

Janis Kent, FAIA, CASp

ADA

IN DETAILS

Interpreting the
2010 Americans with Disabilities Act
Standards for Accessible Design



WILEY

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with Disabilities Act Standards for
Accessible Design

JANIS KENT, FAIA, CASp



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Contents

Preface v

Acknowledgments vi

CHAPTER 1

Accessible Routes 1

Accessible Routes & Clearances 1

Clear Floor, Turning, & Maneuvering Spaces 6

Walking Surfaces 11

Protruding, Post-Mounted, & Overhanging
Objects 14

Reach Ranges 19

Doors & Gates – General 23

Doors & Gates – Maneuvering Clearances 26

Doors & Gates – Opening Configurations 29

Power-Assist, Low-Energy, & Automatic Doors &
Gates 34

Doors, Gates, & Windows – Specific Types &
Uses 38

Machines, Controls, & Other Items 41

CHAPTER 2

Site Elements 47

Accessible Parking – In General 47

Accessible Parking Signage 51

Accessible Parking Spaces 54

Valet & Passenger Drop-Off & Loading Areas 59

Transportation – Boarding & Alighting Areas 63

Curb Ramps 66

Corner Curb Cut Ramps 72

Island Conditions & Blended Transitions 76

Detectable Warning Surfaces 80

Accessible Electric Vehicle Charging Stations –
Requirements 85

Pools, Spas, & Other Recreation 92

Pools, Spas, & Water Entry Systems 96

CHAPTER 3

Vertical Access 103

Stairways 103

Pedestrian Ramps 107

Pedestrian Ramp Landings 111

Edge Protection 118

Handrails 121

Elevator Lobby & Landing Area 127

Elevator Car 131

Platform Lifts—Non-Enclosed Runway 135

CHAPTER 4

Architectural Elements 139

Counters – Check-Out, Food, Sales, & Service 139

Seating At Tables, Bars, & Work Surfaces 144

Kitchens & Kitchenettes 149

Drinking Fountains 157

Common Use Plumbing Fixtures 160

Sign Types 163

Sign Components 167

International Symbol of Accessibility (ISA) 172

Telephones – Wheelchair Access 174

Telephones & Other Communication Features 177

CHAPTER 5

**Restrooms & Bathing
Facilities 181**

Restroom & Bathing Facility Signage 181
Restroom & Bathing Facility Accessories 185
Lavatory 189
Toilet Fixture 193
Grab Bars 196
Restroom & Bathing Facilities – Single-User 200
Toilet Compartments 206
Restroom – Multi-User 210
Ambulatory Compartment 217
Urinals 220
Showers 222
Bathtubs 229

CHAPTER 6

Other Elements 233

Children’s Suggested Requirements 233
Storage, Lockers, and Fitting & Dressing
Rooms 238
Assembly – Circulation & Seating 243
Assembly – Assisted Listening Systems 248
Transient Lodging 251

Multi-Family Dwelling Units 260

Employee Only Spaces 271

CHAPTER 7

**A Word or Two on Existing
Projects 275**

Overview 275
Barrier Removal 275
Alterations 278
Summary 279

CHAPTER 8

**Innovative Ideas on Access
World-Wide 281**

Access Overall 281
Visiting 281
Designing Universally 281
As We Age in Place 282
Life-Long Communities 282
Other Topical Approaches 282
Access Overall – In Summary 285
References 286

Index 287

Preface

HOW TO USE THIS BOOK

A Word to the Wise and Others

While I have been working with these details for more years than I can count, tweaking, correcting, and adding more information, there always seems to be some small item that is not quite right. Please do reference the applicable codes and regulations before using the information—that’s why the Sources are there. There are additional exceptions in the source material as well, that may not be notated within these pages. Be aware that the Administrative Authority for local jurisdictions, may have modified these provisions and interpretations, although it should not be less stringent than the ADA. And then of course, there is the continual refining of gray areas with court interpretations, which could have further implications. Also, federal government projects have slightly differing requirements under the Architectural Barriers Act (ABA) for facilities that use federal funds for design, build, or alteration, or are leased by a federal agency. The Act was initially passed in 1968 and modified, expanded, and updated over the years, depending on whether the branch is GSA, DOD, or USPS, with HUD temporarily adopting the ADA, with eleven exceptions, as an equivalent standard for UFAS. So use this book as a starting point.

Another item to note that has come up numerous times. When referencing standards such as BHMA, ANSI, ASME, ASTM, ICC/IBC, and NFPA, I am purposefully not referencing the most current version of each. The reason is that both the Department of Justice and the Department of Transportation do not provide ‘blanket approval’ to these standards, but rather review specific referenced editions that need to be complied with at a minimum. So depending upon local jurisdiction requirements, you may need to comply with more than one edition. If there is a conflict with a newer version, the older Director of the Federal Register approved edition takes precedence. This is discussed in the Scoping section – ADA Chapter 1: Application and Administration, 105 Referenced Standards.

Although this book was originally created for projects within California, it has grown and expanded to

include all projects under the Americans with Disabilities Act—for projects outside of California, just ignore the blue print, whether blue text or blue strike-out lines. Remember, the local Administrative Authority may have other parameters for the project location that you would need to consider and overlay on top of this information.

Items in black are per the 2010 Americans with Disabilities Act Standards (ADAS), which became mandatory March 15, 2012, with the exception of pools and spas for transient lodging, which received an extension until January 31, 2013, and are the minimum of what we need to comply with. **If the black text has no blue strike-out line, the 2016 California Building Code (CBC) is either in conformance with the ADA Standards, or ADAS takes precedence because it is more stringent and provides for greater access than CBC. Items in blue are CBC only, where CBC is more stringent, or provides more parameters, or doesn’t allow (if there is a strike-out) the less restrictive/less access standards of ADAS.**

And last, but definitely not the very least, remember that our population has close to 20% with some form of disability, and by the time we hit 65 that percentage increases to over half per the U.S. Census Bureau Report of July 2012. With this last census, the percentage of the overall population with disabilities has stabilized, unlike previous projections, but the actual percentage of people with severe disabilities has increased. So making our environment accessible is a huge priority for us all!

Overall Background

Accessibility for *places of public accommodation* has two components: The first is meeting the requirements for the Americans with Disabilities Act Standards (ADAS), and the second is meeting requirements for local jurisdictions, whether city, county, or state. The ADA is a civil rights act and is subject to interpretation by the courts. The second component is subject to code review with the Administrative Authority having jurisdiction. A facility needs to comply with both, and if one is more

stringent, providing greater access than the other, it would be the one that rules. All new buildings and alterations that are post-ADA need to comply, with very few exceptions. Existing buildings that are pre-ADA need to have barriers removed—where this is considered *readily achievable*—for *places of public accommodation* and commercial buildings. Public buildings—city, county, or state—are required to provide *program accessibility* rather than *barrier removal* for existing facilities. As of

March 15, 2012, new portions were integrated into the regulations. These elements, if they already existed, would be required to have barriers removed where *readily achievable* for *places of public accommodation*, or to be part of a *transition plan* for *public entities*. Facilities that were built after the 1991 ADA went into effect should have complied. If not, noncomplying elements would need to be fixed according to the new Standards—it would not be considered *barrier removal*.

Acknowledgments

I wish to thank all of those people, or as many as I can, who have generously offered support and encouragement over the years, as well as their expertise. Their assistance before, during, and particularly at the end of the process with comments and proofing of this book was particularly invaluable. Many of these people are experts in their own right and work for public or federal agencies, while others are in private practice and consulting.

I am grateful for the endless and often ongoing conversations that I have had on different aspects of

Accessibility and their interpretations, and wish to specifically thank – A. Bauman, P. Bishop, F. Bostrom, K. Braitmayer, J. Brogan, J. Clancy, T. Durbrow, V. Fletcher, R. Halloran, C. Hansen, B. Hecker, J. Hoewisch, T. Kohut, M. Krinsky, M. Mazz, W. & P. Meyer, M. O'Brien, J. Orland, R. Pace, J. Pecht, S. Sabatini, E. Steinfeld, E. Takahashi, J. Terry, S. Toji, and everyone else, including those at the U.S. Access Board and my local AIA chapters.

And last but not least, David and Kiara and Jenn, who had to put up with me during this process. I thank you all!

Accessible Routes

ACCESSIBLE ROUTES & CLEARANCES

Accessible routes or paths of travel in new and existing projects are essential aspects of Accessible design. If you cannot even get to an area, no matter how accessible that portion is, it will still not be accessible. Not only is the route or path itself required to be accessible, but there are a variety of component requirements that make it accessible. This chapter will look at a broad view of these elements and their specific requirements.

