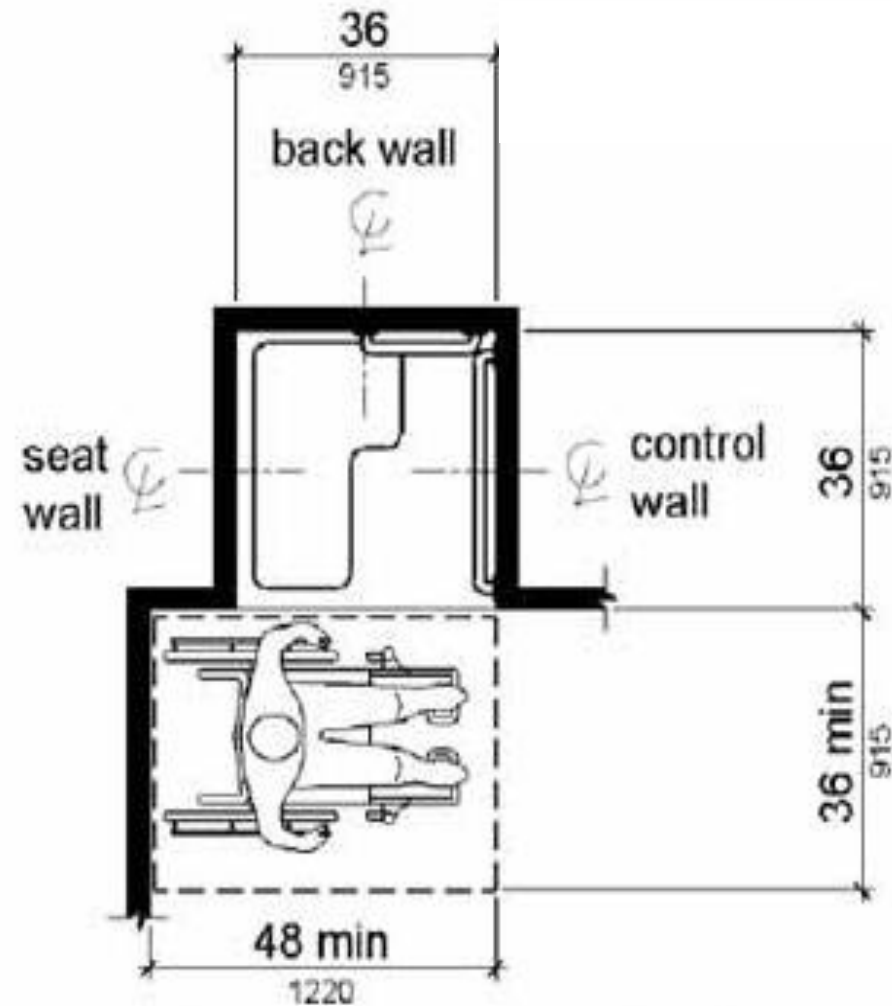
4.13.5 Clear Width. Doorways shall have a minimum clear opening of 32 in (815 mm) with the door open 90 degrees, measured between the face of the door and the opposite stop. Openings more than 24 in (610 mm) in depth shall comply with 4.2.1 and 4.3.3.

4.13.8* Thresholds at Doorways. Thresholds at doorways shall not exceed 3/4 in (19 mm) in height for exterior sliding doors or 1/2 in (13 mm) for other types of doors. Raised thresholds and floor level changes at accessible doorways shall be beveled with a slope no greater than 1:2.

