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California Access Compliance

Course Number: AIAPDH731

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About the Author

My name is Jodie Ellis. I have a Bachelor of Architecture degree from Texas Tech University. I became a licensed architect for the State of Texas in 2005 after living in a few states, one of which was California. The first time I had to design for accessibility was in college. In a third year design studio, we designed a campus information center with accessible restrooms. I didn't think much of it at the time. I simply pulled out my handy Architectural Graphic Standards to get the required dimensions. The week I graduated college, my mom broke her ankle while walking down to her pond to fish. She came to my graduation in a wheelchair. Being by her side for a couple of weeks after graduation made me realize the importance of accessibility and how inaccessible so many places were. It was a very eye-opening experience. Years later, when my father needed a ramp built to be able to get to the front door of his house and several doors and frames had to be removed inside of his house, I was reminded, yet again. I became a Registered Accessibility Specialist for the Texas Department of Licensing and Regulation in 2015. I'd been designing for accessibility for more than 15 years at this point, so it wasn't a stretch to get this certification.

Course Introduction and Objectives

If you are a design professional in California, I know you have heard of Title 24. If you are new to the State, Title 24 is the California Building Standards Code that governs the design and construction of buildings, the structural safety and sustainability for public schools in California, community colleges, and state buildings, and the accessibility requirements for public accommodations. There are 12 parts to Title 24. The information we are going to focus on is in Part 2, which is the California Building Code, or CBC for short. The CBC is based on the International Building Code with California's amendments. If you are familiar with the International Building Code, then you know that Chapter 11 is about accessibility. The California Building Code broke up Chapter 11 into 2 sections – 11A, which goes over accessibility for housing, and 11B, which outlines accessibility to public buildings, public accommodations, commercial buildings, and public housing. We are mostly going to stay in Chapter 11B with this course.

It is impossible to cover the entire chapter 11B in the time allotted, but at the end of the course, you should be able to:

1. Understand the scoping requirements for accessibility in relation to public buildings, public accommodations, commercial buildings, and public housing.
2. Be knowledgeable of the common building blocks for accessible spaces and elements.
3. Identify what constitutes an accessible route and how to design those elements.
4. Know how to design accessible elements within specific types of spaces, such as restrooms, kitchens, and residential dwelling units.

For this course, I recommend that you have a digital or hard copy of the 2022 California Building Code available for reference. If you don't already have a copy, you can find it online at the International Code Council's website.

The 2022 California Access Compliance Advisory Reference Manual by the Division of the State Architect would also be handy to have. You can get it on the DSA's website.

Course Outline

Module 1 – Scoping Requirements

Module 2 – Building Blocks

Module 3 – Accessible Routes

Module 4 – General Site and Building Elements

Module 5 – Plumbing Elements and Facilities

Module 6 – Communication Elements and Features

Module 7 – Special Rooms, Spaces and Elements

Module 8 – Built-In Elements

Module 9 – Recreation Facilities

Module 1 – Scoping Requirements

The scoping requirements are found in Division 2 of Chapter 11B of the California Building Code. The big question is – what must be accessible? Obviously, every single parking space doesn't have to be accessible with access aisles, and every toilet stall in public restrooms doesn't have to be large enough to accommodate wheelchairs. But, how many do? Division 2 answers these questions…what and how many?

Generally speaking, newly designed and constructed spaces and altered portions of existing buildings and facilities must be fully accessible unless it is exempted somewhere in the code or the Scoping Requirements in Division 2 limits the number of multiple elements required to be accessible. A lot of people are shocked to find out that temporary buildings are NOT exempt unless they are associated with the actual processes of construction. If a construction site has a trailer that is used for meetings, offices, and viewing plans, it MUST be accessible. (201.4) Toilet and bathing facilities on construction sites must also be accessible and be on an accessible route.

Additions and alterations to existing buildings or facilities are required to be accessible. (202.1)

Definitions

It's helpful to know what is considered an addition and an alteration when making a determination. The CBC references the 2010 Americans with Disabilities Act Standards model code definitions.

It says that an addition is 'an expansion, extension, or increase in the gross floor area or height of a building or facility.' (106.5)

An alteration is a change to a building or facility that affects or could affect the usability of the building or facility or portion thereof. Alterations include, but are not limited to, remodeling, renovation, rehabilitation, reconstruction, historic restoration, resurfacing of circulation paths or vehicular ways, changes or rearrangement of the structural parts or elements, and changes or rearrangement in the plan

configuration of walls and full-height partitions. Normal maintenance, reroofing, painting or wallpapering, or changes to mechanical and electrical systems are not alterations unless they affect the usability of the building or facility. (106.5 ADA)

Because it lists 'resurfacing of circulation paths', this could even be interpreted as replacing carpet or tile. Changing the flooring can affect the accessibility of a space. Think 'shag carpeting' versus a smooth vinyl tile. Or, if you go from one height thickness of a material to a different height thickness, the transitions could create an issue for someone in a wheelchair if it's not done correctly.

The State of California considers seismic strengthening work to be a building alteration as well as reconstruction after a fire. This was clarified in Advisory 202.3.

Path of Travel Clause

For renovations, I can't think of another section in the code that has more ramifications than Section 11B-202.4. This has the path of travel clause. It says that 'when alterations or additions are made to existing buildings or facilities, an accessible path of travel to the specific area of alteration or addition shall be provided. The primary accessible path of travel shall include:

1. A primary entrance to the building or facility,
2. Toilet and bathing facilities serving the area,
3. Drinking fountains serving the area,
4. Public telephones serving the area, and
5. Signs. (202.4)

There are some exceptions to the path of travel clause. (202.4) One being residential dwelling units because they have their own requirements.

The second exception basically says that if the 5 elements in the path of travel clause listed earlier (entrance, restroom, drinking fountains, telephones, and signs) meet the previous California Building Code, then you don't have to make them comply with the current code.

The third exception lets you limit the scope of work if altering one of the following for accessibility:

1. One building entrance
2. One existing toilet facility
3. Existing elevators
4. Existing steps
5. Existing handrails

The fourth exception includes alterations from a list of 19 items that are solely made for the purpose of barrier removal:

1. Installing ramps.
2. Making curb cuts in sidewalks and entrance.
3. Repositioning shelves.
4. Rearranging tables, chairs, vending machines, display racks, and other furniture.
5. Repositioning telephones.
6. Adding raised markings on elevator control buttons.
7. Installing flashing alarm lights.

8. Widening doors.
9. Installing offset hinges to widen doorways.
10. Eliminating a turnstile or providing an alternative accessible route.
11. Installing accessible door hardware.
12. Installing grab bars in toilet stalls.
13. Rearranging toilet partitions to increase maneuvering space.
14. Insulating lavatory pipes under sinks to prevent burns.
15. Installing a raised toilet seat.
16. Installing a full-length bathroom mirror.
17. Repositioning the paper towel dispenser in a bathroom.
18. Creating designated accessible parking spaces.
19. Removing high-pile, low-density carpeting.

The fifth exception is if you're resurfacing/restriping a parking lot, you can limit your scope to the actual project.

The sixth exception includes the replacement of signs. You can limit your scope of work just to the signs you are replacing.

The 7th exception to the path of travel clause includes heating, ventilation, air conditioning, reroofing, electrical work as long as it does NOT involve the placement of switches and receptacles, and cosmetic work that does not affect items regulated by the code. This would be items such as painting, equipment that's NOT considered to be a part of the architecture of the buildings such as computer terminals and office equipment.

The 8th exception to the path of travel clause concerns hardship. When the adjusted construction cost is less than or equal to the current valuation threshold, the cost of compliance shall be limited to 20% of the adjusted construction cost of alterations, structural repairs or additions. If the cost of full compliance exceeds 20 percent of the adjusted construction cost, accessibility must be achieved to the greatest extent possible up to that amount.

So, what exactly is included in the adjusted construction cost? As shown in the definition, it's all costs directly related to the construction of the project. The only expenses that shouldn't be included in the adjusted construction cost are PM, A and E, testing and inspection fees as well as utility connections or service district fees.

The valuation threshold may be found on the DSA's website. When determining cost, the work done in the previous 3 years must be taken into account. For 2024, the valuation threshold is $200,399.00. It changes in January of each year.

So, in 2024, if the construction cost is $200,399 or less, you have to achieve accessibility to the path of travel elements to the greatest extent possible up to 20% of the construction cost.

It's a little different if the construction cost exceeds $200,399. If the enforcing agency decides that

full compliance would be an unreasonable hardship, full compliance isn't required. Compliance shall be required by equivalent facilitation OR to the greatest extent possible without creating an unreasonable hardship. Once again, you can't spend less than 20% of your construction cost on making the path of travel elements accessible.

You should also note that the adjusted construction cost of alterations, structural repairs, or additions shall NOT include the cost of alterations to path of travel elements required for full compliance. Don't forget the amount for determining hardship includes the value you've spent on making path of travel elements accessible during the previous 3 years.

If you can't make all of the path of travel elements accessible, then priority is given in this order:

1. An accessible entrance;
2. An accessible route to the altered area;
3. At least one accessible restroom for each sex or one accessible unisex (single-user or family) restroom;
4. Accessible telephones;
5. Accessible drinking fountains; and
6. When possible, additional accessible elements such as parking, signs, storage and alarms.

The 9th exception to providing accessibility to the path of travel clarifies that even if you're renovating a privately funded, multistory building that was formerly exempt on levels above or below the first level because it was built before April 1, 1994, it doesn't make it exempt now. It could fall under the previous 20% hardship exception, though. These building types include:

1. Office buildings and passenger vehicle service stations of 3 or more stories and 3,000 or more square feet per floor.
2. Physician and surgeon offices
3. Shopping centers
4. Office buildings 3 or more stories and 3,000 or more square feet per floor if a 'reasonable portion of services sought and used by the public is available on the accessible level.

Another important thing to note is that if you are not required to install an elevator to a floor due to hardship, you still have to meet the other accessibility requirements of the code for the floors you may only reach by stairs. If restrooms are provided on a level that is not served by an elevator, then they must also be provided on an accessible ground floor.

The final exception to the path of travel clause says that if you are installing electric vehicle charging stations at a place where it would be considered a primary function, such as, a gas station, then you must provide accessibility for the path of travel elements up to the 20% valuation threshold. However, if you're installing them somewhere else where they are not considered a primary function, then you do not have to make the path of travel elements accessible.

The are several general exceptions for providing accessibility. They are found in 11B-203.

1. Construction sites – scaffolding, bridging, material hoists, materials storage and construction trailers, and portable toilet units ONLY used by construction personnel. If owner meetings will occur in the trailer, it must be accessible.
2. Raised areas for security, life safety, or fire safety
3. Limited access spaces not customarily occupied that are accessed only by ladders, catwalks, crawl spaces, or very narrow passageways.

4. Machinery spaces only frequented by service personnel – elevator pits, mechanical, electrical, or communications equipment rooms, etc.
5. Single occupant structures such as toll booths
6. Detention and correctional facilities – common use areas that are used only by inmates or detainees and security personnel and don't serve holding cells or housing cells required to be accessible
7. Residential facilities – the common use areas that don't serve residential dwelling units required to have mobility features or adaptable features
8. Employee workstations do not need to fully comply. They need to be on an accessible route, have fire alarms with wiring for visible alarms, comply with the requirements for Floor surfaces and changes in level , have electrical switches and receptacle outlets within allowable reach ranges unless they are an integral part of workstation furnishings, fixtures, and equipment, and have doors with a clear width of 32 inches minimum (or 36 inches if the opening is more than 24 inches deep).
9. Raised refereeing, judging, and scoring areas. An accessible route must be provided to the floor level entrance if one is provided.
10. Water slides. An accessible route must be provided to the floor level entrance if one is provided.
11. Animal containment areas not for public use. The ones for public use must be on an accessible route.
12. Raised boxing or wrestling rings. An accessible route must be provided to the floor level entrance if one is provided.
13. Raised diving boards and diving platforms. An accessible route must be provided to the floor level entrance if one is provided.

After all of the exceptions are listed, the code jumps to protruding objects. If a protruding object is on a circulation path, it must comply with the accessibility standards for protruding objects unless they are within an area of a sport activity or a play area.

Operable Parts

Next are operable parts. If operable parts are on accessible elements, along accessible routes, and in accessible rooms and spaces, then they have to comply with the accessibility requirements for operable parts unless they fall within one of the exceptions listed:

1. Intended to be used only by maintenance personnel.
2. Are a dedicated use power or communications receptacle.
3. Are a floor power receptacle.
4. Are an HVAC diffuser
5. Are a redundant control for something other than a light switch.

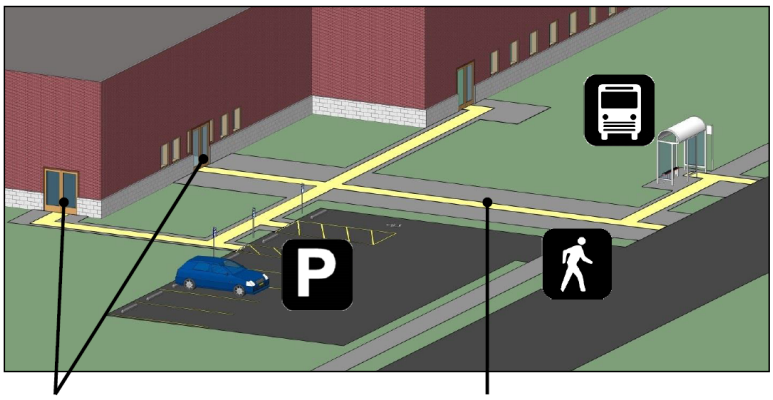
6. Are a cleat or other boat securement device
7. Are an exercise machine/equipment
8. In residential dwelling units with mobility features where receptacles are provided in a kitchen at a corner worksurface, one receptacle shall be located 36 inches from either wall at the inside corner.

Accessible Routes

Next, let's talk about accessible routes. Below is a good graphic from the U.S. Access Board's Technical Guide.

Accessible Routes from Site Arrival Points [§206.2.1]

Site arrival points include accessible parking spaces and accessible passenger loading zones, public transit stops located on sites, and pubic streets and sidewalks.



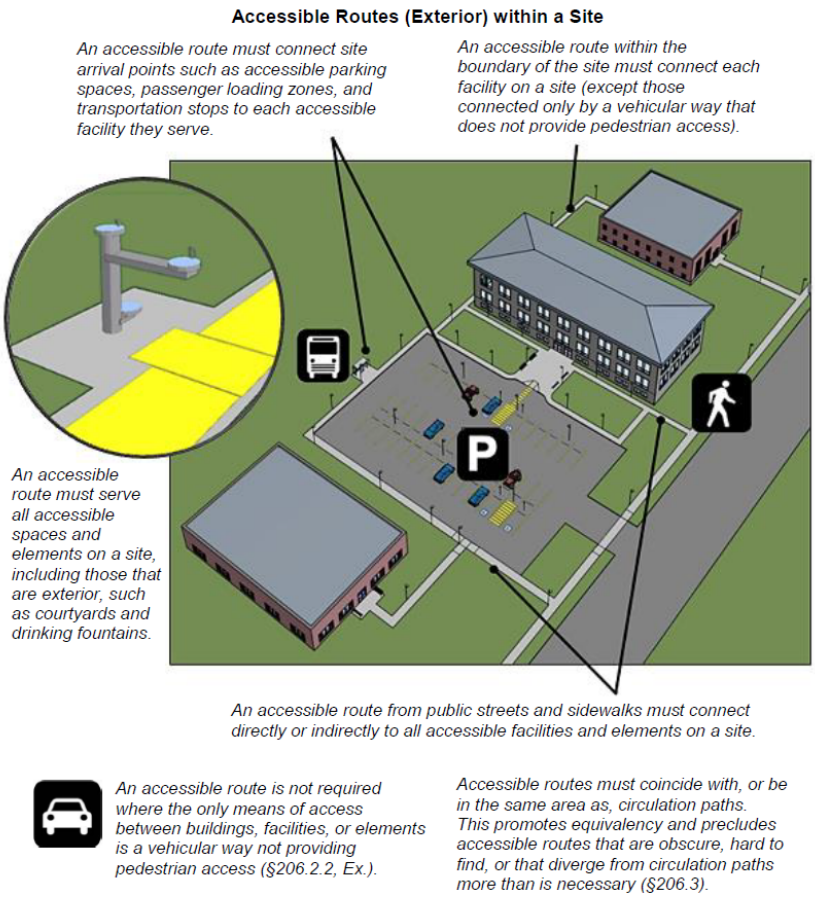
An accessible route must connect site arrival points to each accessible entrance they serve.

Accessible routes must coincide with, or be in the same vicinity as, general circulation paths (§206.3).

If no pedestrian route onto a site is provided and site entry is by vehicle only, an accessible route from the site boundary is not required (§206.2.1, Ex. 2). Where a vehicular way does provide pedestrian access, such as a shopping center parking lot, an accessible route is required.

Accessible routes (11B-206) are required within the site from accessible parking spaces and accessible passenger *drop-off and* loading zones; public streets and sidewalks; and public transportation stops to the accessible building or facility entrance they serve. Something that is unique to California is that w*here more than one route is provided, all routes must be accessible.* If you're outside of California, you typically need only 1 accessible route. There is an exception if the only means of access is a vehicular way that doesn't provide pedestrian access. An example of this would be at a self-service storage facility where all users are expected to drive to their storage units.

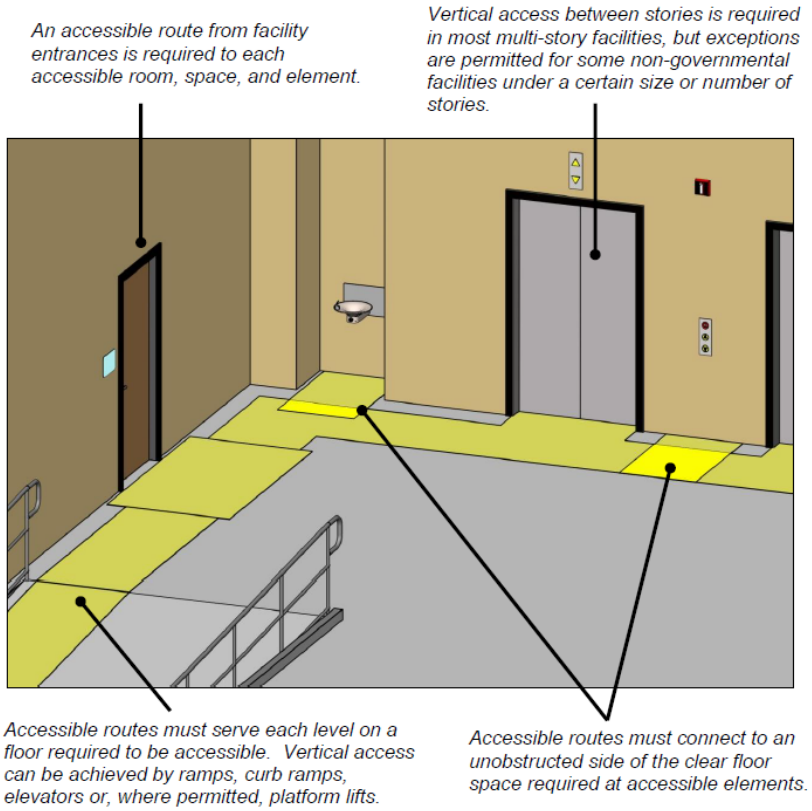
At least one accessible route must connect accessible buildings, accessible facilities, accessible elements, and accessible spaces that are on the same site unless, once again, the only means of access is a vehicular way that doesn't provide pedestrian access.



An accessible route has to connect all accessible spaces and elements, including mezzanines unless they are exempt. (206.2.3.2) In new construction of buildings where elevators are required and they are more than 10,000 s.f. on any floor, you can't place the accessible vertical route (ramp, elevator, lift) more than 200 feet away from each stair or escalator unless the stairs are ONLY used for emergency egress.

Accessible Routes within a Building or Facility

At least one accessible route must connect all accessible spaces and elements. If a circulation path is interior, the accessible route also must be interior. Accessible vertical interior circulation must be in the same area as stairs and escalators, not isolated in the back of the facility.



Here are the exceptions for providing vertical accessible routes:

1. *Multi-storied office buildings (other than the professional office of a health care provider) and passenger vehicle service stations less than three stories high or less than 3,000 square feet per story. If you have a 3-story office building with 4500 s.f. on the first floor, 2500 s.f. on the second floor, and 1500 sf on the 3rd floor, this exception would NOT qualify because one of the 3 floors is over 3000 s.f.*

2. Any other privately funded multi-storied building that is NOT a shopping center, shopping mall or the professional office of a health care provider, or a terminal, depot or other station used for specified public transportation, or an airport passenger terminal and that is less than three stories high or less than 3,000 square feet per story if a reasonable portion of all facilities and accommodations normally sought and used by the public in such a building are accessible to and usable by persons with disabilities. It's important to note that these exceptions are ONLY for the elevator. Everything else must comply.

3. In detention and correctional facilities, an accessible route isn't required to connect the floors that don't have the accessible cells with mobility features or their common use areas. All public use areas must be on an accessible route.

4. In residential facilities, an accessible route isn't required to connect the floors that do NOT have the accessible residential dwelling units with mobilty or adaptable features, or those units common use areas.

5. If you've got a multi-level guest room within a transient lodging facility, you don't need to have an accessible route to all levels as long as the features that are required to be accessible are on the accessible level. The sleeping accommodations on the accessible level have to be large enough for 2 people. The features required to be accessible are living and dining areas, exterior areas, sleeping areas, a bathroom, and a kitchen.

6. In air traffic control towers, an accessible route isn't required to serve the cab and the equipment areas on the floor immediately below the cab.

In alterations and additions, if you're putting in an escalator or stair where none existed previously and major structural modifications are required to do so, an accessible route is going to be required unless one of the 6 exceptions applies.

An accessible route must be provided to ALL functional areas of restaurants, cafeterias, banquet facilities, bars, and similar facilities. This includes the raised, sunken, or outdoor areas. (206.2.5)

There are only a couple of exceptions to this. The first is for mezzanines of alteration projects. If it has less than 25% of the total combined area for seating and dining and the same décor and services are provided in the accessible area.

The other exception is for tiered dining areas in sports facilities.

There are specific accessible route requirements for other facility types and spaces, as well.

You must provide an accessible route to performance areas from assembly seating areas if there is a circulation path that connects them. So, if there are going to be stairs from a seating area up to the stage, there also needs to be a ramp, lift, or elevator, as well.

Press boxes must be on an accessible route unless the aggregate area of ALL press boxes is less than 500 s.f. or are elevated at least 12 feet w/the aggregate area being more than 500 s.f. (206.2.7)

Common use circulation paths within employee work areas must be accessible unless they are an integral component of work area equipment or are located outside and fully exposed to the weather. (206.2.8)

All entrances to each tenant's space must be on an accessible route. (206.4.5)

Each primary entrance into a residential dwelling unit must be on an accessible route. (206.4.6)

Even restricted entrances must be on accessible routes. (206.4.7)

At least one entrance into a judicial facility, detention facility or correctional facility must be on an accessible route. (206.4.9)

At medical care and long-term care facilities, there is an additional requirement. You must provide protection from the elements at one accessible entrance where the period of stay may exceed 24 hours. The passenger drop-off and loading zone and the route to the entrance it serves must be covered. (206.4.10)

We already know that every entrance into a building must be on an accessible route. The doors also need to be accessible. Once you get inside the building, every door, doorway, or gate serving rooms or spaces required to be on an accessible route must also be accessible. (?) 206.5.2

At transient lodging facilities, every door must provide a clear width opening of 32 inches, even if the rooms, themselves are not required to provide mobility features. (206.5.3) (The one exception is at

shower/sauna doors in rooms that are NOT required to provide mobility features.) If the rooms ARE required to have mobility features, then the entrances must be fully accessible with the required accessible door clearances. 206.5.3

Security barriers (i.e. security bollards and security checkpoints) can't obstruct required accessible routes. (206.8) If they do, an accessible route must be provided next to it.

Every passenger elevator must be fully accessible UNLESS it's an elevator provided where one isn't required. Here is the list again of where elevators aren't always required.

- Multi-storied office buildings and passenger vehicle service stations less than 3,000 s.f. per story
- Privately funded multi-storied buildings less than 3,000 s.f. per story
- Detention and correctional facilities
- Residential facilities
- Multi-story transient lodging guest rooms
- Air traffic control towers

If you are providing an elevator where one isn't required, it is allowed to be the LULA-type elevator. For those of you who aren't familiar with a LULA, it's a Limited-use, limited application elevator. In my entire career, I've only dealt with a LULA once and it was to replace it with a standard commercial elevator. It was installed initially because it's the only thing the client could afford at the time. But, there were always issues with it. It also traveled very slowly, so passengers would get on it and not even realize it was moving. Maybe they've gotten better over the years. I don't know.

The only other exception to providing the standard commercial elevator is IN multi-story residential dwelling units. Note that I said IN the dwelling unit. So, if you've got an apartment that is multi-story, the elevator within the apartment itself can be either a LULA-type elevator OR an elevator that meets the standards for private residence elevators.

There are some locations where platform lifts are allowed. In those instances, they may be installed instead of an elevator. The specific locations they are allowed are performance areas and speakers' platforms. 206.7.1; They are also allowed at locations to help provide the line of site dispersion requirements; to incidental spaces not used by the public and occupied by no more than 5 people; jury boxes/witness stands and other courtroom stations in courtrooms; and where you've got existing exterior site conditions that aren't feasible for a ramp or elevator due to the topography; Platform lifts can also be put inside transient lodging guest rooms that must provide mobility features; amusement ride load/unload areas; play areas (play components and soft contained play structures); to team or player seating areas serving areas of sports activity; and at recreational boating facilities (here, platform lifts can be used instead of gangways).

One thing to note about platform lifts is that they must be designed to operate if power is lost. So, either standby power OR self-rechargeable batteries must be used to power platform lifts. (207.2)

Means of Egress

There are several accessibility requirements outside of Chapter 11B in the CBC. One is in Chapter 10, Section 1009. This chapter is about accessible means of egress. Means of egress must comply with that chapter UNLESS it falls under one of these 5 exceptions.

Exceptions:

1. Where means of egress are permitted by local building or life safety codes to share a common path of egress travel, accessible means of egress shall be permitted to share a common path of egress travel.

2. Areas of refuge shall not be required in detention and correctional facilities.

3. Accessible means of egress are not required to be provided in existing buildings.

4. Doors that provide access only to interior or exterior stairways shall not be required to be accessible.

5. If you've got more exits than those required from the occupancy calculations from Chapter 10, AND the additional exit is more than 24 inches above grade, the door doesn't have to be accessible or be on an accessible route. Signs need to be posted that direct you to the location of an accessible exit.

Parking Spaces

Now, let's get into parking. How do you figure out how many accessible parking spaces are required? You look at the handy Table in section 208. There are some exceptions to using this Table that we will get into in a minute. Basically, you take the total amount of parking spaces in the lot or facility and see the total accessible spaces it corresponds with on the table. It's important to note that each parking lot on a site is calculated separately.

Table *11B*-208.2 Parking Spaces

Total Number of Parking Spaces Provided in Parking Facility	Minimum Number of Required Accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000

Now, I will get into the exceptions to using this table. Most of them are related to parking for facilities that are expected to have a larger than normal amount of wheelchair users at the facility.

Ten percent of patient and visitor parking spaces provided at hospital outpatient facilities and free-standing buildings providing outpatient clinical services must be accessible. (208.2.1) These are facilities that provide continuing medical treatment without an overnight stay. This does NOT include doctors' offices, independent clinics, or other facilities not located in hospitals.

20% of patient and visitor parking spaces for rehabilitation facilities and physical therapy facilities must be accessible. (208.2.2)

For residential facilities, if each dwelling unit gets a parking space, then the units required to have mobility features must get an accessible space. If more than 1 parking space is provided for each unit, then 2% of the spaces need to be accessible. (208.2.3) Non-resident parking needs to comply with the chart.

For every six accessible parking spaces, at least one must be van accessible. (208.2.4)

Where should the accessible spaces be located? On the shortest accessible route from the parking to an accessible entrance. Van spaces can be grouped on one level of a multi-story parking facility. If you can provide substantially equivalent or greater accessibility by putting the accessible spaces in a different parking facility, that is also allowed. (exception 2, 208.3.1)

Drop-Off and Loading Zones

Now, let's get into drop-off and loading zones. They also have requirements. You need at least 1 accessible zone for every continuous 100 l.f. of drop-off and loading zone space.

Each bus bay, stop, or other area designated for lift or ramp deployment must be accessible.

On-street bus stops must also comply to the maximum extent possible.

Licensed medical care and long-term care facilities where the care may exceed 24 hours require accessible drop-off and loading zones at accessible entrances. (209.3)

Valet parking require accessible drop-off and loading zones. (209.4) Note that accessible parking spaces also have to be provided at valet parking lots.

Mechanical access parking garages are required to have accessible drop-off and loading zones, as well. (209.5)

Stairways

Stairways 210 – Must meet all of the accessibility requirements for stairs unless they are in a non-public part of a detention and correctional facility, are between levels connected by an accessible route in an existing facility, are an aisle stair in an assembly area, or if they connect play components. However, even the exceptions must meet some of the requirements.

Drinking Fountains

211 Drinking fountains – If drinking fountains are provided, 2 are required. One must meet the requirements for wheelchair accessibility. The other must be for standing individuals. It could be a high-low drinking fountain that meets both requirements. The California Plumbing Code Table 4-1 determines if and how many drinking fountains are required – NOT the accessibility code. If you provide more than the required number of drinking fountains, then 50% must be designed for wheelchair users and 50% for standing users.

Bottle filling stations must be accessible if they are provided.

Kitchens, Kitchenettes, and Wet Bars

212 Kitchens, kitchenettes, wet bars must be accessible

California has a different definition for these than other states. There is no distinction between a Kitchen or Kitchenette – they are rooms, spaces or areas with equipment for the preparation and cooking of food.

Wet Bars have sinks and counters, but they don't have cooking facilities.

5% of sinks (at min. 1 of each type) in each accessible room must comply EXCEPT mop, service or scullery sinks as well as scrub sinks.

Toilet and Bathing Facilities

213 toilet and bathing facilities – where they are provided, they must be accessible. If they are provided on a level not required to be accessible, then accessible ones must be provided on a level that is accessible – 213.1

If separate facilities are provided for separate user groups, each user group must have accessible restrooms.

The only exceptions to complying:

In alterations where it's technically infeasible, you can provide a single unisex toilet room instead if it's in the same area as the non-compliant restrooms.

If there are multiple single user *portable* units clustered together, only 5% in each cluster has to comply.

Where single user toilet rooms are clustered together, only 50% must comply.

If you've got toilet or bathing rooms in guest rooms that don't have mobility features, you don't have to make them fully accessible, but they are still required to have 30x48 clear floor spaces.

What must be accessible within a restroom that is required to be accessible?

5% toilet compartments (or 5% of the combination of toilet compartments and urinals) in multi-user restrooms but no fewer than 1;

If 6 or more toilet compartments or 6 compartments/urinals are provided, then an ambulatory accessible compartment must also be provided. 213.3.1

5% of water closets must be accessible (213.3.2)

10% of urinals must be accessible (213.3.3)

10% of lavatories must be accessible (213.3.4)

If mirrors are provided, at least one must be at an accessible height.

Bathing facilities – at least 1 bathtub or shower must be accessible.; If 2 or more accessible showers are provided in the same functional area, at least one shower shall be opposite hand from the other or others (one right hand controls; the other left-hand controls); they also must be the roll-in type showers.

Transient lodging guest rooms, multi-bedroom housing units in undergraduate student housing and residential dwelling units are the only locations transfer type shower compartments allowed. (213.3.6)

Coat hooks and shelves – if provided in toilet rooms without toilet compartments, then one of each type must be mounted at the accessible heights. If provided in toilet compartments, at least one of each type must be mounted at the accessible heights in the accessible toilet compartments. If they are mounted in bathing facilities, accessible height coat hooks/shelves must be installed at accessible tubs/fixtures. 213.3.7

Something fairly new to the code is adult changing facilities. Where provided, they must be accessible. Commercial places of public amusement are required to provide at least 1 accessible adult changing facility. (249)

Washing Machines and Clothes Dryers

Washing machines – Where provided, if you've got 3 or less washing machines, at least 1 must be accessible; if >3, at least 2 shall be accessible. (214.2)

Dryers – Same numbers as washing (214.3)

If your project is subject to HUD Section 504 Regulations, the machines must be front loading. For individual dwelling units, front loading machines could be required as a reasonable accommodation.

Fire Alarm and Carbon Monoxide Alarm Systems

215 Where Fire alarm systems and carbon monoxide alarm systems are provided with audible alarms, they must also have visible alarms. In existing facilities, the visible alarms only need to be provided when they are replaced or upgraded.

The visible alarm has to be located in the space that it serves so it can be seen.

Details are found in Chapter 9, Section 907 instead of Chapter 11B. Visible alarms are not required in enclosed stairways, ramps, or elevator cars. (907.5.2)

Visible alarms are required in public use and common use areas. The list includes but is NOT limited to band rooms, classrooms, corridors, gymnasiums, lobbies, meeting rooms, multipurpose rooms, music practice rooms, occupational shops, occupied rooms where ambient noise impairs hearing of the fire alarm, and sanitary facilities including restrooms, bathrooms, and shower rooms.

Visible alarms aren't required up front for employee work areas but have to be designed with 20% spare capacity so they can be added as accommodations are needed.

At transient lodging facilities such as hotels, motels, and dorms, visible alarms must be provided in the number of rooms, as shown in table 907.5.2.3.2.

TABLE 907.5.2.3.2
VISIBLE ALARMS

NUMBER OF SLEEP UNITS	SLEEPING ACCOMMODATIONS WITH VISIBLE ALARMS
6 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22
501 to 1,000	5% of total
1,001 and over	50 plus 3 for each 100 over 1,000

At residential dwelling units, the capacity has to be there for installation of visible alarms in the future if accommodations need to be made.

Signs

216 Signs – new or altered signs must be accessible. Note that the addition of or replacement of signs does NOT trigger additional path of travel requirements.

Exceptions – building directories, menus, seat and row designations in assembly areas, occupant names, building addresses, and company names and logos; temporary signs (7 days or less); non public-use area signs in detention and correctional facilities

Signs that identify permanent rooms/spaces must be accessible with braille. (216.2)

Directional/informational signs such as occupant load signs aren't required to have braille, but they must the requirements about the visual characteristics.

Required exit door signs must be accessible with braille. 216.4.1

Areas of refuge/and assisted rescue must be accessible with braille. 216.4.2

Means of egress directional signs do not need braille, but they must meet the requirements about the visual characteristics . 216.4.3

Delayed egress lock signs must have braille. 216.4.4

Accessible parking signs have their own requirements.

In existing buildings where every entrance isn't accessible, then you have to identify the accessible entrances with a sign that has the Internation Symbol of Accessibility on it. There also must be directional signs showing where the accessible entrances are located at the non-accessible entrances. 216.6

The same is true for elevators. If an elevator isn't accessible in an existing building, signs are needed that direct passengers to the accessible elevators from the lobby. The accessible elevators need to be represented with a sign that has the International Symbol of Accessibility. 216.7

This can be applied at toilet rooms, as well. Directional signs locating the accessible ones. 216.8

Geometric symbols must be provided on signs at the entrances into public toilet and bathing rooms as follows:

Men – triangle

Women – Circle

Unisex – combined circle/triangle

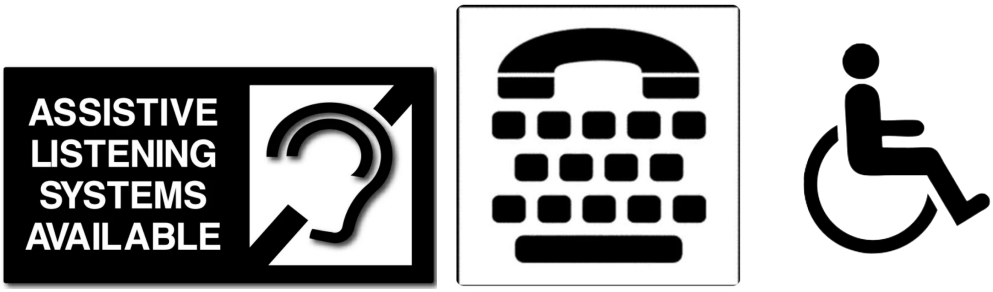
Public TTY's (teletypewriters for the deaf) must be identified by the International Symbol of TTY. Directional signs indicating the location of them must be provided at all banks of public pay telephones not containing a public TTY. 216.9

Assistive listening systems 216.10 If they are required in assembly areas, signs must be provided that let occupants know they are available in a prominent location.

Accessible Check-out aisles must be identified with specific signs that display the International Sign of Accessibility.

Amusement rides must have signs identifying the type of access. Signs directing people to the accessible loading and unloading areas are also required.

Variable message signs have their own specific requirements. 216.13



Public Telephones

This doesn't apply much anymore, but public telephones have accessibility requirements. Where coin-operated public pay telephones, coinless public pay telephones, public closed-circuit telephones, public courtesy phones, or other types of public telephones are provided, wheelchair accessible public telephones must be provided per Table 11B-217.2.

All public telephones must have volume controls.

You have to provide TTY's in certain instances. There are different requirements for public buildings than private buildings. The general rule is that for public buildings with one pay phone, one TTY will be required. In private buildings, you need a TTY if 4 public pay phones are provided.

Table *11B*-217.2 Wheelchair Accessible Telephones

Number of Telephones Provided on a Floor, Level, or Exterior Site	Minimum Number of Required Wheelchair Accessible Telephones
1 or more single units	*At least 50 percent of telephone units, but not less than* 1 per floor, level, and exterior site
1 bank	*At least 50 percent of telephone units per bank, but not less than* 1 per floor, level, and exterior site
2 or more banks	*At least 50 percent of telephone units per bank, but not less than* 1 per bank *At least 1 telephone per floor shall meet the requirements for a forward reach telephone.*

Assistive Listening Systems

Assistive listening systems are required in assembly areas, including conference and meeting rooms. To determine the number of receivers required, you look at the number of seats. 4% of the total number of seats are required. But, at least 2 are required. The assistive-listening system must be within 50 feet of the stage or playing area with a view to it.

Permanently installed assistive listening systems are required in areas that accommodate 50 or more people or if they have audio-amplification systems, AND there is fixed seating. Portable systems can serve more than 1 room. 219.5

Assembly Areas

We started getting into specific assembly requirements with the assistive listening systems. Now, let's talk about seating. For assembly areas with fixed seats, wheelchair spaces are required. The number of required wheelchair spaces is determined by the total number of seats. At arenas, stadiums, and grandstands that have luxury boxes, club boxes, or private suites, you have to consider each of those separately…or box by box. Every box is required to have wheelchair spaces based on table 11B-221.2.1.1.

Table *11B*-221.2.1.1 Number of Wheelchair Spaces in Assembly Areas

Number of Seats	Minimum Number of Required Wheelchair Spaces
4 to 25	1
26 to 50	2
51 to 150	4
151 to 300	5
301 to 500	6
501 to 5000	6, plus 1 for each *100*, or fraction thereof, between 501 through 5000
5001 and over	*46*, plus 1 for each 200, or fraction thereof, over 5000

At venues that are NOT arenas, stadiums, or grandstands such as performing arts centers, they sometimes have 'boxes' as well, oftentimes provided in tiered boxes. You don't have to provide wheelchair spaces in every box – only 20% of them. However, the total number of required wheelchair spaces is determined by the number of seats in all of the boxes combined. You take that number, go to the chart, do the calculation, and distribute them among 20% or more of the boxes.

