حكومة دبي
GOVERNMENT OF DUBAI

كود دبي للبيئة المؤهلة

DUBAI UNIVERSAL DESIGN CODE

FIRST EDITION: FEBRUARY 2017

Dubai Universal Design Code

Section A

General Provisions

Section A - General Provisions

1. Introduction

The purpose of the Dubai Universal Design Code is to define how the built environment and transportation systems in the Emirate shall be designed, constructed and managed to enable one to approach, enter, use, egress from and evacuate independently, in an equitable and dignified manner, to the greatest extent possible, in line with the Universal Design concept.

The requirements in this Code cover a wide range of human abilities, embracing all aspect of life. The requirements of this Code shall be applied at the earliest possible stage in the design process.

In some instances, parameters in this Code are quite specific; in others, they include dimensional ranges. Where dimensions and/or measurements are stated, they are subject to tolerances. Dimensional ranges are intended to provide some flexibility of design solutions.

2. Structure of this Code

This Code is organized in 4 Sections and 3 Annexes:

1. Section A - General Provisions

General provisions contain scope, definitions and general provision for both accessibility domains: built environment and mobility.

2. Section B - Accessible Built Environment

Accessible built environment contains requirements for common accessibility elements, specific requirements in public spaces and buildings and provision for specific building types.

3. Section C - Accessible Transportation

Accessible transportation contains accessibility provisions for all Dubai's transport modes.

4. Section D - Wayfinding

Wayfinding requirements for exterior and indoor environments.

5. Annex 1

Annex 1 contains the required accessibility in each building type.

6. Annex 2

Annex 2 contains the licensing procedures and checklist.

7. Annex 3

Annex 3 contains anthropometrics measurements.

2.1. Beneficiaries of Universal Accessibility

The following table displays the population groups benefiting from accessible provisions when the requirements of this Code are followed. **The green colour indicates** population groups that will enjoy more comfort while **"X" indicates** those to whom the improvement is directly addressed.

LEVEL OF PERFORMANCE ACCORDING TO USERS												
	Universal Accessible Solutions											
	Entrance	Path	Toilets	Family restrooms	Changing rooms	Furniture	Parking and Drop-off point	Accessible rooms	Tactile map	Reserved spaces for wheelchair	Induction loops	Wayfinding
Children				X		X						X
Pregnant woman								X				
Elderly people	X		X									
Families	X	X	X	X	X	X						
People with visual impairment		X	X			X			X			X
People with hearing impairment									X		X	X
People with intellectual impairment				X								X
Mobility device users	X	X	X	X	X	X	X	X	X	X		
Ambulant disabled people	X	X					X		X			
Tourist				X								X

Table 1. Level of performance according to users

3. Scope

This Code specifies a range of requirements for many of the elements of construction, assemblies, components, vehicles and fittings that comprise the built environment and transport services.

These requirements relate to the external environment, such as public open spaces, as well as access to buildings, to circulation within buildings, to egress from buildings, as well as public transport system's vehicles, elements, stations and equipment.

The requirements are to be applied during the design, construction, renovations, and alteration of sites, facilities, buildings, and elements of the built environment and transportation systems, to the extent required by regulations issued by the Emirate of Dubai under Law No. 2.

This Code does not apply to individual dwellings, only to common parts of multi-occupancy residential buildings. However, it includes a section addressing requirements for new convertible housing.

Nothing in these requirements prevents the use of designs, products, or technologies as alternatives to those prescribed, provided they result in substantially equivalent or greater accessibility and usability.

The dimensions stated in this Code are primarily based on adults, but it includes specifications that address the requirements that should suit children and people with different heights. If a facility is primarily to serve children, dimensions and other provisions should be adjusted to make them suitable for children.

Dimensions are given in metric units. All dimensions in figures are given in meters or millimetres and are measured to the centreline, unless otherwise specified.

The purpose of Section C, Accessible Transport, is to give guidance when creating transportation systems that support equitable access and ease of travelling for all persons regardless of their social, economic, physical, sensory or cognitive capacity.

Section C focuses on issues of Universal Accessibility and usability for persons with functional limitations and should be used together with the other sections of this Code.

Section D, Wayfinding, establishes the minimum requirements for providing information for orientation and navigating the public realm and buildings.

3.1. Scoping requirements

All areas of newly designed and newly constructed buildings and facilities and altered portions of existing buildings and facilities shall comply with these requirements.

Where a site, building, facility, room, or space contains more than one use, each portion shall comply with the applicable requirements for that use.

Temporary buildings and facilities provided for public use should also comply with this Code.

Where public access is permitted during construction or maintenance of a facility, the requirements of this Code shall be respected to provide safe and equitable use for everyone.

3.2. Existing buildings and facilities

The accessibility conditions of the buildings shall be assessed and the owner shall present to the authorities a proposal for adapting the building to the requirements for existing buildings contained in the Dubai Universal Design Code within three years after its publication.

Additions and alterations to existing buildings or facilities shall comply with this Code. Each addition to an existing building or facility shall comply with the requirements for new construction. Where existing elements or spaces are altered, each altered element or space shall comply with the applicable requirements of this Code.

An alteration that decreases or has the effect of decreasing the accessibility of a building or facility below the requirements for new construction at the time of the alteration is prohibited.

Maintenance of all facilities, including public and private buildings, as well as transportation facilities, shall guarantee accessibility continuity.

Buildings listed for their cultural interest or catalogued for their particular historical and artistic value remain exempt from applying the accessibility requirements when they contradict the preservation regulations of Dubai. However, they still need to incorporate as many elements as possible to maximize accessibility conditions.