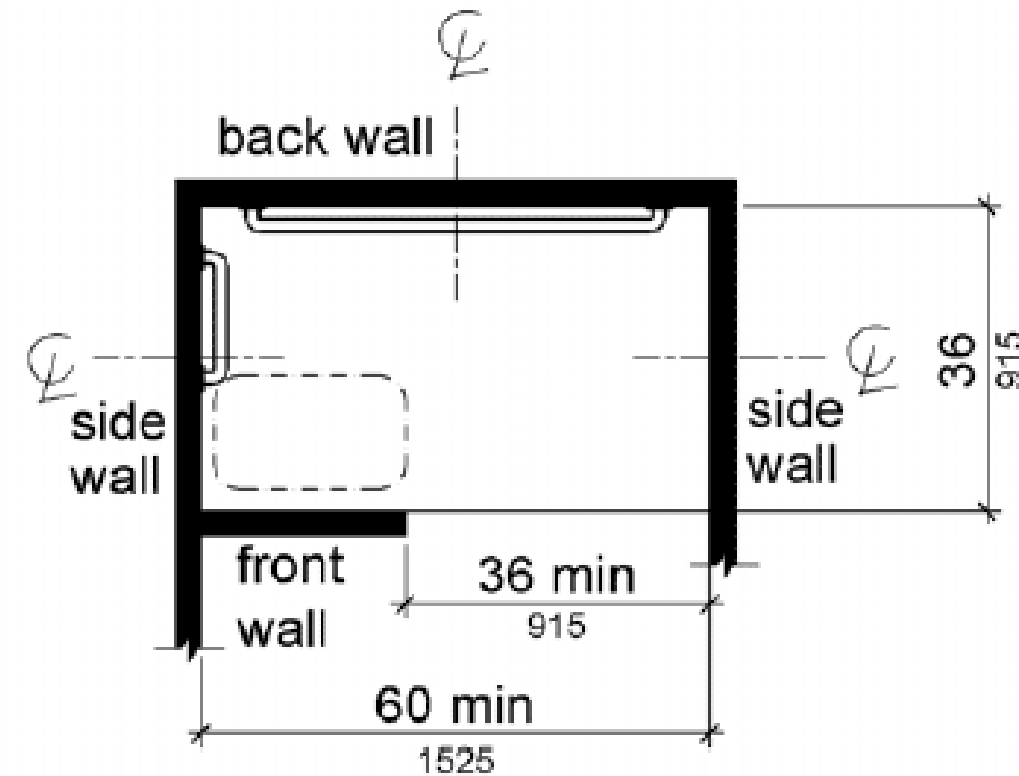
4.3.4 Passing Space. If an accessible route has less than 60 in (1525 mm) clear width, then passing spaces at least 60 in by 60 in (1525 mm by 1525 mm) shall be located at reasonable intervals not to exceed 200 ft (61 m). A T-intersection of two corridors or walks is an acceptable passing place.