General Notes

- A minimum of one accessible route within the site connects all site arrival points from the public right of way and public transportation stops, to accessible parking, accessible loading zones, accessible building elements and spaces on the site, and required building entrances
- If the only means of access is a vehicular way with no pedestrian access, then an accessible route is not required to connect the site arrival points with the building entries, but instead from the accessible parking and passenger drop-off areas to the building entries

Note Access aisles for accessible parking spaces are considered to be part of the accessible route

- The accessible route is located in the same general area and coincides with the circulation path, but does not include stairs or escalators [nor can it pass thru kitchens, restrooms, storage rooms, or closets, unless explicitly permitted by Chapter 10 of the CBC]
- Qualified historical buildings that are allowed exemptions for alterations are required to have one minimum accessible path of travel from the public right of way to the entry

Note: *Path of travel* is a concept that only applies to alterations and existing buildings. It not only includes

the area where pedestrians move—such as corridors, hallways, lobbies, sidewalks, ramps, parking access aisles, walkways, doorways, and elevators—but, by definition, it also includes the restrooms, phones, and drinking fountains. Generally a *path of travel* connects an exterior approach, to an entry, to an altered area. The required width and height meet the same requirements as *accessible routes*. The term *path of travel* is used when providing an approach to an altered area that is required to be upgraded using 20% of the construction costs for *proportional spending*. CFR § 36.403(e) and § 35.151(b)(4)(ii):

A *path of travel* includes a continuous, unobstructed way of pedestrian passage by means of which the altered area may be approached, entered, and exited, and which connects the altered area with an exterior approach (including sidewalks, streets, and parking areas), an entrance to the facility, and other parts of the facility.

An accessible *path of travel* may consist of walks and sidewalks, curb ramps, and other interior or exterior pedestrian ramps; clear floor paths through lobbies, corridors, rooms, and other improved areas; parking access aisles; elevators and lifts; or a combination of these elements.

For the purposes of this section, the concept of *path of travel* also includes the restrooms, telephones, and drinking fountains serving the altered area.

- A minimum of one accessible route within the building/facility connects all accessible entries with all accessible spaces and elements connected by a circulation path unless specifically exempted
- Both manual and powered revolving doors/gates/turnstiles are not part of an accessible route, although they can be considered part of a common use circulation path

| Items in black are where ADAS provides for greater access or where ADAS and CBC are equivalent | Items in blue are where California provides greater access | Outside of California ignore blue text and the blue [strikeout] line itself—everything in black pertains |

- In new construction with over 10,000 SF per floor where elevators are required, a vertical accessible route is provided within 200 LF of each stairway and escalator; in existing projects when new stairs or escalators are added (if not used only for emergency egress), a vertical accessible route is also provided per CBC
- Accessible routes are not required to connect [~~mezzanines in one-story buildings, or~~] levels and stories within places of public accommodation that are less than 3 stories or multi-story buildings with less than 3,000 SF per each floor, unless they are offices of health care providers or shopping centers/malls, with a few other exceptions [per CBC]

CBC NOTE

While the intent in the CBC is to always connect mezzanine levels with an accessible route, this is not how it is actually stated in the code

- Accessible routes connect required clear floor spaces at accessible elements—one full unobstructed side of the clear floor space adjoins the accessible route or overlaps the route where not prohibited
- Units in self-storage facilities that are not required to be accessible are not required to be located on an accessible route

Route Clearances

- Sidewalks and exterior walkways are a minimum of 36" clear [only if restrictions exist caused by right-of-way, natural barriers, or other existing conditions causing an unreasonable hardship, otherwise it is 48" minimum clear per CBC]
- If the overhang of parked cars intrudes upon the minimum required clear width of sidewalks or walkways, then wheelstops, bollards, or some other means must be provided to prevent encroachment into the minimum required clear walkway width

NOTE

Bollards are considered a viable and appropriate alternative to stop a vehicle, whereas wheelstops can easily lead to trip and falls when there is no vehicle parked in the space, and cars can jump the wheelstop if going too fast

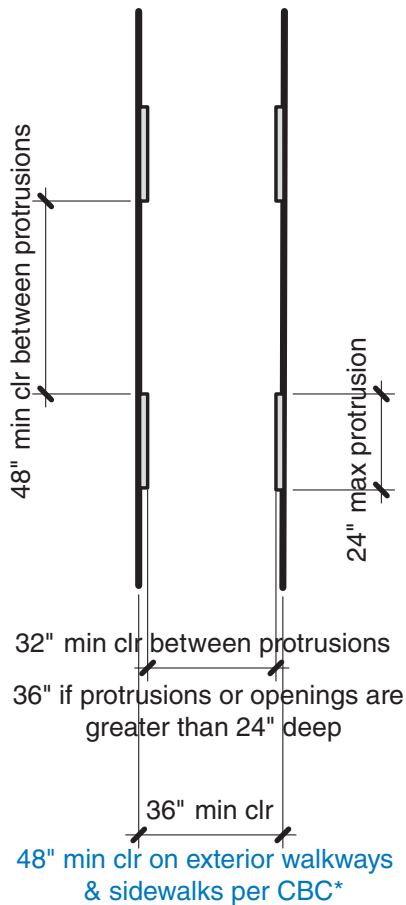
- The accessible route [preferably] does not go behind parking spaces, with the exception of the specific space the person is parked in [per CBC]
- Walking surfaces are 36" minimum clear [if it is an aisle serving 1 side (ie, check stand, employee work area, food service, fixed seating, tables, or counters) per CBC]
- Aisles serving 2 sides are 44" minimum clear per CBC
- Routes to the accessible toilet compartments in multi-user restrooms are 44" minimum clear except at doors per CBC
- Corridors are 44" minimum clear if serving 10 or more people and 36" minimum if serving less than 10 people per CBC
- Protrusions of 24" maximum in length parallel to the direction of travel can reduce the route from 36" minimum down to a 32" clear width if separated by a distance of at least 48" between each occurrence of the protrusion
- Protrusions more than 24" in length parallel to the direction of travel, as well as openings more than 24" in depth, are required to have a clear width of 36" minimum
- In multi-user restrooms, the area in front of the accessible toilet stall door is [~~42" minimum clear for a latch approach~~] [48" minimum clear for push side approach and 60" minimum clear for pull approach per CBC]
- Ambulatory compartments with latch side approach have a minimum clear route width of [42] [44" per CBC]

Note: *Accessible route* is a term used to describe a route taken by pedestrians that is accessible for people with limited mobility meeting specific requirements. With a few exceptions, the *accessible route* connects the accessible parking spaces and accessible passenger loading zones with the public right of way, and public transportation stops to the accessible building entrance and to accessible elements and spaces both on the site and within the building including each story and mezzanine. The term *path of travel* is generally used for existing projects and is also accessible.

If spaces and elements are connected by a *circulation path*, then for the most part they are also required to be connected by an *accessible route*, preferably in the same

vicinity. If spaces or elements are accessible, they are located on an *accessible route* and are to coincide or be in the same general area as *circulation paths*. *Accessible routes* are comprised of walking surfaces with a 5% maximum slope, doorways, pedestrian ramps, curb ramps excluding their flared sides, elevators, and lifts. Revolving doors, gates, and turnstiles are not part of an *accessible route*, although they are part of a *circulation path*. An *accessible route* is considered to be a volume of 80" minimum clear height. The minimum width is 36" per ADAS whereas in California it is 48" on the exterior, 44" on double-loaded and 36" on single-loaded interior routes. There are further width requirements for U-turns, doorways, and passing spaces. This required minimum clear width of an *accessible route* cannot be reduced by any protruding objects.

Accessible Route Clear Widths



* Exterior exit balconies are typically 44" minimum clear depending upon exiting requirements per CBC

Assembly Areas

- Accessible routes directly connect performance areas to assembly seating if a circulation path directly connects both areas
- Performance areas have an accessible route connecting the performance area to ancillary areas used by performers unless it is a *place of public accommodation* with less than 3 stories or a multi-story building with less than 3,000 SF per each story; [orchestra pits and similar performance areas are considered to be a level and are required to be inter-connected per CBC]

Public Multi-Family Housing Dwelling Units

According to HUD's May 23, 2014, deeming document, ADAS can be used as an alternative accessibility standard for projects under their jurisdiction, with some exceptions. For housing, the exception allowed by ADAS for common use areas not serving mobility feature dwelling units per 203.8, is not allowed, and all common use areas are required to be accessible unless there is another specific exception that applies.

- In multi-family residential facilities built by or on behalf of a public entity, common spaces not serving mobility dwelling units [nor serving units with adaptable features] are not required to be accessible or on an accessible route [per CBC]
- Within the mobility feature dwelling unit, the accessible route connects all spaces with the exception of unfinished attics and basements
- All rooms in a mobility feature dwelling unit are located on an accessible route, and have a turning space, which includes all bathrooms and walk-in closets, with the exception of small exterior spaces with 30" maximum in one direction
- If there is only one accessible route thru the dwelling unit, it does not pass thru bathrooms, closets, or similar spaces

Employee Only Areas

- Employee work areas [and work stations] are located on a common use circulation path and are able to be approached, entered, and exited [excepting portions that are less than 300 SF and elevated 7" or more for the space to function][per CBC]

NOTE

Individual work stations and offices have doors or openings 32" minimum clear and allow for a 30" x 48" clear floor space just over the threshold within the room or space itself—no requirement for a turning space inside the individual work station or office

- Within employee work [station] areas, a common use circulation path exists that complies with accessible route requirements for clear widths, door requirements, slope, and floor height change components; unless it is an exterior work area fully exposed to the weather, or if it is an integral component of work area equipment, [or if the area is less than 1,000 SF and defined by permanent partitions, counters, casework, or furnishing] although these areas are still required to be on an accessible route just not within [per CBC]
- Employee work stations are on an accessible route and spaces and elements within are on a common use circulation path complying with means of egress, floor surface and change in level requirements, and clear width at doors per CBC
- Machinery spaces used only by service personnel for maintenance, repair, or occasional monitoring are not required to comply or be on an accessible route

NOTE

Elevator pits/penthouses, mechanical, electrical, and communication equipment rooms are considered machinery spaces, and if only frequented on an occasional basis by service personnel for maintenance, repair, or occasional monitoring, are not required to be accessible or on an accessible route

- Common use circulation paths within employee work areas can be reduced in width by work area equipment if it is required for the equipment to function

Note: *Circulation path* is a general term. It can be a *common use circulation path* within an employee work area, which has several specific exceptions, or just a *circulation path* in general. *Circulation paths* are where pedestrians move from one place to another, and do not necessarily mean they are accessible. *Circulation paths* thru vehicular ways and unpaved paths are required to either be designed to be accessible or have an *accessible route* nearby.