Team or player seating areas serving sports areas requires at least one wheelchair space except at bowling lanes.

At stadium-style movie theaters, the number of wheelchair spaces is determined by the total number of seats. The wheelchair spaces either have to be located within the rear 60% of seats. OR, be placed so that they meet a specific viewing angle calculation. The vertical viewing angles to the top of the movie screen must be between the 40th and 100th percentile of vertical viewing angles for all seats as ranked from the seats in the first row (1st percentile) to the seats in the back row (100th percentile). (221.2.1.5)

In assembly areas, each specialty seating area with distinct services and amenities must have wheelchair spaces. These don't have to be calculated separately as with box seats. They can be part of the overall wheelchair calculation. In existing buildings, if it's not readily achievable to accommodate this, you can get away with not doing it ONLY if you provide the same services and amenities at other accessible locations at no additional cost. 221.2.1.6

Wheelchair spaces must be integral to the seating plan.

There are line of sight requirements. The wheelchair spaces need to be dispersed so that they provide spectators with options of seating locations and viewing angles that are equal or better to the other seating choices available to other spectators. At stadiums, arenas, and grandstands, wheelchair spaces have to be dispersed to all levels of seating served by an accessible route. This doesn't apply to team/player seating areas. 221.2.3

Wheelchair spaces need have to be dispersed horizontally, as well. ….so, around the field of play or performance area.

There are a couple of exceptions to the horizontal dispersion requirement. If there are 300 or less seats and the wheelchair spaces are located within the 2nd or 3rd quartile of the total row length. Also, in row seating, 2 wheelchair spaces are allowed to be located side-by-side.221.2.3.1

There is a separate requirement for vertical dispersion. Wheelchair spaces must be dispersed at varying vertical distances from the screen , performance area, or playing field. They have to be located in every balcony or mezzanine that's on an accessible route. It also has a couple of exceptions. One is if there are 300 or fewer seats and the wheelchair spaces provide equivalent viewing angles to the average viewing angle. The other exception is in bleachers. They only have to be provided in rows at points of entry to bleacher seating. This would be at cross aisles, concourses, vomitories, and entrance ramps/stairs. 221.2.3.2

Wheelchair spaces cannot be located on or obstructed by temporary platforms or other movable structures. Wheelchair spaces are only allowed on a temporary platform if one is brought in to increase seating for an event, and an entire seatings section is placed on the temporary platform. 221.2.4

AT least one companion seat must be provided immediately adjacent to each wheelchair space. 221.2.1

At least 5% of the total number of aisle seats provided must have armrests that are folding or retracting.

Lawn seating without fixed seats must connect to an accessible route.

At least 1% of seating must be semi-ambulant and provide at least 24” of leg space in front of them.

At least 5% of dressing rooms, fitting rooms, or locker rooms that are provided in a cluster must be accessible. 222.1

Medical Facilities

In hospitals, rehabilitation facilities, psychiatric facilities, and detox facilities, all public use areas must be accessible. 223.2

At hospitals, psychiatric and detox facilities, at least 10% of the patient bedrooms must be accessible with mobility features and they must be dispersed among the medical specialties. 223.2.1

In facilities that specialize in treating conditions that affect mobility, ALL of the patient bedrooms must be accessible with mobility features. 223.2.2

At least 10% of physician/staff on-call rooms must be accessible with mobility features. 223.2.3

At long-term care facilities such as nursing homes, 50% of each type of patient bedroom must be accessible with mobility features. 223.3

All professional offices of health care providers must be accessible with mobility features. 223.4

Transient Lodging

When discussing accessible routes, transient lodging came up. Transient lodging provides short-term accommodations – so hotels, motels, and resorts fall under this category. The California Code groups dormitories under this category, too, when identifying what needs to be accessible in rooms.

To figure out how many rooms must have mobility features (for wheelchair accessibility), you go to Table 11B-224.2. If you’re doing alterations or additions, it’s based on the number of rooms in your current project. If you’re building a new hotel, it would be based on the total number of rooms. As you can see, the table lets you know how many accessible rooms with mobility features you need to provide and the type – with roll-in showers or without.

Table *11B*-224.2 Guest Rooms with Mobility Features

Total Number of Guest Rooms Provided	Minimum Number of Required Rooms Without Roll-in Showers[1]	Minimum Number of Required Rooms With Roll-in Showers[2]	Total Number of Required Rooms
1	*1*	*0*	*1*
2 to 25	*1*	*1*	*2*
26 to 50	*2*	*1*	*3*
51 to 75	3	1	4
76 to 100	4	1	5
101 to 150	5	2	7
151 to 200	6	2	8
201 to 300	7	3	10
301 to 400	8	4	12
401 to 500	9	4	13
501 to 1000	2 percent of total	1 percent of total	3 percent of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000	10, plus 1 for each 100, or fraction thereof, over 1000	30, plus 2 for each 100, or fraction thereof, over 1000

1. *Provide either a bathtub complying with Section 11B-607 or a transfer type shower complying with Section 11B-608.2.1.*
2. *Provide either a standard roll-in type shower complying with Section 11B-608.2.2 or an alternate type roll-in shower complying with Section 11B-608.2.3.*

There is a separate Table for determining how many rooms need to have communication features for the deaf or hard of hearing. It's table 11B-224.4.

Table *11B*-224.4 Guest Rooms with Communication Features

Total Number of Guest Rooms Provided	Minimum Number of Required Guest Rooms With Communication Features
1	1
2 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22
501 to 1000	5 percent of total
1001 and over	50, plus 3 for each 100 over 1000

The guest rooms that must be accessible need to be dispersed among the various types of sleeping accommodations with various room sizes, costs, and amenities. You can't make them all the same size and type with the same view.

At least one guest room that is required to have mobility features must also have communication features. However, no more than 10% of the guest rooms with mobility features can be used to satisfy the communication features requirement.

There are a couple of other things to note. Every door into and within each guest room must be wide enough for a wheelchair to fit through it, so they must have an opening that provides 32 inches of clear width. The only doors that wouldn't apply here are shower and sauna doors if they are in a room that isn't required to provide mobility features. Bathroom doors must be either sliding or hung to swing in the

direction of egress FROM the bathroom of every room. The requirement of the door swinging out doesn't apply to dorms though.

In addition, in rooms that are NOT required to be accessible, a wheelchair must be able to go through the door of the bathroom and touch the sink, toilet, and tub/shower. 224.1.4; 603.6

As I mentioned earlier, the California Building Code groups dormitories with transient lodging. If there are actual residential dwelling units at a place of higher education, they would NOT fall under this category if they don't contain any public use or common use areas available for educational purposes. They would fall under the public housing section.

If you have a college dorm that's made up of individual suites with multiple sleeping rooms in each suite, there are a couple of things to consider. If a suite has a bedroom that's required to have mobility features, there needs to be an accessible route throughout the suite. If the suite has a kitchen, it must be accessible, as well, if there's a bedroom in there with mobility features.

Social service center establishments such as group homes, halfway houses, or homeless shelters also fall under transient lodging but they've got specific requirements. If you've got a sleeping room with more than 25 beds, at least 5% of the beds need to have a clear floor space on each side of the bed. If there are more than 50 beds, the common-use bathing facilities need to provide at least one roll-in shower with a seat. 224.8.2

Storage

Enough about transient lodging. Let's get into to storage now. If you are providing storage in accessible spaces, in general, at least one of each type of storage must be accessible. This could be closets, cabinets, shelves, clothes rods, hooks, and drawers. One of each type must be in the accessible reach ranges.

If you are providing lockers, 5%, but no less than one of each type must be accessible.

Self service shelving like that at the library or a store must be on an accessible route but they are **not** required to be within an accessible reach range.

Book stacks in public areas can't be more than 54 inches above the finish floor unless an attendant is available to assist.

Table *11B*-225.3 Self-Service Storage Facilities

Total Spaces in Facility	Minimum Number of Spaces Required to be Accessible
1 to 200	5 percent, but no fewer than 1
201 and over	10, plus 2 percent of total number of units over 200

For those self-service storage facilities, there's a table in the code, table 11B-225.3, that lets you know how many units need to be accessible. An accessible storage unit needs to be on an accessible route, have an accessible means of egress, and accessible parking. Some storage units have public-use areas, as well. If so, they must be accessible. Dispersion is a requirement here, so you can't limit the location and type of units that are accessible.

Dining and Work Surfaces

Onto dining and work surfaces. 5% of the seating spaces and standing spaces in restaurants or bars must be accessible and it must be dispersed for each type of seating. If there's a counter where food or drink is being served that is more than 34" high, then you also need to provide a 60" length section of the counter that's between the height of 28 and 34 inches that's accessible. 226

5% of work surfaces that aren't strictly for employees must be accessible.

Baby diaper changing stations count as work surfaces. When in the open position, they can't obstruct the required width of an accessible route except for what is allowed as a protruding object. They also can't be located in a toilet stall.

Service Counters and Checkout Aisles

Service counters and check-out aisles have their own specific requirements.

Table *11B*-227.2 Check-Out Aisles

Number of Check-Out Aisles of Each Function	Minimum Number of Check-Out Aisles of Each Function Required to Comply with *11B*-904.3
1 to 4	1
5 to 8	2
9 to 15	3
16 and over	3, plus 20 percent of additional aisles

There is a table, 11B-227.2, that lets you know how many accessible check-out aisles are required. This isn't cumulative. Each function is calculated separately. So, if you have self-checkout aisles and standard checkout aisles, each type must have the appropriate number of accessible aisles based on the table. If you are in a major department store in the mall, and the checkout aisles are dispersed within each department, the accessible checkout aisles must also be dispersed in the same way. If every checkout aisle isn't accessible, the accessible ones must be identified with a sign showing the International Symbol of Accessibility. The only exception to dispersion is if it's a small store that's less than 5000 s.f. Then you only need 1 accessible aisle.

At least one of each type of sales counter and service counter must be accessible and be dispersed if the other counters are dispersed. If there is a counter for online order pickup and a separate counter for returns, they both need to be accessible.

Food service lines must be accessible. 50% of self-service shelves must be within accessible reach ranges….or at least 1 of each type. Tray slides need to be between 28 and 34 inches above the finish floor. Queues and waiting lines must have an adequate clear width for a wheelchair.

Depositories, Vending Machines, Change Machines, Fuel Dispensers, and Electric Vehicle Charging Stations

Wherever you have depositories (these could be the slots where you mail a letter at the post office or the slots you put a book through at the library. It could also be where you leave the money bag afterhours at a bank. One of each type must be accessible. The same goes for vending machines, change machines, and fuel dispensers….one of each type must be accessible.

The first time I saw an electric vehicle charging station was at the Getty Center in LA in 2001. I'd say that we've come a long way since then! As popular as they are now, entire sections in the code are dedicated to them. And, what do you know? There's also a handy table (11B-228.3.2.1) so you can figure out how many need to be accessible. Just like the standard parking lots, you have to calculate the totals separately for each facility. This doesn't apply to EVCS that are NOT available to the general public such as those at a reserved parking space for an individual employee.

TABLE 11B-228.3.2.1
ELECTRIC VEHICLE CHARGING STATIONS FOR PUBLIC USE AND COMMON USE

Total Number of EVCS at a Facility[1]	***Minimum Number (by type) of EVCS Required to Comply with Section 11B-812[1]***		
	Van Accessible	***Standard Accessible***	***Ambulatory***
1 to 4	*1*	*0*	*0*
5 to 25	*1*	*1*	*0*
26 to 50	*1*	*1*	*1*
51 to 75	*1*	*2*	*2*
76 to 100	*1*	*3*	*3*
101 and over	*1, plus 1 for each 300, or fraction thereof, over 100*	*3, plus 1 for each 60, or fraction thereof, over 100*	*3, plus 1 for each 50, or fraction thereof, over 100*

Notes:

1. *Where an EV charger can simultaneously charge more than one vehicle, the number of EVCS provided shall be considered equivalent to the number of electric vehicles that can be simultaneously charged.*

Judicial Facilities, Detention Facilities, Correctional Facilities

231 – Courtrooms must be accessible.

One of each type of central holding cell must be accessible. (So, if there are separate cells for adult male, juvenile male, adult female, or juvenile female, 1 of each must be accessible.) The same applies for court-floor holding cells.

Visiting areas are public, so they must be accessible. At least 5% of cubicles must be accessible. This applies to both the visitor and detainee sides. If a counter is provided, it has to follow the sales counter requirements of being at least 36" long and 34" high with adequate knee clearance for forward approach.

If there are solid partitions or glass that separate the visitors from the detainees, at least one of each type of cubicle must provide accessible telephone headsets with assistive listening devices.

232 – Now, let's get into detention and correctional facilities.

Detention facilities - jails, detention centers, holding cells in police stations

Correctional facilities – prisons, reformatories, and correctional centers

3% of the general cells must have mobility features

If there is a cell with more than 25 beds, 5% must have a clear floor space on at least 1 side of the bed. These type of rooms must be dispersed amongst the various classification levels.

2% of the general cells must have communication features. This would be audible emergency alarm systems. If telephones are provided, they must have volume controls

Special holding and housing cells (such as protective custody, detox, medical isolation) – one of each type must have mobility features.

For the visiting areas of detention/correctional facilities, 5% of cubicles must be accessible on both the visitor and detainee sides. If there are solid partitions or glass that separate the visitors from the detainees, at least one of each type of cubicle must provide accessible telephone headsets with assistive listening devices.

Public Housing

We are going to briefly talk about public housing. I say briefly, but there is quite a bit of information here. Really, it could be a complete course, in and of itself. If you are working on public housing projects in California, I highly recommend that you download this guide from the Division of the State Architect's website. There are so many different state and federal laws, regulations, standards, and guidelines at play here. It's important to understand which regulations apply to each specific situation. I am only going to touch on the application of Chapter 11B of the California Building Code for public housing projects. The guide from the DSA has several handy flowcharts that help you determine which laws apply to each type of project.

So, what exactly is public housing? (233) The definition provided in Chapter 2 of the CBC says that it's Housing facilities constructed or altered by, for, or on behalf of a public entity, or constructed or altered as part of a public entity's program to provide housing pursuant to United States Code of Federal Regulations, 28 CFR Part 35, 102(a), including but not limited to the following:

1. One-or two-family dwelling units, or congregate residences;

2. Buildings or complexes with three or more residential dwellings units;

3. Homeless shelters, group homes, halfway houses and similar social service establishments;

4. Transient lodging, such as hotels, motels, hostels and other facilities providing accommodations of a short term nature of not more than 30 days duration;

5. Housing at a place of education, such as housing on or serving a public school, public college or public university.

It's important to note that I said 'public'. Housing at a private school, college, or university is NOT public housing. In those facilities, you should follow the section of the code addressing 'Housing at a place of education,' which is 11B-224.7 for the scoping requirements.

So, the definition of public housing is based on construction as part of a public entity's program to provide housing. This could be the allocation of local, state, or federal financial assistance, Community Development Block Grants, Low Income Housing Tax Credits, the California Multifamily Housing Program, loan agreements and housing bonds. However, examples that are NOT considered a public entity's program to provide housing may include density bonuses, the receipt of public funds for the installation of energy efficiency features, seismic strengthening, water conservation and fire safety features.

Now that you know a little more about which type of projects the 'public housing' section of the code applies to, let's get into the actual accessibility requirements.

In facilities with residential dwelling units, 5% must be accessible with mobility features and be on an accessible route. 2% must provide communication features.

For the residential dwelling units that are NOT accessible with mobility features, they need to have adaptable features, as follows: if they are on floors served by an elevator, all residential dwelling units must have adaptable features. Ground floor residential dwelling units in non-elevator buildings must be adaptable. If the 1st floor in a building contains residential dwelling units and it's a floor above grade, ALL units on that floor must be adaptable.

If an individual residential dwelling unit has more than 1 story AND it's within a facility that has an elevator, then the main entrance into the dwelling unit has to be on an accessible route on the floor served by the elevator. At least one restroom and kitchen need to be located on the primary entry level. The restroom could be a powder room or a bathroom. AND all of the rooms or spaces located on the main entry level need to be on an accessible route.

If you're designing a residential dwelling unit that has more than 1 story AND it's within a facility that does NOT have an elevator, then at least 10% of the multi-story residential dwelling units need to have a primary entrance on the ground floor and be on an accessible route. A restroom must also be on that accessible level. And, the rooms or spaces on that main level need to be on an accessible route.

There are 2 entire pages of the code that address site impracticality for public housing facilities. I must say that I currently live in an extremely flat area and can only dream about living in an area, once again, where this code section applies.

If you've got a site with difficult terrain conditions or unusual characteristics, there are a few tests to help you determine how many residential dwelling units need to be designed with adaptable features in buildings without an elevator. These tests do NOT apply to multi-level dwelling units. I do not have time to get into those details with the amount of time allotted for this course, but I've provided the sections in the code, so you know where to go.

In the design of public housing, there are several other provisions that need to be considered. If a residential dwelling unit that was designed and constructed OR altered by public entities and will be offered for sale to individuals, accessible features need to be provided.

If you are adding onto a building to increase the number of residential dwelling units, the minimum # of new units required to be accessible is determined only by the # of new units being constructed. The units required to have mobility features must be on an accessible route.

If a building is being vacated, so it can be renovated, and it has at least 15 residential dwelling units, 5% must have mobility features and be on an accessible route. 2% are required to have communication features.

If you are performing renovations to an individual residential dwelling unit and you're substantially altering a kitchen, bathroom, and at least 1 other room, then it must be renovated with mobility features and be on an accessible route IF the facility doesn't already have the required number of units with mobility features.

If you are altering an individual residential dwelling unit with adaptable features, the standards don't apply if the unit was originally constructed before March 13, 1991. After that date, multifamily dwelling units with adaptable features just need to stay in compliance with the accessibility standards in effect when it was originally constructed unless you're doing a total gut job.

The accessible units with mobility and communication features must be dispersed throughout the facility among the various types of units.

It's also good to note that public graduate student and faculty housing that doesn't have public use or common use areas DOES fall under the public housing code instead of the 'housing at a place of education' code

Amusement Rides

We've already touched the subject of amusement rides when going over the requirements of accessible routes. Now, let's get into the requirements of the rides, themselves. Note that these requirements do NOT apply to mobile or portable amusement rides.

Load and unload areas are required to have a turning space.

The rides must provide either a wheelchair space, a transfer seat, or a transfer device UNLESS the ride is controlled by the rider, designed primarily for children, or is a ride without seats.

When altering a ride (we aren't talking about general maintenance here), you need to provide a turning space at the load and unload areas if you are rebuilding that area. If you change the structural or operational characteristics so it performs differently than originally designed, you have to meet the seat requirements for new rides.

Recreational Boating Facilities

Onto recreational boating facilities…You look at this handy table to determine how many accessible boat slips (or parking spaces for the boats) that you need. If you are at a facility where the individual boat slips aren't identified, you calculate 1 boat slip for every 40 ft of edge there is along the perimeter of the pier.

The accessible boat slips need to be dispersed among the various types of boat slips.

5% of boarding piers provided at boat launch ramps must be accessible. 235.3

There aren't really any scoping requirements for fishing piers and platforms other than to say that they need to comply with the accessibility requirements for fishing piers and platforms.

Golf Facilities

If there is 1 teeing ground provided for a hole, it must be constructed so that a golf car can enter and exit it.

If there are 2 teeing grounds provided for a hole, the forward teeing ground has to be constructed so a golf car can enter and exit the teeing ground. Where 3+ teeing grounds are provided for a hole, 2/3 (1 being the forward one) need to be constructed for the golf car to enter and exit. At existing golf courses, the forward teeing ground doesn't necessarily need to be the one that the golf car enters and exits if the terrain makes it infeasible.

Golf cars must be able to enter and exit putting greens.

If weather shelters are provided, golf cars must be able to enter and exit those, as well.

At driving ranges, at least 5% of practice putting greens, practice teeing grounds, and teeing stations at driving ranges must be designed so that a golf car can enter and exit them.

50% of holes at a miniature golf course must be accessible, and they must be consecutive or with a maximum of 1 break. There must be an accessible route to get to the last accessible hole to the course entrance or exit without traveling through other holes.

Play Areas

The favorite component of any elementary school or park for a lot of children is the playground. Play areas for children ages 2 and up must be accessible. If separate areas are provided on the same site for specific age groups, each play area must be accessible. There are a few exceptions, such as at a residence, at amusement attractions, and certain alterations to existing play areas.

When getting into the requirements of play areas, it's helpful to understand how the various components are defined.

A Ground level play component is a play component that is approached and exited at the ground level. A spring rider that is located at ground level is an example. A child can approach it from an accessible route at ground level, get on it, ride it, get off of it and leave at the same level as they approached it. A freestanding slide is also considered a ground level play component because you enter it from the ground and exit it on the ground.

The Elevated Play Component is defined as a play component that is approached above or below grade and that is a part of a composite play structure consisting of two or more play components attached or functionally linked to create an integrated unit providing more than one play activity. An example of an elevated play component is a climber that is approached or exited from the ground or a platform that is above grade and is a part of a composite play structure.

Play area is a portion of a site containing play components designed and constructed for children.

Play component is an element intended to generate specific opportunities for play, socialization, or learning. They may be manufactured or natural. They can also be stand-alone or be part of a composite play structure. (106.5.44) Different types of play components provide different experiences. Examples of these experiences include rocking, swinging, climbing, spinning, and sliding.

Soft contained play structure is a play structure made up of one or more play components where the user enters a fully enclosed play environment that utilizes pliable materials, such as plastic, netting, or fabric.

To determine how many and what type of play components must be on an accessible route, you look at table 11B-240.2.1.2. If 2 or more required ground level play components are provided, they have to be dispersed throughout the play area and integrated with other play components.

Table *11B*-240.2.1.2 Number and Types of Ground Level Play Components Required to be on Accessible Routes

Number of Elevated Play Components Provided	Minimum Number of Ground Level Play Components Required to be on an Accessible Route	Minimum Number of Different Types of Ground Level Play Components Required to be on an Accessible Route
1	Not applicable	Not applicable
2 to 4	1	1
5 to 7	2	2
8 to 10	3	3
11 to 13	4	3
14 to 16	5	3
17 to 19	6	3
20 to 22	7	4
23 to 25	8	4
26 and over	8, plus 1 for each additional 3, or fraction thereof, over 25	5

When play areas are constructed in phases, they must continue to meet the play area guidelines throughout construction. The initial phase area must meet the guidelines, and then at each successive phase the whole play area must be reassessed to assure compliance.

When ground level play components are provided, at least one of each type have to be on an accessible route, have at least 1 turning space on the same level, and have a clear floor space.

Where elevated play components are provided, then the number of accessible ground level components have to be provided per the table unless at least 50% of the elevated play components are connected by a ramp and at least 3 of those elevated play components are different types.

At least 50% of elevated play components have to be on an accessible route, have at least 1 turning space on the same level, and have a clear floor space.

Saunas, Steam Rooms, Pools, and Spas

Saunas and steam rooms must be accessible with the required bench and turning space. If they are clustered, 5% must be accessible.

Pools and spas must also be accessible. Of course, there must be an accessible route to the swimming area. (*242*)

Swimming pools need two accessible ways to get into them. The primary method must be either a pool lift or a sloped floor. Secondary methods include transfer walls, transfer systems, or pool stairs. There are exceptions for smaller pools measuring less than 300 linear feet around them; they only need one entrance that is either a pool lift or sloped floor. (*242*)

Wading pools are required to have sloped entries.

Spas are required to either have a lift, transfer wall, or transfer system. If a cluster of spas is provided, 5% must be accessible.

Miscellaneous Facilities

At least 5% of shooting facilities with firing positions must have a 60” circular turning space with slopes not steeper than 1:48. 243

Religious facilities must be accessible under the California Building Code. Each use within a religious facility must comply. Architectural barriers are not permitted at participation areas. 244

If you’ve got a public accommodation in a private residence, it must also be accessible. So, you need an accessible route to the entrance, an accessible entrance, and accessible routes to the areas of public accommodation. You would even need accessible restrooms. So, if you’re running a business out of your house and sometimes have clients over, the route to the entrance, the door they would enter and the paths to the rooms in your house they may go must be accessible. 245

Outdoor developed areas must be accessible unless the enforcing agency finds that the natural environment would be materially damaged by compliance with the regulations or compliance would create an unreasonable hardship.

Where campsites are provided, at least 2 campsites and 1 additional campsite for each 100 campsites or fraction thereof, must be accessed by and connected to sanitary facilities by travel routes with a maximum slope of 1:12. Permanent toilet and bathing facilities serving campsites must be accessible.

Beaches must be accessible along with day use areas and vista points.

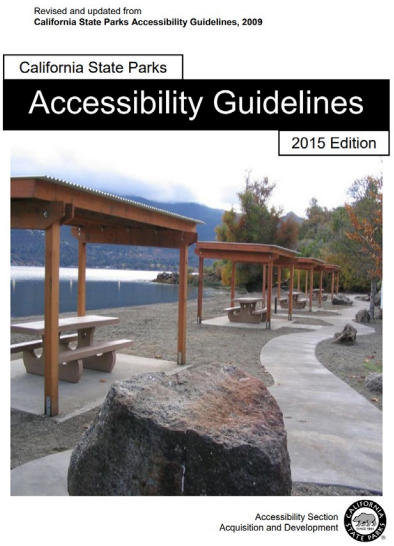
In an area with picnic tables, at least one must be accessible. If there is an area with 20 or more picnic tables, you need 1 additional accessible table for every 20 tables, or fraction thereof. They would need to meet the same standards as dining and work surfaces.

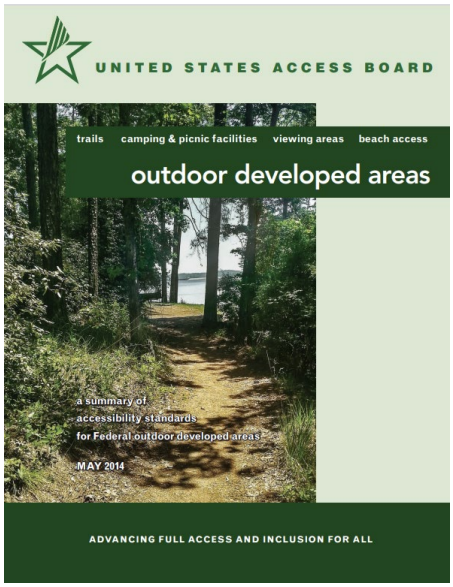
Any parking lots provided for outdoor developed areas must meet the same accessible parking lot standards as elsewhere. They also need to be curb cuts for adjacent walks, paths or trails.

Trails, paths and nature walk areas, or portions of them, have to be constructed with slopes that can allow at least partial use by wheelchair occupants. Buildings and other functional areas have to be served by paths or walks with firm and stable surfaces. 246.7

Nature trails and similar educational and informational areas also must be accessible to individuals with vision impairments. So provisions must be made. This could include rope guides, raised Arabic numerals and symbols, or similar guide and assistance devices.

The guidebooks shown are good resources when designing outdoor developed areas. They can be found on the California State Parks and US Access Board websites.

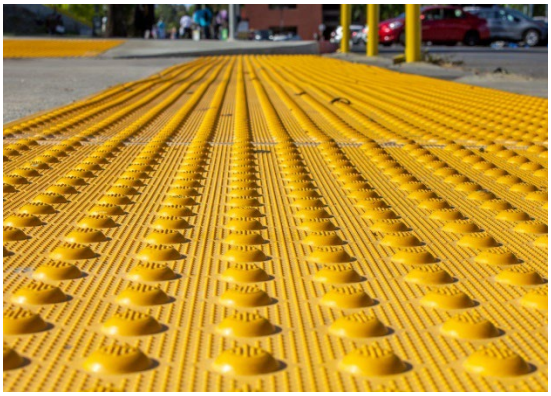




Detectable Warnings

Detectable warnings are required at platform boarding edges, curb ramps, islands or cut-through medians, blended transitions, the edges of reflecting pools (if they aren't already protected by railings, walls, or warning curbs), and track crossings where it's necessary to cross tracks to reach transit boarding platforms.

At transit boarding platforms, the pedestrian access must be marked with detectable directional texture.


Detectable Directional Texture


Detectable Warnings

Circulation Paths

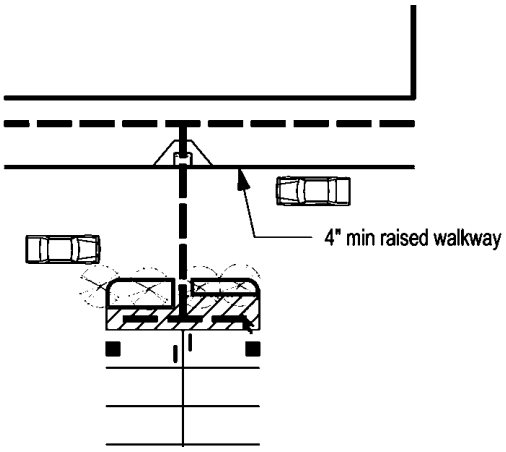
The last section of the scoping requirements listed in Division 2 has to do with circulation paths. It was previously called hazardous vehicular areas. This section of the code was added in 2019 and written with new construction in mind. It's not exactly black and white when trying to apply it to existing sites.

If you've got a circulation path that is contiguous to vehicular traffic, it needs to be separate from vehicular traffic.

It's helpful to understand the definitions here. A circulation path is defined as an exterior or interior way of passage provided for pedestrian travel, including but not limited to, walks, sidewalks, hallways, courtyards, elevators, platform lifts, ramps, stairways and landings. The DSA has their own advisory definition. **Advisory Definition of CIRCULATION PATH.** A *CIRCULATION PATH* is a pedestrian route provided within a building, facility or site and may or may not (in the case of stairs) include an accessible route. Whenever the accessible route diverges from the regular circulation path signage may be required to identify the departure from the regular route if not obvious.

So, that's circulation path. What does vehicular traffic include? It includes travel through parking facilities, into and out of parking spaces, into and out of electric vehicle charging spaces, and along roadways, driveways, and drive aisles.

How do you separate circulation paths from vehicular traffic? The codes says you have to raise them up 4" minimum above the level of vehicular traffic. This has HUGE implications on site design.



There are 6 exceptions to this requirement. The first exception allows you to use curb ramps and blended transitions with detectable warnings to connect raised circulation paths with vehicular traffic areas. Blended transitions and cut-through medians with detectable warnings can also be used to connect pedestrian crossings that are at a similar level to vehicular traffic areas. This, obviously, provides a way of transitioning from the raised circulation paths into and through the vehicular traffic area.

The 2nd exception allows sidewalks that are in the public right-of-way to cross driveways if it's not at an intersection with a yield or stop sign.

The 3rd exception allows circulation paths to cross driveways or drive aisles without providing physical separation. Detectable warnings aren't allowed to be placed along the sides of these crosswalks. The raised separation is not required where such crosswalks immediately connect to access aisles of parking spaces, but physical separation is still required through the use of blended transitions with detectable warnings.

Detectable warning can be a hindrance to many wheelchair users. This helps them out by not allowing them to demarcate a circulation path within a vehicular area with truncated domes.

The 4th exception allows you to provide the separation with detectable warnings for alteration projects at existing parking facilities.

The 5th exception says that the access aisles for accessible parking spaces and accessible passenger drop-off and loading zones do not need to be raised.

The last exception applies to electric vehicle charging stations. If the charger and its controls are facing the vehicle space it serves and the charger's clear floor spaces for operable parts and point-of-sale devices are at the same elevation as the vehicle space, the accessible route doesn't need to be raised. The intent of this exception is to permit configurations which allow a wheelchair user to access the EV charger and connect it to the vehicle without navigating changes in elevation.

Review Questions

1. If there are three elevated press boxes at a sports field, and they are 200 square feet each, how many press boxes must have an elevator?
    a. 0
    b. 1
    c. 2
    d. 3
2. If five cup sinks and five standard sinks are provided in a science lab, how many total sinks must be accessible?
    a. 1
    b. 2
    c. 5
    d. 10
3. If you are designing a new parking facility that will have 28 electric vehicle charging stations for public use, how many van-accessible spaces do you need?
    a. 0
    b. 1
    c. 2
    d. 3
4. Which of the following must be accessible if you are running a business out of your private residence where clients will attend meetings?
    a. Route to entrance
    b. The door clients enter
    c. Restrooms
    d. All of the above

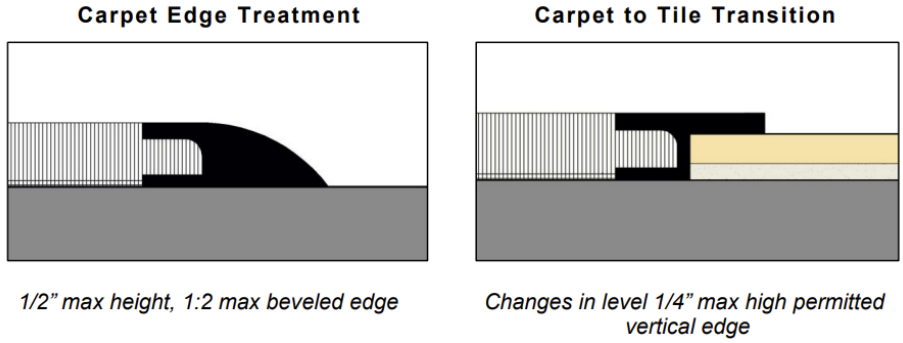
Module 2 – Building Blocks

Now, with Module 2, I'm going to get into what the code calls building blocks. The building blocks are referenced throughout the entire accessibility chapter. They are applicable to just about everything that has to do with accessibility.

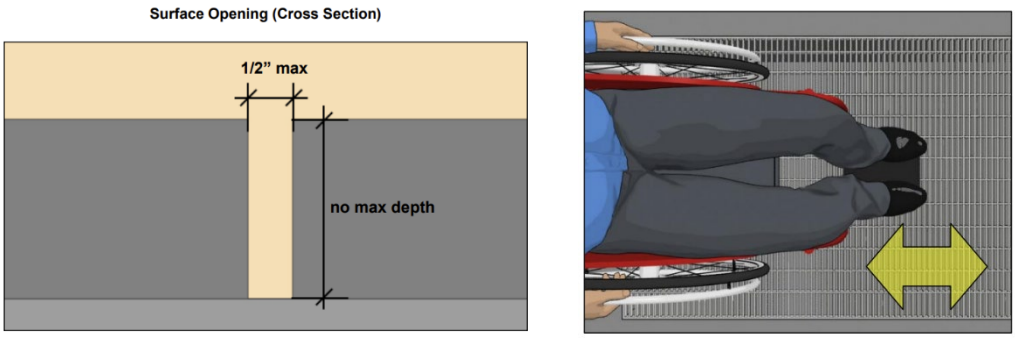
Floor and Ground Surfaces

First, let's talk about Floor and ground surfaces. It's no shock that they need to be stable, firm, and slip resistant unless they are within animal containment areas or sports activity areas. Stable surfaces will remain unchanged by contaminants or applied force so that when the contaminant or force is removed, the surface returns to its original condition. A firm surface resists deformation by either indentations or particles moving on its surface. A slip-resistant surface provides sufficient frictional counterforce to the forces exerted in walking to permit safe ambulation. So, concrete, asphalt, tile and wood are good options. Gravel wouldn't meet these requirements. Cobblestones can be difficult to navigate because they can be bumpy and uneven.

If carpet is being installed, it must be securely attached to the substrate. If it has a cushion or pad, it must be firm. The amount of force required to roll over the carpet is increased as the softness increases. The carpet must have a level loop, textured loop, level cut pile, or level cut/uncut pile. Pile height can't be higher than ½ inch. So, no shag carpet. The exposed edges of carpet need to be fastened to the floor with trim along the exposed edge. The trim must meet the specifications for changes in level, including requirements for beveled edges when the height exceeds ¼".

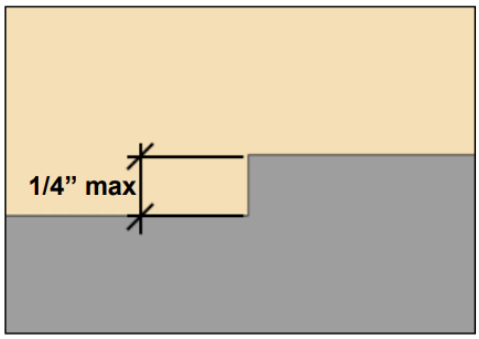


Openings in ground and floor surfaces, such as grates, are limited in width to prevent passage of a ½" diameter sphere. Wheelchair casters can get wedged into wider openings. Elongated openings, like those of most grates, must be oriented so that the long dimension is perpendicular to the dominant travel direction. In locations where there is no dominant flow pattern, openings must be limited to ½" in both dimensions. Where an accessible route is available to bypass openings completely, they can be oriented in any direction.

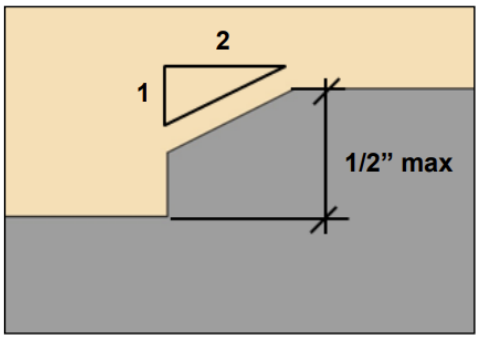


Changes in level can be up to ¼" without treatment or ½" if beveled with a slope no steeper than 1:2. Changes in level above a ½" must be treated as a ramp or curb ramp (or a walkway if a slope no steeper than 1:20 can be achieved). These specifications apply to all portions of accessible routes, including thresholds and carpet trim as mentioned earlier.

1/4” Max Change in Level



1/2” Max Change in Level



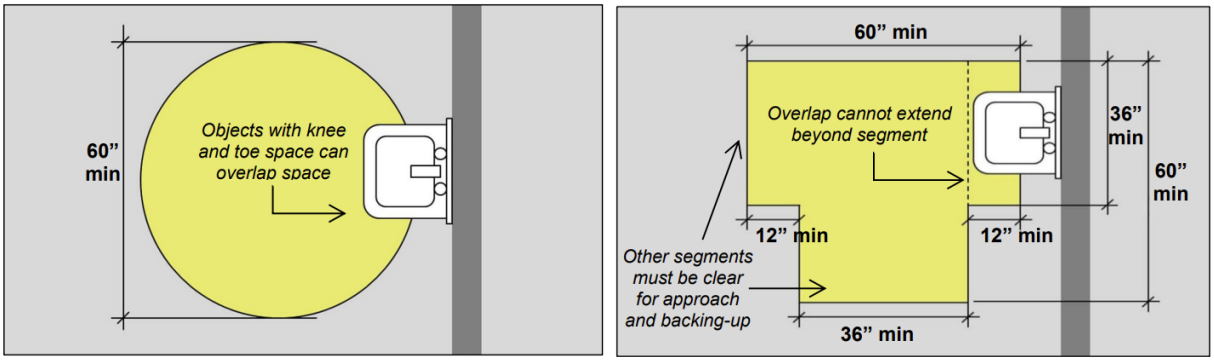
Abrupt changes in level exceeding 4” in a vertical dimension between walks, sidewalks, or other pedestrian ways and adjacent surfaces or features shall be identified by warning curbs at least 6” in height above the walk or sidewalk surface. This is not required between sidewalks and adjacent streets or driveways. It is also not required when a guard or handrail is provided with a guide rail centered 2”-4” above the surface of the sidewalk.