ADA: Baths

Shower



Note: inside finished dimensions measured at the center points of opposing sides

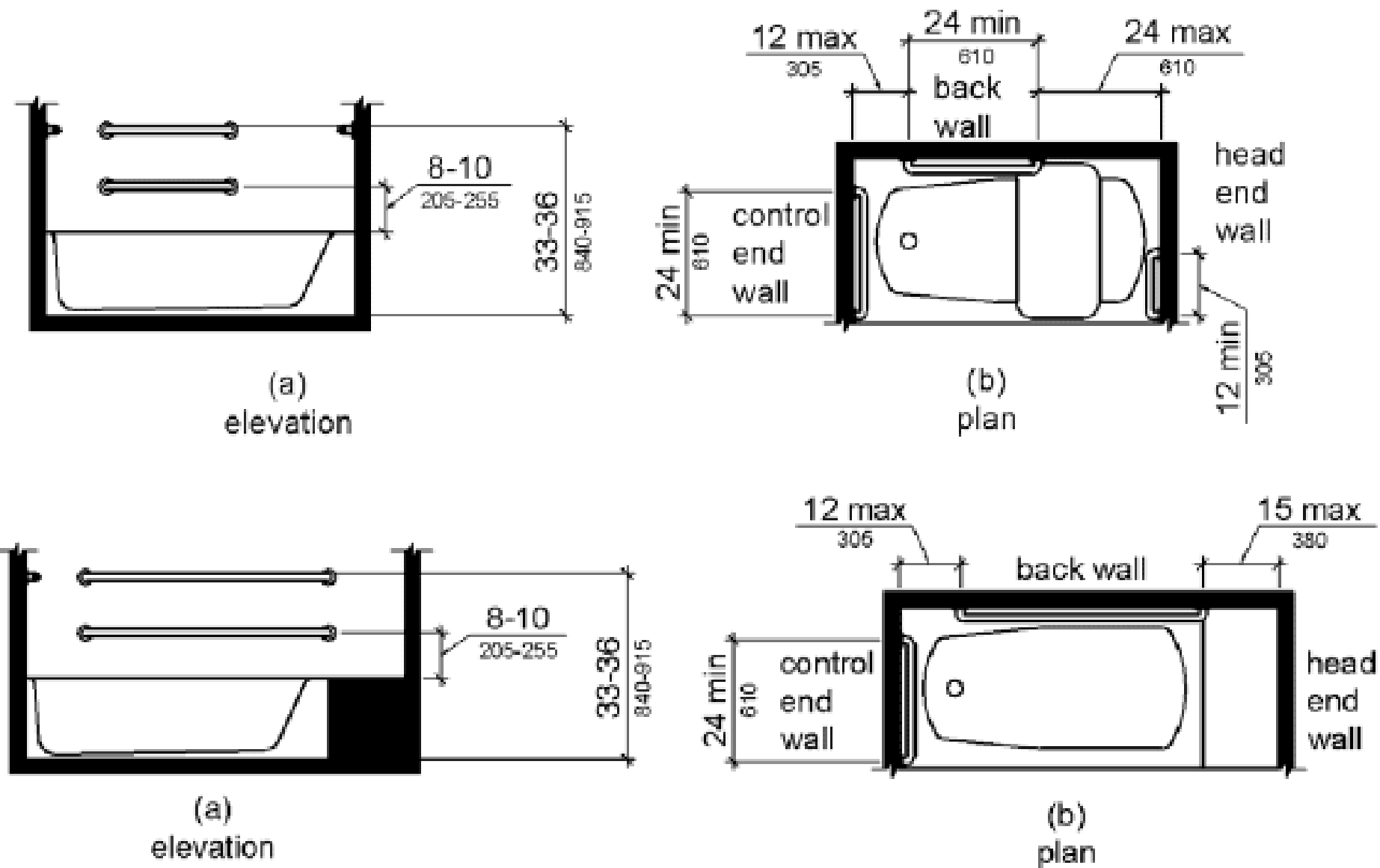


Note: inside finished dimensions measured at the center points of opposing sides

- Grab bars at all sides (vertical recommended not required)
- Handheld shower head recommended
- Single hand faucet

- Where a seat is provided in a standard roll-in shower compartment, it shall be a folding type, shall be installed on the side wall adjacent to the controls, and should extend from the back wall within 3 inches of the shower entry.
- Transfer space

Bathtub



Bathtubs with Permanent Seats

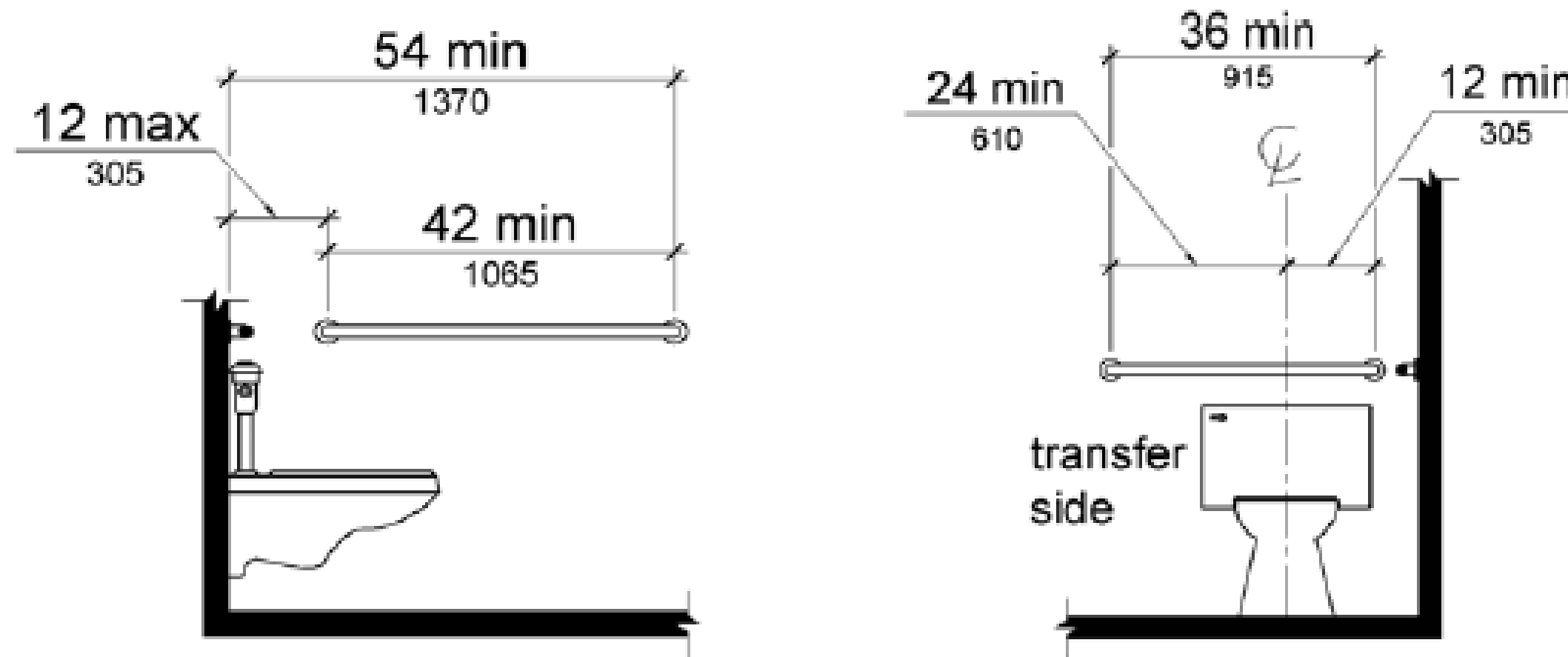
- Back Wall. Two grab bars should be installed on the back wall, one located 8 inches minimum and the other 10 inches above the rim of the bathtub. Each grab bar shall be installed 15 inches maximum from the head end wall and 12 inches maximum from the control end wall.

- Control End Wall. A grab bar 24 inches long minimum should be installed on the control end wall at the front edge of the bathtub.