Stairs are considered vertical *circulation paths*, which obviously are not accessible for the majority of people with mobility issues. There still are requirements such as tread/riser dimensions, nosing profiles, and handrails to assist people who can navigate stairs. If a vertical *circulation path* leads to an accessible area or element, there is to be an *accessible route* within the same general area—whether lift, elevator, or ramp—unless there is a specific exemption. The *accessible route* can overlap the *circulation path* or be separate in the same area.

Compliant protruding objects can project into a *circulation path* if they do not protrude into the minimum required clearance of an *accessible route*, if it does overlap the *circulation path*.

Circulation Path. An exterior or interior way of passage provided for pedestrian travel, including but not limited to, walks, hallways, courtyards, elevators, platform lifts, ramps, stairways, and landings.

Common Use. Interior or exterior circulation paths, rooms, spaces, or elements that are not for public use and are made available for the shared use of two or more people.

SOURCES – RELEVANT CODES AND STANDARDS

2010 ADA Sources:

- 106.5 Definitions – Defined Terms – Circulation Path
 - 106.5 Common Use
- 203 General Exceptions
 - 203.4 Limited Access Spaces
 - 203.5 Machinery Spaces
 - 203.8 Residential Facilities
 - 203.9 Employee Work Areas
- 206 Accessible Routes
 - 206.2.1 Where Required – Site Arrival Points
 - 206.2.2 Where Required – Within a Site
 - 206.2.3 Where Required – Multi-Story Buildings and Facilities
 - 206.2.4 Where Required – Spaces and Elements
 - 206.2.6 Where Required – Performance Areas
 - 206.2.8 Where Required – Employee Work Areas
 - 206.3 Location
 - 206.4.5 **except** Entrances – Tenant Spaces
- 305.6 Clear Floor Or Ground Space – Approach
 - 305.7 Maneuvering Clearance
- 402.2 Accessible Routes – Components
- 403.5 Walking Surfaces – Clearances
 - 403.5.1 Clear Width
 - 403.5.3 Passing Spaces
- 404.2.1 Doors, Doorways, and Gates – Manual Doors, Doorways, and Manual Gates – Revolving Doors, Gates, and Turnstiles
 - 404.2.3 Clear Width
 - 404.3.7 Automatic and Power-Assisted Doors and Gates – Revolving Doors, Revolving Gates, and Turnstiles
- 502.7 Parking Spaces – Relationship to Accessible Routes
- 604.8.1.2 Water Closets and Toilet Compartments – Toilet Compartments – Wheelchair Accessible Compartments – Doors
 - 604.8.2.2 Ambulatory Accessible Compartments – Doors
- 809.2 Residential Dwelling Units – Accessible Routes
 - 809.2.1 Location
 - 809.2.2 Turning Space

2016 CBC Sources:

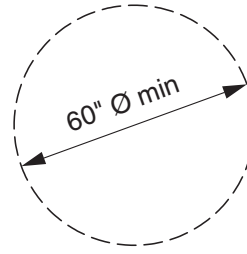
(Sources shown in blue italics differ from ADA)

- 11B-203 General Exceptions*
 - 11B-203.4 Limited Access Spaces*
 - 11B-203.5 Machinery Spaces*
 - 11B-203.8 Residential Facilities*
 - 11B-203.9 Employee Work Stations*
- 11B-206 Accessible Routes*
 - 11B-206.2.1 Site Arrival Points*
 - 11B-206.2.2 Within a Site*
 - 11B-206.2.3 Multi-Story Buildings and Facilities*
 - 11B-206.2.3.2 Distance to Elevators*
 - 11B-206.2.4 Spaces and Elements*
 - 11B-206.2.6 Performance Areas*
 - 11B-206.2.8 Employee Work Areas*
- 11B-206.3 Location*
 - 11B-206.4.5 except Tenant Spaces*
- 11B-302 Floor Or Ground Surfaces*
- 11B-303 Changes In Level*
- 11B-402.2 Accessible Routes – Components*
- 11B-403.5 Walking Surfaces – Clearances*
 - 11B-403.5.1 Clear Width*
 - 11B-403.5.3 Passing Spaces*
- 11B-404.2.1 Doors, Doorways, and Gates – Manual Doors, Doorways, and Manual Gates – Revolving Doors, Gates, and Turnstiles*
 - 11B-404.2.3 Clear Width*
 - 11B-404.3.7 Automatic and Power-Assisted Doors and Gates – Revolving Doors, Revolving Gates, and Turnstiles*
- 11B-502.7 Parking Spaces – Relationship to Accessible Routes*
- 11B-604.8.1.2 Water Closets and Toilet Compartments – Toilet Compartments – Wheelchair Accessible Compartments – Doors*
 - 11B-604.8.2.2 Ambulatory Accessible Compartments – Doors*
- 11B-809.2 Residential Dwelling Units – Accessible Routes*
 - 11B-809.2.1 Location*
 - 11B-809.2.2 Turning Space*

CLEAR FLOOR, TURNING, & MANEUVERING SPACES

General Notes

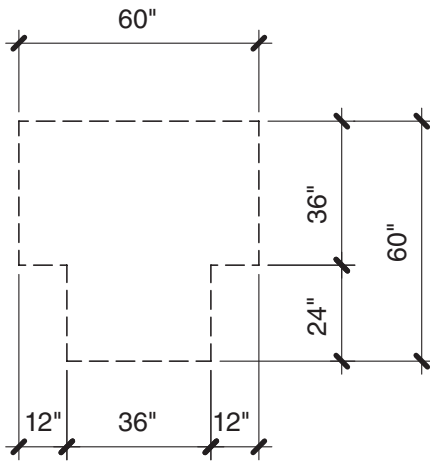
- Maneuvering, turning, and clear floor spaces are level with a maximum slope of 1:48 (2.083%) with no height changes greater than ½"—with ¼" vertical + an additional ¼" beveled with a 1:2 maximum slope
- Maneuvering, turning, and clear floor spaces require a firm, stable, and slip resistant surface and can use knee/toe clearance under objects with a clear height of 27" minimum, which can extend 25" maximum under an element
- T-shaped turning spaces can use knee and toe clearance on one of the three ends of the T only
- One full unobstructed side of a clear floor or turning space adjoins an accessible route or another clear floor space [and can overlap the accessible route unless specifically prohibited per CBC]



60" Diameter

- Accessible routes with a clear width of less than 60" have either a 60" × 60" minimum clear passing space, or a T intersection where 2 walking surfaces meet and extend 48" minimum beyond the intersection in all 3 directions of the T every 200 LF maximum

Turning Spaces



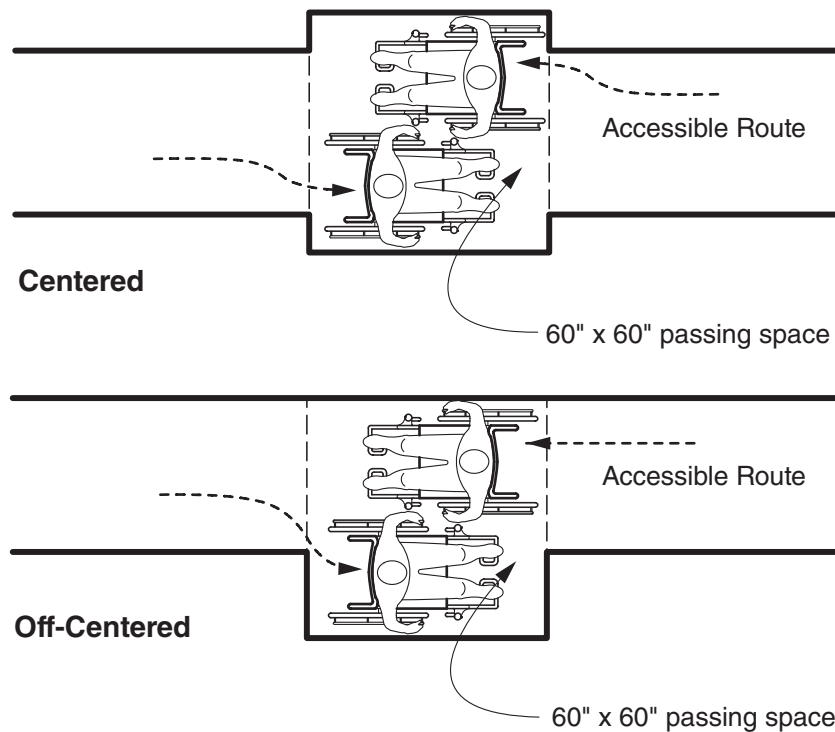
Only one of the 3 arms of the T can go underneath an object with knee/toe clearance below