When a building is built in a flood zone the entrances of the building can have a change in level from the exterior ground level.

Sports facilities shall follow the Paralympics Committee's requirements, as long as these requirements are greater than the Dubai Universal Design Code requirements.

Urban general planning and urban project developments shall ensure the accessibility continuum with surrounding elements and areas, according to the criteria set in this Code.

3.3. Transport

New vehicle procurement, retrofitting of existing vehicles, stations and stops including rail, bus, marine vessel, school bus and accessible taxis shall have accessible features meeting the technical and design requirements in the Code. The scope of this Code does not cover air, intercity bus or intercity rail travel.

4. Definitions

1. Accessible path of travel

Allows a continuous and barrier free movement, with the combination of built elements that guarantee anyone can enter, move, use, exit, orient themselves and communicate autonomously and comfortably both in the public space, and around and inside the buildings.

2. Accessibility

Accessibility include eases of independent approach, entry, evacuation, and/or use of a building and its services and facilities, by all of the building's potential users, regardless of disability, age or gender with an assurance of individual health, safety and welfare during the course of those activities.

3. Built Environment

External and internal environments and any element, component or fitting that is commissioned, designed, constructed and managed for use by people.

4. Clear headroom

Free unobstructed vertical space to allow proper and safe passage.

5. Clear width

Free unobstructed space for access through a doorway, passage, stair, ramp, walkway, etc.

6. Colour Blindness

The most common form of colour blindness is red/green deficiencies in which shades of grey are generally detected in place of red and green. This should be considered when using colour coding or coloured text.

7. Curb Ramp

Construction in the form of an inclined plane that makes it possible to pass from street level to a higher accessible pedestrian path.

8. Functional limitations

Functional limitations are restrictions in performing fundamental physical and mental actions used in daily life such as mobility (physical) or memory (mental).

9. Gangway

An inclined solid structure to connect a building or a vessel with a berth, with handrails at each side.

10. Handrail

Component of a stair or of a ramp or other building component that provides guidance, balance and support.

11. Headroom

Clear vertical space above one's head, as in a vehicle or room.

12. Interaction space

The interaction space is the space required by a person to interact with another person, furniture, appliance, machine or another item.

13. Kneeling

When a vehicle is lowered at a boarding/disembarking location to reduce the vertical gap between the entry/exit point to the vehicle and the boarding platform or ground level.

14. Landing

Platform or part of a floor structure at the end of a flight of stairs or a ramp or at the entrance to a car lift.

15. Light Reflectance Value (LRV)

The proportion of visible light reflected by a surface at all wavelengths and directions when illuminated by a light source. LRV is also known as the luminance reflectance factor. The LRV is expressed on a scale of 0 to 100, with a value of 0 for pure black and a value of 100 for pure white.

16. Luminance

The amount of light emitted from a surface or source in any given direction.

17. Maneuvering area

Minimum three-dimensional spaces within which it is feasible to complete a maneuver to gain access to a specific facility, component or fitting, in particular while using a wheelchair or a walking aid.

18. Mobility aid

A device that is used by persons with functional limitations to assist walking. Examples include canes, arm crutches, and walkers. Within this Code the term “wheelchair” is used to include manual wheelchairs, sports chairs, electric powered wheelchairs and mobility scooters, unless otherwise stated.

19. Mobility device

A manual or motorized device to be used by persons with functional limitations in their mobility. Examples include manual and sports wheelchairs, electric powered wheelchairs, and three and four-wheeled mobility scooters.

20. Nosing

Projecting front edge of a tread or landing that can be rounded, chamfered or otherwise shaped.

21. Operable with the elbow

This expression is frequently used in this Code. It is used as an abbreviated explanation of the manual operations that can be executed:

- With one hand only
- Without wrist turning
- Without finger grip
- Not requiring very precise psychomotor skills
- With low strength requirements

22. PTV

Pendulum Test Value. This parameter provides information about the slipperiness of a floor surface. Many floor manufacturers provide this value in the technical specifications of their products. Pendulum Test Value (or sometimes BPN, British Pendulum Number, or even SRV, Slip Resistance Value). The standard EN 13036-4 determines the test methods.

23. Ramp

An inclined solid flat plane structure that is steeper than 5 % from the horizontal. Depending on the length it shall include an intermediate landing, which makes it possible to pass from one level to another.

24. Rise

Vertical distance between the upper horizontal surfaces of two consecutive treads, or of a landing and the next treads above or below it, or of a flight between consecutive landings.

25. Riser

Vertical component of a step between a tread or a landing and the tread or a landing above or below it.

26. Reflectance

Measure of light reflected in a given direction by a surface and which is expressed in a unit term from 0 to 100 scale, respectively, that represents a grey scale progression from the notional extremes of total light absorption (black) to total light reflection (white).

27. Service animal

Any guide dog, signal dog, or other animal individually trained to work or perform tasks for an individual with a disability, including, but not limited to, guiding individuals with impaired vision, alerting individuals with impaired hearing to intruders or sounds, providing minimal protection or rescue work, pulling a wheelchair, or fetching dropped items. Service animals shall be identified with a certification.

28. Shall

It is mandatory to do it.

29. Should

It is recommended to do it.

30. Visual contrast

Visual perception between one element of a building and another

31. Wayfinding

Descriptive of a system whereby appropriate information is provided to assist a person to pass through the built environment towards a specific destination. Wayfinding includes orienting oneself, knowing one's destination, following the best route, recognizing one's destination and finding one's way back out. People who are blind or who have a vision impairment benefit from tactile information to facilitate wayfinding.