Without permanent seats

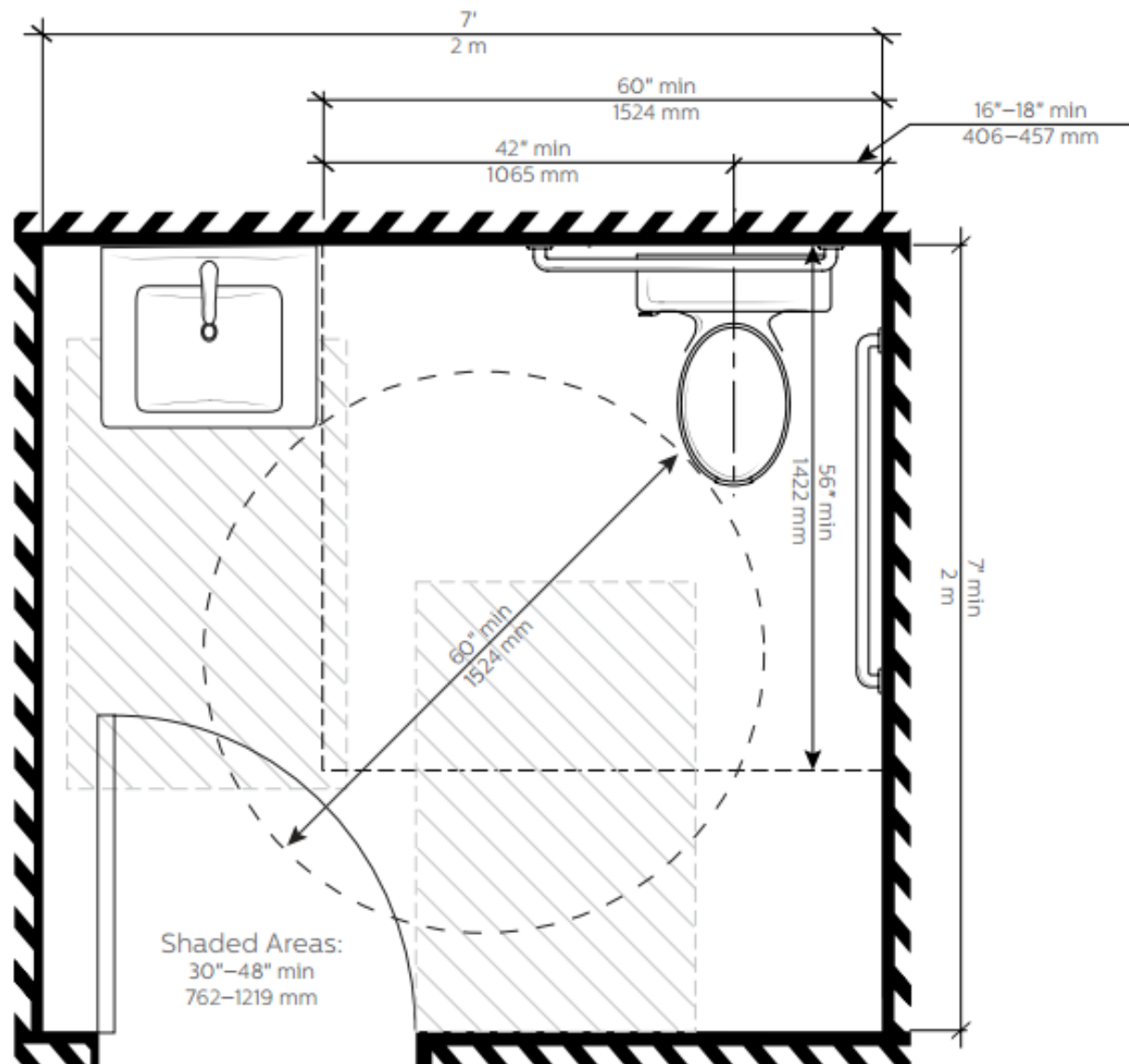
- Head End Wall. A grab bar 12 inches long minimum should be installed on the head end wall at the front edge of the bathtub.