Turning Spaces

Turning spaces are required in various locations throughout the code. Turning spaces are required in the following places:

- Toilet and bathing facilities
- Dressing, fitting, and locker rooms
- Transient lodging guest rooms
- Dwelling units (All rooms on an accessible route)
- Patient bedrooms
- Holding and holding cells
- Saunas and steam rooms
- Raised courtroom stations served by ramps or lifts with entry ramps
- Certain recreation spaces (amusement ride load/unload areas, fishing piers and platforms, play components, and shooting facilities)

A turning space must be flat. It can’t have a slope of greater than 1:48. Detectable warnings aren’t allowed in turning spaces. However, elements with knee and toe space can overlap a portion of the turning space. A turning space is either a circular space with a 60” diameter or a T-shaped space for a 3-point turn as shown in the images here. Doors are allowed to swing into the turning spaces.

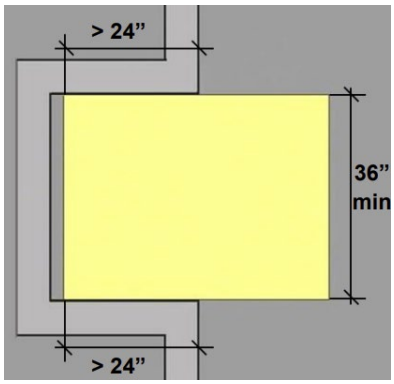


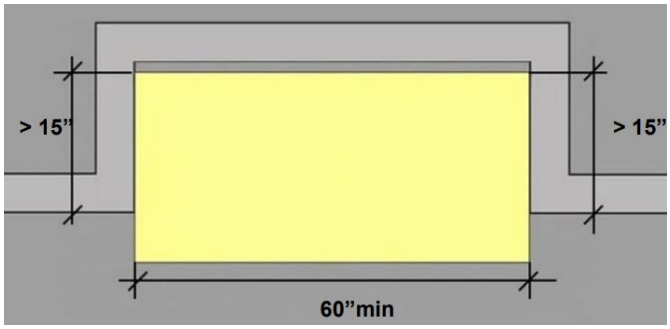
Clear Floor and Ground Space

There are a lot of elements that require clear floor spaces:

- Accessible controls
- Operable parts
- Drinking fountains
- Lavatories and sinks
- ATMS's and fare machines
- Appliances
- Beds
- Other elements

Clear floor spaces need to be 30" x 48" minimum. Additional maneuvering clearances are required at alcoves. If the depth of an alcove is more than 24", the clear floor space needs to be increased to 36" wide for a front approach. For a side approach, if the alcove is greater than 15", the clear floor space needs to be 60" instead of 48". They need to be level and without detectable warnings. In most cases, the knee and toe clearance will be used for the clear floor space. At most elements, clear floor or ground space can be positioned for either a forward or a side approach. For better usability, a forward approach is required at certain elements, including dining and work surfaces, drinking fountains, lavatories, and most sinks. At other elements, a side approach is allowed. A side approach is typically provided or required at sales and service counters, beds, and most appliances.

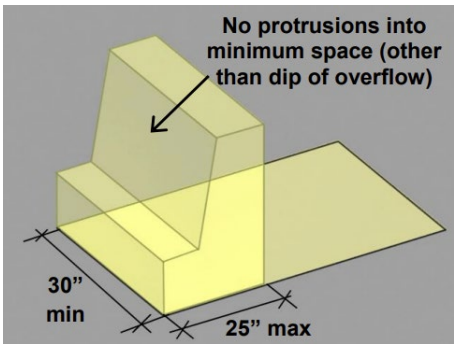


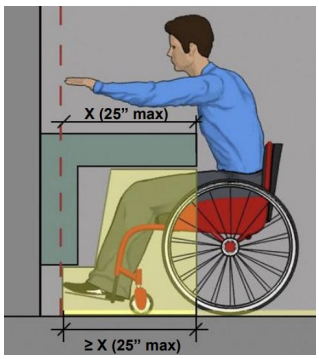


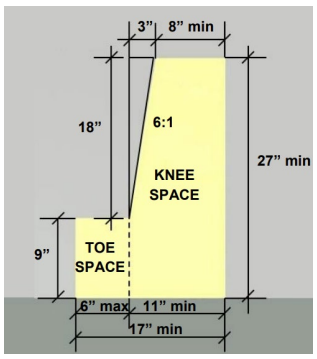
Centering the clear floor or ground space on elements is often advisable but is only required at drinking fountains, kitchen work surfaces, and washers and dryers.

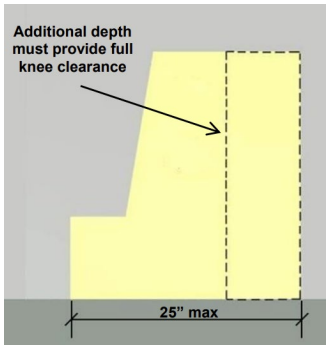
Knee and Toe Space

Objects that provide space for toes or knees can overlap a portion of the clear floor space. Knee and toe space allows a closer approach to elements and reduces the reach to operable parts. It is required at some elements, such as drinking fountains and lavatories, so that people using wheelchairs can pull up to them.









Knee and toe space must be at least 30" wide and up to 25" deep measured to the leading edge of the clear floor space. The specifications allow space for plumbing, enclosures, and supports outside the minimum clearances. No object can protrude into the required clearances (other than the dip of the overflow at lavatories and sinks).

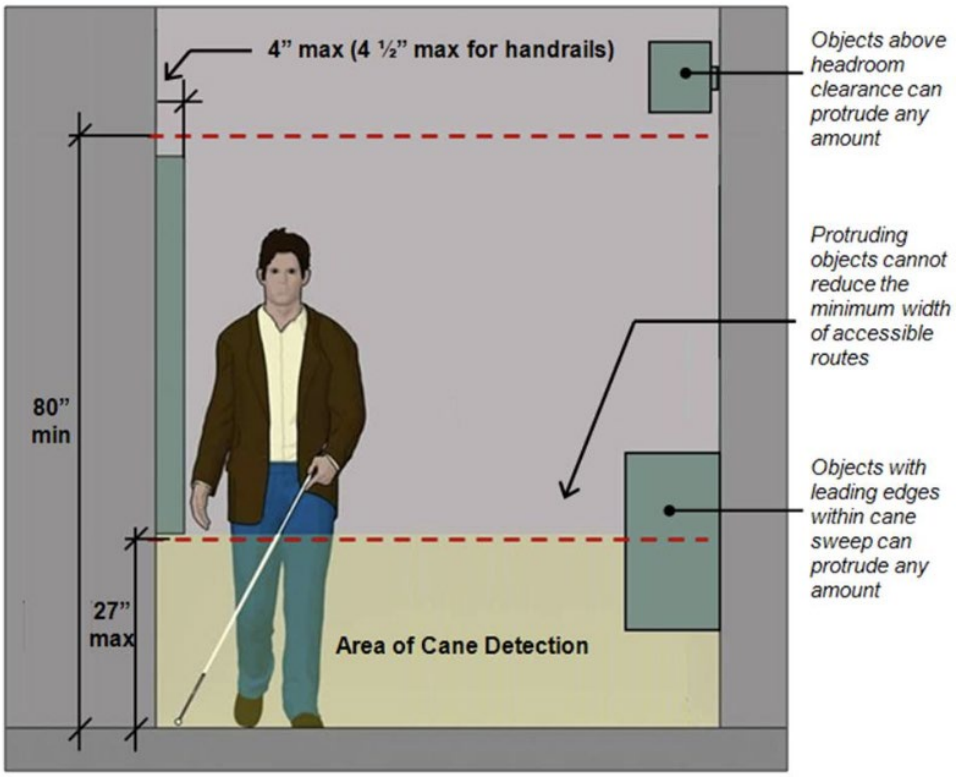
Where knee and toe space is required, it must be at least 17" deep. In all cases, the minimum depth may be further determined by the required reach to operable parts served by the clear floor space. Knee and toe space is required below drinking fountains, lavatories and sinks, dining and work surfaces, and those sales and service counters that provide a forward approach.

At any element, the knee and toe space must be as deep as the required reach to operable parts. This facilitates access since a forward reach does not extend far beyond the toes. Both the reach depth and the knee and toe space depth are limited to 25" measured from the leading edge of obstructions. Space beyond this depth is not usable. At lavatories required to be accessible, the toe clearance is limited to 19 inches instead of 25 inches.

Where knee and toe space is required at an element, it must be at least 17" deep, except it must extend 19" minimum under sinks, built-in dining, and work surfaces that are required to be accessible. Beyond a depth of 8" measured from the leading edge, the 27" minimum high knee clearance can reduce 18" (to the 9" toe space) over a 3" span. However, the knee clearance can't be reduced at built-in dining and work surfaces required to be accessible.

When the knee and toe depth exceeds the 17” minimum, the additional space must provide full knee clearance at least 27” high.

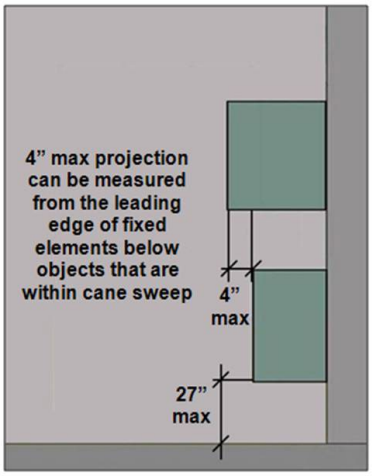
Protruding Objects



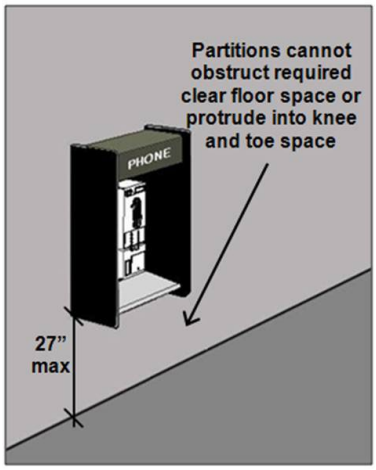
To prevent hazards to people with vision impairments, the standards limit the projection of objects into circulation paths. These requirements apply to all circulation paths and are not limited to accessible routes. Circulation paths include interior and exterior walks, paths, hallways, courtyards, elevators, platform lifts, ramps, stairways, and landings.

People with vision impairments often travel closely along walls which can provide wayfinding cues sometime called a “shoreline.” Objects mounted on walls, partitions, columns, and other elements along circulation paths can pose hazards unless their projection is limited. Those with leading edges that are within cane sweep (27″ high maximum) or that provide minimum headroom clearance (80″ minimum) do not pose hazards and can protrude any amount.

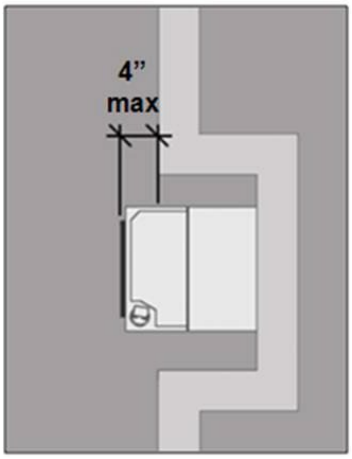
Objects located above elements that are within cane sweep can protrude 4″ maximum from the leading edge of such elements provided that any required reach or clear floor space is not obstructed.



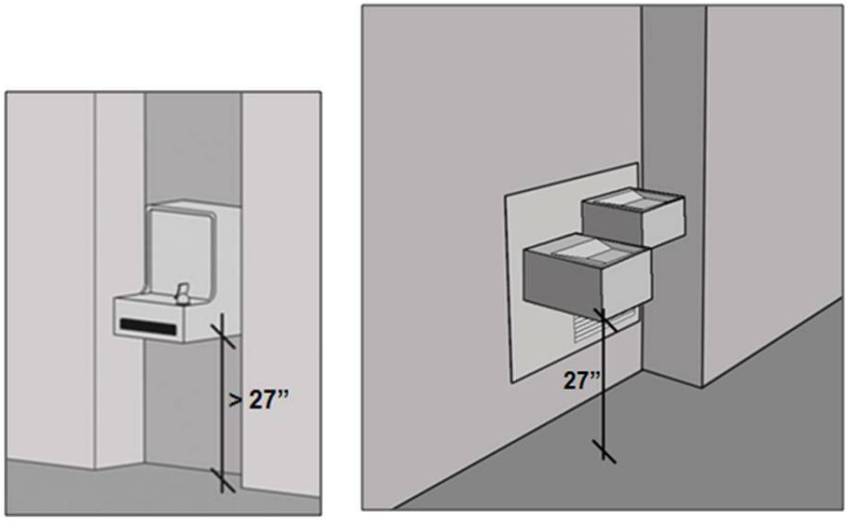
Side partitions or panels and wing walls can also be used to make protruding objects compliant. The bottom edge of panels or partitions must be 27″ high maximum.



Objects can be recessed in alcoves so that they do not project more than 4″ into circulation paths. Alcoves must be sized to accommodate required clear floor space at accessible elements.



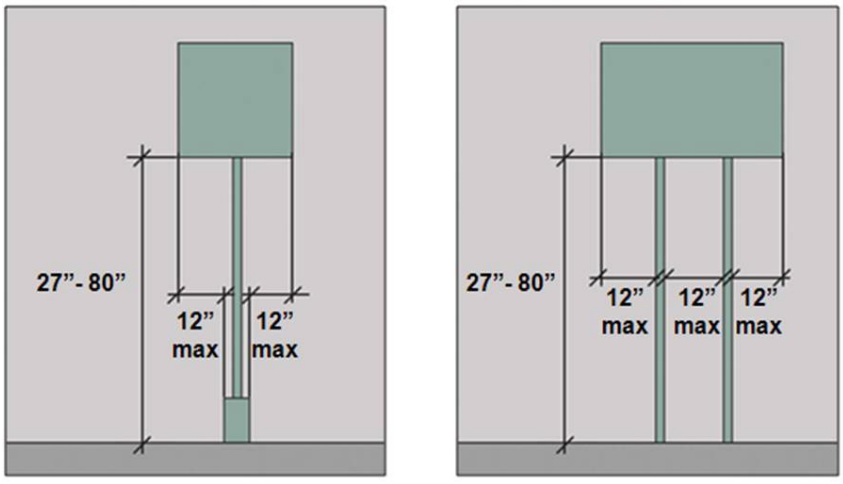
Elements, such as wheelchair accessible drinking fountains, must provide a knee clearance of at least 27″. If located to provide, but not exceed this clearance (exact dimension of 27″ above the floor) they are not protruding objects because the leading edge will be within cane detection.



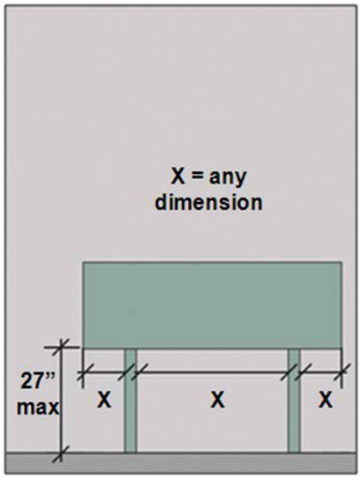
Another thing to note is that protruding objects are not allowed to reduce the clear width required for accessible routes.

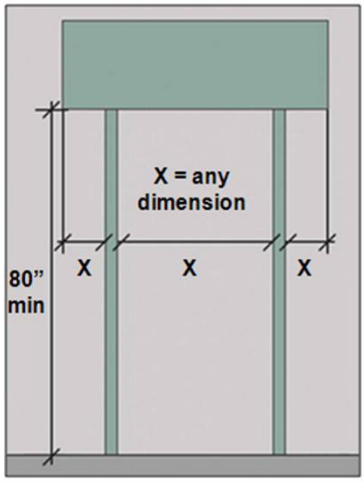
Post-Mounted Objects

Free-standing objects with leading edges 27″ to 80″ high that are mounted on posts or pylons cannot protrude more than 12″ into circulation paths. The 12″ limit also applies to the clearance between multiple posts (excluding the sloping portions of handrails).



Objects with leading edges 27″ maximum or above 80″ can protrude any amount from posts or pylons because the edge can be used as cane detection.

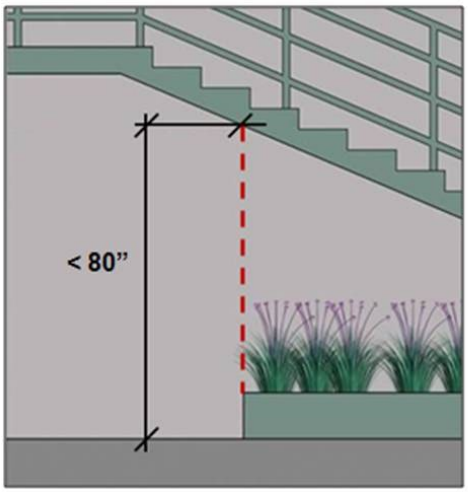


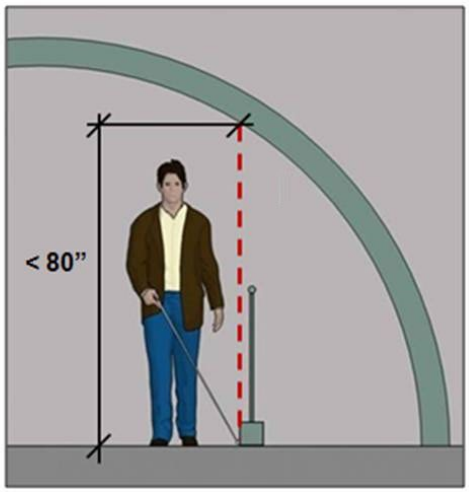


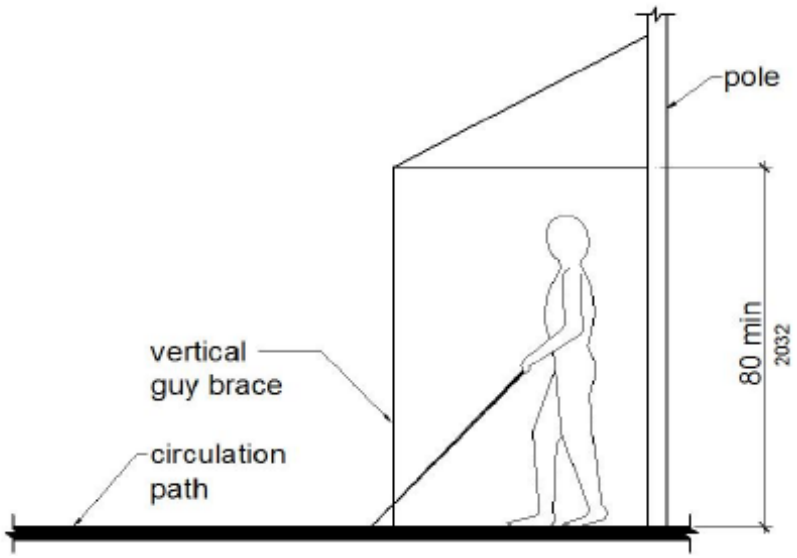
Where signs or other objects are mounted on posts or pylons, and the lower edge is lower than 80”, the edges of the signs/objects must be rounded with a radius of at least 1/8”.

Vertical Clearance

Headroom clearance of at least 80″ high is required along all circulation paths (except at doors and doorways where a 78″ minimum clearance is permitted to accommodate door stops and closers).







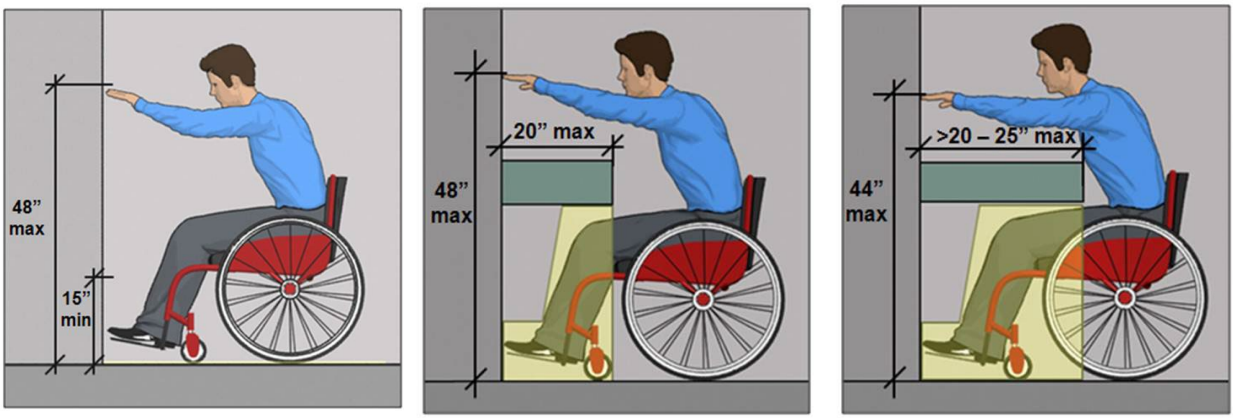
Fixed barriers, such as guardrails, are required where the vertical clearance is less than 80″ such as at open stairways and along sloped or curved walls. Barriers must have leading edges no higher than 27″ so that they are within cane sweep. Fixed planters, benches, and other elements can be used instead of guardrails.

Also, where a guy support brace is used and it's within the width of a circulation path or 24" maximum beyond the circulation path, a vertical guy brace, sidewalk guy or similar device must be used to prevent a hazard or an overhead obstruction.

Reach Ranges

Forward Reach

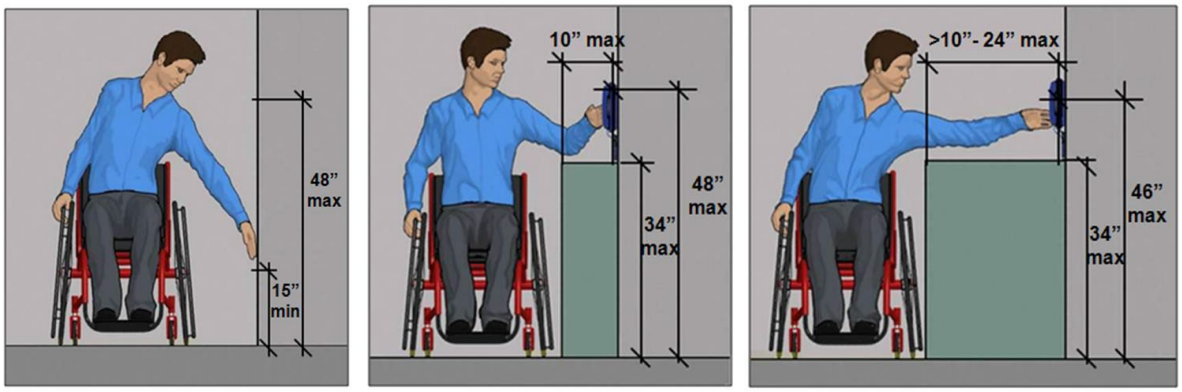
The range for unobstructed reaches (15″ to 48″) applies only to those portions of elements that are operable. Non-operable portions can be located outside the range.



The maximum reach of 48″ is reduced to 44″ when the depth of reach over an obstruction exceeds 20″. Knee and toe space must extend the full depth of reach.

Side Reach

The range for side reach, like forward reach is 15″ to 48″ if unobstructed. The maximum reach depth for this range is 10″ measured from the available clear floor space.

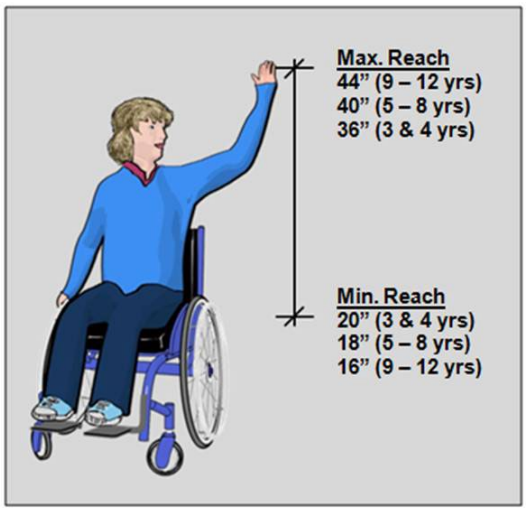


The operable parts of fuel dispensers located on existing curbs can be up to 54″ high.

The maximum high reach is reduced to 46″ when the reach over an obstruction is deeper than 10″ (to a maximum of 24″). Obstructions at side reaches are limited to a height of 34”.

Children

Where building elements like coat hooks, lockers, or operable parts are designed for use primarily by children, these suggested dimensions are permitted. They apply to both forward and side reaches. (308.4)



Operable Parts

Operable parts must be usable with one hand and not require tight grasping, pinching, or twisting of the wrist, or more than 5 pounds of force (lbf) to operate. The 5 pound limit doesn’t apply to gas pump nozzles and electric vehicle connectors.

Parts that can be operated without hand or finger dexterity, fine motor movement, or simultaneous actions provide easier access and accommodate a broader range of users.

Push-activated controls not requiring more than 5 lbf are acceptable. Buttons that are raised or flush are easier to use than those that are recessed. (Elevator control buttons cannot be recessed, and input keys at ATM and fare machines must be raised.)

Standard U-shaped pulls and lever-shaped handles are acceptable. Stationary knobs with a shape that can be loosely gripped also are acceptable. Knobs that require a full hand grip and turning, including round door knobs and shower controls, do not comply because they require twisting of the wrist.

Latches and locks with small parts that must be manipulated can be difficult to use and will not comply if pinching is necessary. However, non-fixed portions of locks and other operable parts, such as keys and access cards, are not required to comply (but those that do not require pinching or turning provide better access). Hardware that does not require simultaneous actions are better, but some types, such as handles with thumb latches are acceptable.

Dials and other controls that can be turned with the fingers but not the full hand can be used if they do not require twisting of the wrist or pinching. Flip switches and similar controls are acceptable, though push plate types can provide easier access.

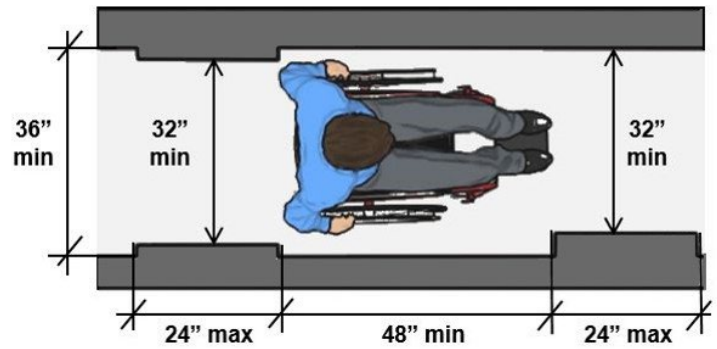
Module 3 – Accessible Routes

This next module is about accessible routes.

So, what are the components of an accessible route? They include walking surfaces w/ a maximum running slope of 1:20, doorways, ramps, curb ramps, elevators, and, where permitted, platform lifts.

Walking Surfaces

We have already discussed walking surfaces and changes in level of accessible routes under the building blocks section. The required clear width of walking surfaces is 36” with several exceptions.

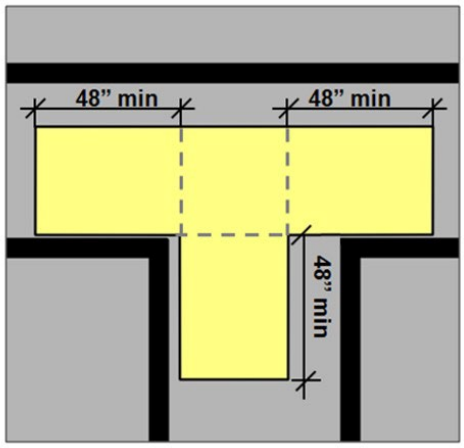


The minimum 36″ continuous clear width of accessible routes can reduce to 32″ at points, such as doorways, for a maximum distance of 24″ as shown in the image above. The minimum clearance cannot be reduced by any elements, including handrails or protruding objects.

The clear width for walking surfaces in corridors serving an occupant load of 10 or more is a minimum of 44”.

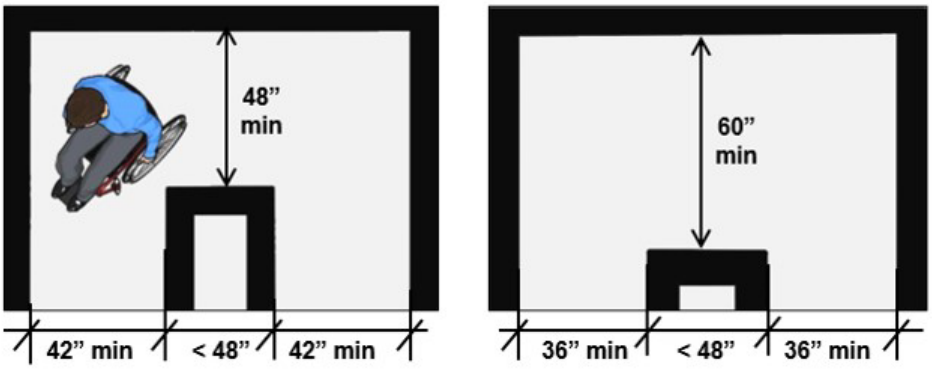
The minimum clear width for sidewalks is 48”. Sidewalks can go down to 36” if the enforcing agency determines that the 48” would create an unreasonable hardship.

For aisles, the clear width can be 36” if it’s only serving elements on one side. If the aisle is serving elements on both sides, it must be increased to 44”.

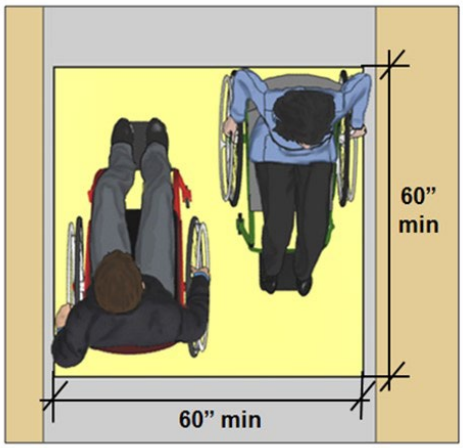


The clear width for accessible routes to accessible toilet compartments must be 44” except at doors.

Additional clearance is required at 180 degree turns around an element that is less than 48″ wide. The clear width must be at least 48″ at the turn and 42″ minimum approaching the turn (unless the clear width at the turn is 60″ minimum).



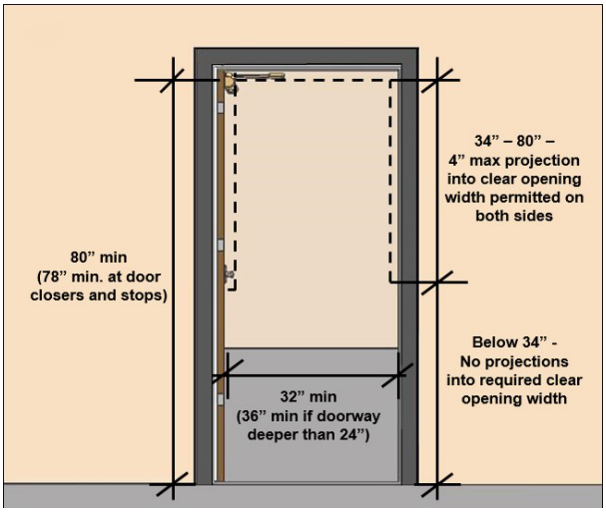
Passing space as shown in the image below is required every 200 feet and must be provided as a 60″ by 60″ minimum space or as T-shaped space where each stem is at least 48″ long.

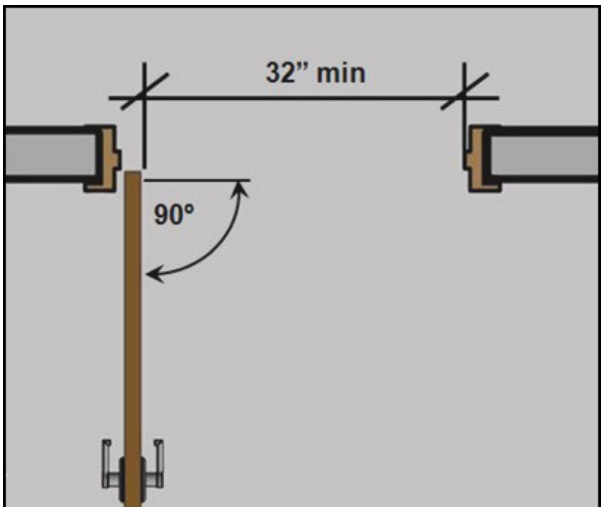


If handrails are provided along walking surfaces, they must be accessible. We will go over those requirements later.

Doors, Doorways, and Gates

Let’s move on to doors. Door openings must provide a clear width of 32”. The clear width is measured from the stop to the face of doors or gates open 90º (or to the leading edge of sliding or folding doors. No projection into the clear width is permitted below 34″. A 32” wide door is not going to give you a clear width of 32”.





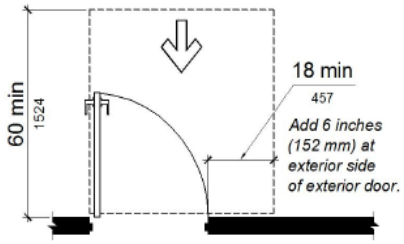
The door opening needs to provide 32” of clearance. There are also required clearances on each side of the door, as well, so a person in a wheelchair or using a mobility aid is able to get up to the door and open it. Table 11B-404.2.4.1 shows the required clearances.

Table *11B*-404.2.4.1 Maneuvering Clearances at Manual Swinging Doors and Gates

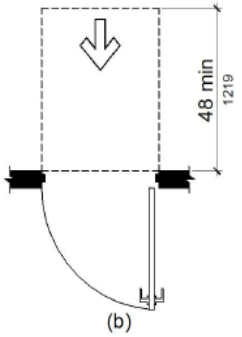
Type of Use		Minimum Maneuvering Clearance	
Approach Direction	**Door or Gate Side**	**Perpendicular to Doorway**	**Parallel to Doorway (beyond latch side unless noted)**
From front	Pull	60 inches (*1524* mm)	18 inches (*457* mm)[5]
From front	Push	48 inches (*1219* mm)	0 inches (0 mm)[1]
From hinge side	Pull	60 inches (*1524* mm)	36 inches (*914* mm)
From hinge side	Push	*44 inches (1118 mm)*[2]	22 inches (*559* mm)[3]
From latch side	Pull	*60 inches (1524 mm)*	24 inches (610 mm)
From latch side	Push	*44 inches (1118 mm)*[4]	24 inches (610 mm)

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

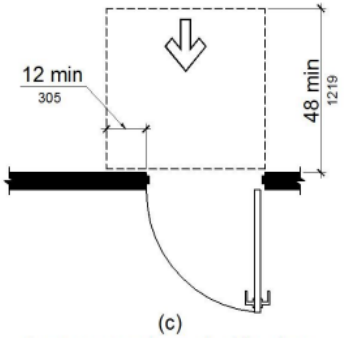
The drawings in the code are much easier to understand. I'm not going to go over all of these dimensions, but I will say it's important to read the notes carefully. For example, detail A says that you must add 6" to the 18" dimension if it's at the exterior side of the exterior door.



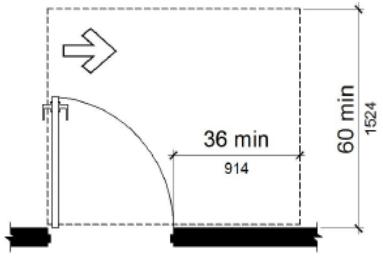
(a)
front approach, pull side



(b)
front approach, push side



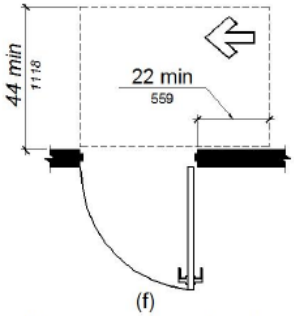
(c)
front approach, push side, door
provided with both closer and latch



(d)
hinge approach, pull side

Model code
figure not
applicable

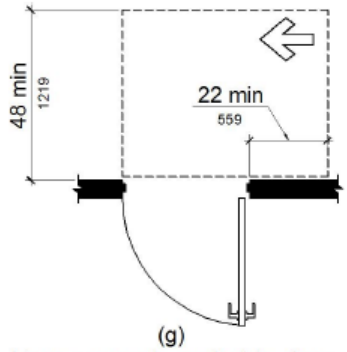
(e)
reserved



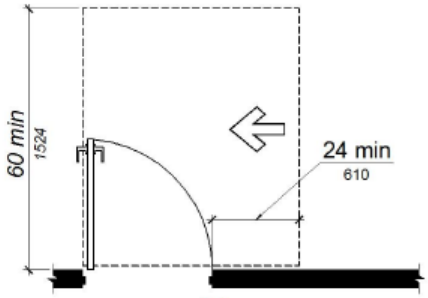
(f)
hinge approach, push side

Detail C shows that you only need the 12” clearance on the push side of the door if the door has BOTH a closer AND a latch. So, if it just has one or the other, the 12” of clearance is not required.

Here are the other door clearance details. Note that detail ‘g’ on the upper left shows that you need that 48” of clearance instead of 44” of clearance only if the door has both a closer and a latch. And, detail ‘k’ shows the additional 4” of clearance needed if the door has a closer on it.



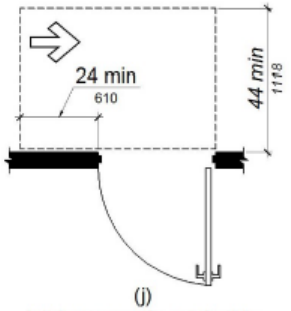
(g)
hinge approach, push side, door provided with both closer and latch



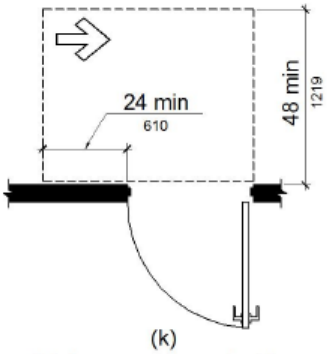
(h)
latch approach, pull side

Model code figure not applicable

(i)
reserved



(j)
latch approach, push side



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

I'd say that the required door clearances was probably the most referenced section of the code for me until I memorized it.

If the doors you're designing are manual sliding doors or manual folding doors, they've got their own code section seen below. As with swinging doors, required dimensions are provided for side and forward approaches.