Section B

Accessible Built Environment

Section B – Accessible Built Environment

5. Common accessible elements for outdoor and indoor areas

5.1. Accessible path of travel

Accessible paths of travel shall present the following characteristics:

1. The width of the path free of obstacles should be enough to allow all pedestrians foreseen in all directions; considering 1000 mm per each simultaneous pedestrian. It shall be always more than 2000 mm and no one obstacle can reduce it to less than 1200 mm.
2. The accessible path shall be linear and continued, while avoiding direction changes between pedestrian crossings.
3. All intersections shall be clearly visible and defined with safety and traffic control elements such as signs or lights. Pedestrian crossings shall be clearly distinguished from the road with contrasted colour marks.
4. In pedestrian crossings, when there is a height change, curb cuts shall be provided following the requirements of section 6.3.
5. The maximum permitted gradient for a running slope in accessible paths is 5%.
6. The clear headroom along the entire path shall be at least 2200 mm.
7. Uneven surfaces in accessible paths should be avoided and the maximum height of any irregularity shall be 5 mm.
8. The accessible path shall not have dangerous unprotected level changes. Unevenness, gaps and openings with a height difference greater than 500 mm should have guardrails.
9. Accessible paths shall be free of protruding objects like vegetation, furniture and signs.

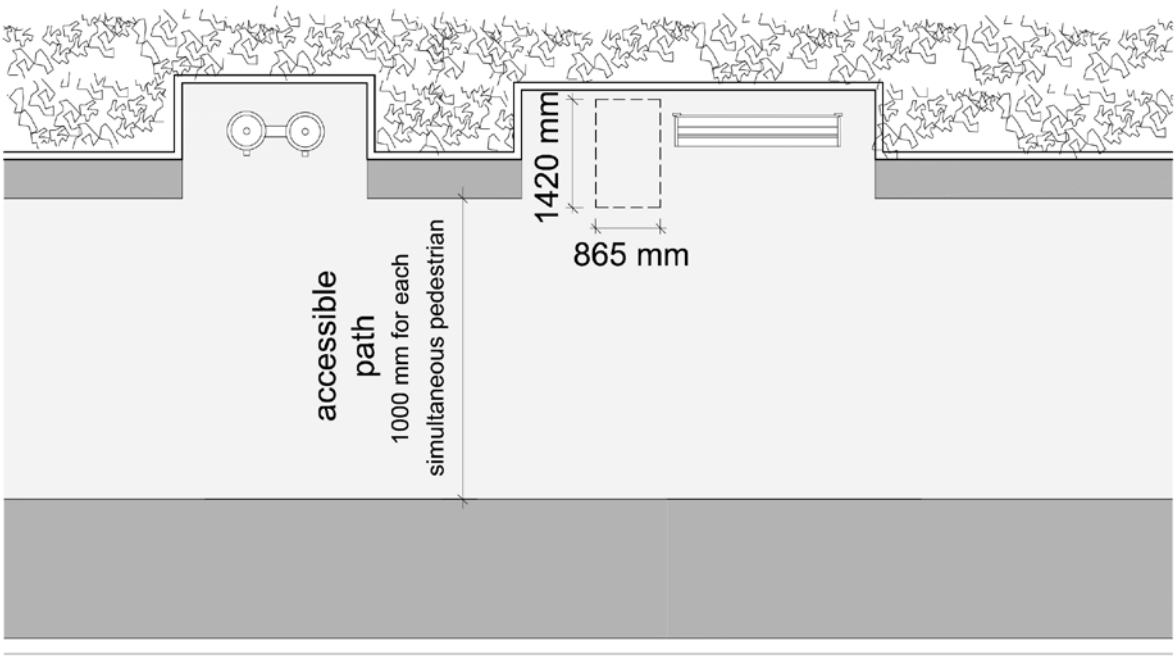


Figure 1. Accessible path of travel free of obstacles

10. Accessible elements such as paths, crossing, stairs, etc., shall have a luminance of at least 100 lux. All lighting changes along an accessible path shall be gradual to prevent glare.

11. Drain grids shall never be within the accessible path or the accessible pedestrian crossing.

12. In outdoor areas, accessible paths shall be free of obstacles and located between the buildings facade and the furniture zone adjacent to the curb.

13. Parking entrances shall not modify the slope or the width of the accessible path.

14. The curb height shall be between 100 mm and 150 mm.

15. Utility covers should be avoided in accessible walking paths. When placing utility covers out of the accessible path is impossible, the maximum height difference shall be 5 mm. When placing drain grids out of the accessible path is impossible, the maximum dimensions of the holes shall be 15 mm.

16. Standing water should be avoided with a cross slope up to 2%.

17. If there is a pedestrian bridge along an accessible path of travel it shall provide a ramp or an elevator and shall be shaded.