Toilet



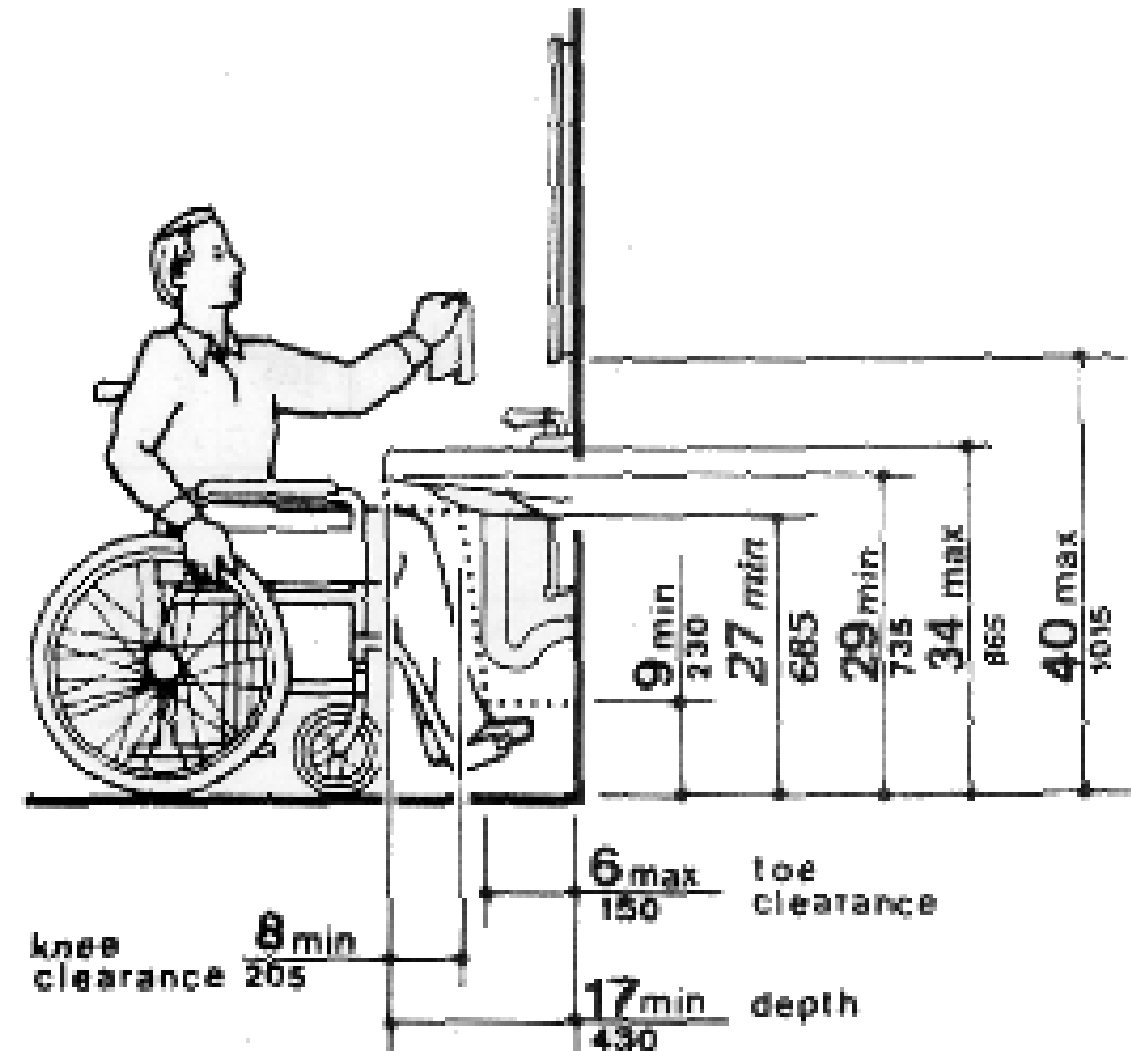
- Toilet must be 16" A.F.F.
- Centerline of toilet must be 16"-18".
- Wall mounted grab bars must be located beside and behind toilet. Can be added later on but it is recommended to go ahead and add blocking for future installation. Vertical grab bars are also recommended.
- Must have transfer space.