Table *11B*-404.2.4.2 Maneuvering Clearances at Doorways without Doors or Gates, Manual Sliding Doors, and Manual Folding Doors

	Minimum Maneuvering Clearance	
Approach Direction	**Perpendicular to Doorway**	**Parallel to Doorway (beyond stop/latch side unless noted)**
From front	48 inches (*1219* mm)	0 inches (0 mm)
From side[1]	42 inches (*1067* mm)	0 inches (0 mm)
From pocket/hinge side	42 inches (*1067* mm)	22 inches (*559* mm)[2]
From stop/latch side	42 inches (*1067* mm)	24 inches (610 mm)

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

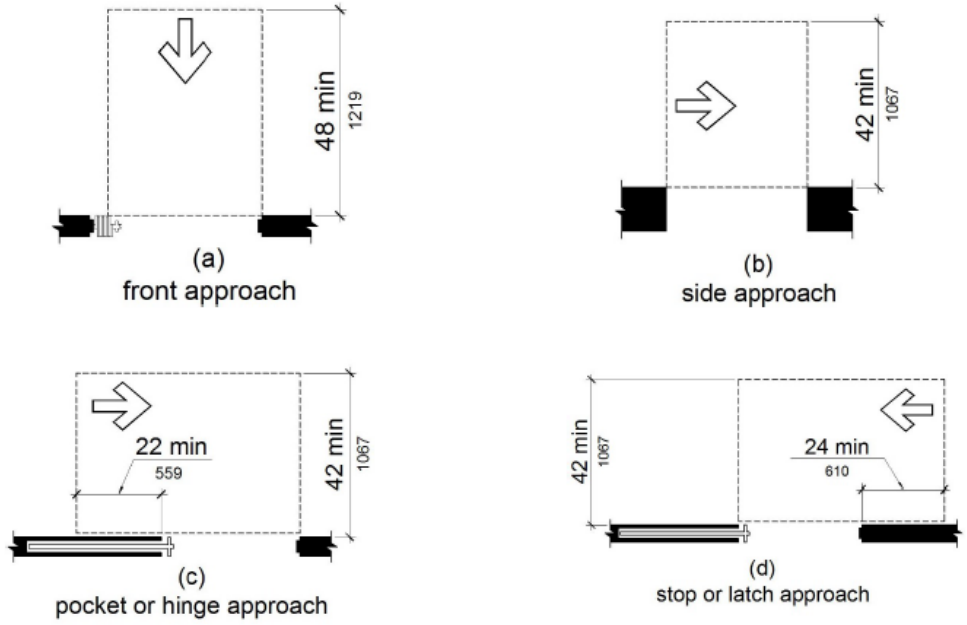


Figure *11B*-404.2.4.2
Maneuvering Clearances at Doorways without Doors, Sliding Doors, Gates, and Folding Doors

Sometimes, you can't get around designing a recessed door. Depending on how far back the door sits, you may have to design for a forward approach. If there is an obstruction that projects more than 8" beyond the face of the door (and that would be measured perpendicular to the door), and it is within 18" of the latch side at an interior doorway or within 24" of the latch side of an exterior doorway, the door must be designed with the forward approach clearances. This is a common occurrence at exterior doors because of the wall thicknesses. If there are fixed elements such as cabinets that are adjacent to the doors, it can also create a situation where your doors are recessed.

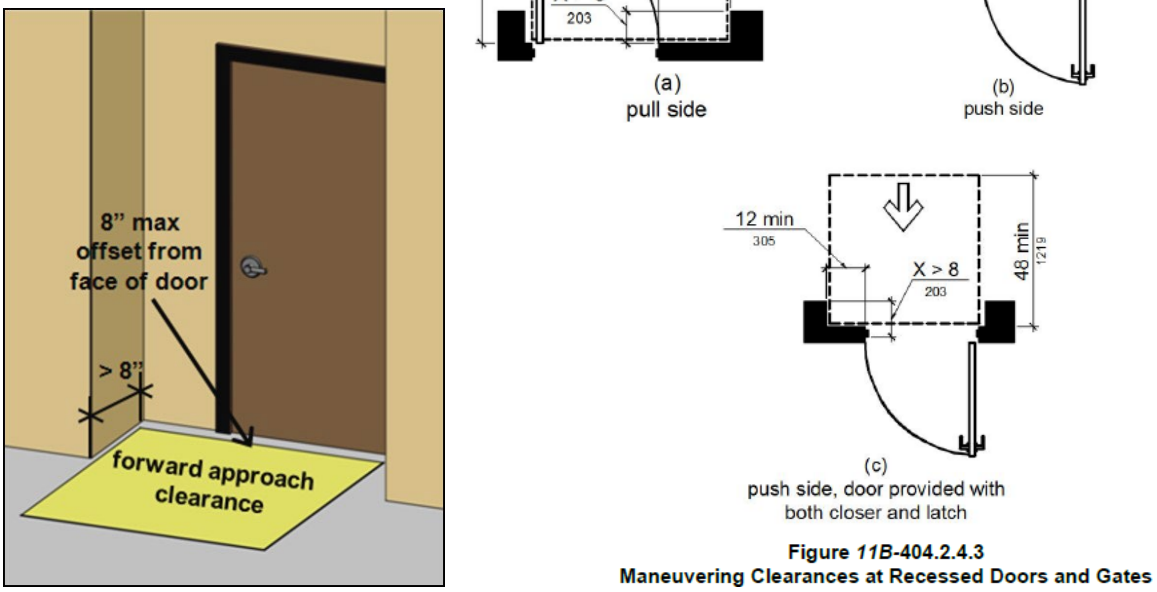


Figure *11B*-404.2.4.3
Maneuvering Clearances at Recessed Doors and Gates

When you've got a situation where there are multiple swing doors to go through, such as at a vestibule, there needs to be 48" of clearance plus the width of the door if it's swinging into the space. The drawings below from the code show it much better than I can describe it.

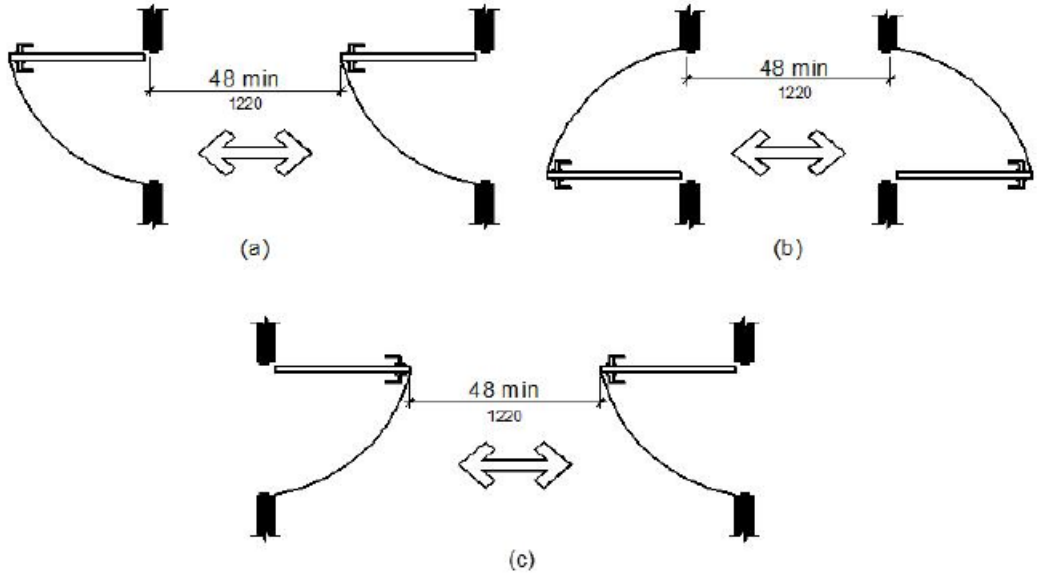
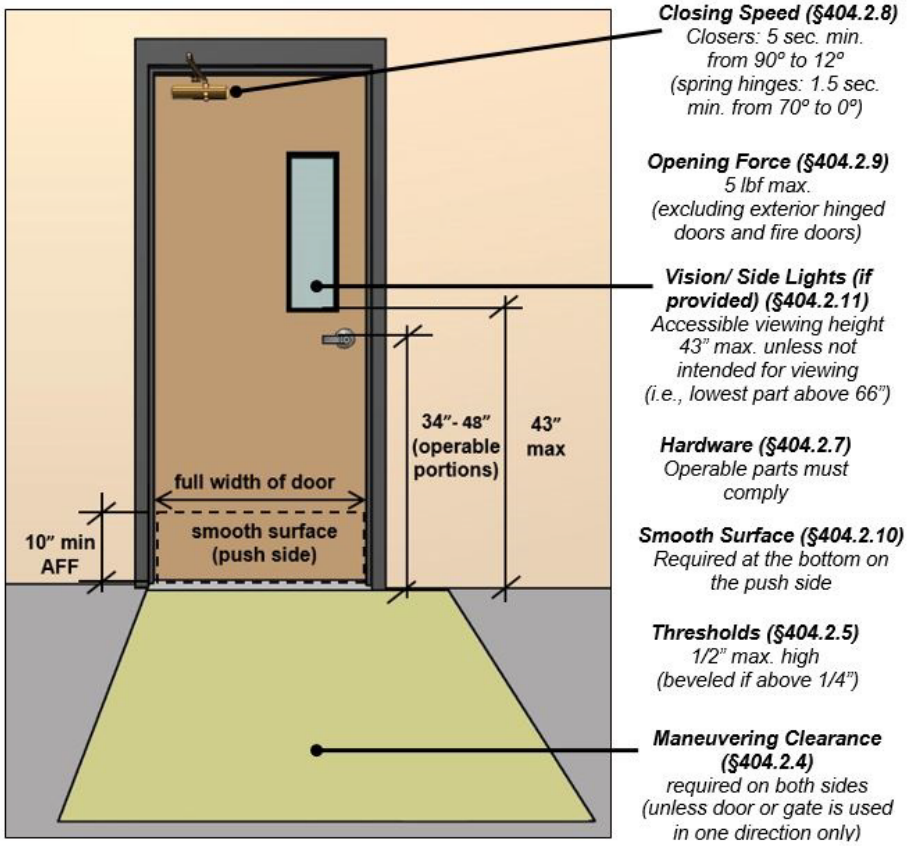
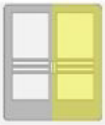


Figure *11B*-404.2.6
Doors in Series and Gates in Series

Earlier, we talked about operable parts. The door hardware must comply. If you remember, it must be operable with 1 hand and can't require tight grasping, pinching or twisting of the wrist. Door knobs, obviously, are not accessible. That's why everyone started switching to lever handles years ago. Per the State Fire Marshal's requirements, the lever handle has to be curved back towards the door so that it is within ½" of the door. I've personally gone through one of the doors with a lever handle that didn't return to the door and got the strap of my handbag caught on it while going through without realizing it. Getting jerked back isn't fun. In the event of an emergency, it could have been dangerous. The same has also happened to me at handrails that don't return to the ground or back to the post.





Double-Leaf Doors (§404.2.2)
One active leaf of double-leaf doors is required to meet criteria for clear width and maneuvering clearance. Other door requirements apply to both leaves.

One of the other requirements is that the handles, pulls, latches, and locks have to be installed between 34 and 44 inches above the finish floor. Existing locks can be at the top or bottom rail of glazed doors if the doors don't have stiles. The key word here is existing. I was working on a renovation at an old bank a couple of years ago that had the locking device at the floor. I always hated going over there because I'd end of sitting on the floor for 5 minutes before I could convince the lock to turn. There had to have been a trick to getting those doors to unlock, but I never figured it out. Anyway, I had them replaced with the renovation.

One of the other exceptions to the hardware being between 34 and 44” is existing overhead rolling doors and grilles that has the locking hardware at the top or bottom rail. Once again, the keyword here is existing.

Another logical exception is if there is a gate in a fence that’s protecting access to a swimming pool, spa, or hot tub, the operable parts for the release latch can be located up to 54” aff. As long as they don’t automatically lock when the door closes. You don’t want small kids to be able to reach it and lock themselves in with a swimming pool.

For sliding doors, the handles must be exposed and usable when the door is fully open. I’m sure you’ve all seen those pocket doors where the hardware is flush with the edge of the door, and you almost need tweezers to pull it out so you can get the door closed again. Well, that won’t work for doors that must be accessible.

Now, let’s talk about closing speed. The time it takes a door or gate to go from an open position of 90 degrees to a position of 12 degrees from the latch can’t be more than 5 seconds.

Spring hinges at doors and gates need to go from an open position of 70 degrees to a closed position in no less than 1.5 seconds.

There are also requirements to how much force is required to open a door. For interior or exterior doors as well as sliding or folding doors, that force is no more than 5 lbs maximum. If the door is a required fire doors, the force is acceptable up to 15 lbs. You can see the picture of the force gauge I use to measure the opening force for doors. The opening force can be a serious issue. I’ve had a Chemistry building with a lot of outside exhaust for fume hoods. There was so much pressure on some of the outside doors that I’d watch some petite women who couldn’t even open them. There was a lot of money spent on an engineer to do a thorough review of the entire HVAC system, so we could resolve the issue. I’ve also worked on a high rise where the pressure on the fire doors into the stairwells was such that entering them was very difficult for some people. We spent months working on a resolution there. There were many lengthy chats with the fire marshal.

California has an additional section in the code that addresses powered doors. If you’ve got a single location with multiple doors, and where 1 of every 8 doors is a powered door, the other exterior doors adjacent to that powered door can have an opening force up to 8.5 lbs instead of 5 lbs. The powered door must be closest to the accessible route. The powered door also needs back-up battery or generator power if the occupant load of the facility is more than 150 and it has to be controlled from the interior and exterior sides by sensing devices, push plates, vertical actuation bars, or similar operating devices. If push buttons are provided at the powered doors, you have to install one between 7 and 8 inches above the floor and a second one between 30 and 44 inches above the floor. Those dimensions are to the centerlines of the push buttons. They also must have the International Symbol of Accessibility on them. It’s a given that they are to be located adjacent to ta clear floor space, as well. Vertical bars are also an option for door operation. If those are installed, the bottom of the operable part has to be 5 or less inches above the ground and the top has to be at least 35” above the ground.

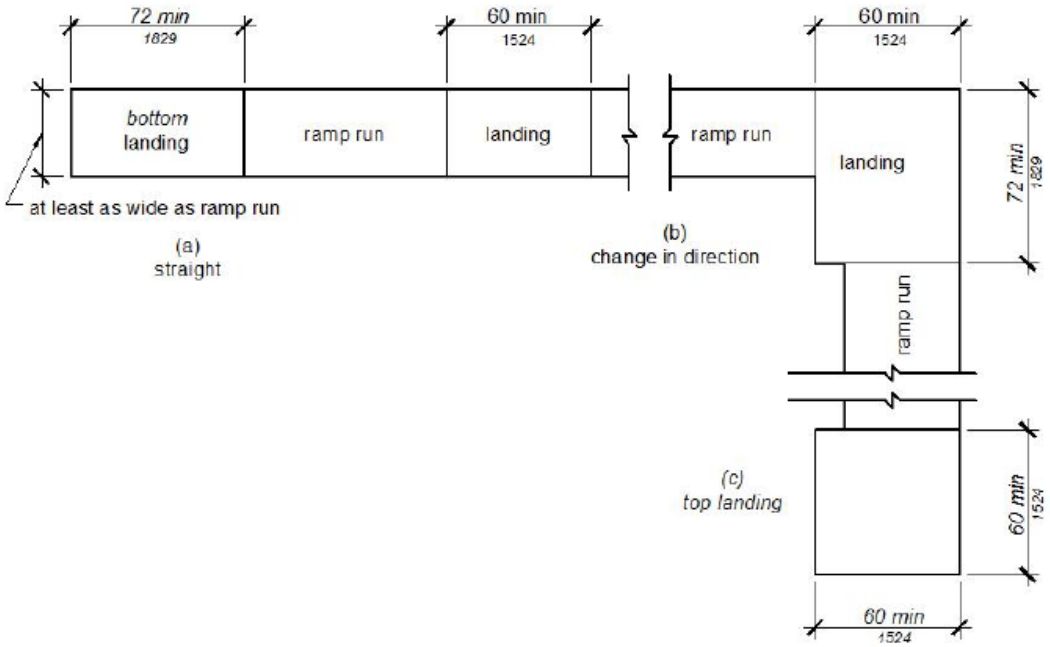
Signs must be installed that provide the locations of the power operated doors.

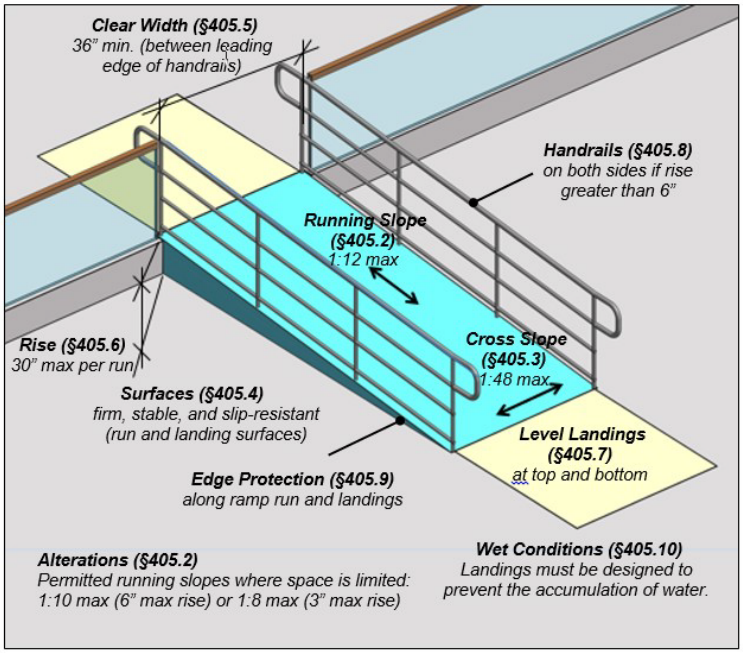
The surface of swing doors and gates within 10” of the ground on the PUSH side must be smooth. So, you’ll have to apply something to the bottom of a chain link fence gate if it is on an accessible route. If you’ve got tempered glass doors that don’t have stiles, if the bottom rail has a top leading edge tapered at 60 degrees as shown in the bottom left image, you don’t need the 10” smooth surface.

If your door has a window in it, the bottom part of at least one glazed panel can't be higher than 43"UNLESS the lowest part of the glass is higher than 66" from the ground. This sometimes gets forgotten on fire doors that are limited in the size of the vision lights.

One final thought on doors before we move onto something else is that revolving doors, gates and turnstiles cannot be on an accessible route.

Ramps





Now, we are going to get into the design of ramps. An accessible ramp will have a running slope that doesn't exceed 1:12. So, it can go up 1" for every foot in length. The cross slope can't be more than 1:48. The clear width is 48". Handrails can only project into this clear width 2.5" on each side. If the ramp is serving an occupant load of 50 or less people, the clear width is allowed to be 36". The maximum rise a ramp can go before you need a landing is 30". The landings need to be flat with a slope not exceeding 1:48. You can't have detectable warnings on the landings, either. I, personally, haven't seen this, but it must be big enough of an issue that it made it into the code. Landings must be at least as wide as the widest ramp run. Top landings have to be at least 60" wide x 60" long. Bottom landings have to extend at least 72" in the same direction as the ramp run. If a ramp changes direction between runs, the landing between the runs must be at least 60" x 72". The 72" dimension is in the direction of the downward travel from the upward ramp.

If there is a doorway adjacent to a ramp landing, the door maneuvering clearances are allowed to overlap the required landing area. If a door is fully open at a landing, it can't reduce the width of that landing by more than 3". While a door is opening, the landing has to be designed so that it doesn't reduce the required width dimensions to less than 42" because if it's less, there's the risk of a wheelchair having to back up to clear the door and rolling backward down the ramp.

We will discuss handrails later, but they need to comply with the requirements for accessible handrails.

Some sort of barrier or curb also needs to be provided along the sides of the ramp along the bottom so that a 4" sphere can't pass through and off the side. Whatever type of barrier is designed has to be continuous and uninterrupted along the length of the ramp.

If a landing is likely to get wet, such as outside, it has to be designed so that water can't accumulate on it.

Curb Ramps

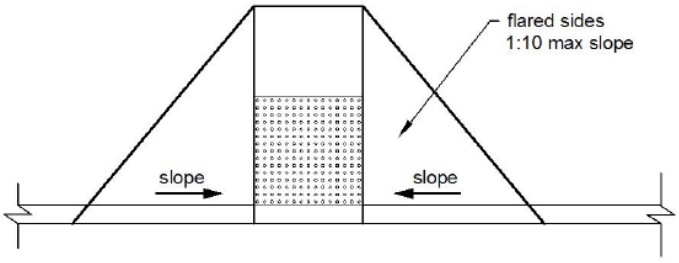


Figure *11B-406.2.2*
Sides of Curb Ramps

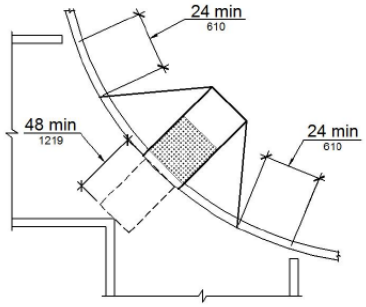


Figure *11B-406.5.10*
Diagonal or Corner Type Curb Ramps

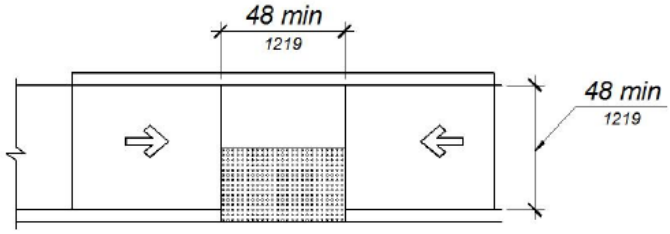


Figure 11B-406.3.2
Parallel Curb Ramps

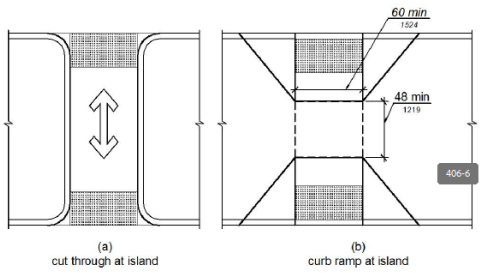


Figure *11B-406.6*
Islands in Crossings

The upper left image shows a perpendicular curb ramp. For this type of ramp, as with regular ramps, the run can't exceed 1:12. Where you have flared sides to a curb ramp, they can't exceed 1:10 slope. They also can't be located in traffic lanes, parking spaces, or parking access aisles. The clear width, excluding the flared sides, must be at least 48". Top landings at least the same width as the ramp and a length of 48" are required.

For parallel curb ramps, they need to slope in the same direction as you travel on the sidewalk. Once again, the slope can't exceed 1:12. The bottom of the parallel curb ramp has to have a 48" x 48" turning space that doesn't have a slope exceeding 1:48.

If you're got a diagonal ramp, it needs to have a 48" landing at the bottom that is outside active traffic lanes. If it's a marked crossing, that 48" has to be within the markings. If the diagonal ramp has flared sides, 24" beyond both of flared sides must be within the crosswalk markings.

For raised islands, the crossing can either cut through the island at the same level as the street, or you can have curb ramps on both sides as shown in the bottom right image. For both, the width can't be less than 60".

All curb ramps, diagonal ramps, and islands are required to have detectable warnings. We will get into the specifics of those later.

Elevators

The final topic in this module is elevators. Earlier, we discussed the locations that require them. Now, we will get into the specifics of what makes up an accessible elevator. Every elevator is NOT accessible. I know an architect who got sued because he designed and specified an inaccessible elevator, and it was constructed. So, it's important to understand a lot of these requirements so you know how to size it and spec it.

First, we will start with the elements outside the elevator. Call buttons - The height of the call buttons must be within accessible reach ranges. The centerline of the highest button can't exceed 48". They must be square, ¾" minimum in the smallest direction, and raiser 1/8" plus or minus 1/32" above the surrounding surface. A wheelchair must be able to get up to them, so they need a clear floor space next to them. The up button must be placed above the down button. When pressed, a white light must illuminate the button's surface. Once the call is answered, the light must go off. If a keypad is provided, it must be the same type that's on a standard telephone.

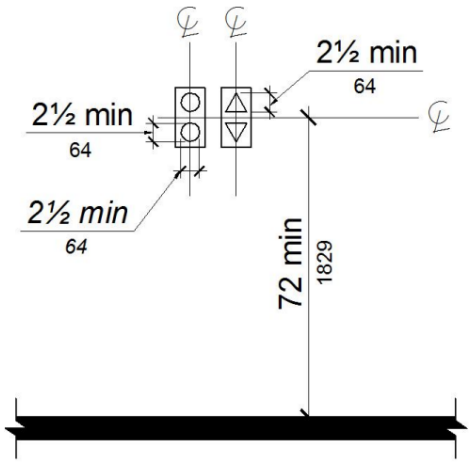


Figure *11B*-407.2.2.2
Visible Hall Signals

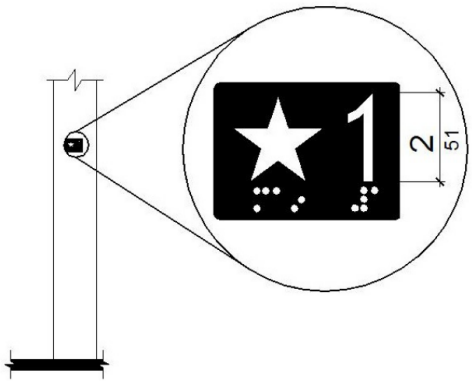


Figure *11B*-407.2.3.1
Floor Designations on Jambs of Elevator Hoistway Entrances

Hall signals – Both visible and audible hall signals must be provided at each hoistway entrance, so it's evident which car is answering the call and the direction it's going. The visible signals must be centered at 72" AFF. The direction signals have to be at least 2-1/2" high by 2-1/2" wide.

The audible signals need to sound once for up and twice for down or annunciate which direction the car is going.

Hoistway signs – Both jambs of each elevator need floor designation signs that have raised characters AND Braille. The raised characters need to be 2" high and white on a black background. If the sign is for a main entry level, a raised star that's 2" in diameter must be placed next to the floor number on the left side of the sign. The braille text below the star should say "MAIN".

Elevator doors – Elevator doors have to slide horizontally and be without gates. If the doors are being obstructed, they need to automatically open back up if it senses an obstruction unless it's an existing elevator with manually operated doors.

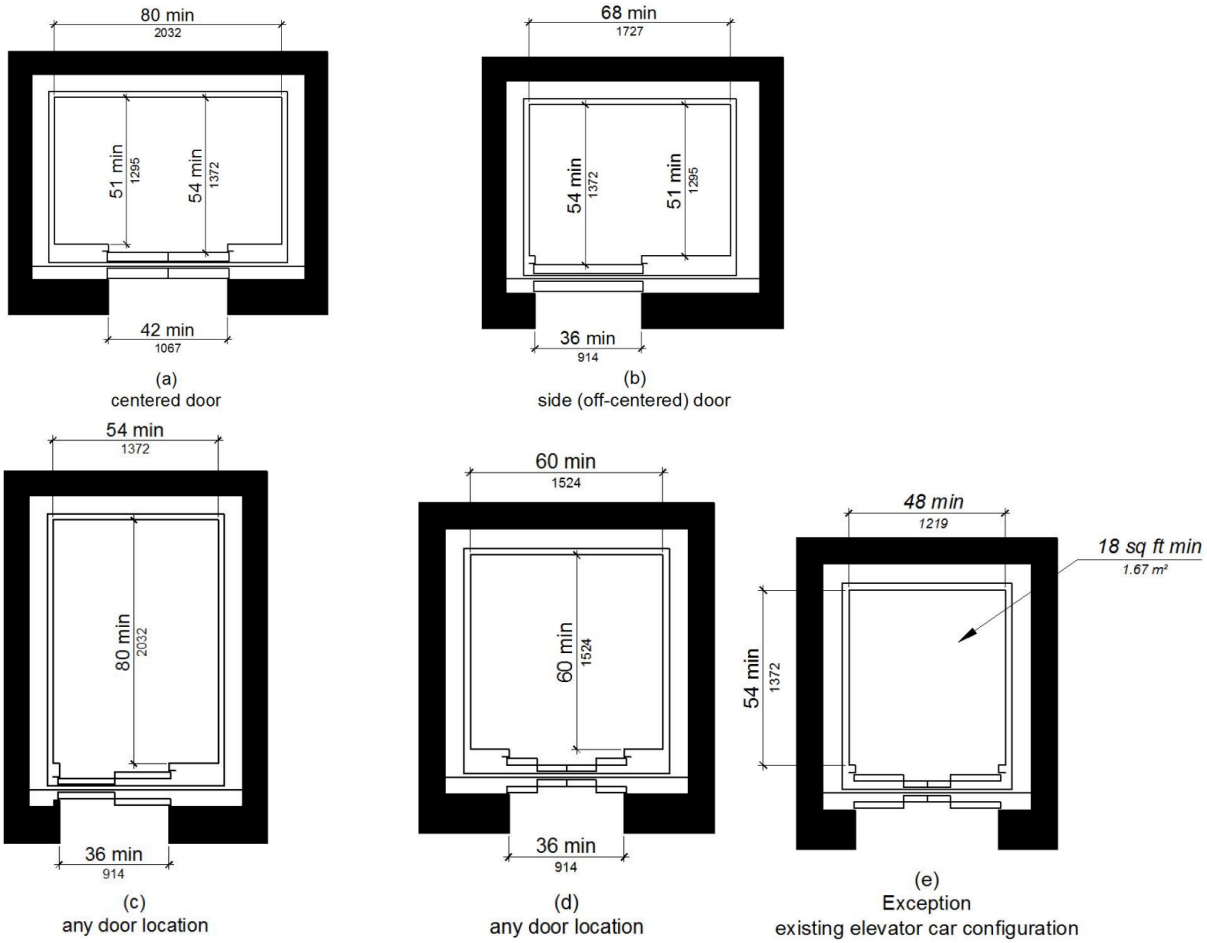
Now, let's get into the cars. Here is a chart that shows the required dimensions for elevator cars. In an existing building, if the existing shaft conditions prohibit compliance with the dimensions on the table, an EXISTING elevator car that provides a clear floor area of at least 18 s.f. with a minimum width of 48" and a minimum depth of 54" will be allowed.

Table *11B*-407.4.1 Elevator Car Dimensions

	Minimum Dimensions			
Door Location	**Door Clear Width**	**Inside Car, Side to Side**	**Inside Car, Back Wall to Front Return**	**Inside Car, Back Wall to Inside Face of Door**
Centered	42 inches (*1067* mm)	80 inches (*2032* mm)	51 inches (1295 mm)	54 inches (*1372* mm)
Side (off-centered)	36 inches (*914* mm)[1]	68 inches (*1727* mm)	51 inches (1295 mm)	54 inches (*1372* mm)
Any	36 inches (*914* mm)[1]	54 inches (*1372* mm)	80 inches (*2032* mm)	80 inches (*2032* mm)
Any	36 inches (*914* mm)[2]	60 inches (*1524* mm)[2]	60 inches (*1524* mm)[2]	60 inches (*1524* mm)[2]

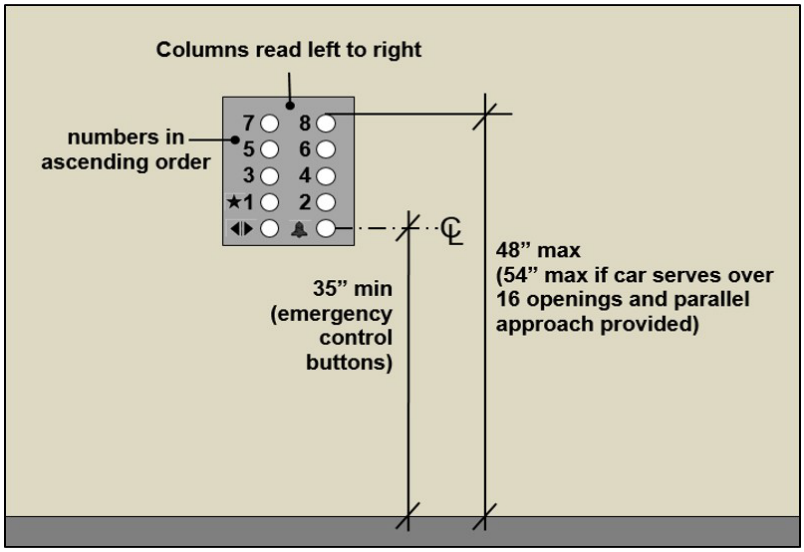
1. A tolerance of minus ⅝ inch (*15.9* mm) is permitted.
2. Other car configurations that provide a turning space complying with *Section 11B*-304 with the door closed shall be permitted.

Here are drawing representations of the dimensions from the table. You'll see that the most efficient design is an elevator with an off-centered door. The smallest elevator shown on the bottom right is only acceptable for existing elevators.



Some other details to note inside the car - The lights within the car need to provide at least 5 foot candles of illuminance.

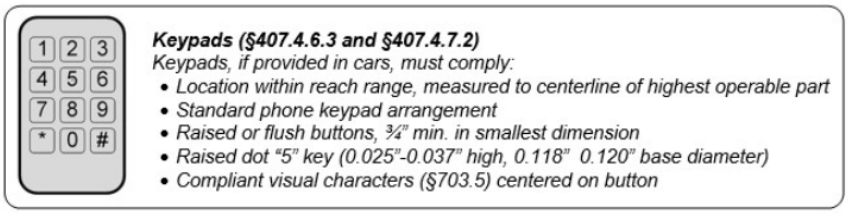
The controls inside the car need to be within the allowable reach ranges, so no higher than 48". UNLESS the elevator serves more than 16 floors. If you've got enough clearance for a parallel approach to this large panel, the buttons can go up to 54". Also, in existing elevators, the buttons can go up to 54 inches, regardless of how many floors they are for.



The buttons inside the car have the same shape and dimensional requirements as the call buttons. The buttons have to be placed in ascending order and read left to right. They also need to be illuminated. This image at the top isn't exactly accurate for California because the buttons are supposed to have what the code calls 'square shoulders'.

Emergency controls need to be a minimum of 35" aff and be grouped at the bottom of the panel.

Car control keypads are supposed to be the standard telephone arrangement. The image below shows the other detailed requirements.



The following Table shows the symbols and braille that need to be on the panel for the control buttons.

Table *11B*-407.4.7.1.3 Elevator Control Button Identification

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

The floor buttons have to light up just like the call buttons.

Within the car, audible and visible car position indicators are required. The visible indicators have to be placed above the car control panel or above the door and be at least ½" in height.

Emergency 2-way communication systems are also required that are identified with raised symbols or characters that are white on a black background with Braille adjacent to the device.

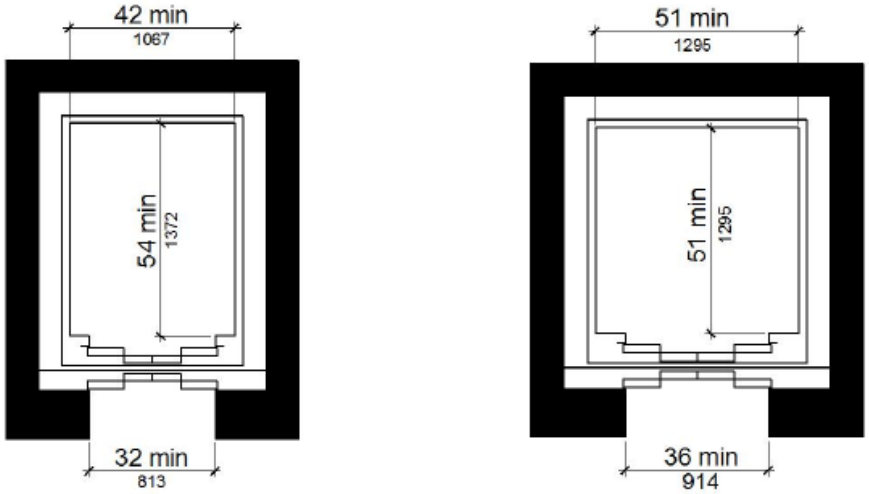
Another requirement inside the car are support rails. They have to be provided on at least one wall of the car. They have different requirements than handrails. They need to provide at least 1-1/2" from the wall and be mounted between 31 and 33" AFF. The should go within 6 inches of the adjacent walls. They need to be smooth and support at least 250 lbs of force at any point along the rail.

An elevator that's really taken off in the last 20 years is the destination-oriented elevators. The CBC allocated more than 6 pages to them. If you aren't familiar with destination-oriented elevators, from an elevator lobby, there's generally a console where you indicate the floor you want to go to. Then, a lobby indicator will tell you which elevator to go to. After you get on the elevator, there's no need to press a button. This type of elevator reduces the number of stops per trip. There isn't enough time for me to get into all of the requirements in this course. If you have a project that has destination-oriented elevators, I encourage you to study CBC 11B-411. There are specific requirements for how to number the elevators and floors, what needs to go on the call consoles and where to place them, and the specifics on the audible controls, too. Destination-oriented elevators could be their own separate course.

LULA Elevators

Do you remember when we were talking about accessible routes, and I mentioned LULA elevators? The limited use limited application elevators. Basically, if you are providing an elevator where one isn't required, it is allowed to be the LULA-type elevator. Well, now, we'll go over some of the requirements for LULA elevators.

A lot of the requirements are the same for LULA elevators as they are for standard elevators…The only requirements that are different are the doors. With LULA elevators, you are allowed to have swinging doors. If they are installed, they also have to open and close automatically and be power operated. They need to remain open for at least 20 seconds when activated.



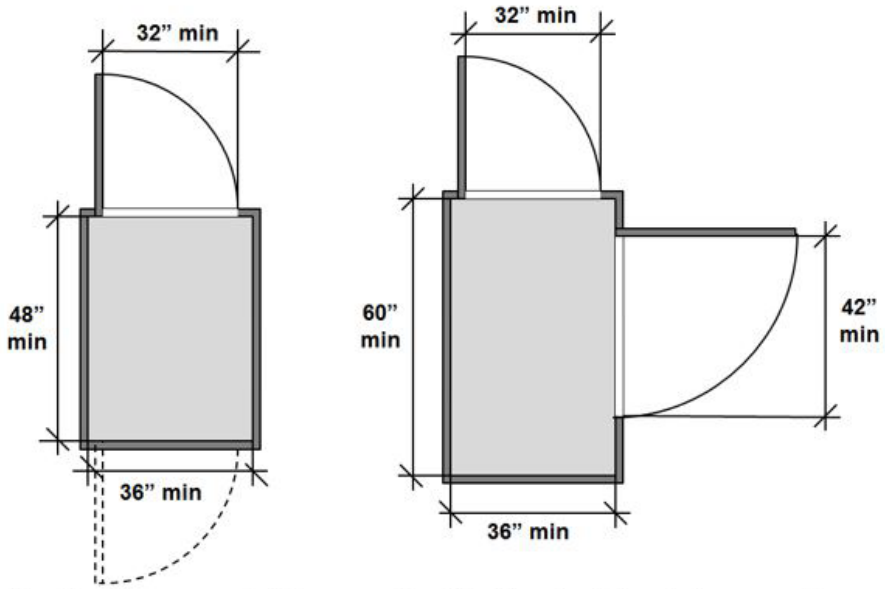
The other main difference than standard elevators is the size. They are smaller. These drawings show the minimum sizes.