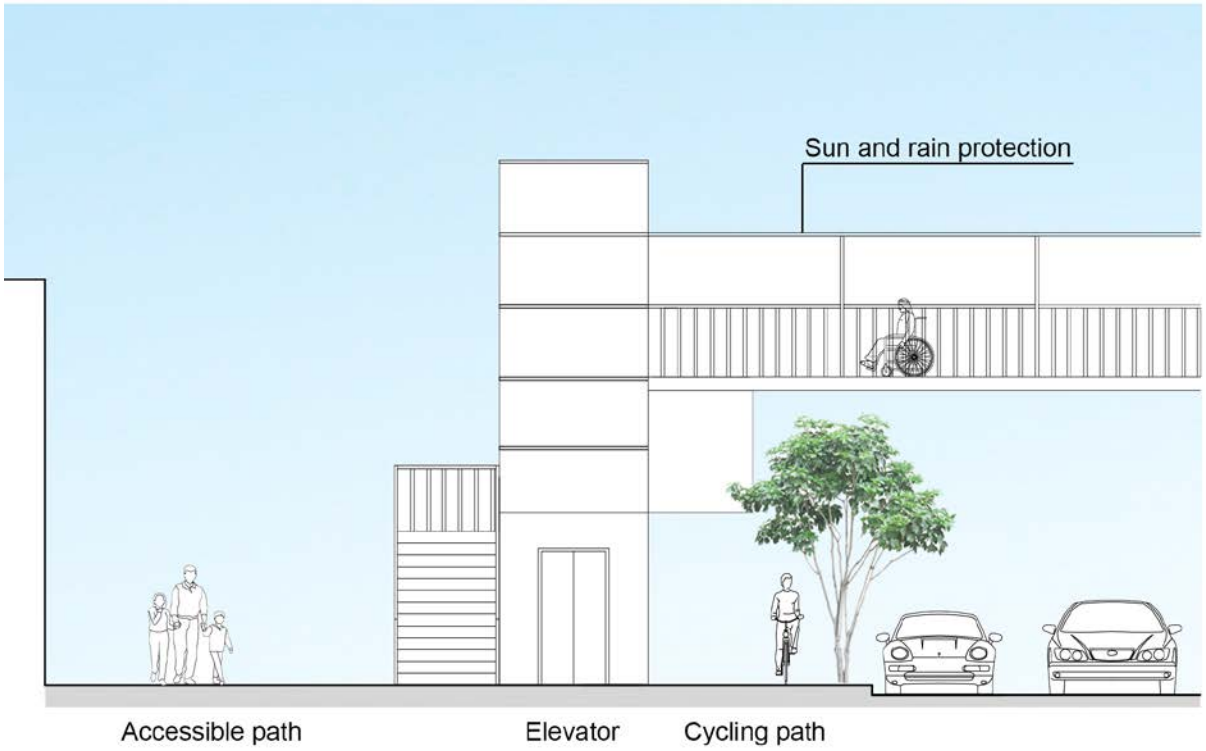


Figure 2. Example of a bridge with elevator

5.2. Floor surfaces

Slip resistance is a requirement in making pavements and surfaces accessible.

Paving in accessible paths shall meet the following conditions:

1. Slip resistance

Levels of slip resistance have to fulfil the requirements outlined in table 2.

Pavement Slip resistance	
Floor pavement slopes	Pendulum Test Value (PTV)
Dry areas indoor	
Level surface	Between 15 and 35
Inclined surfaces with slopes less than 5%	
Inclined surfaces with 5% slopes or greater	35 or more
Wet areas and outdoor	
Level surface	Between 35 and 45
Inclined surfaces with slopes less than 5%	
Inclined surfaces with 5% slopes or greater	45 or more
Streets pavement, swimming pools and showers	45 or more

Table 2. Pavement slip resistance

2. Pendulum Test Value (PTV) should to be calculated using the pendulum technique. The above table shows slip resistance values for accessible pedestrian walking.
3. Pavement surfaces shall be firm, smooth, stable, and slip resistant.
4. Tiles presenting rounded edges and excessive joints shall be avoided in accessible paths to prevent wheel vibration, tripping and noise.

5. The ground pavement cannot have loose elements and must allow for movement or dragging.

6. Rugs and carpets shall be firmly fixed to the floor and shall allow easy movement for wheelchair users.

7. Floor pavement shall not produce glare.

8. The pavement shall present reflectance contrast with the surrounding pavement of at least 30 points LRV (Light Reflectance Value), or by an easily perceptible (by the foot or the cane) texture difference. These pavements can present less contrast if they are separated by a pavement strip of at least 300 mm presenting the required contrast or by an easily perceptible texture difference.

9. Lighting installed in floors is not permitted if it produces glare in the area of accessible paths.

10. Lighting installed in floors shall not produce heat.

11. Imperfections or irregularities in the floor surface that imply a level difference of more than 5 mm or holes of more than 15 mm diameter are not allowed. These level differences can be generated due to the material selection or because of a lack of maintenance. This especially includes manhole covers grids and grills installed in public spaces.

12. Changes in level of maximum 15 mm should be designed with a 25% maximum gradient slope.

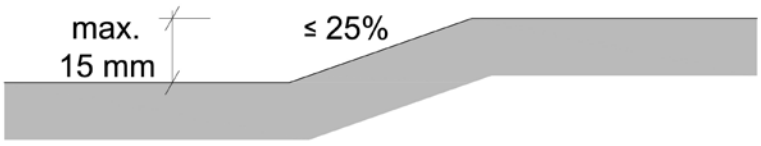


Figure 3. Maximum gradient slope for changes in level of at most 15 mm

13. When grate openings are longitudinal, they should have a perpendicular orientation to the pedestrians' direction of travel.