General

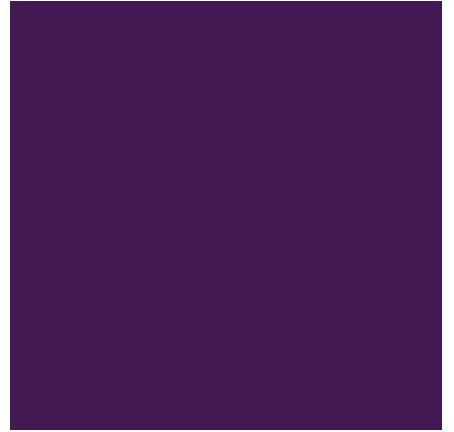
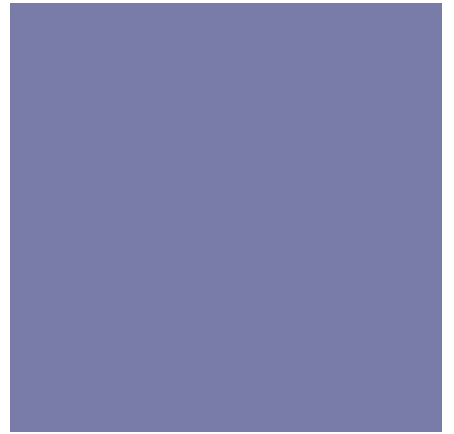
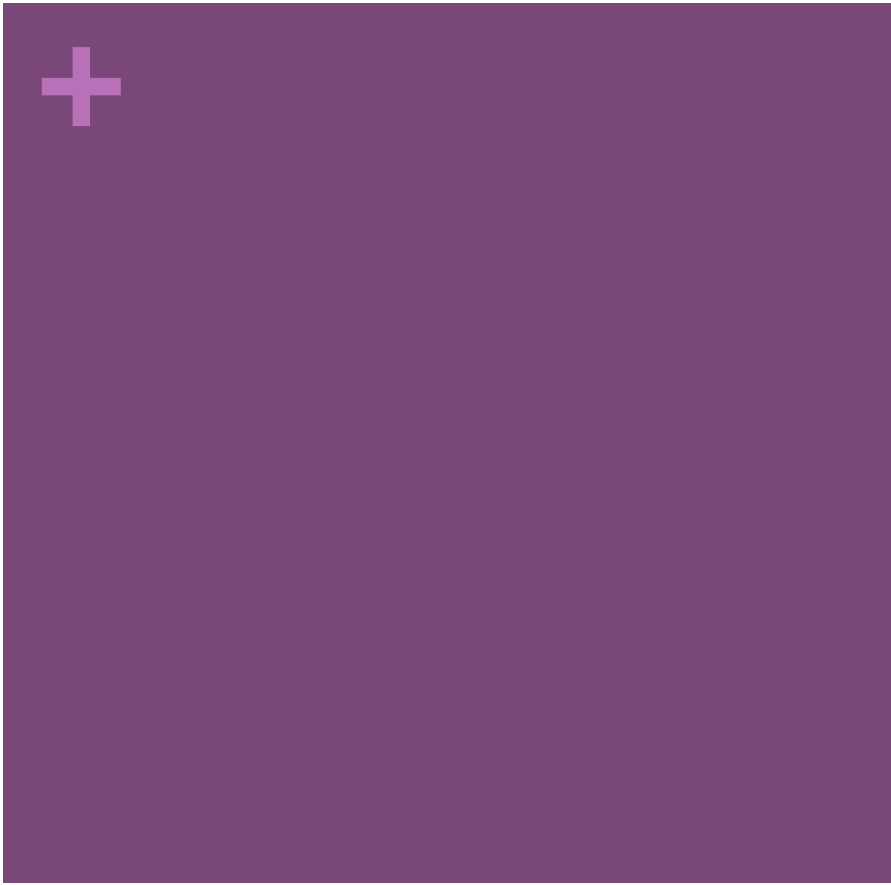


- Minimum of 32" door into bathroom.
- Must have a 5' turning radius inside bathroom.

Sink



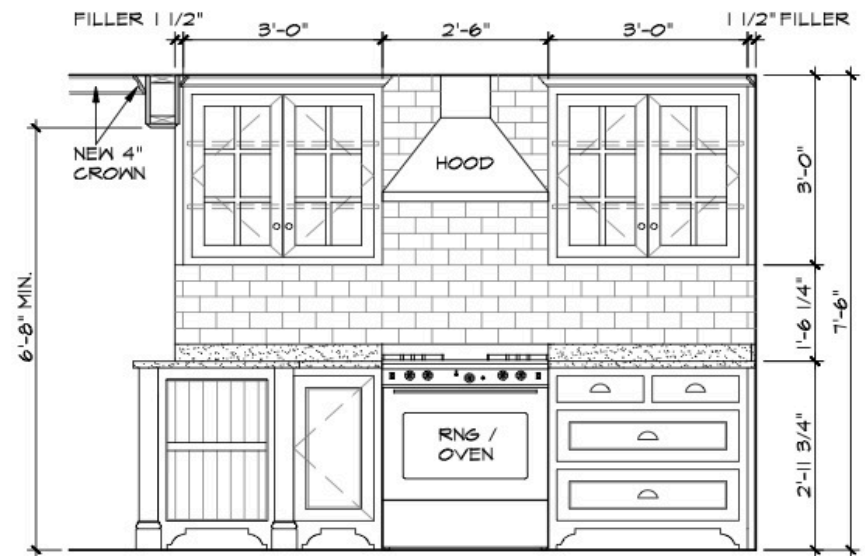
- Must have single hand faucet.
- Allow knee area under sink minimum of 27".
- Allow 9" toe kick for feet.
- Mirrors located above countertops must be installed with a 40" maximum above finish floor to bottom edge of mirror. Mirrors not located above countertops must be a maximum of 30" above finished floor to bottom of mirror.