I'm not going to get into it with this course, but there is a section in the code specific to private residence elevators. If you ever need to design one, they are found in 11B-409 of the CBC. Those elevators only need to provide a clear floor space of 36" x 48".

Platform Lifts

Platform lifts have their own requirements.

They require low-energy power-operated doors. The only exception to this is if the platform lift serves no more than 2 landings and it has doors on opposite sides, those doors can be self-closing manual doors. The end doors and gates have to provide a clear width of 32". If it has side doors and gates, the clear width is 42".



The clear floor space of platforms must be 36" wide min. If doors/gates are on the narrow end only, the length is 48" min. If a door/gate is on the longer side, the min. length is 60" to accommodate side approach maneuvering.

The landings can be no less than 60" x 60".

Signs must be posted at each landing within the platform enclosure that says 'NO FREIGHT' and has the International Symbol of Accessibility on it. Be sure to check the Elevator Code, as well, for additional regulations.

Module 4 – General Site and Building Elements

In this next module, we are going to get into the design of accessible parking, stairs, and handrails.

If you are following along in the code, we are in Division 5.

Parking

Back in the Scoping module, we discussed how to determine the number of accessible parking spaces you need. Now, we will get into the design of those spaces.

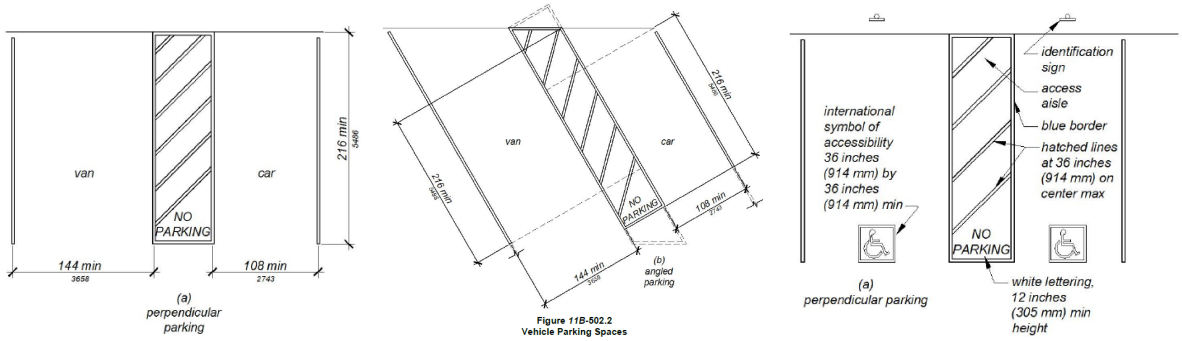


Figure 11B-502.2
Vehicle Parking Spaces

An accessible parking space will be a minimum of 18' long. There are car accessible spaces and van accessible spaces. The car accessible spaces need to be no less than 9' wide. The van accessible spaces need to be 12' wide. A 5' wide access aisle that extends the full required length of the parking space must be directly adjacent to each accessible parking space. Two parking spaces OR one parking space and one electric vehicle charging space can share an access aisle. If you increase the size of the access aisle to 8', the van parking space can decrease in size to 9' wide instead of 12' wide. The access aisles need a blue border painted around them. Lines need to be hatched within the blue border that are no more than 36" on center. The words NO PARKING w/ 12" high letters must be painted on the access aisle, as well.

Parking stripes are around 4" wide. So, where do you take the measurement of the parking spaces? It should be to the centerline of the stripe UNLESS the parking space or access aisle isn't adjacent to another parking space or access aisle. Then, you can measure the full width of the area defining the space or aisle.

A 36" x 36" International Symbol of Accessibility needs to be painted on each accessible parking space in white on a blue background. Reflective signs also have to be installed identifying the accessible parking spaces. If it's a van accessible space, the sign needs to say that. The words 'Minimum Fine $250' must be under the International Symbol of Accessibility on the sign OR an additional sign can be posted. Standard signs would be mounted at least 60" above the ground; that dimension is to the bottom of the sign. If the sign is located in a circulation path, the lower edge of the sign needs to be at least 80" above the ground.

When locating accessible parking spaces and access aisles, it's important that they be designed such that a person parking only has to go behind their own vehicle to reach the accessible route because people in wheelchairs are hard to be seen by other vehicles that would be backing out of other spaces.

Wheel stops and curbs should be designed to prevent vehicles from encroaching in required widths of accessible routes.

California requires that you also post a 17 x 22" sign that saying that unauthorized vehicles parking in accessible spaces will be towed. You can find the exact wording in section 11B-502.8.2.

Let's get into drop-off and loading zones. The vehicular pull-up space has to be at least 8' wide and 20' long minimum. A 5' wide access aisle that's parallel and as long as each drop-off and loading zone must be provided. The access aisles need to connect to an accessible route. As with the parking access aisle, the access aisle for the loading and unloading zone has to have a painted border around it and be hatched with lines no more than 36" apart. The vertical clearance needed is 9 ½'. This isn't just at the space and access aisle. This would also be the route leading up to it to accommodate commercial vans.

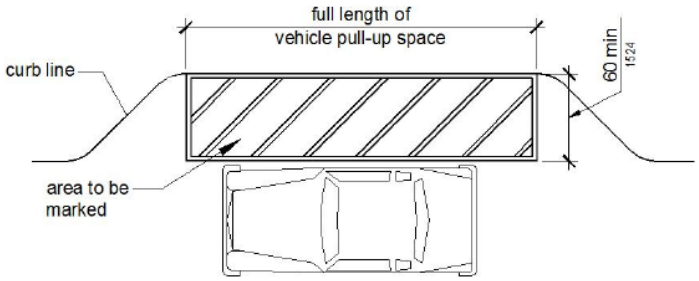
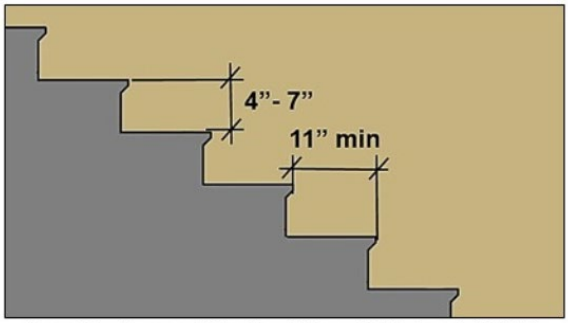


Figure *11B*-503.3
Passenger *Drop-Off and* Loading Zone Access Aisle

Stairways

Onto stairs…Within a flight of stairs, the steps have to be the same height. That height must be between 4 and 7". The depth has to be at least 11". Curved stairs are only required if the stairs are not part of a required means of egress.

Treads and Risers (§504.2 and §504.3)
All steps on a flight must have uniform riser heights within a range of 4" – 7" and uniform tread depths that are 11" min. Open risers are prohibited.

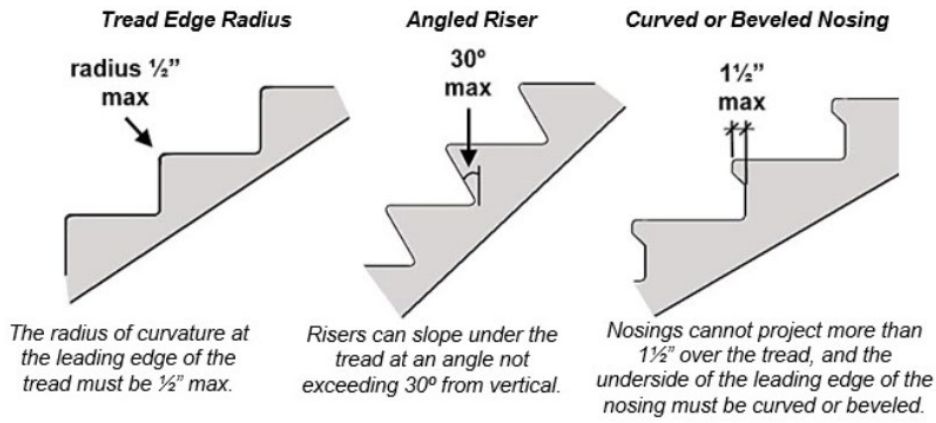


Tread Surface and Wet Conditions (§504.4 and (§504.7)
Tread surfaces must comply with requirements for ground and floor surfaces (§302) and cannot have changes in level other than slopes not steeper than 1:48. Treads and landings subject to wet conditions must be designed to prevent the accumulation of water.

The risers can't be open unless they are an exterior set of stairs. If you've ever tripped on an open riser, you'll understand why. Exterior risers are allowed to have ½" opening between the bottom of the riser and the tread for drainage. For exterior stairs, the risers are also allowed to be constructed of grating as long as the openings aren't more than ½".

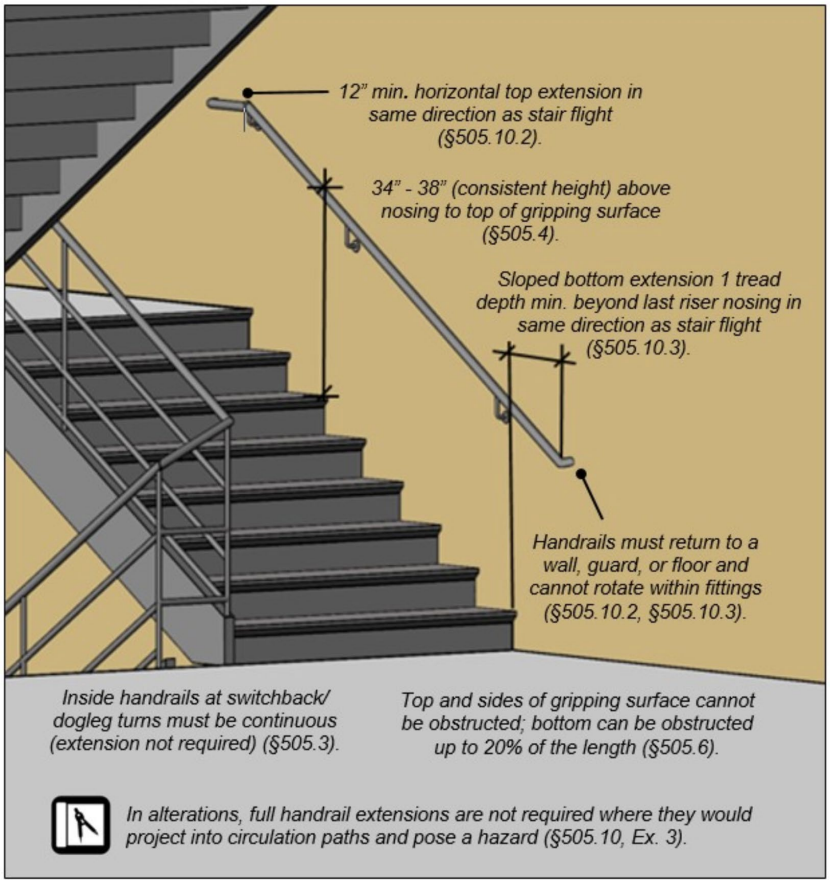
The treads must be flat with a slope no more than 1:48. The treads can't have detectable warnings on them.

For interior stairs, both the upper approach and lower tread must be marked with a stripe. For exterior stairs, all treads and the upper approach must be marked with a stripe. This stripe has to be between 2 and 4" wide and be placed within an inch of the stair nosing. Even though I'm all sure we've seen it before, grooves can't be used to satisfy this requirement because people with vision issues need that contrasting color to define the edge.



The front edge of each step is only allowed to have a radius of up to ½". If the riser is going to be sloped, it can slope up to 30 degrees. The tread can overhand the riser up to 1 ¼". But, if it's going to do this, it must be beveled or curved. The former code allowed a 1 ½" overhang. You don't have to correct this for renovation projects inside existing buildings.

Handrails



Handrails must be placed on both sides of stairs and ramps except in assembly areas. In assembly areas, they can be on either side or within the aisle. They also aren't required at curb ramps or door landings where the rise is less than 6".

At least one handrail has to be in the same direction as the stair run. It can't reduce the required width of the stairs. Remember, you'd go to Section 10 of the CBC to determine the required width of the stairs based on occupancy load.

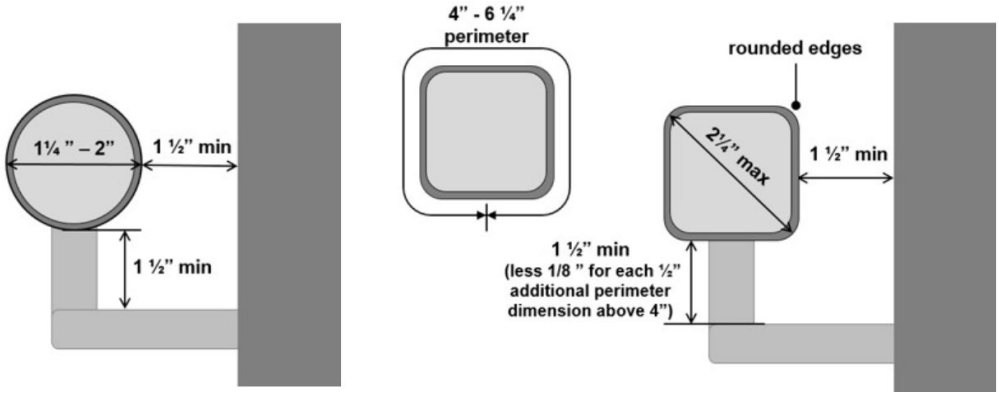
The handrails must be continuous within the full length of each stair flight or ramp run. The inside handrails on switchback or dogleg stairs or ramps must be continuous between the flights or runs.

In assembly areas, ramp handrails next to seats or within the aisle width don't have to be continuous, so you can access the rows of seating.

Handrails need to be mounted between 34 and 38" above the walking surface or stair nosing. If you're designing stairs at an elementary school or other place with a lot of children, it's helpful to put a second handrail at children's height, so no higher than 28". No less than 9" of clearance should be provided between the 2 sets of handrails if you're doing this.

The tops of handrails have to be continuous along their entire length without obstructions. Some skateboarders like to use handrails to slide down, so I've seen stuff get installed on top of handrails to prevent them from being able to do this, but it's against the code.

At least 1 ½" needs to be provided between the handrail and adjacent surfaces to ensure there's enough room for fingers to grasp it. If the handrail is located in a recess, that recess can only be 3" and it needs to provide 18" clearance above the handrail.



The diameter for a circular handrail can be 1 ¼" to 2". If you've got a non-circular handrail, the perimeter dimension all of the way around the handrail needs to be between 4 and 6 ¼". The cross-section dimension can't be more than 2 ¼".

Handrails need to extend beyond the top and bottom of ramps by at least 12". They also have to return to a wall, guard, or landing surface. This is partially so they don't become a protruding object. If the handrail is going to return to a vertical post, make sure the bottom of it is no higher than 27" so a cane can detect it.

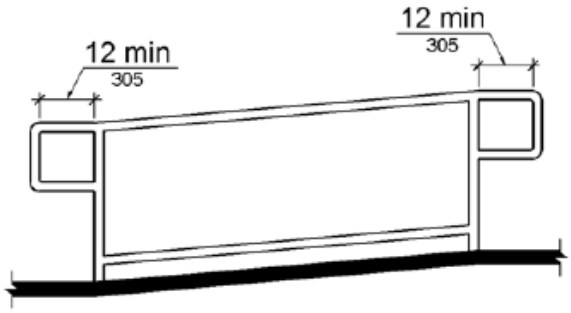


Figure *11B*-505.10.1
Top and Bottom Handrail Extension at Ramps

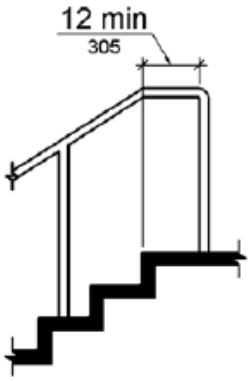
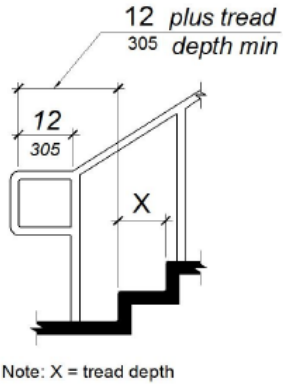
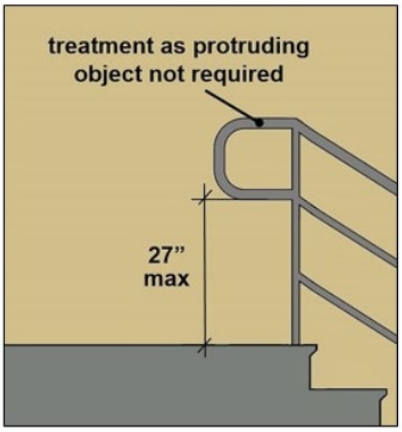


Figure *11B*-505.10.2
Top Handrail Extension at Stairs



Note: X = tread depth

Figure *11B*-505.10.3
Bottom Handrail Extension at Stairs



Stair handrails also have to extend 12” at the top. At the bottom, they need to extend at least the same depth as the treads PLUS 12” as you can see on the center image on the bottom row.

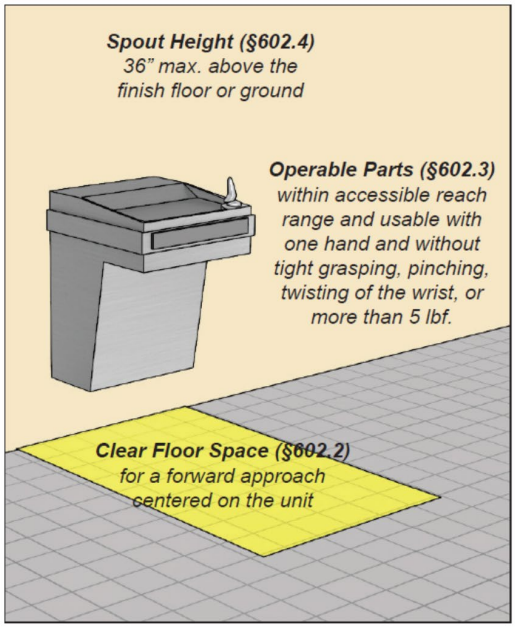
This concludes Module 4!

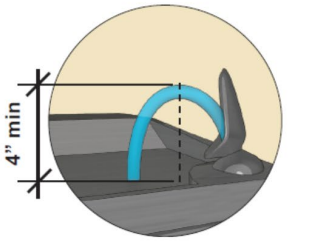
Module 5 – Plumbing Elements and Facilities

Drinking Fountains

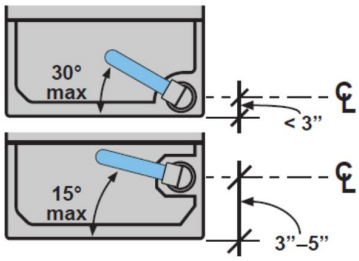
Let’s begin the plumbing module by talking about drinking fountains. Remember if drinking fountains are provided, at least 2 are needed. one must be provided for wheelchair users and 1 for standing users.

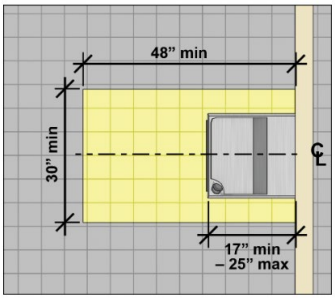
Drinking fountains for wheelchair users need a clear floor space of 30” x 48” positioned for a forward approach that’s centered on the unit with adequate knee and toe clearance. If it’s in an alcove that’s more than 24” deep the clear floor space needs to increase to 36” wide. A parallel approach is allowed for children’s drinking fountains if the spout is no more than 30” aff and the spout is no more than 3 ½” from the front edge of the unit.

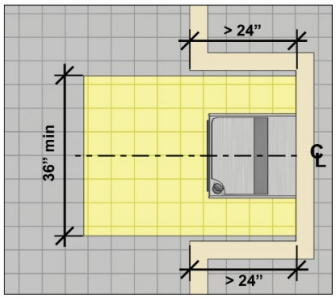


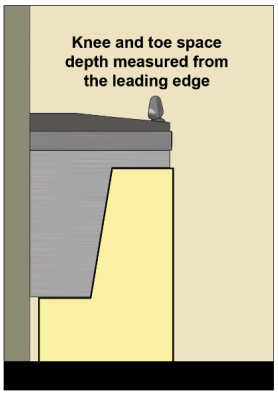


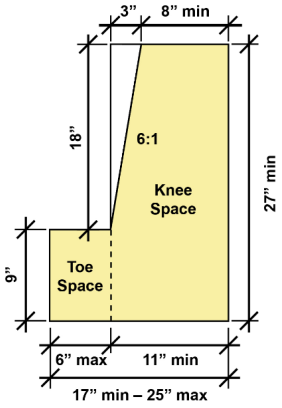
Water Flow (§602.6)
The water flow must be 4" high min. The maximum angle of the water stream is based on the distance of the spout from the front of the unit.











The water can be activated by a manually operated control or an automatic one. If it's manually operated, it needs to either be at the front of the unit or on the side within 6" of the front edge.

The spout height needs to be no more than 36" aff and at least 15" away from the back wall or support and within 5" from the front edge of the unit.

The water needs to be able to flow out of the spout at least 4" high so a cup can be inserted under the flow.

The drinking fountains for standing users need to have spouts mounted between 38 and 43 inches aff. The depth of these fountains must be only 18 and 19”. Since drinking fountains can easily become protruding objects, California has written it into the code that they either have to be located completely within alcoves or positioned so they aren’t encroaching into pedestrian ways. These alcoves must be at least 32” wide and 18” deep. The wing walls or barriers have to be at least as deep as the drinking fountains to within 6” from the floor.

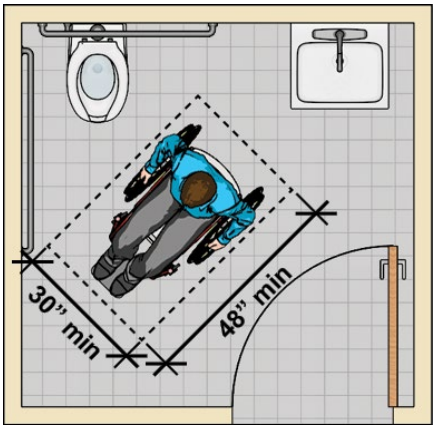
If you’ve got bottle filling stations, they can’t become protruding objects, and their operable parts have to be within accessible reach ranges.

A lot of people think that either bottle filling stations or water coolers can substitute the installation of a drinking fountain, but that’s NOT the case. Note that if water coolers are installed, they even need to have accessible controls within allowable reach ranges, have a clear floor space at them, and be located on an accessible route.

Restrooms

Other than doors, I can’t think of another section in the code that I reference more than the restroom section. Just when I think I’ve got it memorized, there is a unique situation that arises where I have to look something up.

Every restroom needs a turning space – either a 60” diameter turning circle or a T-shaped turning space. The required clear floor spaces, fixture clearances, and turning spaces ARE allowed to overlap. Doors, however, can NOT swing into the clear floor space required for any fixture unless a 30” x 48” clear floor space is provided within the room that is beyond the arc of the door swing as you can see in the image on the right. An accessible toilet compartment door is allowed to overlap the turning space, as well. Doors can only overlap the turning clearances by 12”.



If the restroom has mirrors and they are located above the lavatories or countertops, the bottom edge of the reflecting surface can’t be higher than 40”. Note this isn’t the bottom of the frame. It’s the reflective surface. If the mirror is not above a countertop or sink, the bottom edge can’t be higher than 35”.

Coat hooks have to be located within one of the reach ranges. Shelves must be mounted between 40 and 48” aff. Medicine cabinets must be located with a usable shelf no more than 40” above the finish floor.

Water Closets

Water closets in wheelchair accessible stalls need to be 17-18” from the side wall or partition. In ambulatory stalls, they should be 17 to 19” from the side wall.

A water closet needs 60” of clearance side to side and 56” of clearance front to back. In front of a water closet, 48” of maneuvering clearance is needed. At residential dwelling units, the maneuvering clearance in front of the water closet only needs to be 36”.

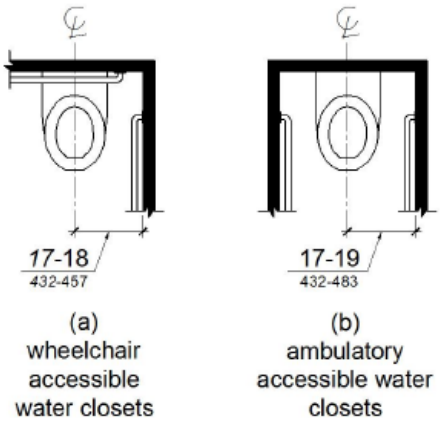


Figure *11B*-604.2
Water Closet Location

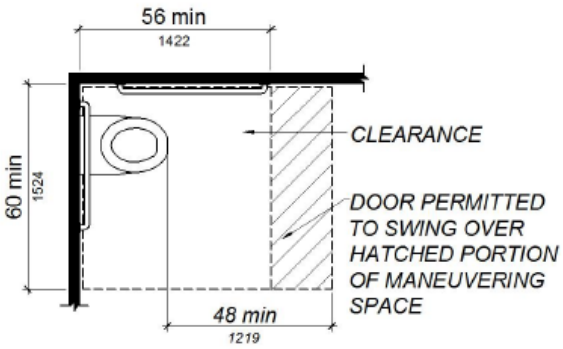


Figure *11B*-604.3.1
Size of Clearance at Water Closets

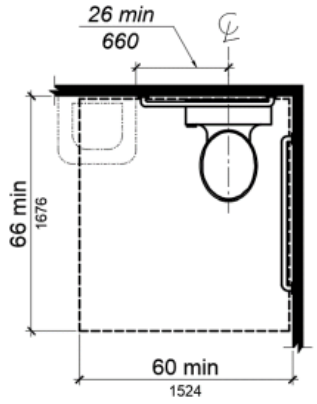


Figure *11B*-604.3.2 (Exception)
Overlap of Water Closet Clearance in Residential Dwelling Units

There are limitations on what can be placed inside the required clearance for an accessible water closet. Of course the water closet and grab bars can be placed there. The only other items include dispensers, sanitary napkin disposal units, coat hooks, and shelves. In residential dwelling units, a lavatory that’s 26” from the centerline of the toilet can also be in the required clearance.

The top of the seats for accessible water closets needs to be located 17 to 19 inches above the finish floor. They can’t be more than 2” high unless it’s a renovation project. Then, they can be 3” high if the existing fixture is less than 15” high. In residential dwelling units, the height of water closets can be 15-19” above the finish floor.

Grab bars are required at accessible water closets. You can see the dimensional requirements for the side wall and rear wall grab bars in the drawings on the top row.

If flush controls are manually operated, they must be located on the open side, or wider side of the water closet. They can't be higher than 44" AFF.

Toilet paper dispensers must be located below the side wall grab bar at a height not exceeding 19" above the floor. They also need to be 7-9" in front of the water closet.

Sanitary napkin disposal units should be mounted between the toilet paper dispenser and the rear wall at a height of at least 19" above the floor.

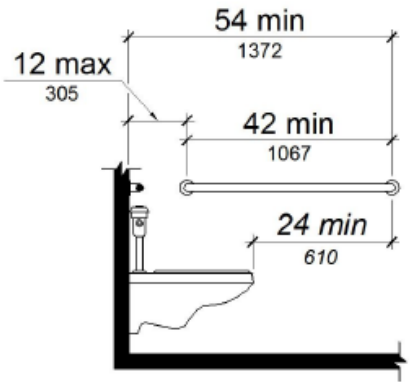


Figure *11B*-604.5.1
Side Wall Grab Bar at Water Closets

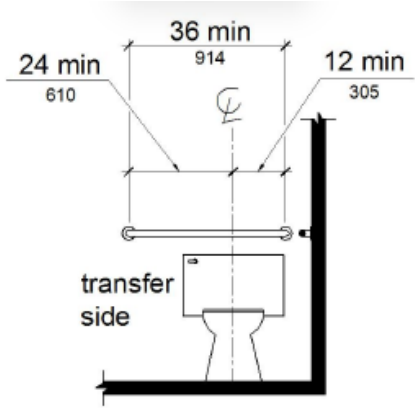


Figure *11B*-604.5.2
Rear Wall Grab Bar at Water Closets

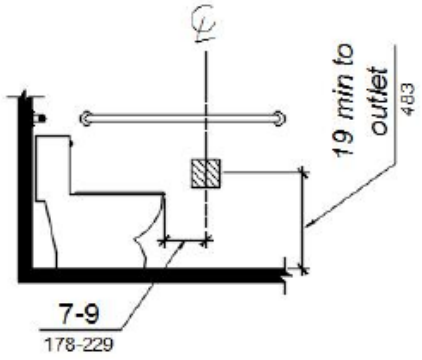


Figure *11B*-604.7.1
Dispenser Outlet Location

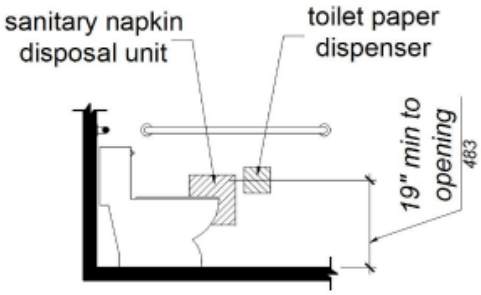


Figure 11B-604.7.2
Disposal Unit Location

Toilet Compartments

There are a couple of different types of accessible toilet compartments. There are wheelchair accessible and ambulatory.

Wheelchair accessible toilet compartments must be at least 60" wide. The depth depends on the type of water closet. If it's a wall hung water closet, the depth needs to be 56". If it's a floor mounted water closet, the depth needs to be 59". For children, the depth must be 59" for both floor mounted and wall hung water closets. Something that the California Code added is the additional maneuvering space in front of the water closets. The door location and swing determines the additional clearance required.

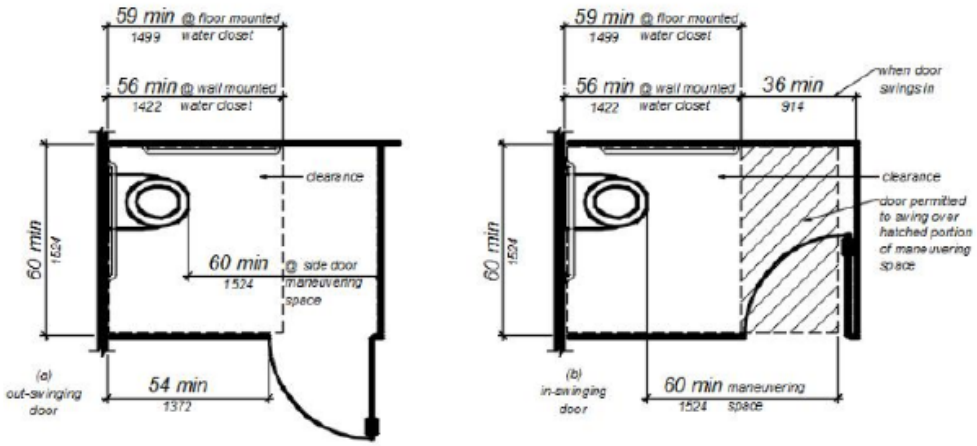


Figure 11B-604.8.1.1.2
Maneuvering Space with Side-Opening Door

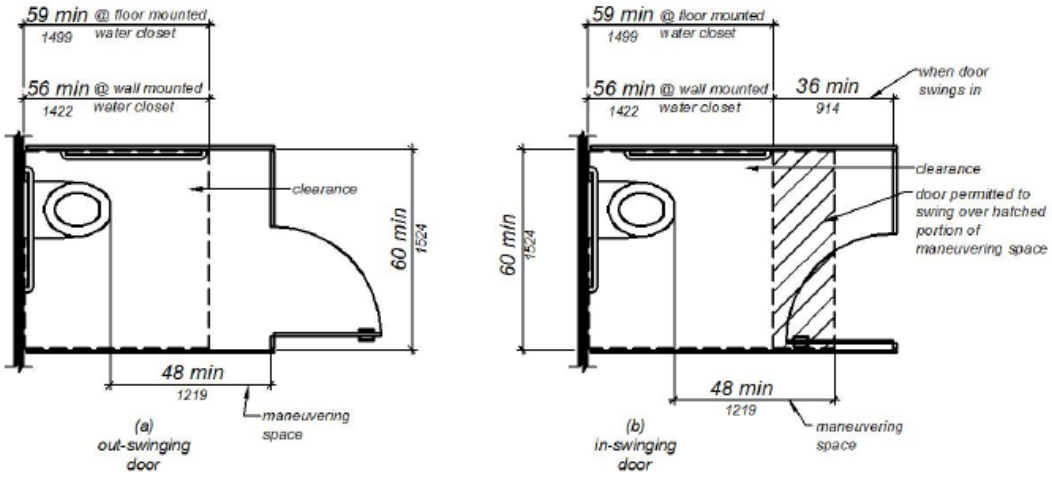


Figure 11B-604.8.1.1.3
Maneuvering Space with End-Opening Door

If you've got a side opening door, an extra 60" of maneuvering clearance is required in front of the water closet as you can see in the top image.

If you've got end-opening doors, an additional 48" of maneuvering clearance is required in front of the water closet per the lower image.

Accessible compartment doors must have the accessible door clearances for standard type doors EXCEPT if the approach is from the push side of the compartment door, the clearance between the door side of the compartment and any obstruction needs to be 48" measured perpendicular to the compartment door in its closed position. This is more than what's required in non-toilet compartment doors because a minimum of 44" is allowed for certain doors. And, the door has to provide a clear width of 34" minimum instead of the 32" that's allowed in Division 4. Another thing to note when figuring clearances is that the gravity hinges are NOT considered to be doors with closers.

The doors must be located in a side partition or the front partition furthest from the water closet. They can't be located directly in front of the water closet. If the door is in the side partition, it has to be at least

54” from the rear wall. The doors must be self-closing with door pulls on both sides of the doors near the latches. The doors can’t swing into the clear floor space required for any fixture. Doors can swing into the portion of the maneuvering space that doesn’t overlap the required water closet clearance.

When designing the partitions, you need to make sure at least one side partition provides a toe clearance of 9” or 12” for children’s compartments. This toe clearance must extend 6” beyond the compartment-side face of the partition as you can see in image C. If a compartment is designed wider than the minimum and is at least 66” wide, then you don’t need that toe clearance. Grab bars in accessible compartments are the same as in accessible toilet rooms.

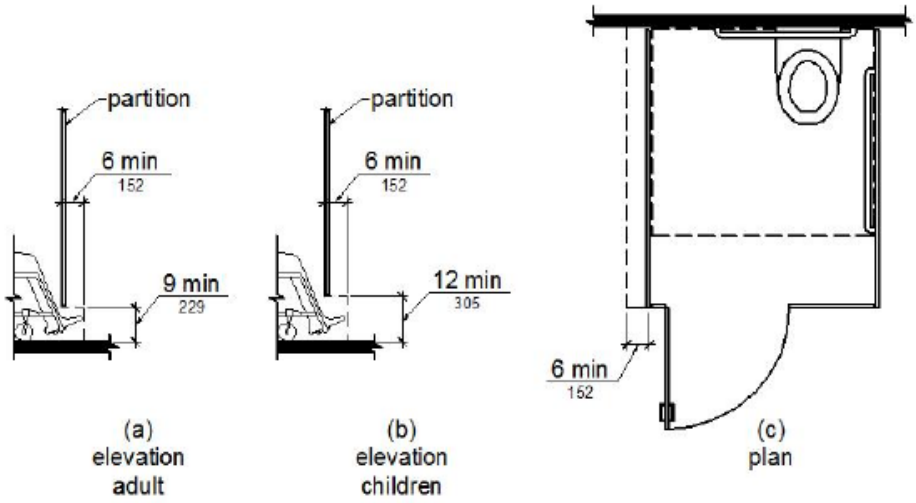


Figure *11B*-604.8.1.4
Wheelchair Accessible Toilet Compartment Toe Clearance

The other type of accessible stall is an ambulatory one. These are designed more for people using walkers or people who may need to use parallel grab bars to help lift themselves up. Ambulatory compartments should be 35-37 inches wide. I usually dimension mine to 36” to give 1” of wiggle room on either side during construction. The depth must be 60” minimum. For ambulatory compartments, the door clearance in front of the compartment can be 44” instead of 48”. These doors also need to be self-closing with door pulls placed on both sides of the door. The toilet compartment doors can NOT swing into the minimum required compartment areas. Grab bars must be placed on both sides of the compartment as shown in the image. If the compartment has coat hooks, they must be placed within an accessible reach range. Shelves in the compartment have to be mounted between 40 and 48” AFF.

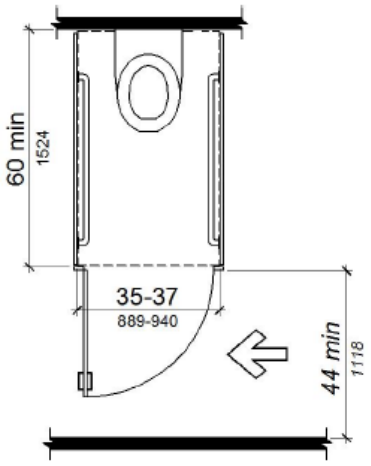


Figure *11B*-604.8.2
Ambulatory Accessible Toilet Compartment

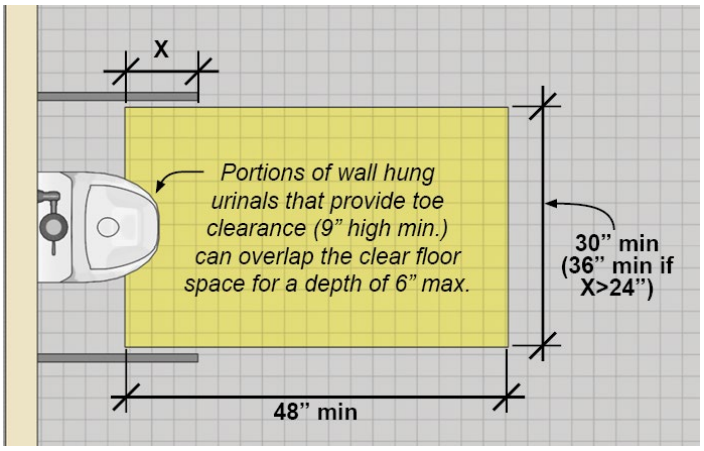
If the restroom is being designed specifically for children, below is the table that provides the accessible mounting heights. Note that if you're doing this, the table must be used for a single age group and apply it consistently across the restroom design.

Table 11B-604.9 Suggested Dimensions for Children's Use

***Suggested Dimensions* for Water Closets Serving Children Ages 3 through 12**			
	Ages 3 and 4	**Ages 5 through 8**	**Ages 9 through 12**
Water Closet Centerline	12 inches (305 mm)	12 to 15 inches (305 to *381* mm)	15 to 18 inches (*381* to *457* mm)
Toilet Seat Height	11 to 12 inches (*279* to 305 mm)	12 to 15 inches (305 to *381* mm)	15 to 17 inches (*381* to *432* mm)
Grab Bar Height	18 to 20 inches (*457* to *508* mm)	20 to 25 inches (*508* to 635 mm)	25 to 27 inches (635 to *686* mm)
Dispenser Height	14 inches (*356* mm)	14 to 17 inches (*356* to *432* mm)	17 to 19 inches (*432* to *483* mm)

Urinals and Lavatories

The rim for accessible urinals should be no more than 17" AFF and at least 13 ½" deep. A 30" x 48" clear floor space is required unless the urinal is in an alcove, then a 36" wide clear floor space is required. If hand operated flush controls are installed, they need to be mounted no higher than 44" above the finish floor.