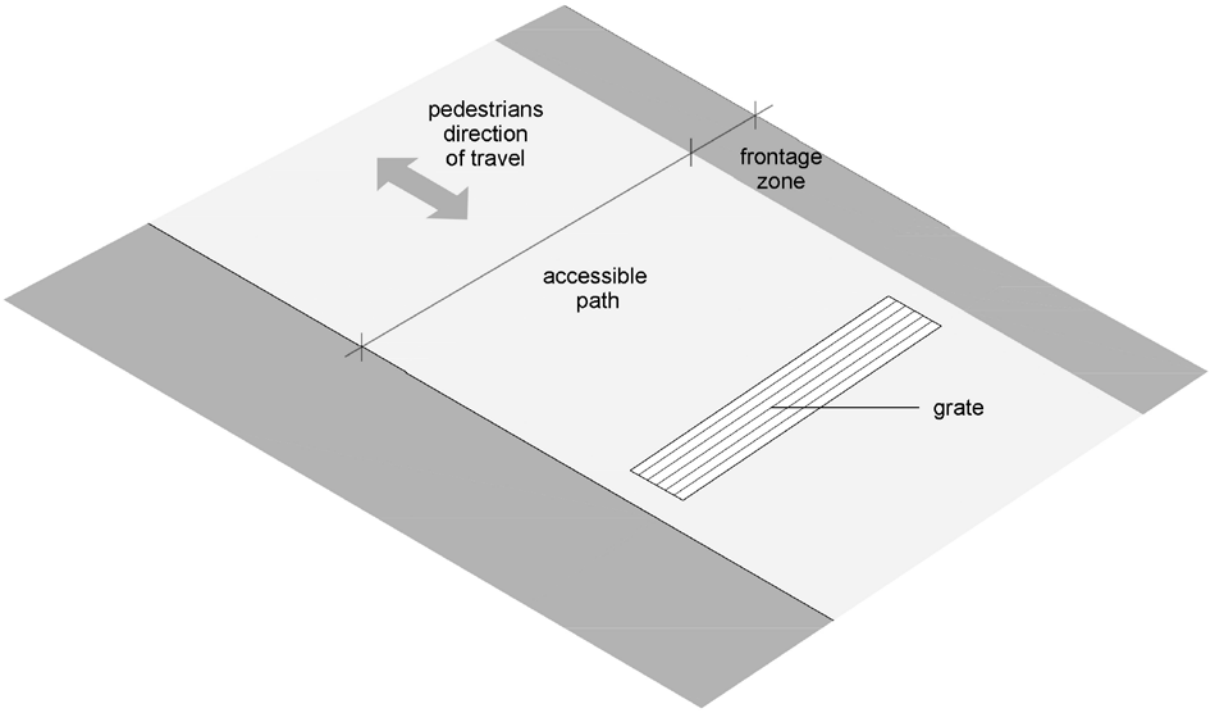


Figure 4. Grate with perpendicular orientation

14. It is not permissible to install grates on the lower level of the pedestrian crossing curb cuts.

15. Trees adjacent to an accessible path shall be protected with walkable grates, especially when its location is less than 2000 mm to a building façade.

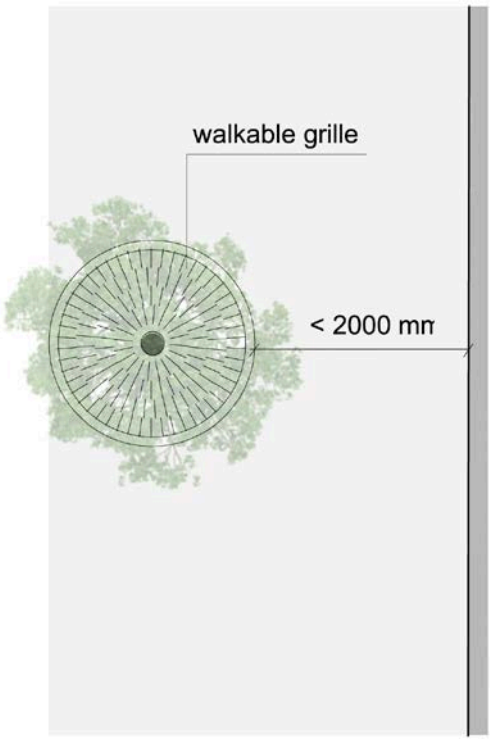


Figure 5. Walkable grille in tree grate

5.3. Tactile Surfaces

Tactile pavements are textured surfaces with contrasted colour that are perceptible and identifiable by feel or cane or residual functional vision that warns or informs people with visual disabilities.

Tactile pavements shall have a reflectance contrast with the surrounding pavement of at least 50 points LRV and the height or depth of this pavement cannot be greater than 4 mm.

Tactile pavements must be installed according to the following criteria:

1. Detectable warning surface: used as a warning of upcoming level changes or obstacles on the course of travel. Warning pavement shall be constructed of truncated cones arranged in a square grid or diagonal rows and installed with bands oriented in the crosswise direction of the course of travel. It must be installed along the entire width of the element and not less than 300 mm from the beginning of the dangerous element. The warning surface shall have a width between 300 mm and 400m.