60" T-Shaped

Note Having the route widen out more often not only helps those in wheelchairs or the elderly to rest, but also helps those who are Deaf, by providing them with space to view each other for communication

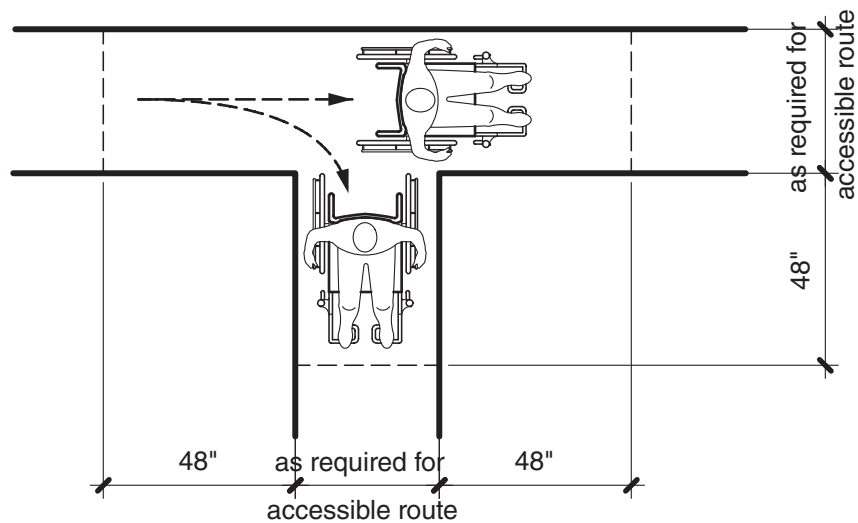
| Items in black are where ADAS provides for greater access or where ADAS and CBC are equivalent | Items in blue are where California provides greater access | Outside of California ignore blue text and the blue [strikeout] line itself—everything in black pertains |

60" x 60" Passing Space



If the accessible route is less than 60" wide every 200 LF maximum provide a 60" x 60" passing space

T-Shaped Intersection Passing Space



If the accessible route is less than 60" wide provide every 200 LF maximum a T-intersection that extends 48" minimum in all 3 directions of the T

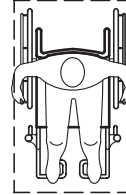
- A clear floor space is generally 30" × 48" unless located in an alcove or otherwise restricted on all or part of 3 sides

Note Elevator call controls require a clear floor space preferably to a volume of 80" above finished floor (AFF) with no recessed or protruding objects at or within that volume of space

Note: Generally a clear floor space is considered to be a volume to a height of 80" that can have a counter, table, work surface, lavatory, or drinking fountain protrude into it

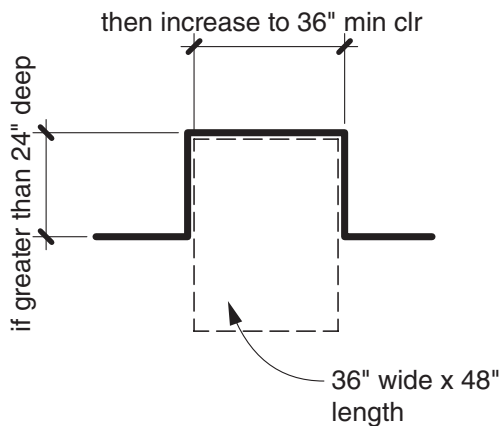
- If the required clear floor space is confined for more than half of its distance along all or part of 3 sides, the space increases—alcoves more than 24" deep for forward approach increase from 30" to 36" × 48" minimum, and those more than 15" deep for parallel approach increase to 30" × 60"

Unobstructed Clear Floor Space

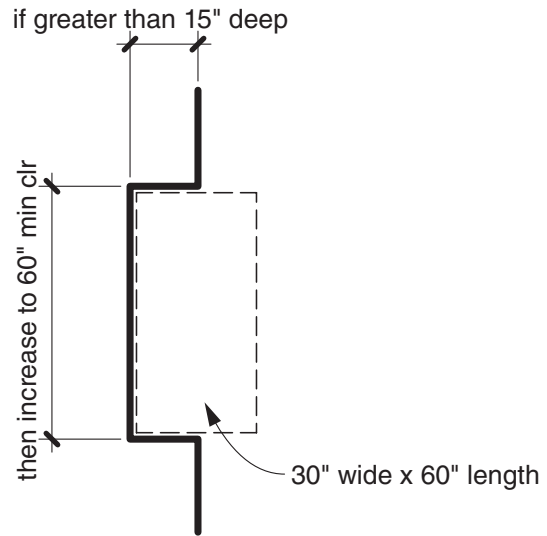


30" x 48" Clear Floor Space

Obstructed Clear Floor Spaces



Front Approach



Parallel Approach

Clear Floor Spaces in Alcoves or Otherwise Blocked on All or Part of Three Sides

- In multi-user restrooms, doors cannot swing into a required clear floor space for any fixture, but can swing into turning spaces [12" maximum unless it is the accessible compartment door, which does not have any limitations per CBC]
- In single user restrooms, doors can swing into clear floor spaces of fixtures and the turning space if there

is a 30" × 48" clear floor space beyond the arc of the door swing [in mobility dwelling units in public housing only—in all other single-user restrooms, doors can swing into clear floor spaces of fixtures if there is a 30" × 48" clear floor space beyond the arc of the door swing, but are limited to a 12" maximum intrusion into the turning space itself per CBC]

180° Turning Aisles Around An Element

- Approach aisles with less than 42" clear width leading to a 180° turn around an element with less than a 48" width, have a minimum of 60" clear at the end aisle
- Approach aisles with a minimum of 42" or more clear width leading to a 180° turn around an element with less than a 48" width, have a minimum of 48" clear at the end aisle

CBC NOTE

If the approach aisles are 2-sided, they are required to be a clear width of 44" minimum, then the end aisle has 48" minimum clear if the element is less than 48" in width per CBC

- If the element is at least 48" minimum in width, all of the aisles, including the end aisle, are to comply with the required clear widths for accessible routes

NOTE

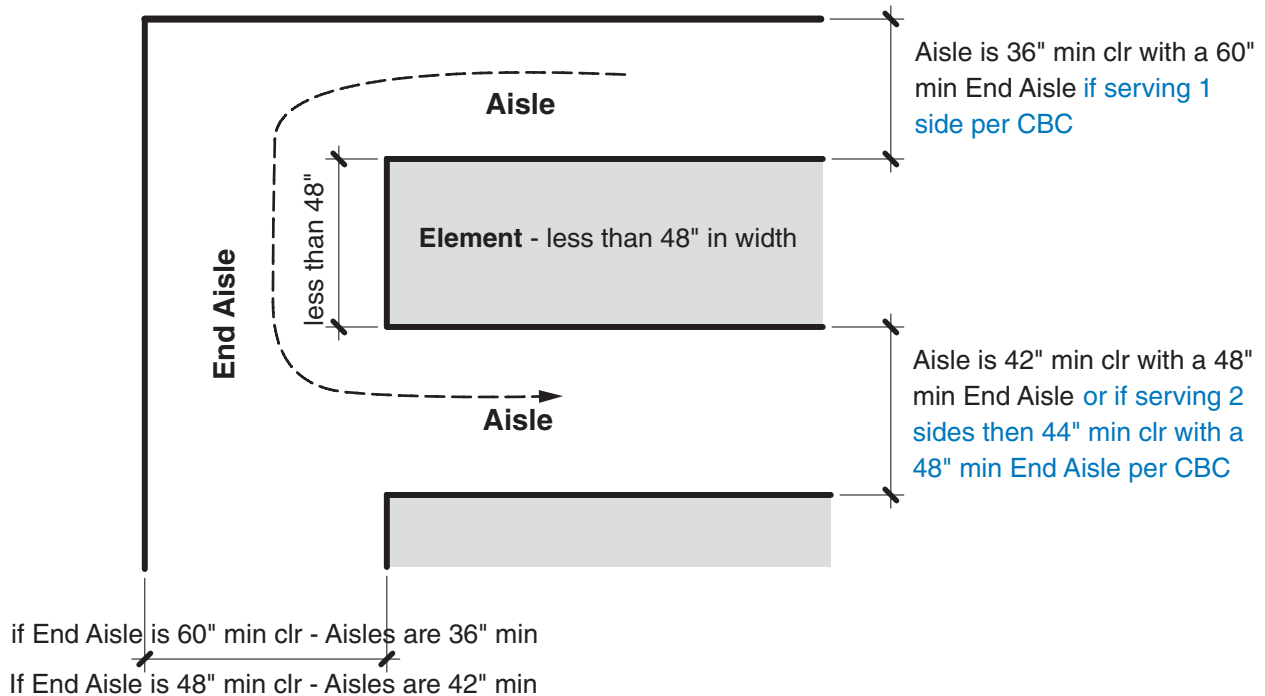
SPEED RAILS

If speed rails are placed in a switchback configuration, rather than having the queue as a single straight line, the question is whether providing 36" continually between the rails is adequate.