Lavatories also require a clear floor space for forward approach with adequate knee and toe clearances unless one of these exceptions apply.

A parallel approach instead of a forward approach is allowed at a kitchen sink in a space where a cook top or conventional range is not provided and at wet bars.

In residential dwelling units, cabinets are allowed under the sinks as long as they can be removed without having to replace the sink, the finish floor extends under the cabinet, and the wall behind the cabinet is already finished.

Children uses provide the next exception. A knee clearance of no less than 24" AFF is allowed if the sink is primarily used by children 6-12 years old if the rim of the sink or counter is no more than 31" AFF.

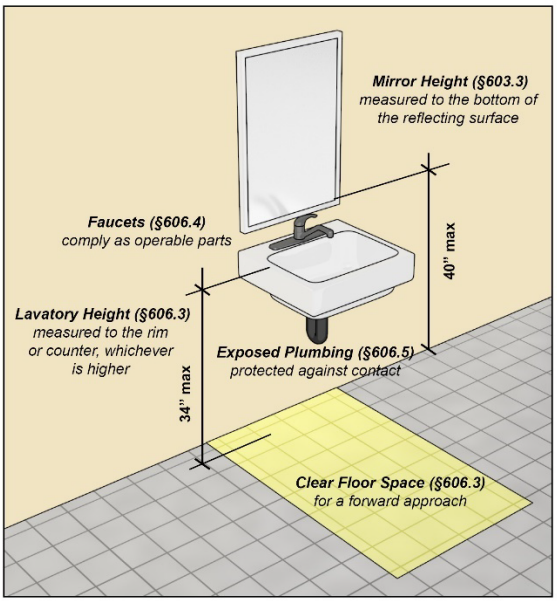
If the sink is going to be used by children 5 and under, a parallel approach is allowed.

The dip of the overflow can be ignored in determining knee and toe clearance because legs can go on either side of it.

The final exception just requires one bowl of a multi-bowl sink to provide the knee and toe clearance.

Note that if the sink is next to a wall, there is another requirement that there is 18" to the centerline of the lavatory.

Lavatories and sinks are supposed to be installed so that the top of the rim or counter, whichever is higher, is at 34" AFF maximum. A common issue I've seen many times is that the countertop is at 34", but the rim of the sink is at 34.5", so it's too high. If the rim of the sink is higher than the countertop, then the top of the rim can't exceed 34".



The controls for faucets must be within accessible reach ranges and can't require tight grasping, pinching, or twisting of the wrist to turn the water on. So, sinks operated by knob handles are not compliant.

The water supply and drain pipes either have to be insulated or covered.

Bathtubs

The clearance required adjacent to a bathtub depends on a couple of things – if you are approaching the bathtub from the side or from the front and if there is a removable or built-in seat. If you've got a parallel approach, you need 30" in front of the bathtub of clearance. If you've got a side approach, that clearance needs to be 48". Accessible lavatories are allowed to go within that clearance as long as they are at the same end as the tub controls. The clearance has to extend the full length of the tub. If a permanent seat is provided at the end where the showerhead is, an additional length of 12" is required, so there's enough room for someone to park their wheelchair and transfer over.

An accessible tub must have either a fixed in-tub seat or a removable one.

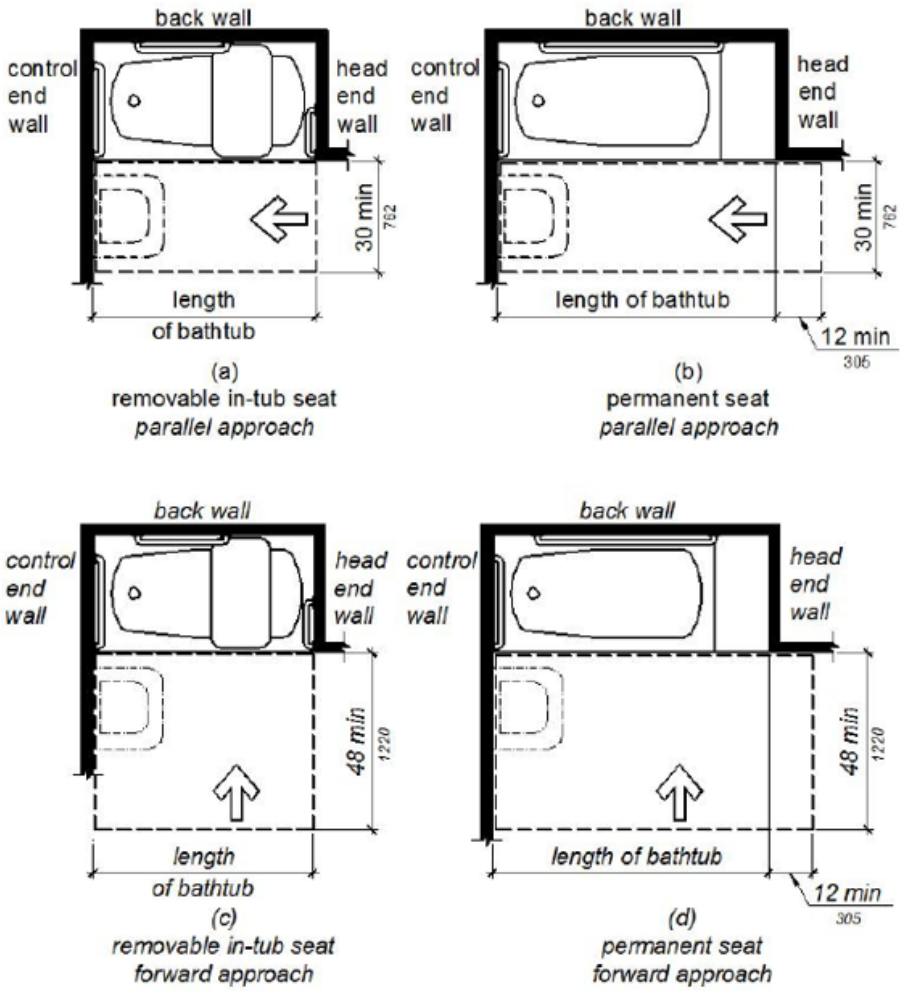


Figure *11B*-607.2
Clearance for Bathtubs

Grab bars are also required. In residential dwelling units, they don't initially have to be installed as long as blocking has already been placed in the walls for future installation.

If a bathtub has a PERMANENT seat, 2 grab bars must be installed on the back wall, or the long wall. One goes at a height between 33 and 36" AFF. The 2nd goes 8-10" above the rim of the bathtub. Both grab gars must be installed no more than 15" from the head end wall and no more than 12" from the wall with the controls.

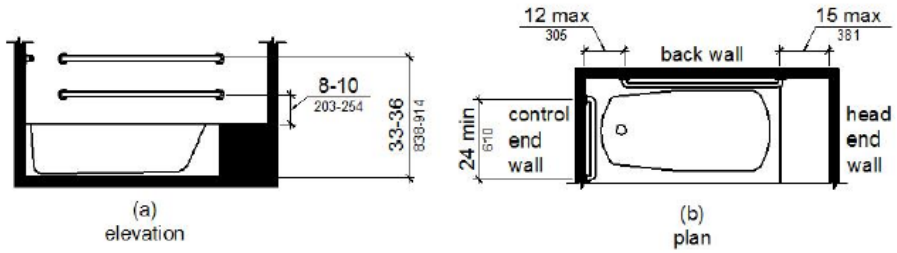


Figure *11B*-607.4.1
Grab Bars for Bathtubs with Permanent Seats

On the wall with the controls, a grab bar that's at least 24" must be installed between 33 and 36", and it needs to go towards the front edge of the bathtub.

If removable seats are going to be utilized instead of permanent ones, two grab bars need to be installed on the back wall just like the grab bars at the tubs with permanent seats. However, they don't need to be as long. 24" is the minimum length for them. They must be mounted no more than 24" from the head end wall and no more than 12" from the wall with the controls.

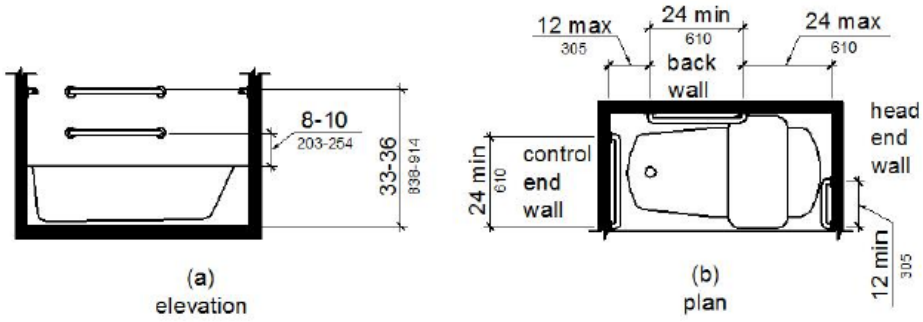
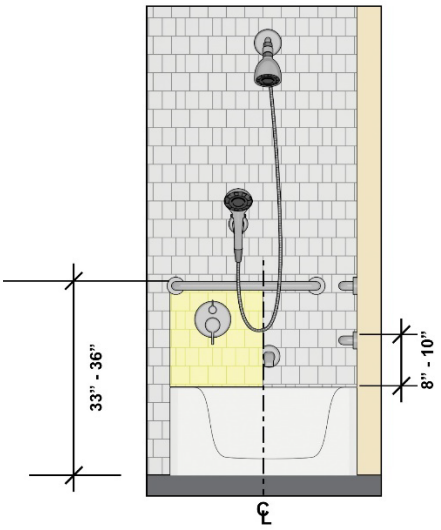


Figure *11B*-607.4.2
Grab Bars for Bathtubs with Removable In-Tub Seats

A 24" grab bar also gets placed on the wall with the controls at the front edge of the tub.

If the tub has a removable seat, another 12" long grab bar must also be installed on the wall with the shower head and be located at the front edge of the tub.

If you look at the below image, you can see where the controls need to be placed. They must be placed on the end wall between the grab bar and top of the tub. They also have to be in the front half section of the tub.



The shower spray unit needs to have a 59-inch hose that can be used in the fixed position or be held. The unit needs to have an on/off control with a non-positive shut-off so the water will stay warm a consistent temp. A shower head can be put on a vertical bar as long as it doesn't obstruct the use of the grab bars. The water heater needs to be set so that it won't get above 120 degrees.

Showers

There are a few different types of accessible showers – there are transfer type shower compartments, roll-in type, and alternate roll-in type shower compartments.

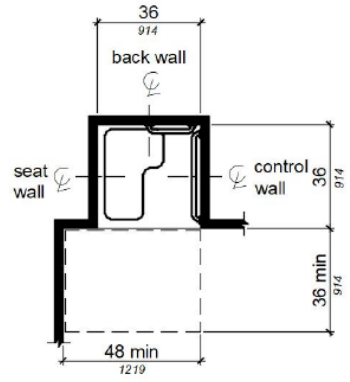


FIGURE 11B-608.2.1
TRANSFER TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

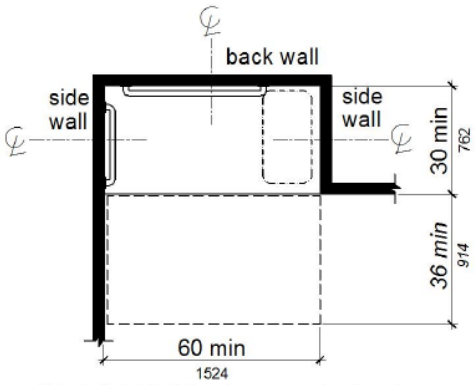


Figure *11B*-608.2.2
Standard Roll-In Type Shower Compartment Size and Clearance

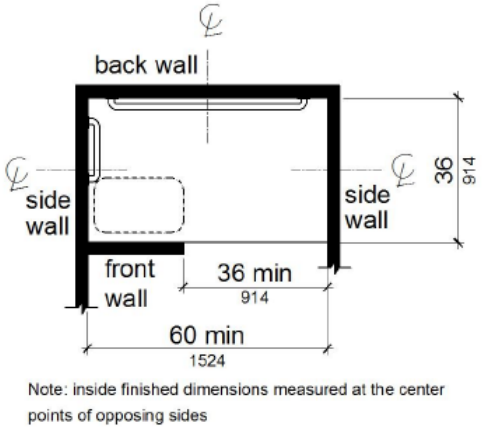


Figure *11B*-608.2.3
Alternate Roll-In Type Shower Compartment Size and Clearance

Transfer-type shower compartments have clear dimensions of 36” x 36”. Note that the dimensions are absolute – not minimum. The side you enter needs to maintain that 36” width. The clear space next to them must be 36” wide x 48” long. This type of shower is permitted in transient lodging guest rooms, multi-bedroom housing units in undergraduate student housing and residential dwelling units. They aren’t permitted at other locations.

Standard roll-in type shower compartments should be at least 30” wide x 60” deep. For this one, the 60” on the entering side must remain clear. The clear space next to the shower would be 36” wide x 60” long.

The alternate roll-in shower would be 36” wide and 60” long minimum. Note that the 36” dimension is an absolute dimension – NOT a minimum. The entry opening should be at least 36” wide.

Showers also need grab bars. The images below show the locations.

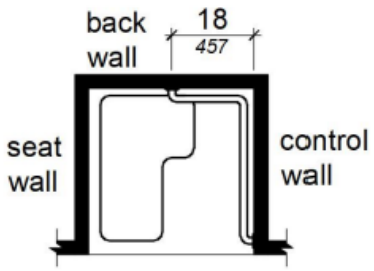


FIGURE *11B*-608.3.1
GRAB BARS FOR TRANSFER TYPE SHOWERS

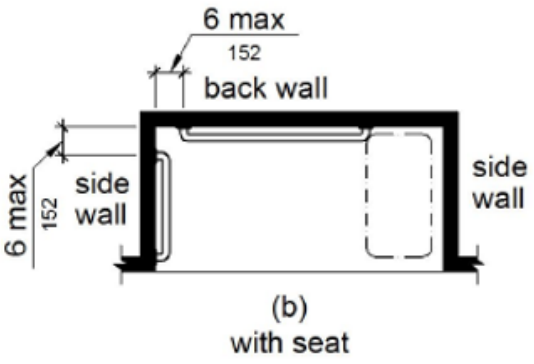


Figure *11B*-608.3.2
Grab Bars for Standard Roll-In Type *Shower*

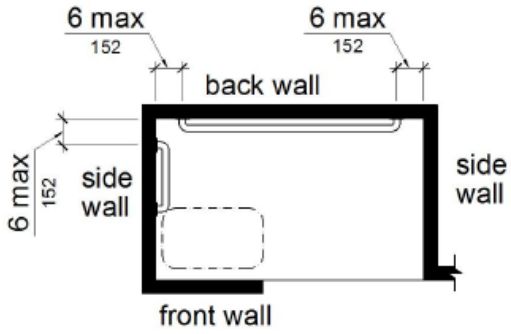


Figure *11B*-608.3.3
Grab Bars for Alternate Roll-In Type Showers

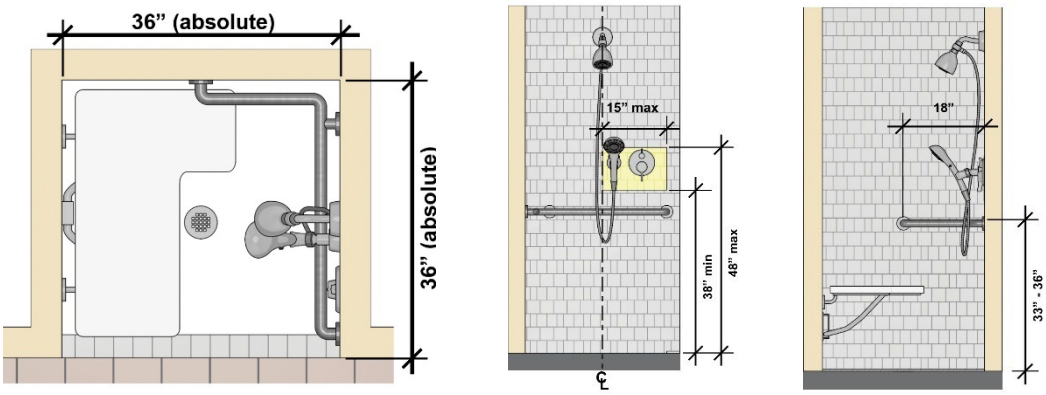
For the transfer type shower, they go on the control wall and wrap around to the back wall for 18” at a height between 33 and 36”.

For the standard roll-in shower, the grab bars go on the back wall and the side wall that’s opposite the seat. Don’t put grab bars above the seat. They get installed within 6” of the adjacent walls.

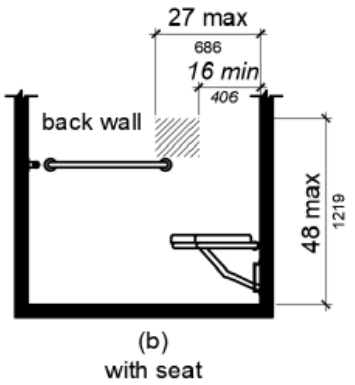
For the alternate roll-in type shower, the grab bars are also installed on the back wall and side wall furthest from the shower entry. They also should be installed within 6” from the adjacent walls.

Folding seats are required to be provided in all of the accessible showers. In residential dwelling units, these seats don’t have to be installed initially if there is blocking installed in the walls for their future placement.

The location for the controls, faucets, and shower spray units for transfer type shower compartments are shown on the images below. They get installed on the side wall opposite the seat at a height of 38 to 48 inches above the shower floor and no more than 15” from the centerline of the seat towards the shower opening.

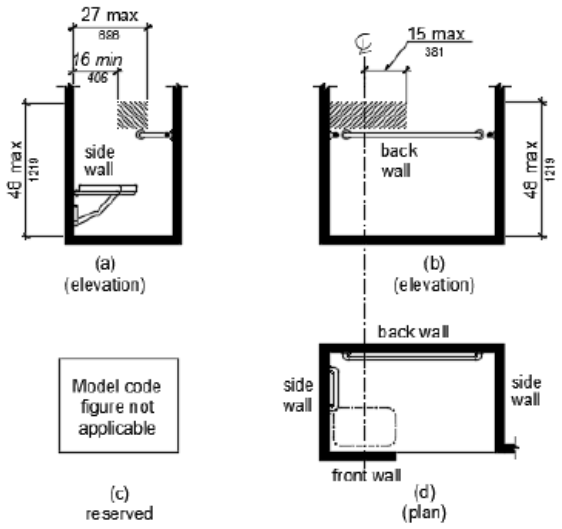


For standard roll-in shower compartments as shown in the image below, the controls, faucets, and spray unit have to be located on the back wall of the compartment adjacent to the seat wall 16-27” from the seat wall. They must be located above the grab bar.



For alternate roll-in type compartments shown on the top row, the controls, faucets, and shower spray units get located on the side wall of the compartment adjacent ot the seat between 16 and 27 inches from the seat wall. They can also be located on the back wall opposite the seat within 15” to the left or right of the centerline of the seat.

The shower spray units for showers have the same requirements as bathtubs. The only difference is that the California code notes that if they are subject to excessive vandalism, 2 fixed shower heads are permitted instead of hand-held spray units if you meet specific facility requirements.



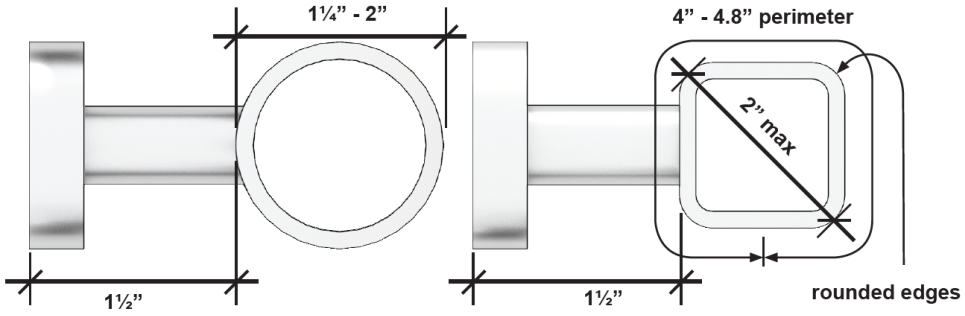
The thresholds at roll-in type showers can be no higher than ½" unless it's an existing facility. Then it can be 2" if a ½" threshold would disturb the structural reinforcement of the floor slab.

The shower floors need to be flat with a slope not exceeding 1:48 in any direction. The grate openings of drains can only be ¼" maximum and must be flush with the floor.

If soap dishes are installed, they must be located on the control wall no more than 40" above the floor and be able to be reached from the seat.

Grab Bars

Grab bars have slightly different requirements than handrails. Circular grab bars need an outside diameter between 1 ¼" to 2". Non-circular grab bars can have a cross-section dimension of up to 2" and a perimeter dimension between 4 and 4.8".



The distance between the wall and the grab bar must be 1 ½". That is an absolute dimension to prevent entrapment. There needs to be at least 1 ½" between grab bars and projecting objects below and at the ends of them. You need 12" of clearance above a grab bar, except in showers. Shower controls, fittings, and other grab bars only need 1 ½" clearance.

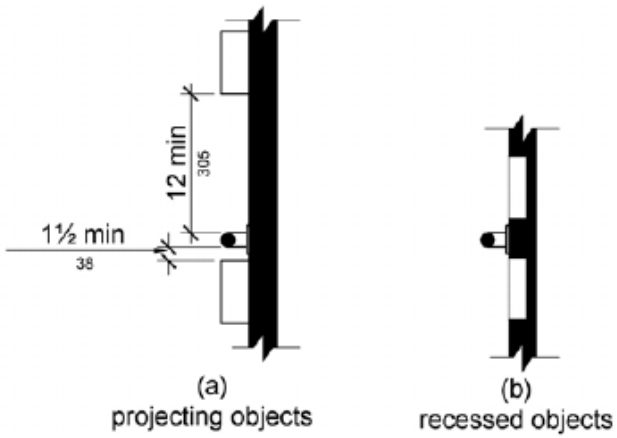
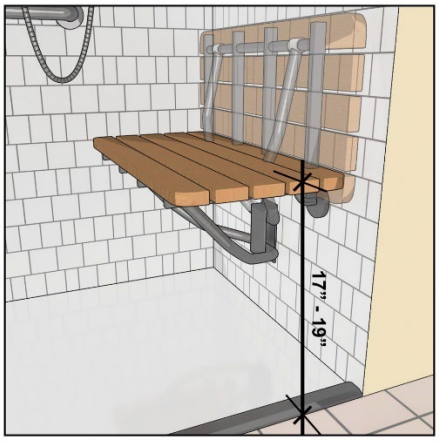


Figure *11B*-609.3
Spacing of Grab Bars

Grab bars cannot rotate within fittings. The structural strength of grab bars must withstand a vertical or horizontal force of 250 lbs. at any point on the grab bar, fastener, mounting device, or supporting structure.

Seats

The top of bathtub seats must be between 17 and 19” above the bathroom floor. The depth of a removable in-tub seat must be between 15 and 16”. Permanent seats need to be 15” minimum.

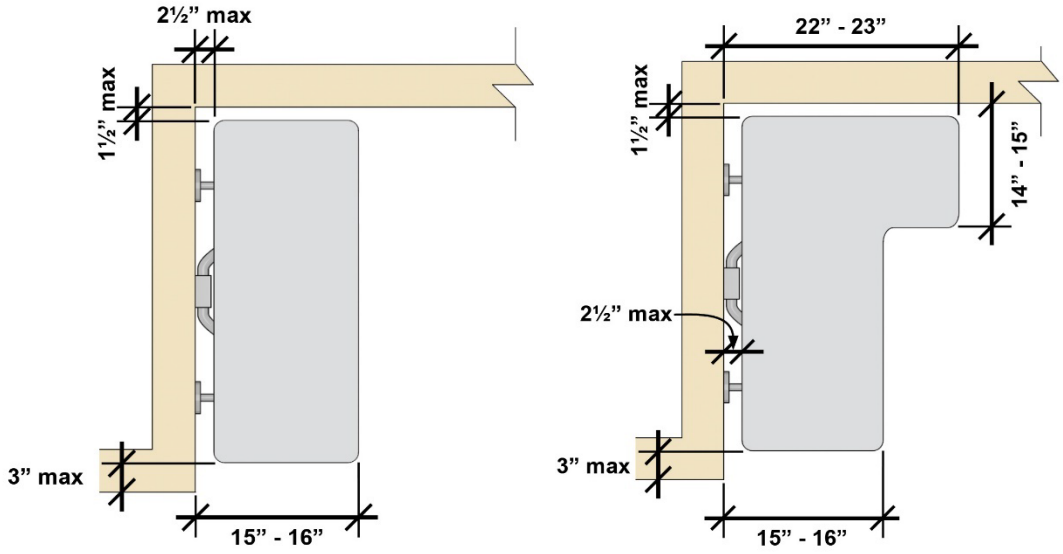


Seats in standard roll-in showers must fold, be installed on the side wall adjacent to the controls, and must extend from the back wall to a point to within 3” of the compartment entry.

For the alternate roll-in entry, the seats must also fold, be installed on the front wall opposite the back wall, and extend from the adjacent side wall to a point within 3” of the shower entry to minimize the transfer gap.

In transfer-type showers, the seat also needs to be 17-19” above the bathroom floor. When it’s in the folded position, it can’t protrude from the wall more than 6”.

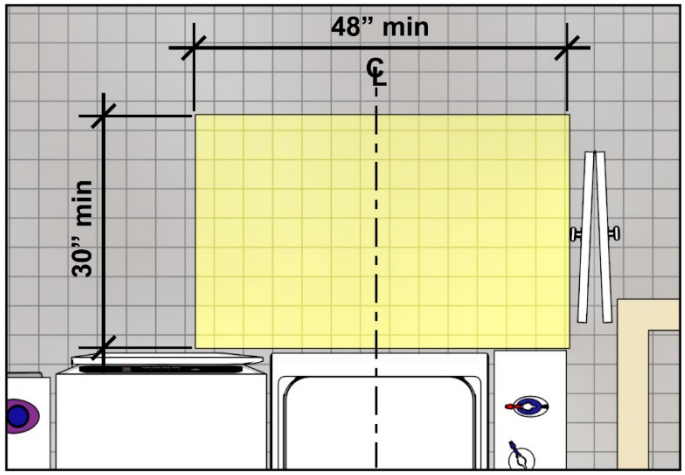
The images below shows the 2 types of shower seats and their dimensional requirements. The L-shaped seat provides additional support and stability from the back wall.



Seats must withstand a vertical or horizontal force of 250 lbs. at any point on the seat, fastener, mounting device, or supporting structure.

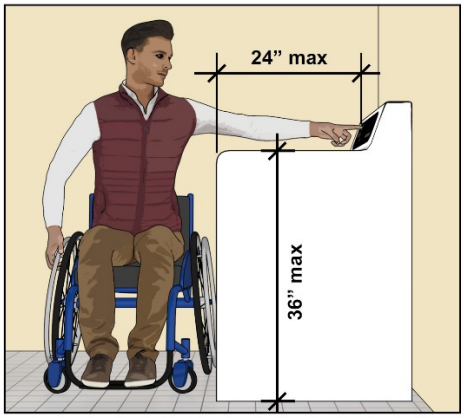
Washing Machines and Clothes Dryers

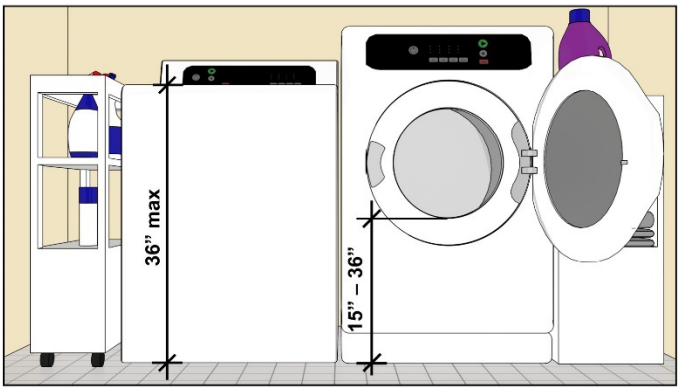
We are almost done with this module. Let's talk about washing machines and clothes dryers. They need a 30 x 48" clear floor space positioned for parallel approach that is centered on the appliance.



The doors, lint screens, and detergent compartments must be in the accessible reach ranges.

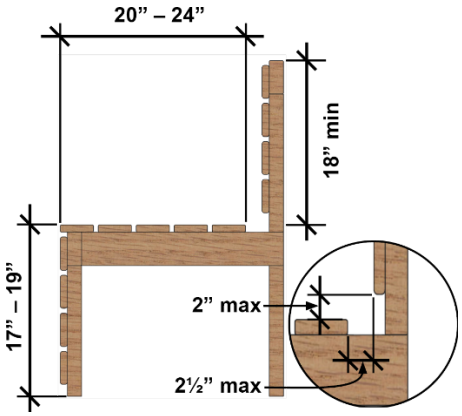
If a top loading machine is installed, the door can't be more than 36" above the floor. For front loading machines, the bottom of the opening can't be less than 15" or more than 36" above the floor.

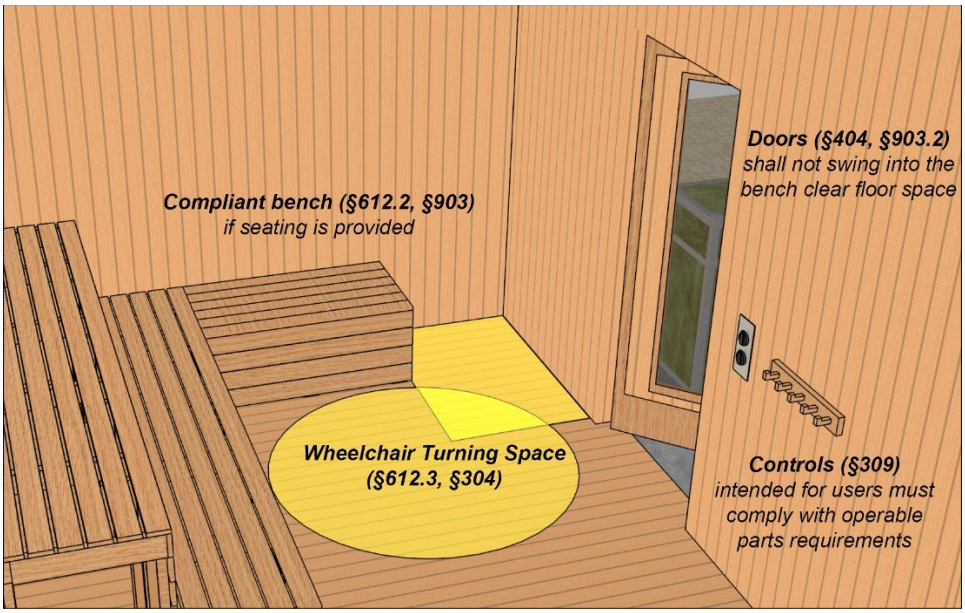




Saunas and Steam Rooms

This is the last section of Module 5 and it covers the last topic for Division 6 in Chapter 11B of the CBC. Saunas and Steam Rooms. Where seating is provided, an accessible bench must be provided. This bench needs a 30” x 48” clear floor space adjacent to the short end of it. The room must have a turning space, as well. The bench, itself, must be at least 48” long and between 20 and 24” deep and be attached to the wall for floor. The top of the seat should be between 17 and 19” above the floor.





Review Questions

5. What is the maximum distance the sign can protrude from the pole for a post and panel sign mounted with the leading edge at 60”?
    a. 0”
    b. 4”
    c. 8”
    d. 12”
6. Which of the following sized doors (width) is accessible?
    a. 28”
    b. 30”
    c. 32”
    d. 36”
7. Which of the following is not accessible?
    a. Top of restroom lavatory at 34” above the finish floor
    b. Bottom of reflecting surface of restroom mirror at 38” above the finish floor
    c. Top of restroom shelf in accessible toilet compartment at 42” above the finish floor
    d. Top of coat hook on door of accessible toilet compartment at 42” above the finish floor

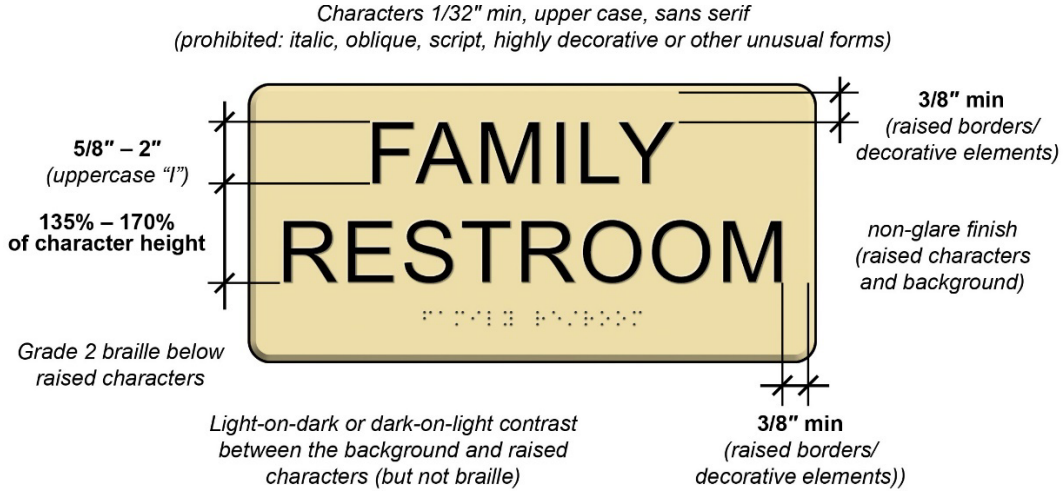
Module 6 – Communication Elements and Features

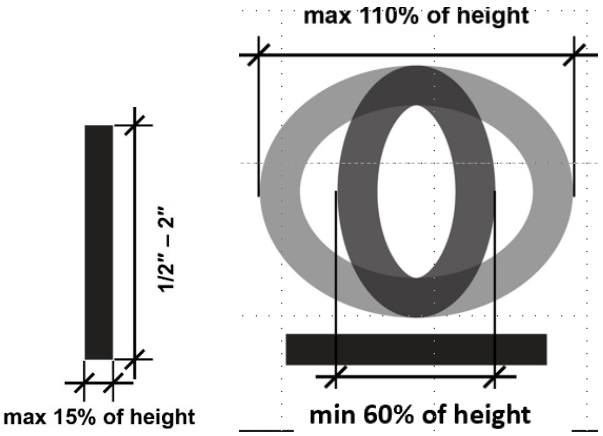
Signs

The next module is about Communication Elements and Features. Let’s first talk about signs. In the scoping section, we went over where signs are needed. Now, we’ll get into some of the specifics.

Something that California has written into the code is that construction documents and specifications must provide the details for the signage so the enforcing agencies can review and approve them. They also must be inspected and approved prior to issuance of a final certificate of occupancy.

There are a lot of guidelines when it comes to the characters of the signs. Raised characters on a sign must be at least 1/32” above their background. Letters must be in uppercase and a sans serif font, so they can’t be italic, oblique, script, decorative, or of other unusual forms. The width of the uppercase letter “O” needs to be 60% minimum and 110% maximum of the height of the uppercase letter I. the images on the right will help you understand what this means. The characters need to be between 5/8” and 2” tall. The uppercase I stroke thickness needs to be no more than 15% of the height of the character.





Spacing between the baselines of separate lines of raised characters within a message must be between 135 and 170% of the raised character height.

Text can’t be vertical. It must be horizontal. If there are raised characters, Grade 2 Braille is also required.

If there are raised characters, Grade 2 Braille is also required. The sizes have to be per the table shown. On the sign, the Braille needs to be directly below the corresponding text, only allowing 3/8”-1/2” between the text and the Braille. The sign needs to be installed so that the bottom edge of the lowest Braille cells is at least 48” AFF. The bottom edge of the top row of tactile characters can’t be higher than 60” AFF.

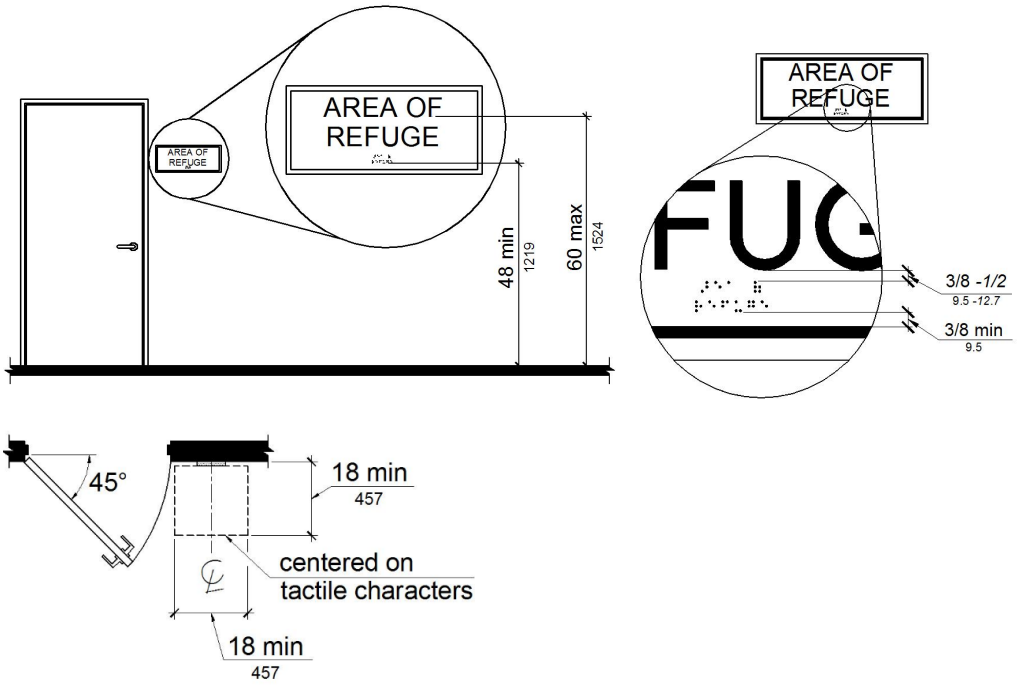


Table *11B*-703.3.1 Braille Dimensions

Measurement Range	Minimum in Inches Maximum in Inches
Dot base diameter	0.059 (1.5 mm) to 0.063 (1.6 mm)
Distance between two dots in the same cell[1]	0.100 (2.5 mm)
Distance between corresponding dots in adjacent cells[1]	0.300 (7.6 mm)
Dot height	0.025 (0.6 mm) to 0.037 (0.9 mm)
Distance between corresponding dots from one cell directly below[1]	0.395 (10 mm) to 0.400 (10.2 mm)
1. Measured center to center.	