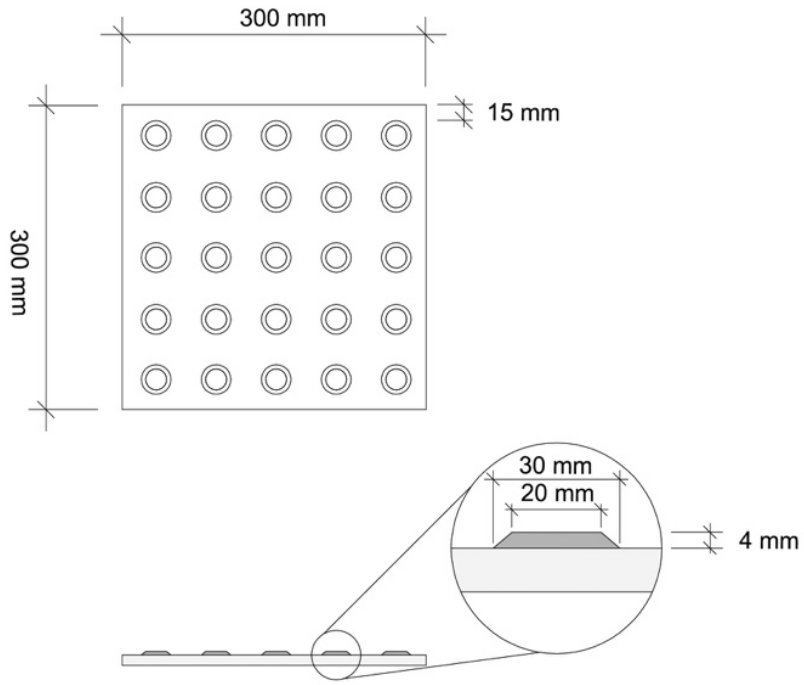


Figure 6. Warning pavement dimensions

The most common elements where warnings are required include stairs, ramps, rail and port platform borders, and unprotected changes in level among others.

2. Tactile guiding surfaces: this element is used as a directional sign to assist the independent mobility of people with visual disabilities. Guiding patterns should be constructed of flat-topped elongated bars. Bars must be oriented in the direction of the course of travel.

The tactile guiding surface shall have a minimum width of 400 mm. The distance among longitudinal stripes can't exceed 32 mm.

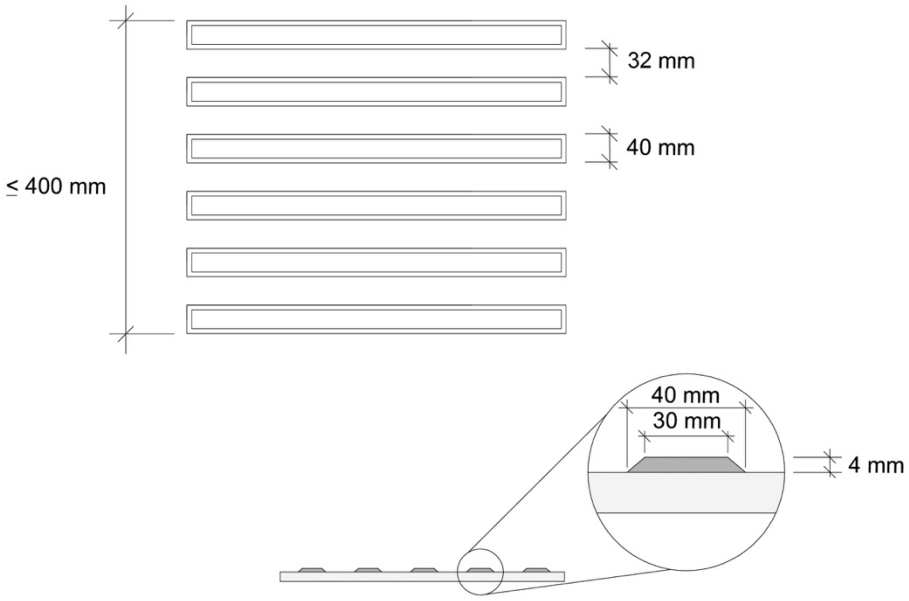


Figure 7. Guiding pavement dimensions

5.4. Protruding objects

Objects shall not protrude into the pedestrian path more than 100 mm.

In case of elements protruding more than 100 mm from façades, posts or other elements, the protruding edge shall extend to the floor or be at least 300 mm above the floor, according to the illustration below.