Typically, 36" would be fine if there is 36" clear between the edges of the stanchion base, or the stanchion itself supporting the speed rail with no base, and presuming that the queue is a single straight line. But if there are switchbacks, the end at the switchback requires more space in order to navigate the 180° switchback turn. This clear dimension at the end is 60" minimum with a 36" minimum aisle leading to it, or it can go down to 48" if the aisles are increased to 42" minimum. It can also decrease if the switchback is around an object that is 48" or wider. In the latter case, you would only need 36" at the end.

If you have a queue that is double-loaded, such as with merchandise on both sides, the minimum width of the queue goes up from 36" minimum to 44" per CBC. In this case, with a switchback, you only need 48" minimum clear at the end, rather than 60", since the aisles leading to it are greater than 42" minimum.

180° Turning Aisles Around an Element



If an Element is 48" or more in width then all Aisles and End Aisles comply with the required accessible route clear widths

SOURCES – RELEVANT CODES AND STANDARDS

2010 ADA Sources:

- 302 Floor or Ground Surfaces
- 303.3 Changes in Level – Beveled
- 304 Turning Space
- 305 Clear Floor or Ground Space
 - 305.6 Approach
- 306 Knee and Toe Clearance
 - 306.3.2 Knee Clearance – Maximum Depth
- 307.4 Protruding Objects – Vertical Clearance
- 403.5.2 Walking Surfaces – Clearances – Clear Width at Turn
 - 403.5.3 Passing Spaces
- 407.2.1.3 Elevators – Elevator Landing Requirements – Call Controls – Clear Floor or Ground Space
- 603.2.3 Toilet and Bathing Rooms – Clearances – Door Swing

- Advisory 407.2.1.3 Clear Floor or Ground Space

2016 CBC Sources:

(Sources shown in blue italics differ from ADA)

- 11B-302 Floor or Ground Surfaces*
- 11B-303.3 Changes in Level – Beveled*
- 11B-304 Turning Space*
- 11B-305 Clear Floor or Ground Space*
 - 11B-305.6 Approach*
- 11B-306 Knee and Toe Clearance*
 - 11B-306.3.2 Knee Clearance – Maximum Depth*
- 11B-307.4 Protruding Objects – Vertical Clearance*
- 11B-403.5.2 Walking Surfaces – Clearances – Clear Width at Turn*
 - 11B-403.5.3 Passing Spaces*
- 11B-407.2.1.3 Elevators – Elevator Landing Requirements – Call Controls – Clear Floor or Ground Space*
- 11B-603.2.3 Toilet and Bathing Rooms – Clearances – Door Swing*

WALKING SURFACES

General Notes

- Ground and floor surfaces are stable, firm, and slip resistant, with the exceptions of sports activity areas and animal containment areas
- A stable surface is one remaining unchanged when an applied force or contaminants are removed
- A firm surface is one that resists deformation of either indentation or particles moving along its surface
- A slip resistant surface provides enough friction when walking on the surface so that it is not slippery, whether it is wet or dry

NOTE

If permeable surfaces are used on an accessible route, such as compacted decomposed granite, use stabilizing admixtures or binders to create a firm and stable surface along with edging. Many of these surface types can be high maintenance, which should be taken into consideration when specifying. If not maintained, the route may very well become not accessible.

- Walking surfaces have a cross slope of 1:48 (2.083%) maximum with a slope of 1:20 (5%) or less in the direction of travel [with the exception of running slopes on sidewalks that are a maximum slope matching the grade of the adjacent street in the direction of travel per CBC]
- Walking surfaces greater than a 1:20 slope are considered either curb ramps or pedestrian ramps

Note Walking surfaces of 1:20 or less are considered sloped walkways, not ramps and therefore do not have to meet pedestrian ramp requirements

- Level area is defined as having a maximum slope in any direction of 1:48 (2.083%)
- Sloped walkways have a level area (1:48 or less) of 60" minimum in the direction of travel for the full width of the walkway at every 400 LF maximum per CBC

- Walking surfaces with an abrupt change in level exceeding 4" at the edge require a 6" minimum height curb, or if a handrail or guard rail is provided, a guide rail can be centered a minimum of 2" to 4" maximum above the walking surface or sidewalk—this is not required along an adjacent vehicular way per CBC
- Changes in level can be vertical up to ¼" maximum height, and changes between ¼" to ½" are to have a bevel with a maximum slope of 1:2 ($\approx 26.6^\circ$ from the horizontal); changes in level more than ½" are to comply with requirements for ramps, except within areas of sports activities and animal containment areas
- Thresholds have a maximum height change of ½" with ¼" vertical and from ¼" to ½" a 1:2 maximum slope – existing thresholds [~~can be ¾" with a 1:2 maximum bevel on each side~~] [comply with the ½" maximum height differential per CBC]
- Carpet and carpet tiles have ½" maximum height pile and are securely attached to the floor with firm or no cushion/pad, and with all exposed edges trimmed and fastened to the floor
- The carpet edge trim is required to have ½" maximum surface differential to the adjacent floor with a maximum of ¼" vertical and an additional ¼" at a 1:2 slope [—if the edge is ¼" maximum, no edge treatment is required per CBC]

Level Changes

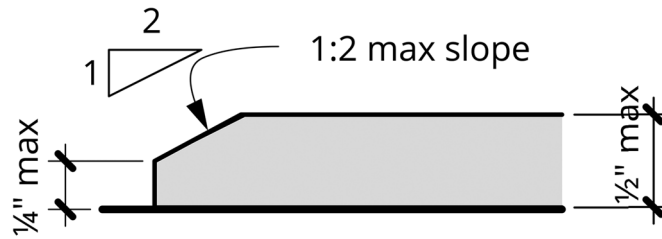


Carpet Pile Height



Maximum Vertical Level Change

| Items in black are where ADAS provides for greater access or where ADAS and CBC are equivalent | Items in blue are where California provides greater access | Outside of California ignore blue text and the blue [strikeout] line itself—everything in black pertains |



- A slope of 1:2 is equivalent to 26.5° from the horizontal
- ~~3/4" vertical height is allowed for existing thresholds with a 1:2 max slope~~

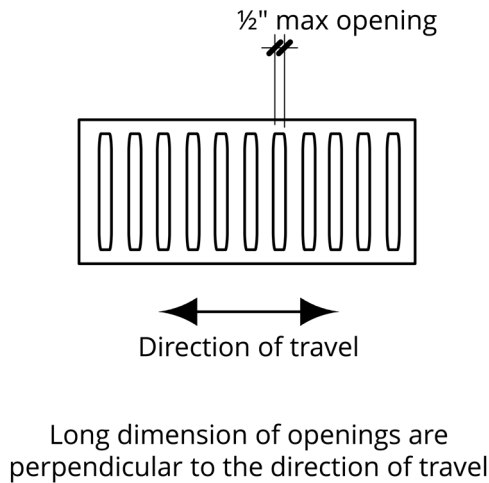
Maximum Level Change without a Ramp Typical at Thresholds

- Openings in ground and floor surfaces are 1/2" maximum whether in grates, tree wells, or between pavers, with the exceptions of the elevator/lift hoistway edge to the car platform edge, as well as the rail flanges on circulation paths at boarding platforms where the paths cross tracks

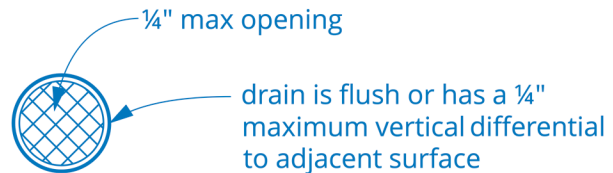
- Elongated openings located on walking surfaces are 1/2" maximum with the 1/2" slot openings perpendicular to the direction of travel
- Shower floors have a 1:48 maximum slope and drains in showers have grates flush with the adjacent floor surface with openings of 1/4" maximum per CBC

Note Openings in circulation paths are sized so a sphere greater than 1/2" in diameter cannot pass thru

Openings In Floor & Ground Surfaces



Grates



Shower Floor Drains per CBC

SOURCES – RELEVANT CODES AND STANDARDS

2010 ADA Sources:

- 302.1 Floor or Ground Surfaces – General
 - 302.2 Carpet
 - 302.3 Openings
- 303 Changes in Level
- 305.2 Clear Floor or Ground Space – Floor or Ground Surfaces
- 403.3 Walking Surfaces – Slope
- 404.2.5 Doors, Doorways, and Gates – Manual Doors, Doorways, and Manual Gates – Thresholds
 - 404.3.3 Automatic and Power-Assisted Doors and Gates – Thresholds
- 407.4.3 Elevators – Elevator Car Requirements – Platform to Hoistway Clearance
- 410.4 Platform Lifts – Platform to Runway Clearance
- 810.10 Transportation Facilities – Track Crossings