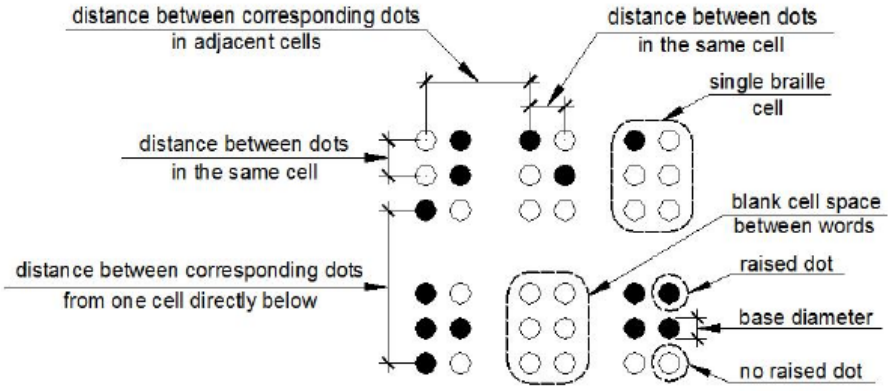


Figure *11B*-703.3.1
Braille Measurement

The sign has to be installed on the latch side of the door. If it's a set of double doors w/2 active leafs, it gets located to the right of the right hand door. If there isn't enough space to put it there, it can be put on the nearest adjacent wall. Signs need a clear floor space of 18" x 18" in front of them and centered on the Braille part of the sign. It can't be within the arc swing of the door because you don't want blind person to get hit while reading the sign. If the sign is for an existing building, it can be installed on the push side of a door if the door has a closer but NOT a hold-open device.

The signs we just went over are the type that have both raised letter AND Braille...so for signs identifying permanent rooms, stairways, floor levels, or the other signs required to have them. Not all signs need raised characters or Braille. There are also requirements for them, as well.

A lot of the requirements are the same – the type of font (can't be italic or a decorative font like script), the proportion of the characters, needing the letters to contrast with the background and have a non-glare finish.

One of the differences is that the letters do NOT have to be all uppercase. They can be both upper and lowercase. The size of the letters depends on what the viewing distance is. The distance is measured horizontally from the sign to any obstruction preventing further approach towards the sign. The table showing the required sizes of the letters is based on the capital letter I.

The signs should get installed so that the visual characters are at least 40" AFF.

Height	Viewing Distance	Min. Character Height
40″ – 70″	under 6′	5/8″
	6′ or more	5/8″ + 1/8″ per foot of viewing distance above 6'
above 70″ to 10′	under 15′	2″
	15′ or more	2″ + 1/8″ per foot of viewing distance above 15′
above 10′	under 21′	3″
	21′ or more	3″ + 1/8″ per foot of viewing distance above 21′

The stroke thickness of the letters of these signs is a little more lax. Once again, it's based on the letter I. The thickness can be 10-20 percent of the height of the character. Spacing between individual characters must be 10-35% of the character height. Line spacing is the same as tactile signs- 135-170% of the character height. The text on these signs also needs to be horizontal…you can't get all creative and write words vertically.

If signs have pictograms, those pictograms have their own guidelines. Pictograms need to be on their own background that's at least 6" high. Neither characters not Braille can be on the same field as the pictogram. As with the other signs, they must have a non-glare finish and the pictogram must contrast with the background….so light on dark or dark on light. Pictograms must have text descriptors below the pictogram field.

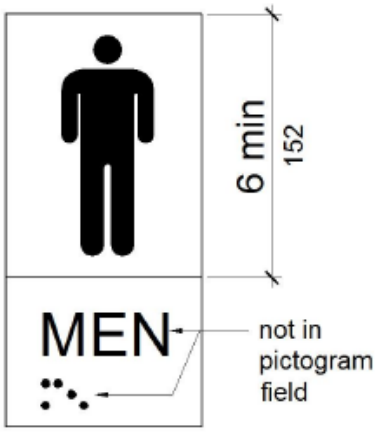


Figure *11B*-703.6.1
Pictogram Field

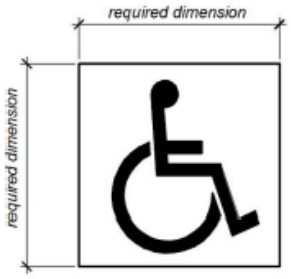


Figure *11B*-703.7.2.1
International Symbol of Accessibility

If the International Symbol of Accessibility is used, it must be a white figure on a blue background unless the enforcing agency approves different colors.

The International Symbol of TTY, Volume Control Telephones, and the International Symbol of Access for Hearing Loss also have their own specific pictograms.

As mentioned earlier in the course, restrooms require identification with geometric symbol signs. Those signs are in addition to the permanent room signs that get mounted adjacent to the door on the latch side. The geometric signs must be mounted on the door so that the centerline of the symbol is between 58 and 60" AFF and they are within 1" of the centerline of the door. Men's restrooms get an equilateral triangle that points upward. Women's get a circle. Unisex restrooms get a combined circle and triangle. The edges of the shapes need to be ¼" thick. Size of shapes is 12". That would be a 12" diameter circle for the women's and a 12" base of the triangle for men's. The edges of the symbols must be rounded.

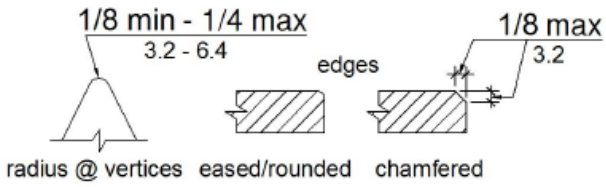
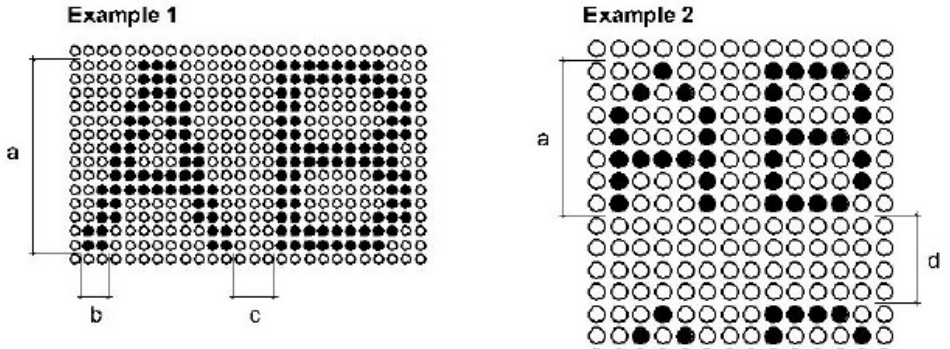


FIGURE 11B-703.7.2.6.4
EDGES AND VERTICES ON GEOMETRIC SYMBOLS

California has added a section in the code for pedestrian traffic-control buttons. If the buttons are pole-supported, a color coding system must be utilized that consists of a 2" textured horizontal yellow band that goes around the pole with a 1" dark band above and below the yellow band. These bands get placed above the control buttons. Since the control buttons must be in accessible reach ranges, they can't be higher than 48" above the ground.

Another group of requirements unique to California are for variable message signs. There are different requirements for high resolution variable message sign characters and low resolution variable message sign characters. High resolution signs must meet the same visual character requirements as those for standard signs that don't have Braille.



	Property	Example 1	Example 2
a	Character Height	14 Pixels	7 Pixels
b	Stroke Width	2 Pixels	1 Pixels
c	Character Spacing	3 Pixels	2 Pixels
d	Line Spacing		4 Pixels

Figure 11B-703.8.5
Low Resolution VMS Characters

If it's a low resolution variable message sign, there are different requirements. All of the characters have to be in uppercase and a conventional font that's not fancy or italic. The size of the letters are determined by the horizontal viewing distance and the top table you see here. If the low resolution sign is in an assembly area where the maximum viewing distance is 100' or more, the height of the uppercase 'I' needs to be 1" for every 30' of viewing distance, but the characters must be 8" minimum. Low resolution signs must meet the pixel counts for the characters shown in the 2nd table there. The bottom left image provides a couple of examples, so you can understand what that table means.

Table 11B-703.8.4 Low Resolution VMS Character Height

Height Above Floor to Baseline of Character	Horizontal Viewing Distance	Minimum Character Height
40 inches (1016 mm) to less than or equal to 70 inches (1778 mm)	Less than 10 feet (3048 mm)	2 inches (51 mm)
	10 feet (3048 mm) and greater	2 inches (51 mm), plus 1/5 inch (5.1 mm) per foot (305 mm) of viewing distance above 10 feet (3048 mm)
Greater than 70 inches (1778 mm) to less than or equal to 120 inches (3048 mm)	Less than 15 feet (4572 mm)	3 inches (76 mm)
	15 feet (4572 mm) and greater	3 inches (76 mm), plus 1/5 inch (5.1 mm) per foot (305 mm) of viewing distance above 15 feet (4572 mm)
Greater than 120 inches (3048 mm)	Less than 20 feet (6096 mm)	4 inches (102 mm)
	20 feet (6096 mm) and greater	4 inches (102 mm), plus 1/5 inch (5.1 mm) per foot (305 mm) of viewing distance above 20 feet (6096 mm)

Table 11B-703.8.5 Pixel Count for Low Resolution VMS

Character Height	Character Width Range	Stroke Width Range	Character Spacing Range
7	5-6	1	2
8	6-7	1-2	2-3
9	6-8	1-2	2-3
10	7-9	2	2-4
11	8-10	2	2-4
12	8-11	2	3-4
13	9-12	2-3	3-5
14	10-13	2-3	3-5
15	11-14	2-3	3-5

Low resolution signs need to be at least 40” above the floor…this is measured to the bottom of the character. They have the same non-glare finish and contrast requirements as other signs. If a VMS message can be displayed in its entirety on a single screen, it has to stay up for at least 1 second for every 7 characters before it can move.

One of the other topics covered in the CBC that I’m going to skip is telephones. It’s rare that they are being installed with the abundance of mobile phones, but if you’re doing a project where public phones are being installed, you should review 11B-704 in the CBC.

Detectable Warnings

Detectable warnings are very important for the blind, people with low vision, or simply those staring at their mobile phones while walking. If you aren’t familiar with them, they are defined as ‘A standardized surface feature built in or applied to walking surfaces or other elements to warn persons with visual impairments of hazards on a circulation path.’ The only warnings that currently comply are truncated domes. In the scoping section, we went over the general location of where they are required. Now, we’ll go over their technical requirements.

First they need to have a base diameter between .9 and .92”. The top diameter needs to be between .45 and .47”. The height must be .2”. The domes have to be spaced between 2.3 and 2.4” on center. If the domes are installed in a radial pattern, then the spacing should be between 1.6 and 2.4” on center.

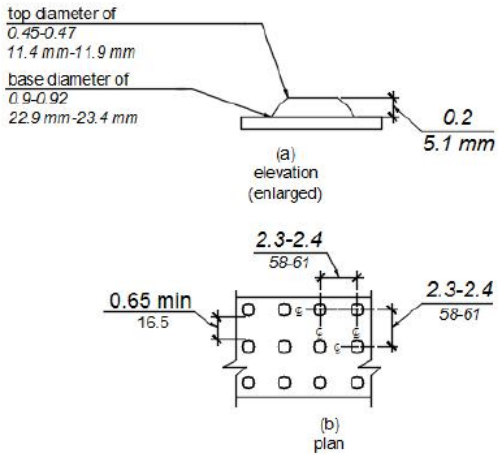


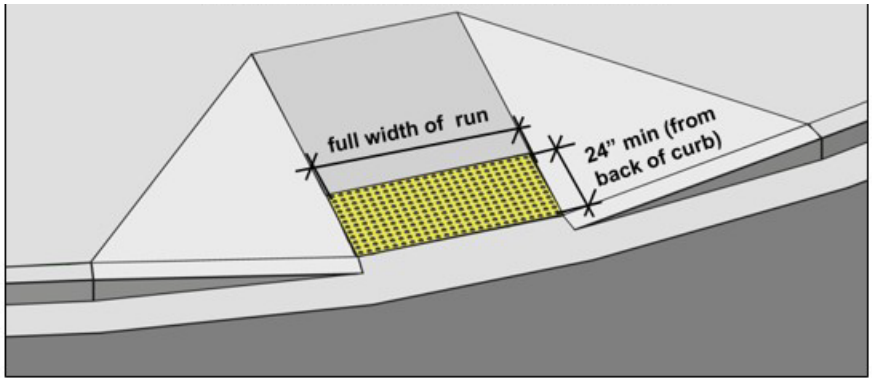
Figure *11B*-705.1
Size and Spacing of Truncated Domes

The detectable warnings must be yellow and provide at least a 70% contrast with adjacent walking surfaces. If you look in Division 11B-705, you can see how the % is calculated.

Now, the specifics on where they get placed.

At platform boarding edges, they need to be along the entire length of the public use areas and 24” wide.

At perpendicular curb ramps, they need to extend 36” in the direction of travel and extend the full width of the ramp as shown on image below.



At parallel curb ramps, the image below shows where to place the truncated domes. Basically, you want to provide 36” of flat space at the bottom of the ramp without the domes for maneuvering.

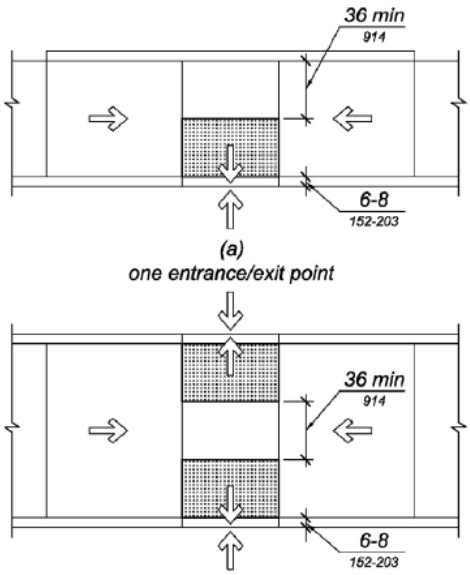


FIGURE 11B-705.1.2.2.2
PARALLEL CURB RAMPS

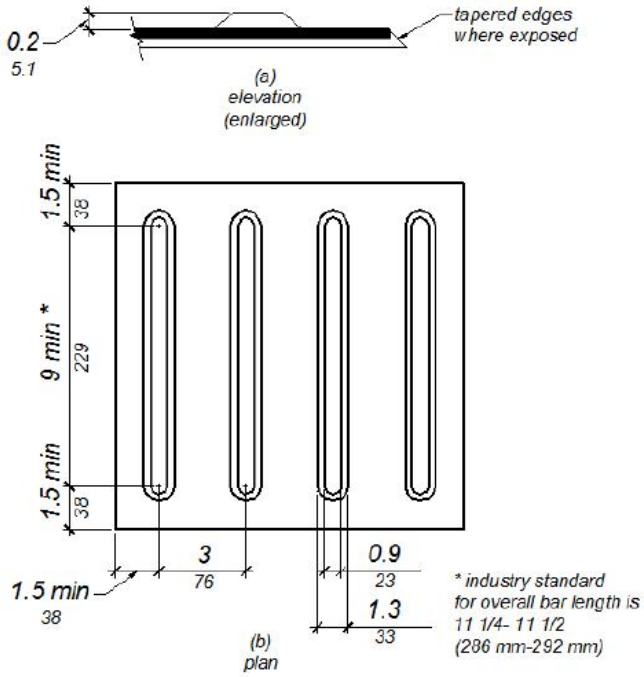
At cut-through medians, the detectable warnings need to be 36” in depth. They need to extend the full width of the pedestrian path and be separated by at least 24” of walking surface without them. If the median is less than 9’ in the direction of pedestrian travel, then you only need 24” of domes instead of 36”.

At bus stops, the domes should extend the full width of the boarding area and be 36” wide.

At blended transitions, they should be 36” wide.

At track crossings, they should also be 36” wide in the direction of travel.

Transit boarding platforms get detectable texture as shown in the image below. It, also, must be yellow in color. It gets placed directly behind the truncated domes. It should be the same width as and align with all doors of the transit vehicles where passengers will embark. This directional texture must be at least 36” deep.



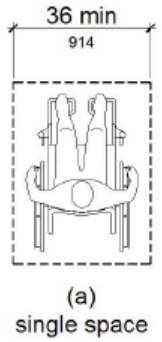
Module 7 – Special Rooms, Spaces and Elements

Wheelchair Spaces

In this next module, we will cover special rooms, spaces, and elements. Let’s start with wheelchair spaces, companion seats, designated aisle seats and semi-ambulant seats.

It’s a given that they need to be flat with a slope no more than 1:48. Detectable warnings are not permitted in wheelchair spaces, either.

The width of a single wheelchair space is 36”. If 2 adjacent spaces are designed, the width for each can be reduced down to 33”. The depth will be at least 48” if you enter from the front or back. If you enter from the side, it needs to be 60” deep to allow enough room for a wheelchair to turn 90 degrees.



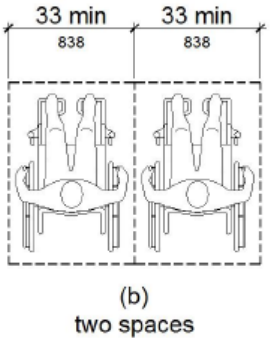
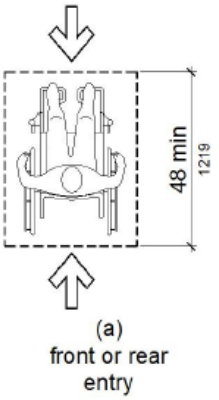


Figure *11B*-802.1.2
Width of Wheelchair Spaces



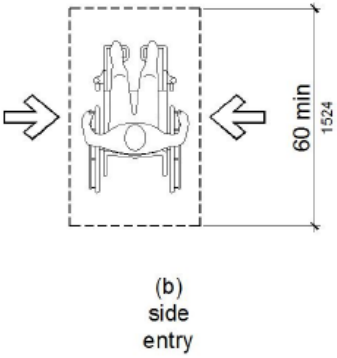


Figure *11B*-802.1.3
Depth of Wheelchair Spaces

As with any accessible element, you need an accessible route to the wheelchair spaces.

Lines of Sight

In assembly areas, achieving adequate lines of sight for wheelchair users can be tricky. There are a lot of considerations. The code's requirements are based on if spectators are expected to remain seated or be standing during events. In an auditorium designed primarily for recitals, I'd say that you could design for seated spectators. For football stadiums, you'd have to design for standing. The entire purpose is equivalent accommodation. If the seating at a venue is designed where standard seats give you sightlines over the heads of the row in front of you, then the wheelchair spaces need to do the same. If the sightlines are designed so that people in the standard seats need to look between the heads of those in front of them, it's okay to design the wheelchair seats similarly. The same is true for venues where spectators are expected to be standing. In this case, the wheelchair spaces will need to be a lot higher than the rows in front of them.

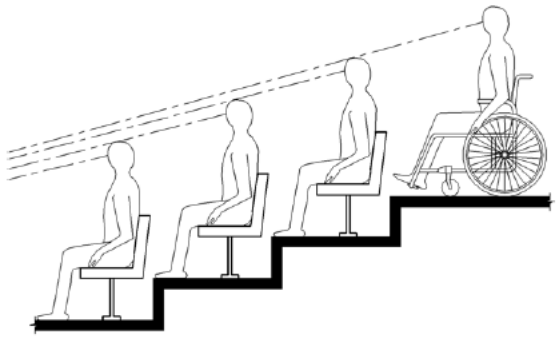


Figure *11B*-802.2.1.1
Lines of Sight Over the Heads of Seated Spectators

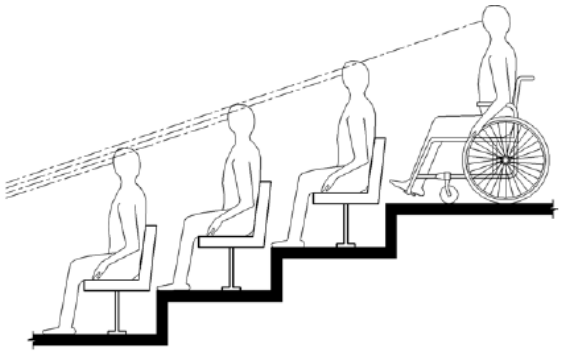


Figure *11B*-802.2.1.2
Lines of Sight Between the Heads of Seated Spectators

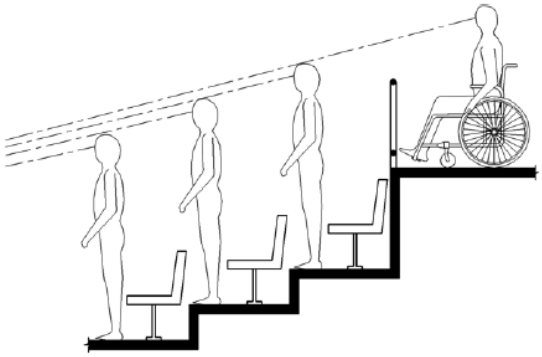


Figure *11B*-802.2.2.1
Lines of Sight Over the Heads of Standing Spectators

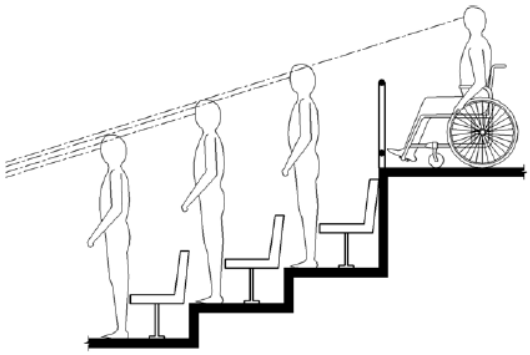


Figure *11B*-802.2.2.2
Lines of Sight Between the Heads of Standing Spectators

If you remember from the scoping section, wheelchair spaces need companion seats. There are requirements for those, too. At row seating, a companion seat has to be located so the person sitting there will be aligned with the person in the wheelchair. Their shoulders need to be aligned. The shoulder alignment point of the wheelchair is said to be 36" from the front of the wheelchair space. Companion seats must be the same size, quality, comfort and have the same amenities as the other seating in the immediate area. They do not have to be stationary.

5% of the total number of aisle seats must have armrests that fold on the aisle side of the seat and be labeled with the International Symbol of Accessibility. This type of seat is intended for people who have a hard time walking.

At least 1% of seating must be what they call semi-ambulant with at least 24" of clear leg space in front of them.

Dressing, Fitting, and Locker Rooms

You may remember from the scoping section that at least 5% of dressing rooms, fitting rooms, or locker rooms that are provided in a cluster must be accessible. 222.1

Accessible rooms need a turning space. Doors can't swing into the dressing room unless a turning space is provided beyond the arc of the door swing.

Accessible benches are also required. They have the same requirements as the benches mentioned when we were talking about saunas and steam rooms.

Any coat hooks have to be in an accessible reach range and can't be above the bench or other seating in the room. Any shelves installed need to be between 40 and 48" AFF.

If mirrors are installed, they need to be full-height mirrors that are positioned with the bottom edge of the reflecting surface no more than 20" above the floor. They need to be at least 18" wide by 54" tall. If a mirror is installed, the person on the bench needs to be able to see themselves.

Kitchens, Kitchenettes, and Wet Bars

Let's discuss kitchens. Turning spaces are required in kitchens within multi-bedroom housing units and on floors containing accessible sleeping rooms with adaptable features in undergraduate student housing.

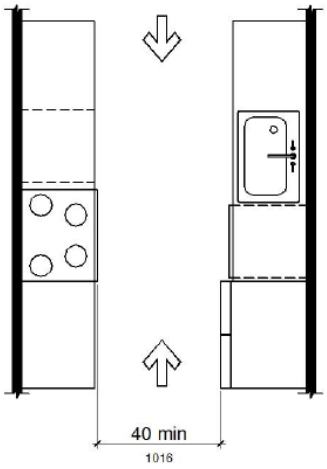


Figure *11B*-804.2.1
Pass Through Kitchens

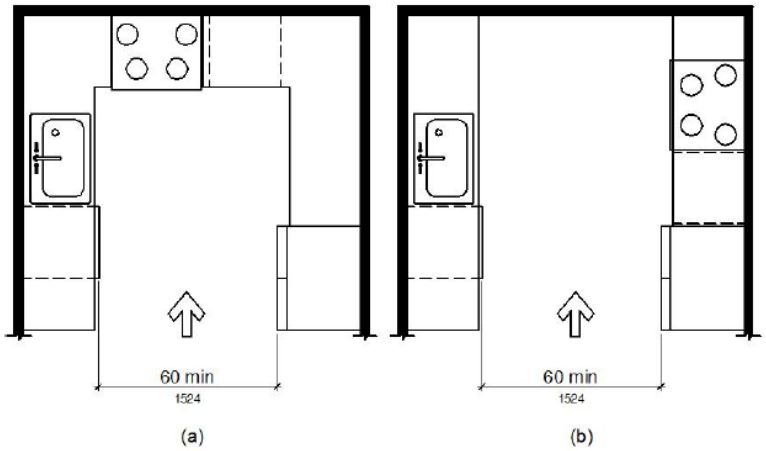


Figure *11B*-804.2.2
U-Shaped Kitchens

Basically, there are 2 types of kitchens – pass through kitchens and U-shaped kitchens. The first graphic shows a passthrough kitchen. You need a minimum of 40" between the cabinets that are on opposite walls.

The second graphic shows a couple of different types of U-shaped kitchens. It doesn't matter if cabinets are on 3 walls like image (a) or on 2 walls like image (b) – 60" of clearance is required.

In residential dwelling units that are required to be accessible, at least one 30" wide section of the counter needs a kitchen work surface that has an accessible knee space and toe clearance under the counter.

In kitchens within multi-bedroom housing units and on undergraduate student housing floors containing accessible sleeping rooms with adaptable features, it also needs that 30" wide work surface for forward approach. .

You may remember from earlier in the course that there is an exception to the forward approach clear floor space. As long as the kitchen can be modified very easily to incorporate the knee space, cabinets can be installed. They must meet several requirements, though. The cabinets would have to be able to be removed without removing the countertop, the finish floor has to extend under the cabinet, AND the walls behind the cabinet have to be finished.

The countertop needs to be no more than 34" aff. If the countertop is adjustable to a lower height, it could go up to 36".

You have to include a knee space under the sink.

At least 50% of the storage needs to be within accessible reach ranges.

Any appliances need to have either a parallel or forward approach clear floor space. Appliance controls need to be in an accessible reach range. You can't reach over burners to access the controls. Oven controls have to be on front panels. In the image on the right, you can see an oven/stove combo unit that has

digital controls on a panel at the front of the unit. It's also an induction unit that could prevent burns. The section of the countertop with a knee space has to go next to the oven.

Dishwashers need a clear floor space adjacent to the door in the open position.

When looking at spec-ing a refrigerator/freezer unit, at least 50% of the freezer space needs to be no higher than 54" aff.

Medical Care and Long-Term Care Facilities

Our next topic is medical care and long-term care facilities. All public spaces have to be accessible. Waiting rooms are required to have 5% of their seating be wheelchair spaces. If it's a facility that's mostly deals with people having mobility issues, then 10% of the seating needs to be wheelchair spaces.

The patient rooms that are required to provide mobility features need an accessible sink with knee and toe clearance. They also need beds with a 36" wide clear space on each side of the bed. Of course the rooms need turning spaces and accessible bathrooms.

For the exam, diagnostic, and treatment rooms, you also need a 36" wide clear floor space on each side of the exam tables and beds. Those rooms also need a turning space.

Changing rooms at a medical place have the same requirements as other dressing, fitting, and locker rooms.

Sinks in exam rooms have to be accessible unless it's a scrub sink.

All built-in cabinets and work surfaces at a medical establishment must be accessible... Even work areas such as nurse's stations or medicine prep areas.

Transient Lodging Guest Rooms

Transient Lodging Guest Rooms – For guest rooms that are required to have mobility features, the living and dining areas must be accessible as well as the exterior spaces that serve those guest rooms. One of the beds needs a 36" x 48" clear space on both sides of it. If you provide that clear floor space between 2 beds, both sides of the bed don't need a clear floor space.

Hotels like to have barriers under beds, so objects can't get left under there. In an accessible room, that's not allowed all of the way around the bed because there needs to be room under the bed for a personal lift device. This space has to be on an accessible route on the long side of the bed, extend 30" under the bed to a height of 7", and come within 12" of the head end and foot end of the bed.

One of the bathrooms in the guest room needs to be accessible. If a kitchen is provided, it also needs to be accessible. The room also needs a turning space.

For the guest rooms that are required to have accessible communication features, the fire alarms must have audible and visible alarms. The room is also required to have notification devices that alert the occupants of incoming phone calls and doorbells. Telephones need volume controls and be able to connect to a TTY.

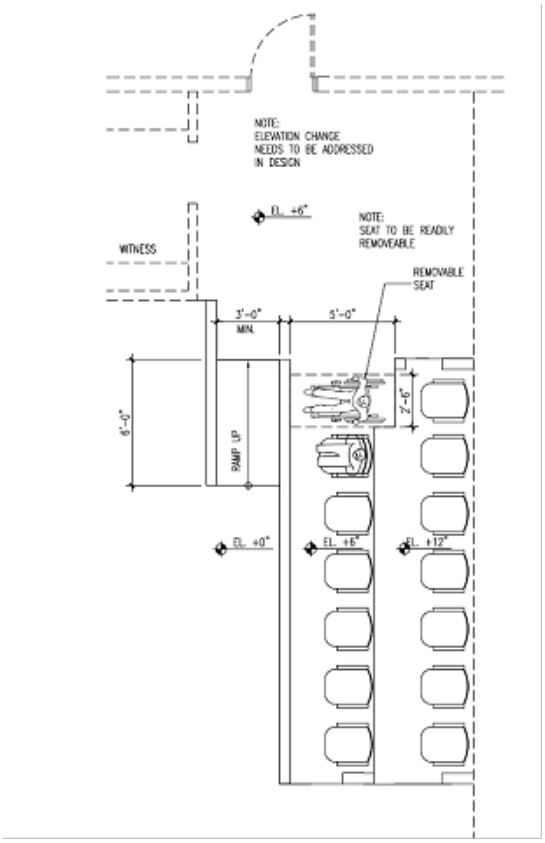
Holding Cells and Housing Cells

Now onto prisons and jails. For cells that are required to have mobility features, they must have a turning space, an accessible bench, and a clear floor space on one side of the bed. If a bathroom is attached to the cell, it must be accessible.

For cells that are required to have accessible communication features, if audible emergency alarms are provided, visible ones are also required…unless the inmates aren't allowed to travel by themselves. If telephones are provided in a cell that's required to have communication features, it must have volume controls.

Courtrooms

Turning spaces are needed in every level in courtrooms. This includes raised or depressed areas that are accessed by ramps or platform lifts.



Each jury box and witness stand is required to have a clear floor space unless it's an alteration project.

All of the work surfaces in the courtroom such as judges benches, clerks stations, and counsel stations need to be at accessible heights between 28 and 34" with a clear floor space under them

Residential Dwelling Units

You may remember from the scoping section that within public housing facilities, a certain # of residential dwelling units are required to be accessible with mobility and communication features. Others are required to have adaptable features.

If a residential dwelling unit is required to have mobility features, accessible routes must be provided inside the unit that connect all spaces and elements of the unit. Every room needs a turning space. The kitchen must be accessible. At least one bathroom in the unit also must be accessible.

If the residential dwelling unit is required to have mobility features, if fire alarms, smoke detection systems, and carbon monoxide detection systems are provided in the unit, they must be designed for the future installation of visual devices in case there is a hearing impaired person who moves into the unit. If the residential dwelling unit is required to have mobility features, it must also have a hard-wired electric doorbell that provide an audible and visual signal. The entry doors need wide angle peepholes. If there's an intercom system to communicate with visitors, it must have a phone jack that can support TTY.

For multifamily residential dwelling units that are required to have adaptable features, they need a 36" wide accessible route through the entrance, through all rooms, and exterior decks or balconies. At doors, the clear opening can go down to 32". Ramps, elevators, or platform lifts must be installed if there are changes in level greater than ½".

The doors have different requirements than standard accessible doors. The opening force can be a maximum of 8.5 lbs. At the primary entry doors, exterior doors, and required exit doors, you need 44" of clearance lengthwise in front of the door and 18" beyond the latch on the pull side of the door. The interior doors need 42 inches in front of them lengthwise on both sides of the door, and it also has to extend 18" beyond the latch on the pull side of the door. If your interior door has a clear width of 34" instead of 32", the length can be reduced to 39" from 42".

Adaptable units also need door buzzers, bells, or chimes. The button can't be mounted higher than 48" AFF.

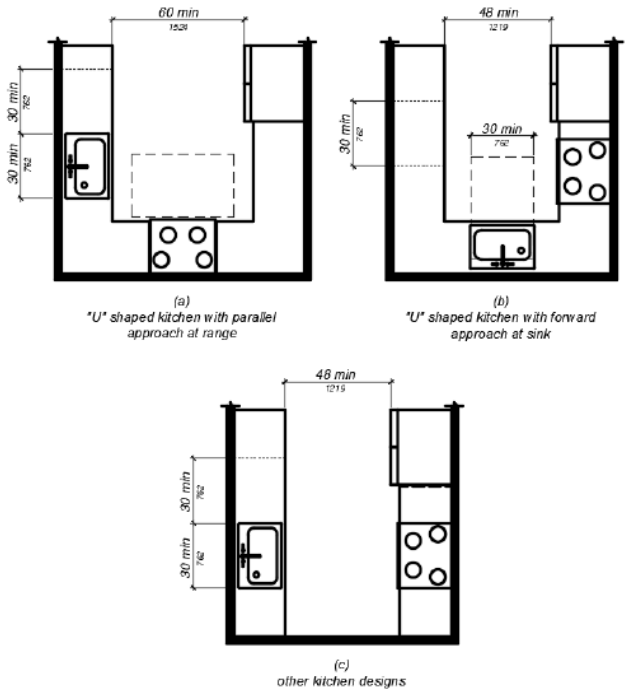


FIGURE 11B-809.9.2
CLEAR WIDTH AT KITCHENS.

Kitchens in adaptable units need parallel 30 x 48” clear floor space at the range. They need a parallel or forward clear floor space at the cooktop, sink, a work surface, and the other fixtures and appliances. U-shaped kitchens that don’t have any knee spaces like image (a) need 60” of clearance between parallel cabinets. If a U-shaped kitchen provides a knee space at the base of the U as it does in image (b) here, that clearance between parallel cabinets can go down to 48” because the knee space can be used in the turning clearance. All other kitchens need 48” of clearance as you can see in image (c).

The sinks in adaptable units need removable base cabinets under them that’s 30” long, so a forward approach can be accommodated easily. This is also required at a 30” length of countertop. The work surfaces can be 36” high.

There needs to be shelving within accessible reach ranges at or below 48”. The faucets must be accessible. Exposed drainage pipes need to be covered or insulated.

The toilet and bathing rooms in adaptable residential dwelling units have specific requirements that are different from standard accessible restrooms.

If a door swings into the bathroom, a clear floor space of 30 x 48” is required beyond the arc of the door swing. A turning space is NOT required.

Bathtubs or bathtub/shower units need a 30 x 48” clear floor space next to them and adjacent to the controls that are located on the wall at the foot of the tub. Toilets and Cabinets under sinks can’t overlap the tub’s clear floor space.

Reinforcement has to be installed in the wall for grab bars as shown on the figure below.

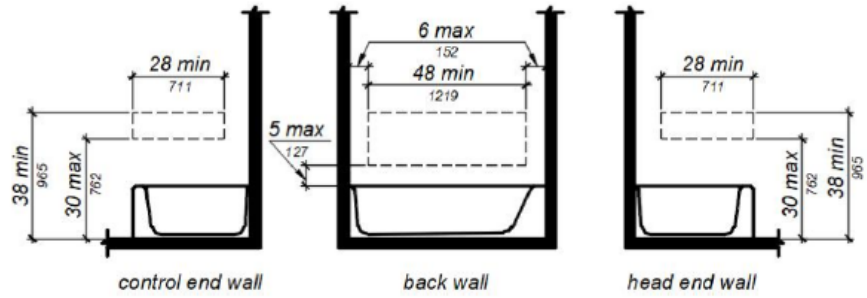


FIGURE 11B-809.10.5.2 REINFORCEMENT FOR GRAB BARS.

Bathtub enclosures need to be constructed from shatter-resistant materials. Hinged doors have to swing out. If the enclosure is glass, it has to be tempered, laminated safety glass.

If one or more showers are installed in an adaptable unit, at least 1 needs to be accessible. There are 3 options. It can either meet the requirements for the 36" x 36" transfer type shower we discussed earlier. If you need a reminder, it's figure 11B-608.2. The third option is a shower stall that is 36"deep x 60" wide with a 36" wide entrance. The slope of the shower floor can't exceed ½" per foot. The floor has to be slip resistant. The CBC goes as far as telling you that it must be Carborundum, a grit-faced tile or another material that can provide equal slip-resistance. A 30 x 48 clear floor space is required adjacent to the shower positioned so you can reach the controls. Walls must be reinforced for the future addition of grab bars as shown in figure 11B-809.10.6.4. Thresholds into the shower can't be higher than 2". They also need beveled edges.

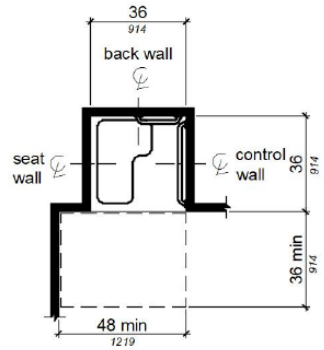


FIGURE 11B-608.2.1
TRANSFER TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

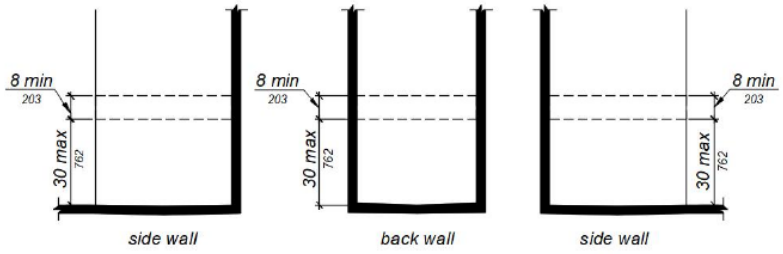


FIGURE 11B-809.10.6.4 REINFORCEMENT FOR GRAB BARS.

A 36" deep by 48" wide clear floor space is required in front of the toilet. The other dimensional requirements are shown in figure 11B-809.10.7.1. The toilets have to be located so that a grab bar can be

installed on at least one side of the fixture in the future. Reinforcement must be installed in the wall so the grab bars can be easily added in the future. Those locations are represented in figure 11B-809.10.7.3

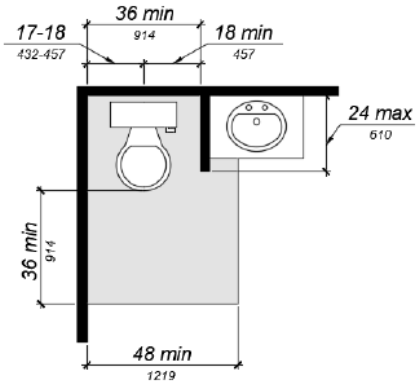


FIGURE 11B-809.10.7.1 FLOOR SPACE.