ADA Kitchens

+ Counter

- Countertop height- 28"-34"
- Space for knees- 24" high from the floor & 30" width
- At least one 30" wide section that will provide work surface



+ Cabinets

Upper cabinets

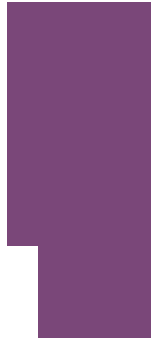
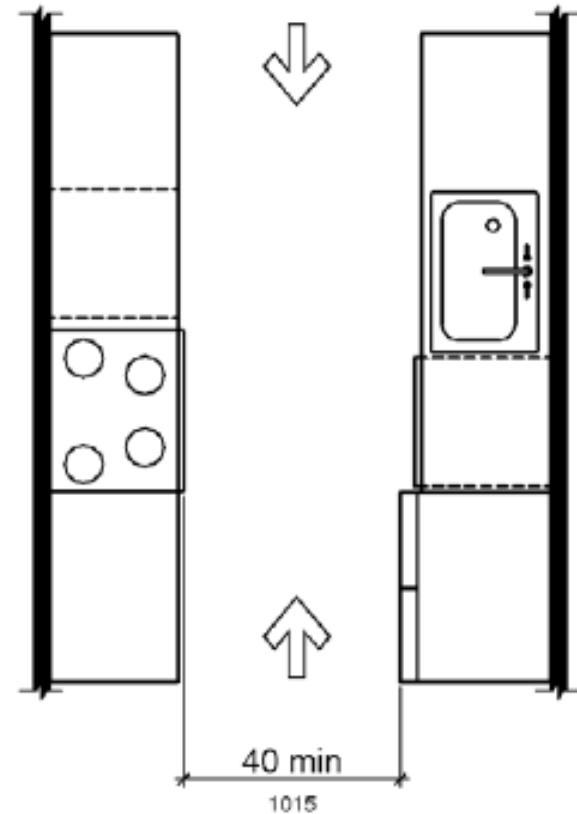
- 48" AFF
- 15" above counter top

Base Cabinets

- 31 ½" tall with countertop 34 ½" from finished floor.
- 23 ½" deep
- Toe kick 8 ½" high & 6" deep

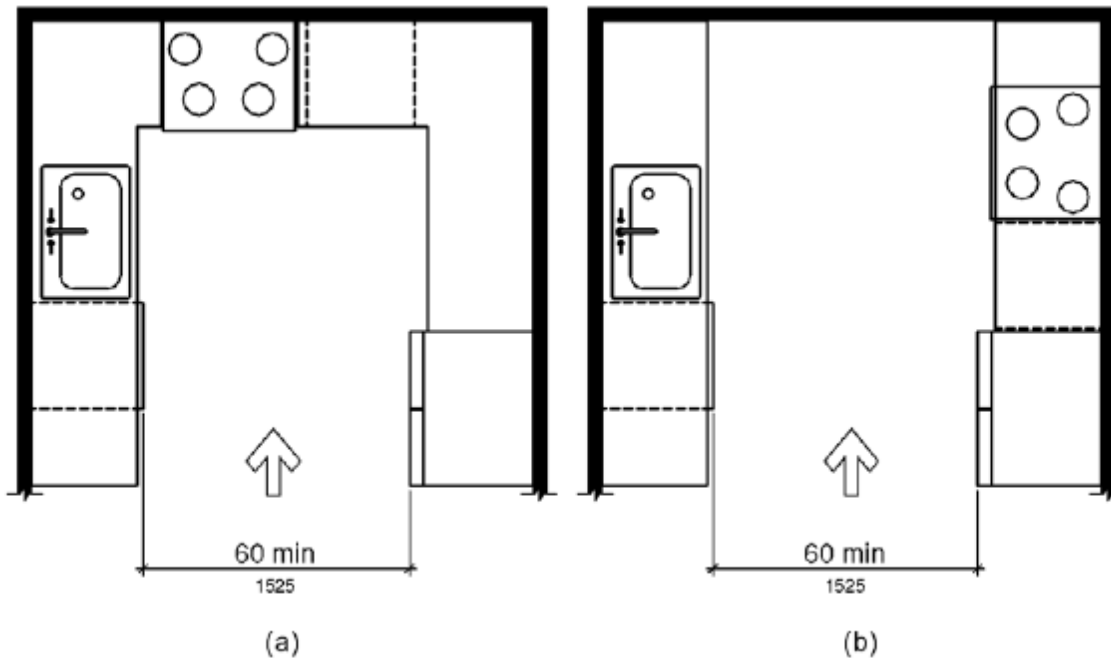
+ Dimension

- Galley kitchen- 40'' min between cabinet to cabinet
- Turning area min- 60''
- Clear passageway of no less than 3' between counter fronts and appliances/ counter fronts and walls.

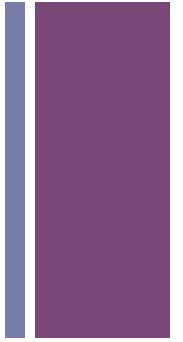


+ Dimension Cont.