- Advisory 302.1 General
- Advisory 302.2 Carpet

2016 CBC Sources:

(Sources shown in blue italics differ from ADA)

- 11B-302.1 Floor or Ground Surfaces – General
 - 11B-302.2 Carpet
 - 11B-302.3 Openings
- 11B-303 Changes in Level*
 - 11B-303.5 Warning Curbs*
- 11B-305.2 Clear Floor or Ground Space – Floor or Ground Surfaces
- 11B-403.3 Walking Surfaces – Slope*
 - 11B-403.7 Continuous Gradient*
- 11B-404.2.5 Doors, Doorways, and Gates – Manual Doors, Doorways, and Manual Gates – Thresholds*
 - 11B-404.3.3 Automatic and Power-Assisted Doors and Gates – Thresholds*
- 11B-407.4.3 Elevators – Elevator Car Requirements – Platform to Hoistway Clearance
- 11B-410.4 Platform Lifts – Platform to Runway Clearance
- 11B-608.9 Shower Compartments – Shower Floor or Ground Surface*
- 11B-810.10 Transportation Facilities – Track Crossings

- Advisory 11B-302.1 General*
- Advisory 11B-302.2 Carpet*

PROTRUDING, POST-MOUNTED, & OVERHANGING OBJECTS

Protruding Objects

- Protruding objects can project into a circulation path but cannot reduce the minimum required clear width on an accessible route or path of travel
- Objects can project from a vertical surface into the circulation path 4" maximum when the leading edge is more than 27" above finished floor (AFF) and less than 80" AFF, unless there is a cane detectable barrier

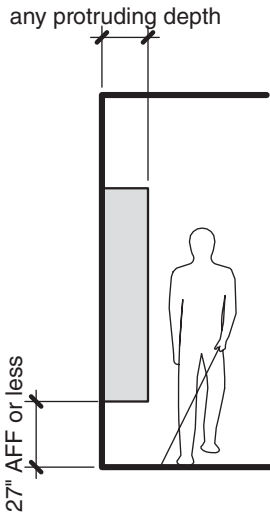
Note: Lavatories can be a protruding object, depending upon the restroom layout and approach. If the leading edge is greater than 27" AFF and if the approach is from the front, it is fine. This would be similar to the typical single user restroom where the lavatory shares

the same plumbing wall as the toilet, or if the lavatory is placed in an alcove.

If there is enough space for a side approach, then the lavatory could be considered a protruding object requiring a cane detectable barrier. If the lavatory is placed precisely so its leading edge is at 27" AFF, by definition it would not be considered a hazardous protruding object, since it is not greater than 27" AFF—the definition of limitations on protruding objects. **California requires the front edge of a lavatory to be at a minimum of 29" AFF; therefore, if there is enough space for a side approach, it does require a cane detectable barrier.**

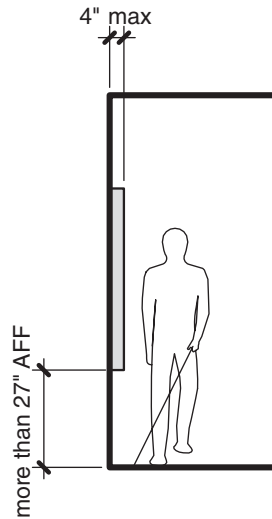
- Objects can project any amount if the leading edge is either greater than 80" AFF or 27" or less AFF; otherwise, a cane detectable barrier is required

Protruding Objects



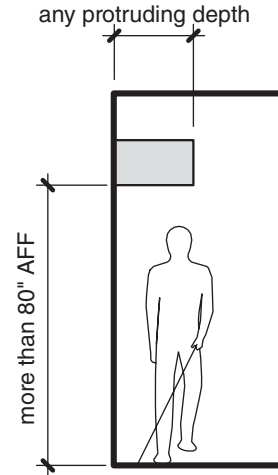
If the leading edge is at 27" or less AFF then there is no limitation on the protruding depth

Leading Edge 27" AFF or Less AFF



If the leading edge is greater than 27" AFF then the protrusion is 4" maximum without a cane detectable barrier

Leading Edge Greater Than 27" AFF



If the leading edge is greater than 80" AFF then the protruding depth does not have a limitation

Leading Edge Greater Than 80" AFF

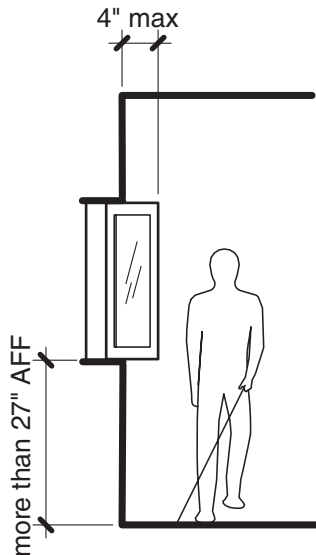
| Items in black are where ADAS provides for greater access or where ADAS and CBC are equivalent | Items in blue are where California provides greater access | Outside of California ignore blue text and the blue [strikeout] line itself—everything in black pertains |

- At doorways, no projections are allowed into the required clear opening width below 34" AFF and 4" maximum projection between 34" AFF and 80" AFF, with the exception of alterations for a 5/8" door stop on the latch side

Note Consideration should be given to not project or overhang anything into the volume of a required clear floor space below 80", such as the 18" x 18" clear floor space required in front of a tactile sign

- Casement and awning type windows cannot project into a circulation path more than 4" if their leading edge is greater than 27" AFF and less than 80" without a cane detectable barrier

Protruding Objects – Windows



Casement & awning type windows opening onto a circulation path can project 4" maximum if their leading edge is greater than 27" AFF unless there is a cane detectable barrier

Leading Edge Greater Than 27" AFF - Example

- Handrails are allowed to protrude from the face of the wall 4½" maximum, [and 3½" maximum into the required clear width on both sides of ramps, with the exception of residential ramps at public

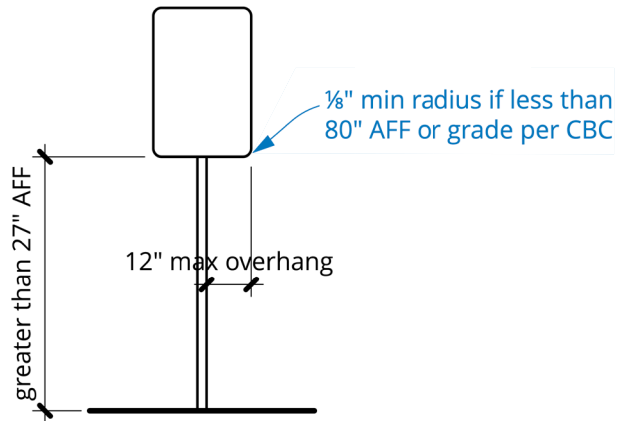
multi-family housing if at the minimum width of 36", with no protrusion in the required clear width at stairs per CBC]

- Surface mounted fire extinguishers generally protrude more than 4", requiring a cane detectable barrier if the leading edge is greater than 27" AFF or grade

Post-Mounted Objects

- Post-mounted objects can overhang circulation paths 12" maximum when the leading edge is above 27" AFF and below 80" AFF, unless there is a cane detectable barrier
- Sloping portions only of stair handrails can project from a post more than 12"
- Edges of post-mounted objects have 1/8" minimum radius corners if less than 80" above grade per CBC

Post-Mounted Objects

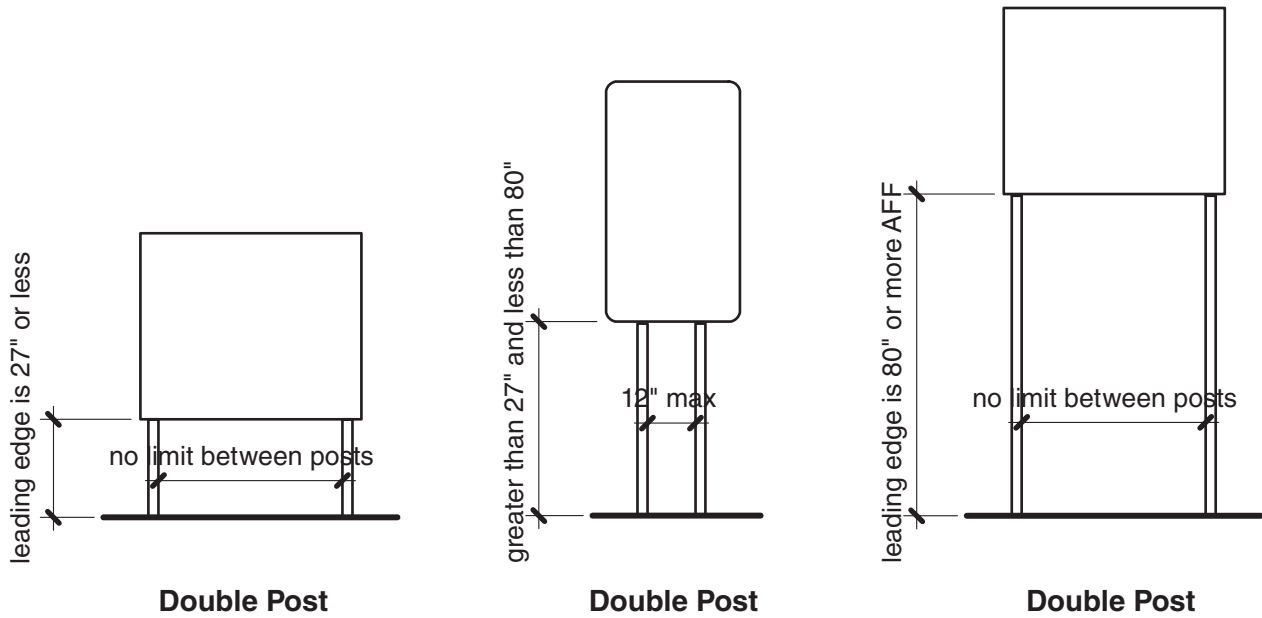


- If greater than a 12" overhang, provide a cane detectable barrier below
- No limits if the leading edge is 27" or below or if 80" or higher