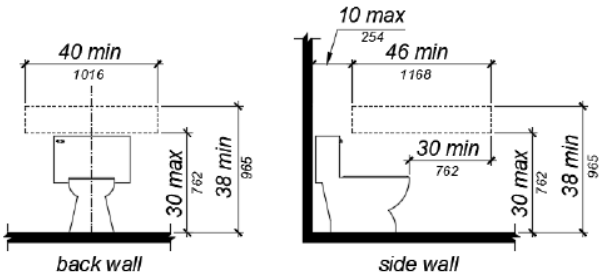


FIGURE 11B-809.10.7.3 REINFORCEMENT FOR GRAB BARS.

Toilet seats can be 15 to 19” AFF. Controls can’t be higher than 44”.

Sinks without base cabinets need to be installed so that the centerline of the sink is at least 18” off of the adjacent wall. If base cabinets are installed, that centerline dimension increases to 24”. The top of the vanity can’t be higher than 34” above the floor. A 30 x 48” clear floor space is required to be centered on the sink. If cabinets are installed, they must be able to the removed easily. Accessible knee and toe clearance must be provided under the sink with the cabinets removed. Drains must be covered or insulated. The bottom edge of mirrors needs to be no higher than 40” above the ground. Towel bars can’t be higher than 40”.

The electrical receptacles, controls, and switches need to be mounted within accessible reach ranges unless they are in a kitchen. There are exceptions to accommodate standard sized cabinets. If you have to reach over a kitchen counter and base cabinet, the work surface can be 36” high and the base cabinet can be 24” deep. The countertop will overhang it to make the maximum reach range of 25 ½”. If a receptacle is at a corner work surface, one has to be located 36” from the inside corner as shown in figure 11B-809.12.

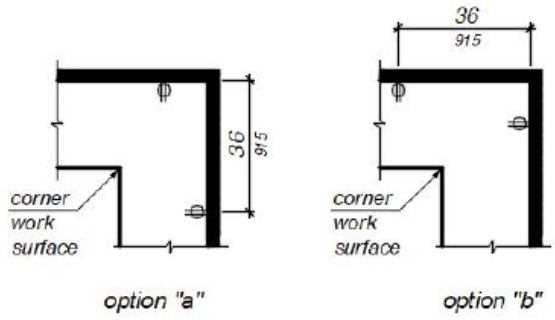


FIGURE 11B-809.12
ELECTRICAL RECEPTACLES AT CORNER WORKSURFACES

Okay, we are done talking about residential dwelling units. Next up, transportation facilities.

Transportation Facilities

The accessible boarding area cannot be in a different location than what the general public uses. Baggage check-in and pick-up areas must be on an accessible route.

Bus stop boarding and alighting areas must have a clear space that's 60" wide x 96" long as shown in the figure here. New areas need a detectable transition between the boarding/alighting area and the road. This detectable transition is a curb that's face is sloped up to 35 degrees OR detectable warnings can be installed. The slope in the boarding/alighting area needs to be flat with a slope no more than 1:48.

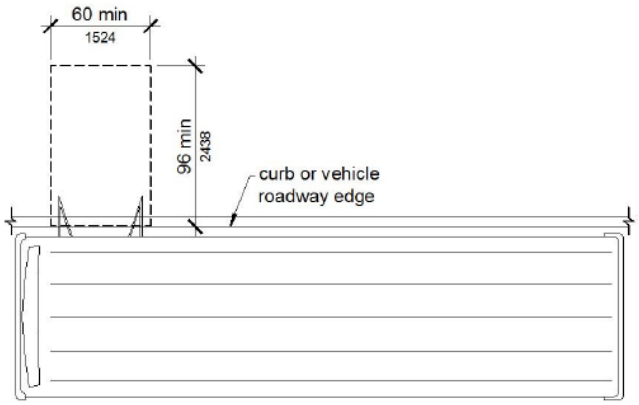


Figure *11B*-810.2.2
Dimensions of Bus Boarding and Alighting Areas

Bus shelters are required to have a 30 x 48" clear floor space and have an accessible route to the boarding/alighting area.

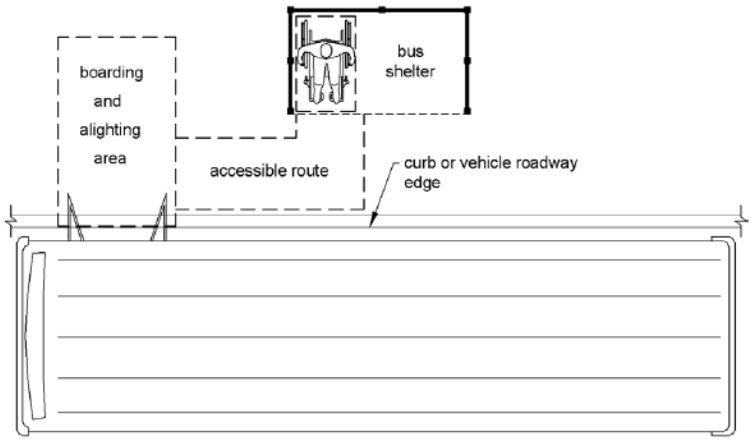


Figure *11B*-810.3
Bus Shelters

Rail platforms need detectable warnings at boarding edges that aren't protected with screens or guards. If you've got a sign that identifies a rail station's entrance, it must be accessible with Braille. The signs that list the stations, routes and destinations must meet the sign requirements for visual characters.

If a public address system is provided, the same information must be conveyed in a visual format, as well. Escalators need a clear width of 32".

Electric Vehicle Charging Stations

Now, we'll get into electric vehicle charging stations. The operable parts at accessible electric vehicle charging stations must be accessible. Access aisles must be flat with a slope not exceeding 1:48. Accessible spaces, access aisles, and the routes to them need a vertical clearance of 98". There needs to be an accessible route from the accessible spaces to the building. The route to the EV charger needs to be accessible, as well. Curbs, wheel stops, or other barriers need to be used to prevent vehicles from encroaching on accessible routes.

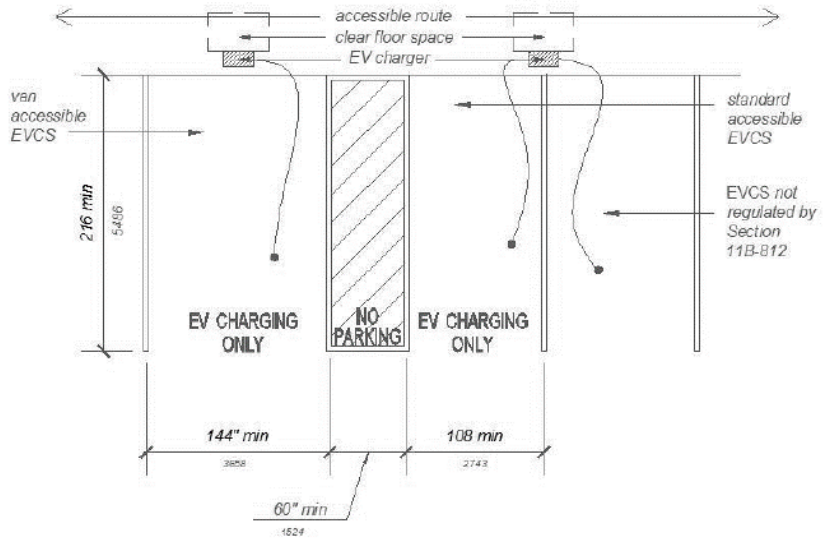


FIGURE 11B-812.9
SURFACE MARKING

Accessible spaces must be at least 18' long and must have the width marked. If it's a parallel parking space, it needs to be 20' long. Drive-up EVCS vehicle spaces have to be at least 18' long; their width doesn't have to be marked.

Van accessible spaces need to be 12' wide and have a 5' wide access aisle next to them. Standard accessible spaces must be 9' wide with an adjacent 5' wide access aisle. Ambulatory EVCS have to be 10' wide with an access aisle. Drive-up spaces must be 17' wide; they don't need an access aisle.

Access aisles get marked in the same way as those for standard vehicle accessible spaces.

If there are 4 or less EVCS, you don't have to mark the accessible ones. If there are 5 to 25 spots, one van accessible spot needs to be identified with the International Symbol of Accessibility. If there are 26 or more EVCS, all of the required van accessible spots must be marked. Ambulatory and drive-up spaces don't need to be marked. The parking signs have the same dimensional requirements as for standard accessible spaces. EVCS spaces have to be marked IN 12" letters with the words EV CHARGING ONLY.

The chargers and cord storage must be within accessible reach ranges. And have a clear floor space adjacent to them. The graphics on the screen must have characters that are at least 3/16" high, contrast with their background, and be in a Sans Serif font. The point-of-sale device needs to have a tactilely discernible numerical keypad.

The charges need to be located adjacent to and within the width of the space they're serving. For existing facilities, if an accessible route isn't provided at the head end of the parking space or access aisle, the EV

charge can be in the access aisle up to 36” from the head end or foot end of the vehicle space. For parallel parking spaces, the EV charger needs to be adjacent to the parking space within 48” from the head or foot end of the vehicle.

Adult Changing Facilities

The last topic we are going to cover in this module is adult changing facilities. 30” x 70” changing tables must be provided within a unisex toilet room or other private room. They must be attached to the floor or wall. 36” of clearance is needed along one entire side and at each end of the table. The tables must be power operated and go from a height of 17” to 38”. The operable parts must be within an accessible reach range and have a clear floor space next to them. 300 lb is the required weight limit. When in operation, they can’t obstruct the required width of an accessible route. In the room with the adult changing table, an accessible toilet, sink, coat hook, shelf, and waste receptacle are required. The restroom also needs a turning space. A door can only encroach into the turning space by 12”. If a 30”x48” clear floor space is provided beyond the arc of the door, the door is allowed to swing into the clear floor spaces required for the fixtures and changing table. Privacy latches are required in these restrooms.

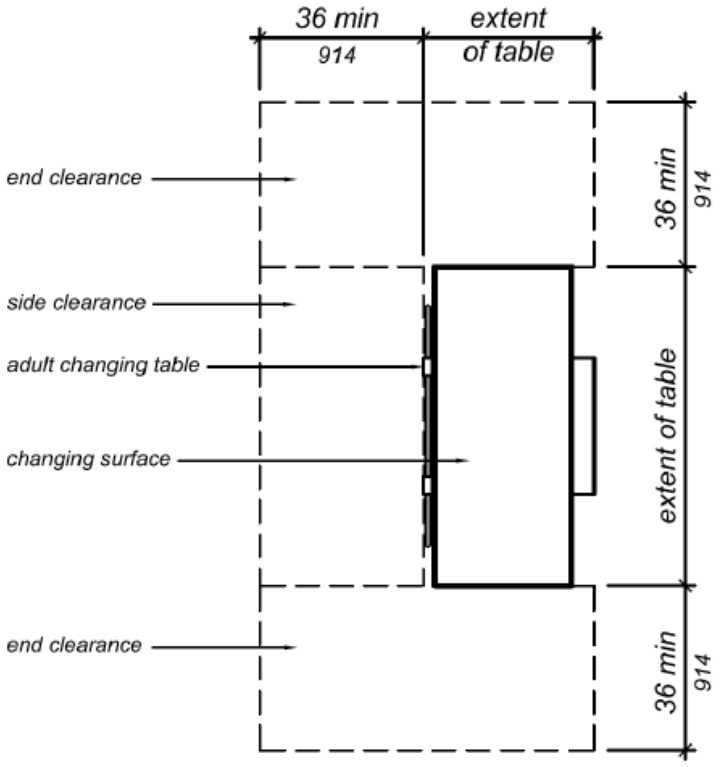


FIGURE 11B-813.2.1.2
CLEARANCE AROUND ADULT CHANGING TABLE

Room identification signs need to say ‘ADULT CHANGING ROOM’. Informational signs should be posted near the changing table that provides the maximum weight capacity of the table. When an amusement park has a central directory, it needs to show the location of the adult changing facilities.

Module 8 – Built-In Elements

In this short module, we will cover a few built-in elements that we haven't already covered.

Check out counters can't be higher than 38". The counter can have a lip that goes up an additional 2". Check writing surfaces must be between 28 and 34" above the floor. If all check-out aisles aren't accessible, the ones that are accessible need to have a sign with the International Symbol of Accessibility.

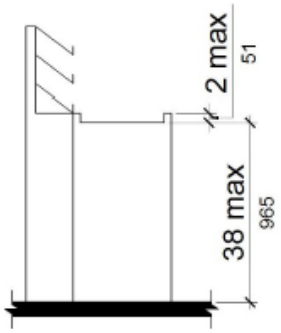


Figure *11B*-904.3.2
Check-Out Aisle Counters

For sales and service counters, there needs to be an accessible portion of the counter with either a parallel approach or a forward approach. The accessible part of the counter must be the same depth as the rest of the countertop. For a parallel approach, a 36" long portion of the counter needs to be 34" high max. A 30 x 48" clear floor space must positioned next to it. If the counter surface is less than 36", the entire counter should be at a height of 34" or lower.

In an alteration, if this would result in less counters, a 24" long (instead of a 36" long) portion that's no higher than 34" can be provided for a parallel approach if the clear floor space is centered on the part of the counter that's accessible.

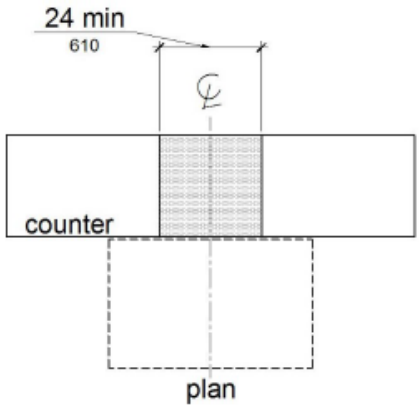


Figure *11B*-904.4 (Exception)
Alteration of Sales and Service Counters

If you're providing a forward approach, you'd also need a 36" wide space that no higher than 34", but you'd also provide accessible knee and toe clearance under it.

At self-service areas of food service lines, the shelves and dispensing devices need to be within accessible reach ranges. Tray slides must be between 28 and 34" above the floor.

If there is security glazing at a counter, there needs to be a way to talk to the employee on the other side of the glass. This could be an opening in the glass. It could also be intercoms or telephone handset devices. If telephones are provided, they need volume control.

Module 9 – Recreation Facilities

We have finally reached the last module. We don't have time to cover everything that's in Division 10 of the code, but I've listed the various types of recreation facilities that are covered and where you can find them:

- Amusement rides (11B-1002)
- Recreational boating facilities (11B-1003)
- Exercise machines and equipment (11B-1004)
- Fishing piers and platforms (11B-1005)
- Golf facilities (11B-1006)
- Miniature golf facilities (11B-1007)
- Play areas (11B-1008)
- Swimming pools, wading pools, and spas (11B-1009)
- Shooting facilities with firing positions (11B-1010)

Swimming Pools

Since public swimming pools are one of the more common locations to design, I'll go ahead and go over the requirements. You may remember from the scoping section that swimming pools need two accessible ways to get into them unless the pool falls under the exception for smaller pools with less than 300 linear feet around them. The primary method must be either a pool lift or a sloped floor. Secondary methods include transfer walls, transfer systems, or pool stairs.

Pool lifts are one of the primary accessible means of entry into a swimming pool. Pool lifts are required to be positioned at the shallow end of the pool where the water level is no greater than 48 inches deep unless the entire pool has a depth that is greater than 48 inches. This allows someone to stand and help from the pool. If more than one lift is provided, only one needs to be at the shallow end. The centerline of the lift seat should be at least 16 inches away from the edge of the pool as you can see in Figure 11B-1009.2.2. The deck in this area needs to be relatively flat with a slope of 1:48 or less. A 36 inch by 48 inch clear deck space is required on the side that is away from the pool. To provide adequate space for someone to transfer from their wheelchair onto the seat, the clear floor space should not extend further than 12 inches behind the edge of the seat back as shown in Figure 11B-1009.2.3.

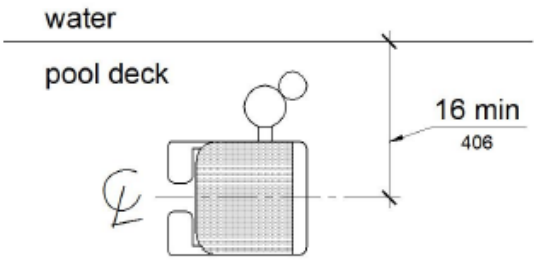


Figure *11B*-1009.2.2
Pool Lift Seat Location

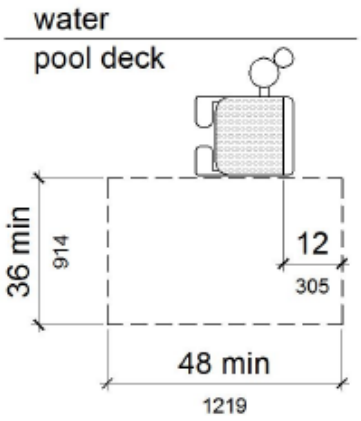


Figure *11B*-1009.2.3
Clear Deck Space at Pool Lifts

The top of the seat in the raised position needs to be able to stop between the height of 16 and 19 inches above the pool deck. The width of the seat should be no less than 16 inches. Footrests that move with the seat are required. Armrests are not required, but if they are provided, they need to allow easy access onto the lift from the wheelchair. The armrest directly next to the clear floor space needs to be removable or be able to be raised up out of the way. (*1009.2.1*)

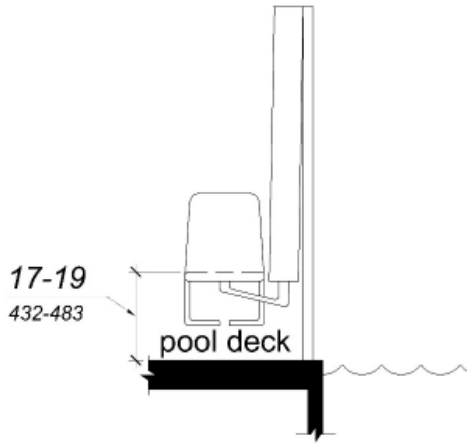


Figure *11B*-1009.2.4
Pool Lift Seat Height

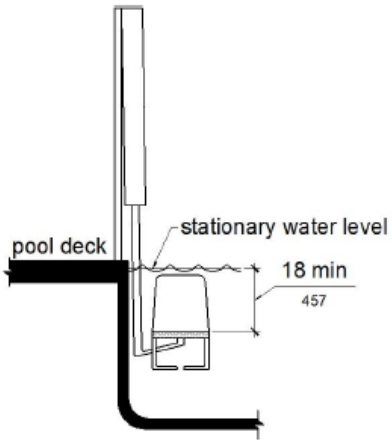


Figure *11B*-1009.2.8
Pool Lift Submerged Depth

The pool lift needs to be designed such that a person can transfer from their wheelchair, onto the lift, into the water, and back out of the water and onto their wheelchair without assistance. The controls cannot have any obstructions during the lift's use. They also must be able to operate with one hand without tight grasping, pinching, or twisting of the wrist. (*309.4, 1009.2.7*)

When the lift gets submerged, it needs to go 17-19" below the surface of the water. The lift must also be able to support the weight of at least 300 pounds.

Sloped entries are another primary means of entry into a pool. If a sloped entry is provided, it needs to meet the same requirements as ramps. So, they must be at least 36 inches wide with a slope of no greater than 1:12. In addition, the sloped entry needs to go to a depth of 24 to 30 inches below the surface of the

water. Two handrails are required on the sloped entry with 33 to 38 inches between them. Handrail extensions are not necessary at the bottom; they are required at the top. (*1009.3*)

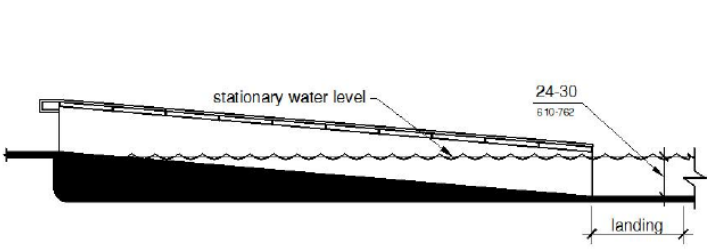


Figure *11B*-1009.3.2
Sloped Entry Submerged Depth

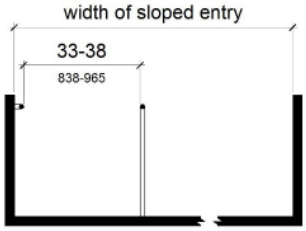


Figure *11B*-1009.3.3
Handrails for Sloped Entry

If sloped entries are provided as the primary accessible means of entry, it would be helpful if aquatic chairs are provided, also. Most standard wheelchairs should not be submerged in water. A wheelchair parking zone would eliminate the issue of the wheelchair being in a splash zone and blocking the path of travel around narrow pool decks.

Transfer walls can be a secondary method of pool entry. At the base of a transfer wall, a 60 inch by 60 inch clear floor space is required. One or two grab bars must be provided. If one is provided, the clear floor space should be centered on the grab bar. If two grab bars are provided, the clear floor space should be centered on the space between the two bars. (*1009.4*)

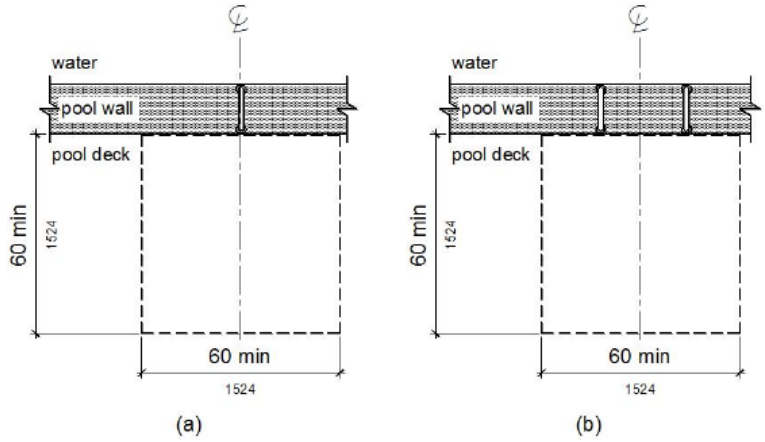


Figure *11B*-1009.4.1
Clear Deck Space at Transfer Walls

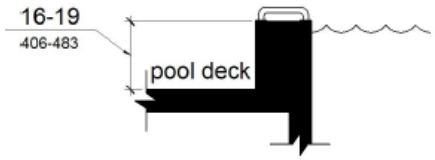


Figure *11B*-1009.4.2
Transfer Wall Height

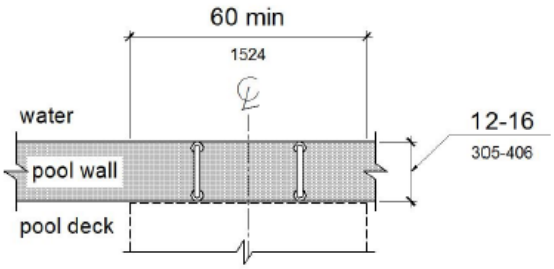


Figure *11B*-1009.4.3
Depth and Length of Transfer Walls

The wall needs to rise above the deck 16 to 19 inches. The water should be near the same level as the top of the transfer wall. The wall requires a depth of 12 to 16 inches, so it can act as a seat during the transfer. The transfer part of the wall needs to be directly next to the 60 inch clear floor space and extend the full 60 inches. (*1009.4*)

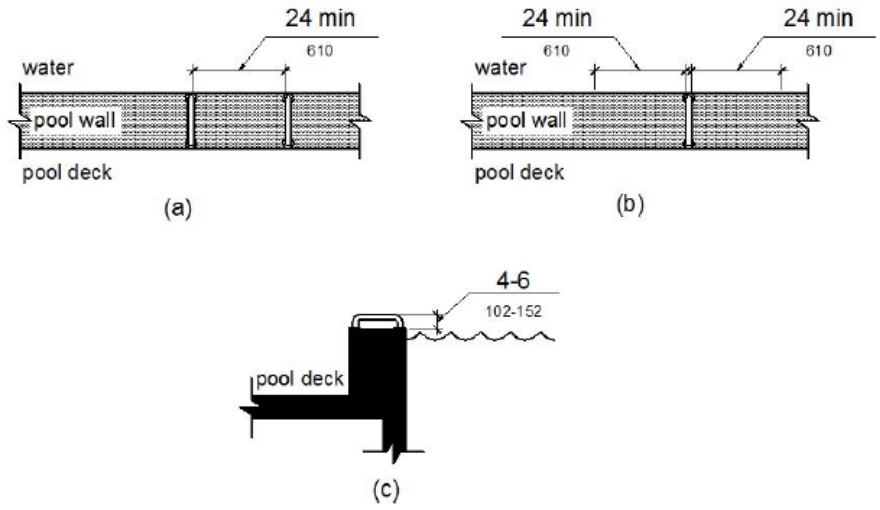


Figure *11B*-1009.4.5
Grab Bars for Transfer Walls

The grab bars must be securely fastened to the top of the transfer wall and extend the full depth of it. They have the same size requirements as standard grab bars. The diameter or cross section for circular handrails should be between 1 ¼ and 2 inches. For non-circular handrails, the cross section can be up to 2 ¼ inches; the length around them needs to be between 4 and 6 ¼ inches. The mounting position is different than a standard grab bar. The tops get mounted so that they are 4 to 6 inches above the transfer wall surface. If one grab bar is installed, there needs to be 24 inches of clearance on either side of it on the water side. If two grab bars are installed, 24 inches of clearance is required between them. See Figure 1009.4.5.

Another secondary method of accessible entrance into a swimming pool is a transfer system. They are made up of a transfer platform and a series of steps that go down into the water. The top platform is a seat that a person will transfer onto before they transfer step by step into the water. The width needs to be at least 24 inches; the depth needs to be at least 19 inches. See Figure 1009.5.2. A clear floor space of 60 inches by 60 inches must be adjacent to and centered on the transfer platform. The height of the platform is the same as that of a transfer wall (16-19 inches). The transfer steps can be no higher than 8 inches each

with a depth of 14 to 17 inches. The steps must go down into the water so that the top of the bottom tread is at least 18 inches below the surface of the water.

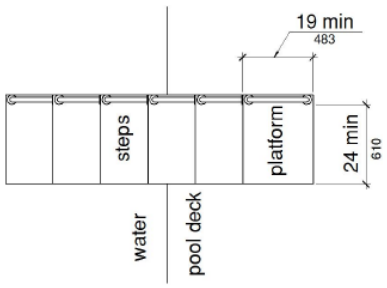


Figure *11B*-1009.5.1
Size of Transfer Platform

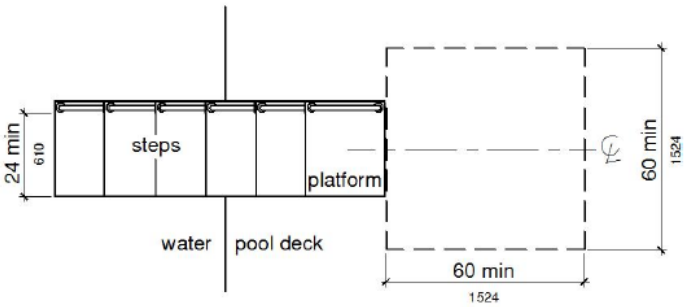


Figure *11B*-1009.5.2
Clear Deck Space at Transfer Platform

At least one grab bar is required on the transfer platform steps as shown in Figure 1009.5.7. The grab bar is unique in that it can be a continuous grab bar like the one shown in image (b) or a series of grab bars that are attached to the tread of each step (image (a)).

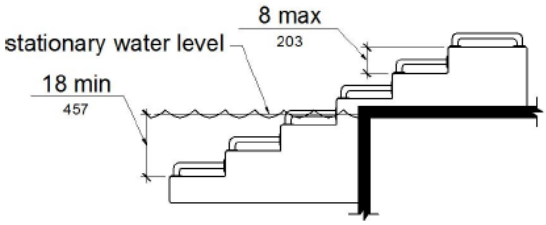


Figure *11B*-1009.5.4
Transfer Steps

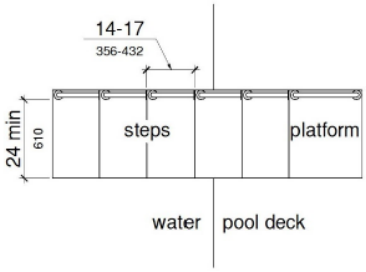


Figure *11B*-1009.5.6
Size of Transfer Steps

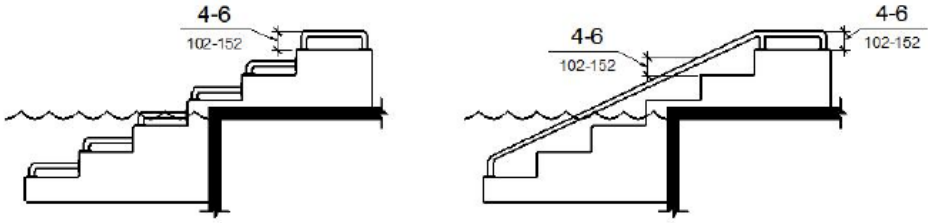


Figure *11B*-1009.5.7
Grab Bars

Pool stairs are the final means of secondary entry into a pool. The requirements for pool stairs are the same as a standard set of stairs, except the riser height does not have to be between 4 and 7 inches if they are a uniform height all of the way down into the water. Standard handrails are required on each side with a clear width of 20 to 24 inches between them. They should have extensions at the top but not at the bottom. A mounting height of 34 to 38 inches above each nosing is also required. (*1009.6*)

Review Questions

8. Where do geometric restroom signs get installed?
    a. On the wall next to the permanent room sign
    b. On the restroom door
    c. The geometric indications are included on the permanent room sign
    d. They are not required
9. What color should detectable warnings be?
    a. Yellow
    b. White
    c. Red
    d. Any contrasting color to the adjacent surface
10. Checkout counters cannot be higher than:
    a. 34”
    b. 36”
    c. 38”
    d. 40”

Conclusion

We have reached the end of this course. We know you have a choice for continuing education providers. We are grateful you chose to spend your time with us! Accessibility codes can be daunting. After taking this course, I hope you have a better understanding of what needs to be accessible and how to make it accessible. With knowledge comes power. You have the power to make the lives of those with disabilities a little better by designing spaces that allow equal access. Put your creative energy to work and use access as one of the tools in your toolbox to creatively execute solutions within the built environment!

References

2022 California Building code (https://codes.iccsafe.org)

2022 California Access Compliance Advisory Reference Manual (https://www.dgs.ca.gov/DSA/Resources/Page-Content/Resources-List-Folder/Access-Compliance-Reference-Materials)

United States Access Board Guide to the ADA Standards (https://www.access-board.gov/ada/guides)

Kent, Janis. *ADA in Details*. Hoboken, Wiley & Sons, 2017

Review Question Answers

1. If there are three elevated press boxes at a sports field, and they are 200 square feet each, how many press boxes must have an elevator?
    a. 0; incorrect
    b. 1; incorrect
    c. 2; incorrect
    d. 3; correct. Per Exception 2 of 11B-206.2.7, an accessible route shall not be required to free-standing press boxes that are elevated above the grade 12 feet minimum, provided that the aggregate area of all press boxes is 500 square feet maximum. The aggregate area of the three press boxes is 600 square feet, so this exception does not apply, they must be on an accessible route.
2. If five cup sinks and five standard sinks are provided in a science lab, how many total sinks must be accessible?
    a. 1; incorrect
    b. 2; correct. One of each sink type are required to be accessible per 11B-212.3.
    c. 5; incorrect
    d. 10; incorrect
3. If you are designing a new parking facility that will have 28 electric vehicle charging stations for public use, how many van-accessible spaces do you need?
    a. 0; incorrect
    b. 1; correct. Per Table 11B-228.3.2.1, if the facility has 26 to 50 EVCS, 1 must be van accessible.
    c. 2; incorrect
    d. 3; incorrect
4. Which of the following must be accessible if you are running a business out of your private residence where clients will attend meetings?
    a. Route to entrance; incorrect
    b. The door clients enter; incorrect
    c. Restrooms; incorrect
    d. All of the above; correct. Per 11B-245.3, the accessible portion of the residence extends to those elements used to enter the public accommodation, including the front sidewalk, if any, the door or entryway, and hallways; and those portions of the residence, interior or exterior, available to or used by employees or visitors of the public accommodation, including restrooms.
5. What is the maximum distance the sign can protrude from the pole for a post and panel sign mounted with the leading edge at 60”?
    a. 0”; incorrect
    b. 4”; incorrect
    c. 8”; incorrect
    d. 12”; correct. Per 11B-307.3, free-standing objects mounted on posts or pylons shall overhang circulation paths 12 inches maximum when located 27 inches minimum and 80 inches maximum above the finish floor or ground.
6. Which of the following sized doors (width) is accessible?
    a. 28”; incorrect
    b. 30”; incorrect
    c. 32”; incorrect

    d. **36”; correct. Per 11B-404.2.3, the clear width shall be 32” minimum. Since it is measured from the face of the door and the stop when the door is open 90 degrees, the only door listed that will provide the minimum of 32” of clearance is the 36” wide door.**

7. Which of the following is not accessible?
    a. Top of restroom lavatory at 34” above the finish floor; incorrect
    b. Bottom of reflecting surface of the restroom mirror at 38” above the finish floor; incorrect
    c. **Top of restroom shelf in accessible toilet compartment at 36” above the finish floor; correct. Per 11B-604.8.3, shelves shall be located 40 inches minimum and 48 inches maximum above the finish floor.**
    d. Top of coat hook on door of accessible toilet compartment at 42” above the finish floor; incorrect
8. Where do geometric restroom signs get installed?
    a. On the wall next to the permanent room sign; incorrect
    b. **On the restroom door; correct. Per 11B-703.7.2.6, the symbol shall be mounted within 1 inch of the vertical centerline of the door.**
    c. The geometric indications are included on the permanent room sign; incorrect
    d. They are not required; incorrect
9. What color should detectable warnings be?
    a. **Yellow; correct. Per 11B-705.1.1.3.1, detectable warnings shall be yellow.**
    b. White; incorrect
    c. Red; incorrect
    d. Any contrasting color to the adjacent surface; incorrect
10. Checkout counters cannot be higher than:
    a. 34”; incorrect
    b. 36”; incorrect
    c. **38”; correct. Per 11B-904.3.2, the counter surface height shall be 38 inches maximum above the finish floor.**
    d. 40”; incorrect

Final Exam – California Access Compliance

1. Where can a LULA type elevator be installed?
    a. Private residence
    b. Doctor's office
    c. Shopping mall
    d. Hotel
2. Which of the following is required to have an accessible drop-off and loading zone?
    a. Mechanical access parking garages
    b. Valet parking
    c. Licensed medical care facilities
    d. All of the above
3. How many drinking fountains must be designed for standing users?
    a. 0
    b. 25%
    c. 33%
    d. 50%
4. Where are adult changing facilities required?
    a. Every unisex restroom
    b. One unisex restroom per cluster
    c. Commercial places of public amusement
    d. Nowhere; they are optional
5. Where are assistive listening systems required:
    a. Lecture halls
    b. Auditoriums
    c. Conference rooms
    d. All of the above
6. How many wheelchair spaces are required in an assembly area with 450 fixed seats?
    a. 2
    b. 4
    c. 5
    d. 6
7. Which of the following facility types is considered transient lodging?
    a. Hotels
    b. Resorts
    c. Undergraduate dormitories
    d. All of the above
8. Book stacks in public areas cannot be more than __ inches above the finish floor unless an attendant is available to assist.
    a. 34
    b. 36
    c. 48
    d. 54

9. If there is one self-checkout aisle, one standard checkout aisle, and one aisle for returns at a department store, how many accessible aisles are required?
    a. 0
    b. 1
    c. 2
    d. 3
10. Which of the following is considered public housing?
    a. Housing at a Christian university
    b. Housing at a State university
    c. Faculty housing at a State university (without public-use areas)
    d. Both B and C
11. What is a primary method of an accessible means of entry into a swimming pool?
    a. Pool lifts
    b. Sloped entries
    c. Transfer walls
    d. Both a and b
12. What is the maximum change in level allowed without a ramp?
    a. ¼”
    b. ½”
    c. ¾”
    d. 1”
13. For a side approach at a 24” deep alcove, how long does the clear floor space need to be?
    a. 36”
    b. 48”
    c. 60”
    d. 72”
14. What is the maximum depth of knee and toe clearance?
    a. 15”
    b. 17”
    c. 25”
    d. 48”
15. If the bottom of a television is mounted at 72” in a school corridor, how far may it protrude from the wall if the corridor is double the size it is required to be for egress?
    a. 0”
    b. 4”
    c. 6”
    d. Fully, as long as it does not protrude into the required clear width of the corridor
16. If you are designing an exterior door that swings out, how much horizontal clear space is required beyond the latch on the pull side of the door for a front approach?
    a. 0”
    b. 18”
    c. 24”
    d. 36”

17. What is the maximum height for the lower edge of an accessible vision light in a door?
    a. 40”
    b. 43”
    c. 48”
    d. 60”
18. What is the maximum allowable force for opening an interior door to an accessible restroom?
    a. 5 lbs
    b. 8 lbs
    c. 10 lbs
    d. 15 lbs
19. What is the maximum slope for an accessible ramp leading up to a stage?
    a. 1:10
    b. 1:12
    c. 1:20
    d. 1:48
20. Where does the raised dot go on an accessible car control keypad for an elevator?
    a. 2 key
    b. 5 key
    c. 8 key
    d. 0 key
21. What is the minimum width of an access aisle for an accessible drop-off and loading zone?
    a. 3’
    b. 4’
    c. 5’
    d. 8’
22. What color is the border for an accessible parking access aisle?
    a. Blue
    b. White
    c. Yellow
    d. Any color that is a contrasting color to the adjacent surface
23. What words need to be painted on an accessible parking access aisle?
    a. ACCESS AISLE
    b. DO NOT PARK
    c. NO PARKING
    d. OFFICIAL USE ONLY
24. What height do handrails get mounted (to the top of the gripping surface)?
    a. 33” – 36”
    b. 34” – 38”
    c. 35” – 39”
    d. 36” – 40”

25. In a men's restroom at an accessible urinal, how much room do you need between the urinal screens if the screens are 25" deep?
    a. 30"
    b. 36"
    c. 42"
    d. 48"
26. Where are 36"x36" transfer-type shower compartments allowed?
    a. High school locker rooms
    b. Hospital patient rooms
    c. Hotels
    d. All of the above
27. What is the required width for an ambulatory accessible toilet compartment?
    a. 33" – 35"
    b. 34" – 36"
    c. 35" – 37"
    d. 36" – 38"
28. What is the required width of the clear floor space in front of a bathtub for a parallel approach?
    a. 30"
    b. 36"
    c. 42"
    d. 48"
29. What is the height to the top of the seat from the floor for an accessible bench in a locker room?
    a. 16" – 18"
    b. 17" – 19"
    c. 18" – 20"
    d. 19" – 21"
30. Which of the following signs is required to have Grade 2 Braille?
    a. Occupant names on room signs
    b. Row designations in assembly areas
    c. Permanent room signs
    d. Directional signs