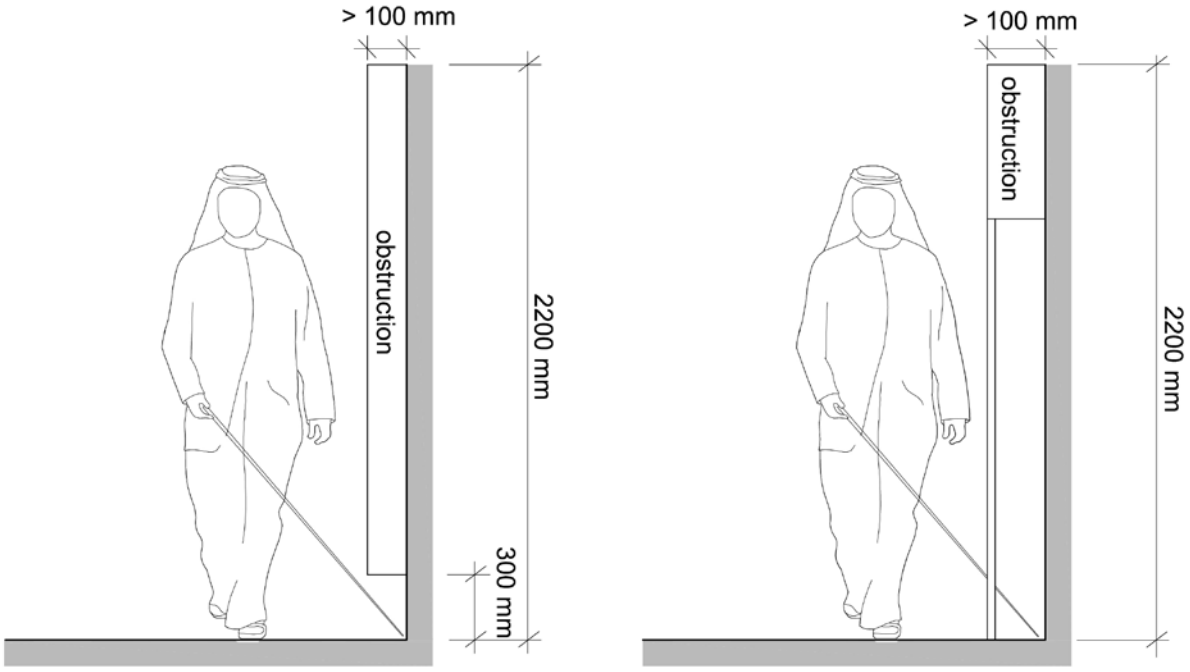


Figure 8. Lateral protruding object limits

For all furniture the detection cone rule shall be followed. The detection cone is an imaginary shape that describes the obstacles to be detected by blind persons with a white cane.

The cone has a base of 500 mm diameter located 300 mm above the ground level. The apex of this cone is located at a height of 900 mm height above the ground. The values of the cone are shown in table 3.

Detection cone diameters depend on the height (above floor level) of the object.

Detection cone diameter depending on the height (from the floor level)	
Height	Diameter Ø
900 mm	50 mm
800 mm	80 mm
700 mm	160 mm
600 mm	250 mm
500 mm	340 mm
400 mm	420 mm
300 mm	500 mm

Table 3. Parametric values of the detection cone

Depending on their height, bollards or similar elements that are located near an accessible path shall have a diameter equal to or greater than the values specified in the table above.

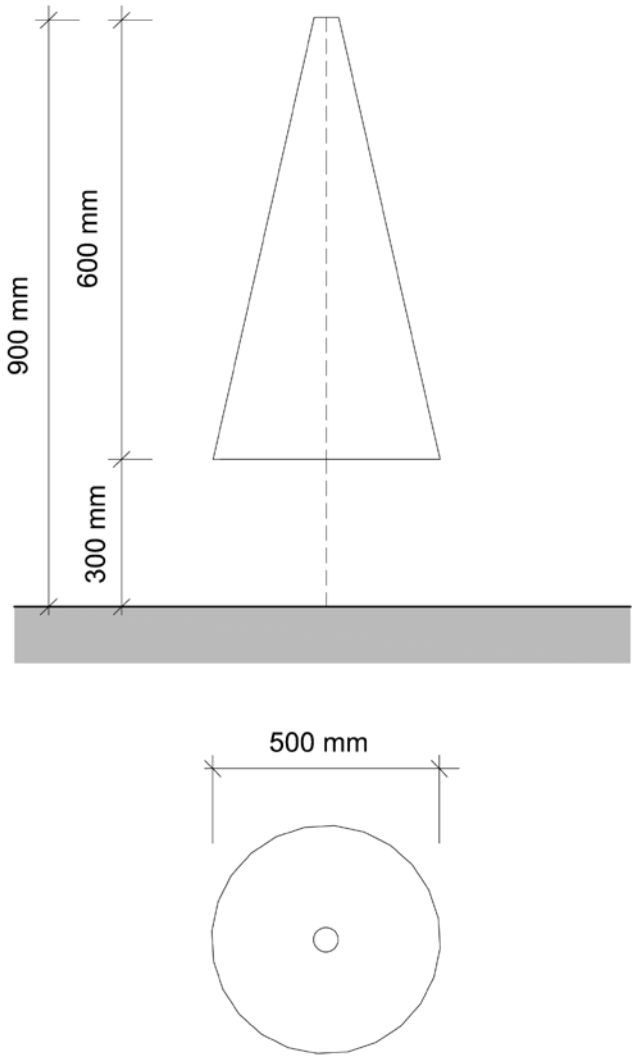


Figure 9. Dimensions of the imaginary detection cone

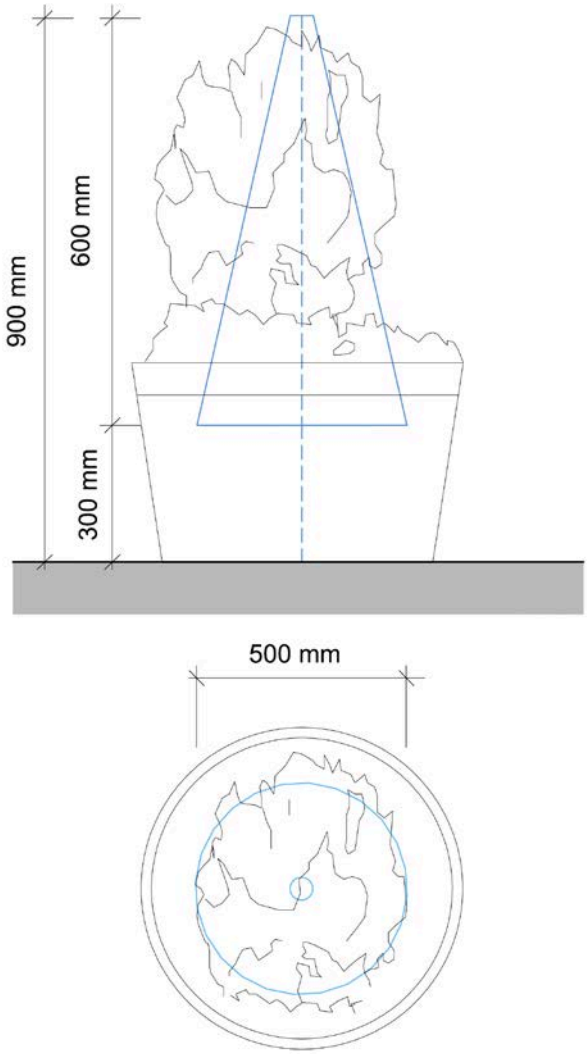


Figure 10. Example of a planter that correctly exceeds the imaginary detection cone.