Single Post

- Double post-mounted objects can have 12" maximum clear between posts if the leading edge is greater than 27" AFF and less than 80" AFF; otherwise, a cane detectable barrier is required

Double Post-Mounted Objects



NOTE

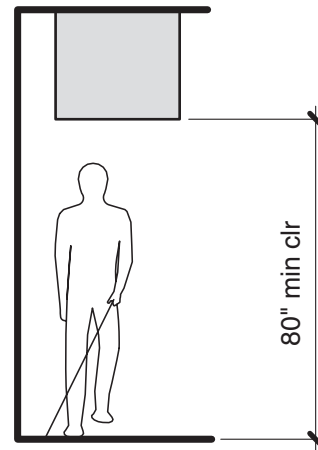
Valves on standpipes located within stairwells are not considered post-mounted objects, since they are located on a pipe, not a post. If the valves extend greater than 4" from the face of the pipe and if its leading edge is greater than 27" AFF, it would require a cane detectable barrier below.

Overhanging Objects

- Overhanging objects provide 80" minimum clear below or the leading edge is 27" maximum AFF
- Door stops and closers are located 78" minimum clear AFF
- Staircases that are open below onto a circulation path require a cane detectable barrier where the underside of the stairs is greater than 27" and less than 80" AFF or grade

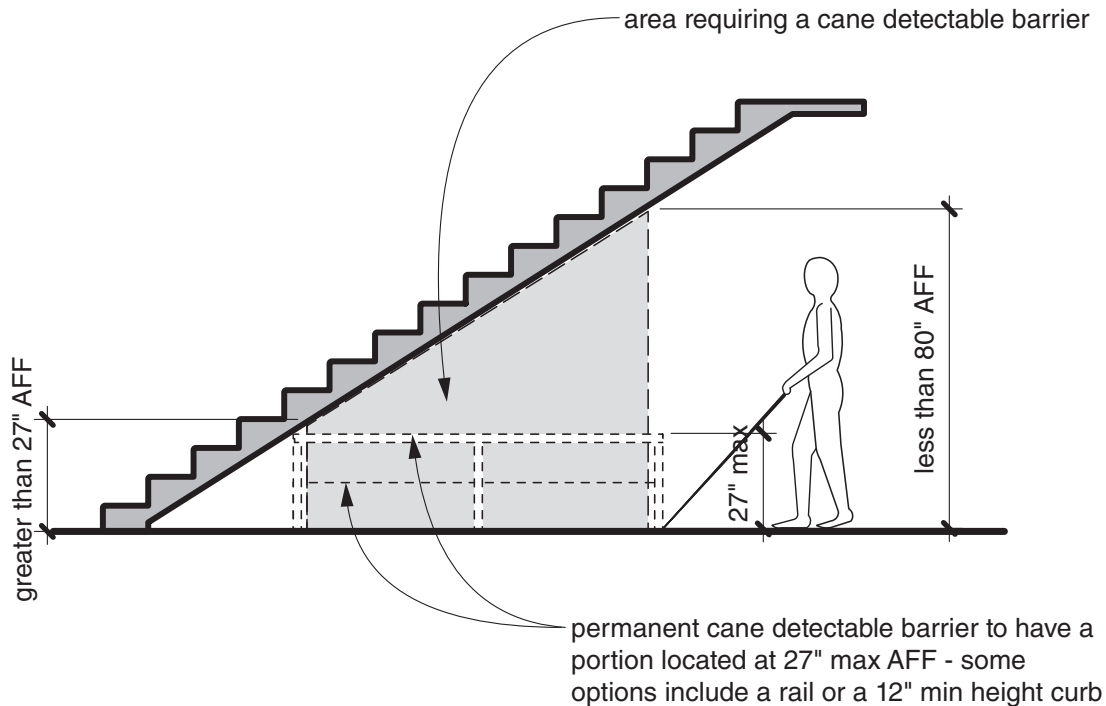
Note Cane detectable barriers below stairs can be a railing with a portion 27" maximum AFF, or a platform or curb at a suggested minimum height of 12"

Overhanging Objects



Provide a cane detectable barrier underneath overhanging objects having less than 80" minimum clear height

Stairs as an Overhanging Object



- All accessible [van] parking spaces, their access aisle, and the full vehicular route from the entry, to the space, and to the exit, have a 98" minimum clear height [per CBC]
- Provide vertical clearance of 114" minimum for the accessible passenger loading zone—the accessible pull-up space, loading area, and the full vehicular route serving the area
- Where a guy support is located in or within 24" of a circulation path, a vertical guy brace, sidewalk guy, or similar device is required per CBC
- Within play areas there is no projection limitation into the circulation paths, provided the accessible routes serving the ground level play components have a minimum vertical height clearance of 80"
- Within areas of sports activity there is no projection limitation into circulation paths

SOURCES – RELEVANT CODES AND STANDARDS

2010 ADA Sources:

204.1 *except* Protruding Objects – General
307 Protruding Objects
 307.2 Protrusion Limits
 307.3 Post-Mounted Objects
 307.4 Vertical Clearance
 307.5 Required Clear Width
404.2.3 Doors, Doorways, and Gates – Manual
Doors, Doorways, and Manual Gates – Clear Width
502.5 Parking Spaces – Vertical Clearance
503.5 Passenger Loading Zones – Vertical Clearance
1008.2.1 Play Areas – Accessible Routes – Ground
Level and Elevated Play Components

2016 CBC Sources:

(Sources shown in blue italics differ from ADA)

11B-204.1 *except* Protruding Objects – General
11B-307 Protruding Objects
 11B-307.2 Protrusion Limits
 11B-307.3 Post-Mounted Objects
 11B-307.4 Vertical Clearances
 11B-307.4.1 *Guy Braces*
 11B-307.5 Required Clear Width
11B-404.2.3 Doors, Doorways, and Gates – Manual
Doors, Doorways, and Manual Gates – Clear Width
11B-405.5 except Ramps – Clear Width
11B-502.5 Parking Spaces – Vertical Clearance
11B-503.5 Passenger Drop-Off and Loading Zones –
Vertical Clearance
11B-1008.2.1 Play Areas – Accessible Routes –
Ground Level and Elevated Play Components

REACH RANGES

General Notes

- Reach ranges are from a 30" × 48" level clear floor space with a maximum slope of 1:48
- If the object is located within an alcove greater than or blocked more than 24" deep and requires a forward approach, the level clear floor space increases to 36" × 48"
- If the object is located within an alcove greater than or blocked more than 15" deep and requires a parallel approach, the level clear floor space increases to 30" × 60"
- One full unobstructed side of a clear floor space either adjoins an accessible route or another clear floor space or overlaps if allowed
- All required operable parts are within compliant reach ranges with the exception of parts used by service or maintenance personnel and dedicated electrical or communication receptacles

Switches, non-dedicated outlets, security and intercom systems, environmental controls, appliance and plumbing fixture controls, and circuit breakers if operated by the public, are all required to be accessible, within reach range from a clear floor space, and operable with one hand without tight grasping, pinching, or twisting of the wrist.

- **Controls, outlets, and switches for use by an occupant are measured to the top of the receptacle box for the outlet or switch for the upper reach range, and to the bottom of the outlet box for the lower reach range per CBC**
- At each location that a depository, vending, or change machine is provided, 1 minimum of each type has controls within compliant reach ranges; a level clear floor space; controls that are operable with one hand without tight grasping, pinching, or twisting of the wrist; an operating force of 5 lbs maximum; and located on an accessible route with the exception of drive-up depositories
- 5% of lockers and interior mailboxes are accessible, with 1 minimum of each type being within compliant reach range, from a level clear floor space, having compliant operating force, and located on an accessible route

- Mailboxes for multi-family residential facilities built by or on behalf of a public entity have one minimum for each mobility unit with compliant reach ranges, clear floor space, operation, and on an accessible route [\[and one minimum meeting these requirements for each adaptable unit per CBC\]](#)
- Operable windows in accessible rooms to be operated by the occupants, including mobility guest rooms in transient lodging and student housing mobility sleeping rooms, have one minimum window and all required operable windows accessible, which includes compliant reach ranges, clear floor space, operation, and located on an accessible route
- Mobility and communication feature dwelling units in multi-family residential facilities built by or on behalf of a public entity are exempt from the window requirements
- Fuel dispensers have highest operable parts at 54" maximum measured from the vehicular way if located on existing curbs
- **Electric vehicle charging stations (EVCS) have all operable parts within reach range per CBC**
- **Pedestrian traffic control buttons are 48" maximum above the adjacent ground surface per CBC**

NOTE

CLEAR FLOOR SPACES – ARE THEY REALLY CLEAR?