- U-shaped kitchen- 60'' min from your work area
- Ceiling no less that 7'
- No less than 50 sq ft. of gross floor area
- Kitchen shall not be less than 7' in any plan dimension



+ Miscellaneous



- Sink should be shallow- 5"-6 ½" deep
- Faucet should be loop or single lever
- Entry door min of 32"
- 42" width for doorway
- Kitchen aisle width 42"
- Lever-style door handle (force to open should not exceed 5lbs)

Blind and Visually Impaired

Projecting Objects Research

James Higgins

Universal Design for the Blind and Visually Impaired

“There are an estimated 21.5 million American adults who reported they are either blind or have difficulty seeing, even with glasses or contact lenses, according to the American Foundation for the Blind, which cites a 2010 National Health Interview Survey Preliminary Report.” (1)

The visually impaired have become a larger group in regards to accommodation than the blind. Most of the ADA guidelines for accessibility deal with persons who are blind. Part of the challenge of Universal Design is accommodating both sections of the population. Protruding objects are of particular concern. ADA guidelines for protruding objects is included below: (2)

307.1 General. Protruding objects shall comply with 307.

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.

Advisory 307.2 Protrusion Limits. When a cane is used and the element is in the detectable range, it gives a person sufficient time to detect the element with the cane before there is body contact. Elements located on circulation paths, including operable elements, must comply with requirements for protruding objects. For example, awnings and their supporting structures cannot reduce the minimum required vertical clearance. Similarly, casement windows, when open, cannot encroach more than 4 inches (100 mm) into circulation paths above 27 inches (685 mm).

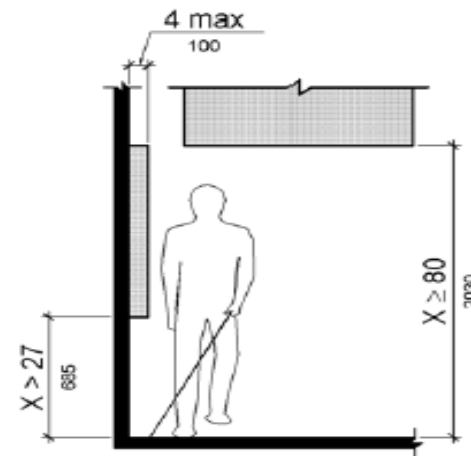


Figure 307.2 Limits of Protruding Objects

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.

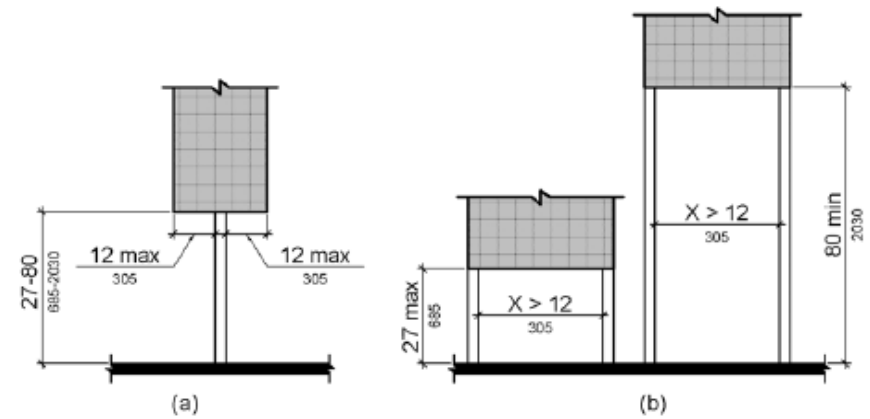


Figure 307.3 Post-Mounted Protruding Objects

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.

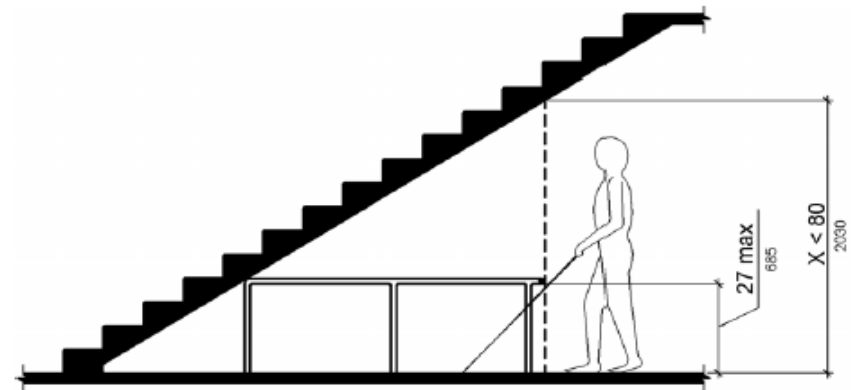


Figure 307.4 Vertical Clearance

307.5 Required Clear Width. Protruding objects shall not reduce the clear width required for accessible routes. (3)

Resources:

(1) <http://americanlibrariesmagazine.org/2012/04/25/new-ada-signage-standards-take-effect/>

(2) Architecture for Low Vision, Site, Building and Interior Design; Stuart L. Knoop, FAIA. National Institute of Building Sciences, Low Vision design Committee, January 10, 2013.

(3) <http://www.ada.gov/reg3a.html#Anchor-13522>