There are certain things in Access that, at first glance, appear to be clear. But many of the simple things are not as intuitive as you might imagine, particularly if you are not a wheelchair user, or not blind nor deaf—clear floor spaces, for instance. We know that a clear floor space is 30" x 48" unless confined on all or part of three sides. But how do we apply it, how do we show it—particularly when we have enough space so the long edge can be either parallel or perpendicular to an element?

When we talk about clear floor spaces, think of the approach to an element, whether forward or parallel, and in some circumstances both. It is not just a matter of providing a space, or drawing a rectangle perpendicular or parallel to an element. In most cases, a clear floor space relates directly to reach ranges. So one of the questions is: What do I need to reach? If it is something on a vertical surface, then either a front or side approach is feasible. The rectangular space can then be placed either parallel or at right angles to this vertical surface, depending upon the space you have. If what you need to reach is set back from the edge of a counter, you cannot do a front approach without having knee/toe clearance below. In this latter case, you will need to show a parallel approach.

| Items in black are where ADAS provides for greater access or where ADAS and CBC are equivalent | [Items in blue are where California provides greater access](#) | Outside of California ignore [blue text](#) and the [blue \[strikeout\]](#) line itself—everything in black pertains |

Forward Reach Range With A Forward Approach

- Unobstructed forward reach range is 15" minimum to 48" maximum AFF
- Obstructed forward reach ranges have the same or less reach depth above the obstruction as the clear knee/toe depth below

NOTE

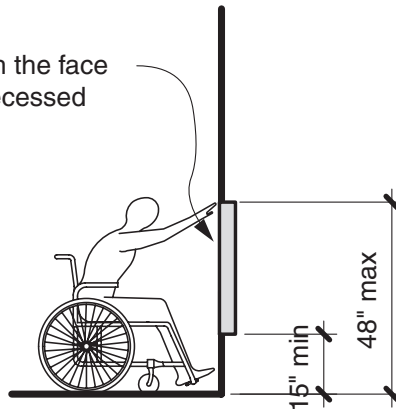
A forward reach from a wheelchair only allows you to reach as far as your toes. This is why we need the same clear depth at a minimum below as the reach depth above. Although some people can reach further than their toes, this is not the norm.

- Obstructed forward reach range over an object with a maximum depth of 20" is 48" maximum AFF
- Obstructed forward reach over an object with a minimum depth greater than 20" to 25" maximum is 44" maximum AFF
- Nothing on the back wall is accessible if located greater than a depth of 25"

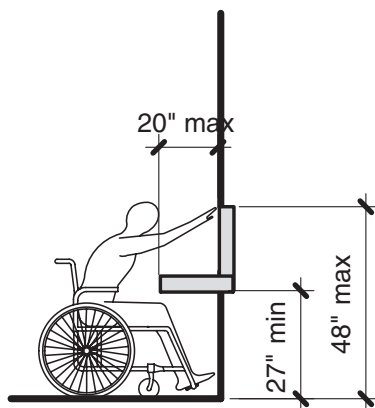
Typical kitchen cabinets cannot have flush-mounted objects on the back wall if the operable parts are located more than 44" AFF, since they would not be within reach range for front approach, presuming the counter with the nosing is 25" maximum in depth. If the counter is 24" deep and at a maximum height of 34" AFF, 46" AFF is within side reach range.

Forward Reach from a Forward Approach

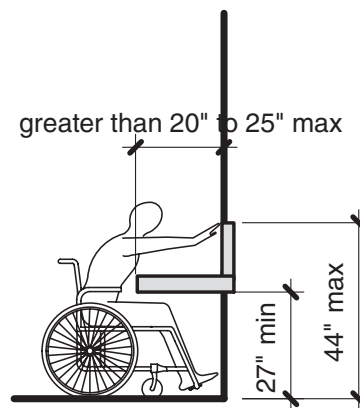
object is flush with the face of the wall - not recessed



Unobstructed Reach



Obstructed Shallow Reach



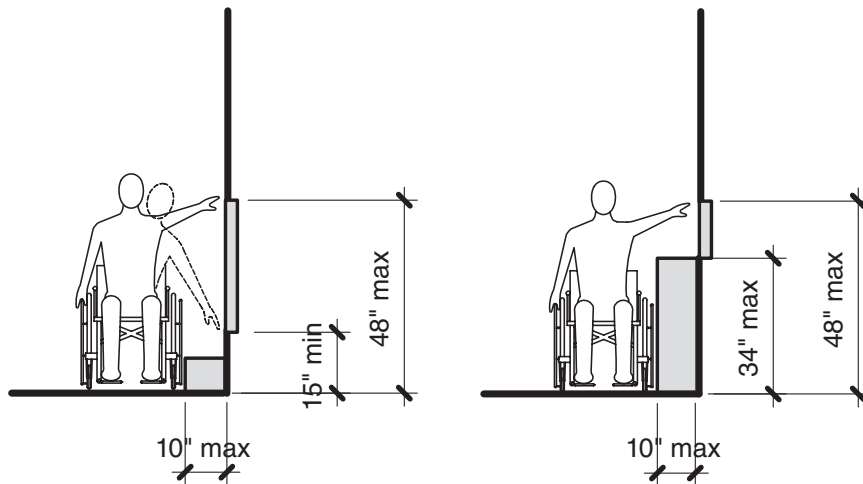
Obstructed Deeper Reach

Clear floor space below an object is the same depth as the reach depth above the object at a minimum

Side Reach Range With A Parallel Approach

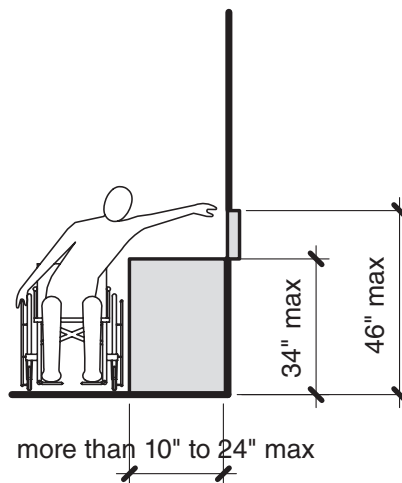
- Unobstructed side reach range is 15" minimum to 48" maximum AFF
- Obstructed side reach range over a narrow object a maximum of 10" in depth is also 15" minimum to 48" maximum AFF if the object is 34" maximum AFF
- Obstructed side reach over an object more than 10" to a maximum of 24" in depth is a maximum of 46" AFF, presuming the object is 34" maximum AFF
- Nothing beyond 24" deep is accessible or if the side reach is over an object greater than 34" AFF
- Obstructed side reach range above a counter greater than 34" AFF can only have objects within reach range if the objects project enough to be located at the front edge and 48" maximum AFF

Side Reach with a Parallel Approach



If the obstruction is higher than 34" then items on the back wall are outside of the reach range

Narrow Obstruction



If the obstruction is deeper than 24" then items on the back wall are outside of the reach range

Deeper Obstruction

SOURCES – RELEVANT CODES AND STANDARDS

2010 ADA Sources:

- 205.1 except Operable Parts – General
- 225.2.1 Storage – Lockers
- 228 Depositories, Vending Machines, Change Machines, Mail Boxes, and Fuel Dispensers
 - 228.2 Mail Boxes
- 229 Windows
- 305.2 Clear Floor or Ground Space – Floor or Ground Surfaces
 - 305.3 Size
 - 305.6 Approach
 - 305.7 Maneuvering Clearance
- 308.2 Reach Ranges – Forward Reach
 - 308.3 Side Reach
- 309 Operable Parts
- 811 Storage

2016 CBC Sources:

(Sources shown in blue italics differ from ADA)

- 11B-205.1 except Operable Parts – General
- 11B-225.2.1 Storage – Lockers
- 11B-228 Depositories, Vending Machines, Change Machines, Mail Boxes, Fuel Dispensers, and Electric Vehicle Charging Stations*
 - 11B-228.2 Mail Boxes*
 - 11B-228.3.1.2 Electric Vehicle Charging Stations – Operable Parts*
- 11B-229 Windows
- 11B-305.2 Clear Floor or Ground Space – Floor or Ground Surfaces
 - 11B-305.3 Size
 - 11B-305.6 Approach*
 - 11B-305.7 Maneuvering Clearance
- 11B-308.1.1 Reach Ranges – General – Electrical Switches*
 - 11B-308.1.2 Electrical Receptacle Outlets*
 - 11B-308.2 Forward Reach
 - 11B-308.3 Side Reach
- 11B-309 Operable Parts*
- 11B-703.7.2.7 Signs – Symbols of Accessibility – Symbols – Pedestrian Traffic-Control Buttons*
- 11B-811 Storage