5.5. Interaction space

The interaction space is the space required by a person to interact with another person, furniture, appliance, machine or another element.

This space is also used by a person to transfer from a wheelchair to a seat or a toilet or to park a pram.

The interaction space shall not invade the accessible path. The interaction space can be frontal or lateral.

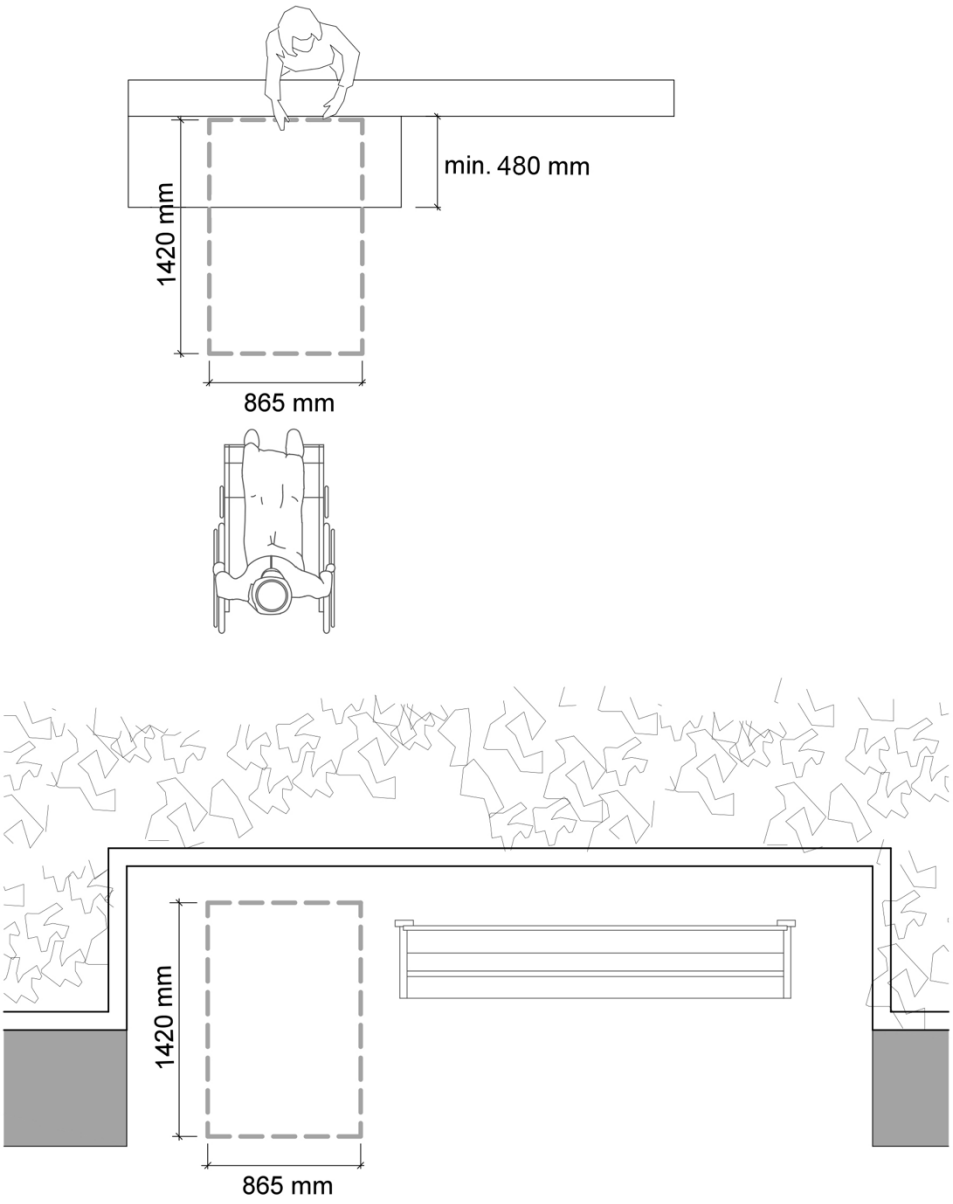


Figure 11. Interaction spaces in front of a desk and beside a bench

The interaction space dimensions are 865 mm x 1420 mm.

When objects protrude into the interaction space, like shoes in a praying room entrance, paper bin in the toilet's lateral approach space, or other similar cases, the interaction space can be marked with a carpet or painting as shown in the following illustration:

Figure 12. KEEP CLEAR area

5.6. Changes in level and guardrails

Guardrails must be at least 1100 mm height. This parameter is measured vertically from the ground level, to the highest point of the guardrail.

The guardrails must have sufficient strength and stiffness to withstand a horizontal uniformly distributed force of 3.0 kN/m.

The guardrails cannot be easily climbable.

Openings on guardrails shall not allow a 100 mm diameter sphere to pass through.

When guardrails are installed to protect slopes, they must have a continuous base in their entire length from the floor surface to a minimum height of 100 mm.

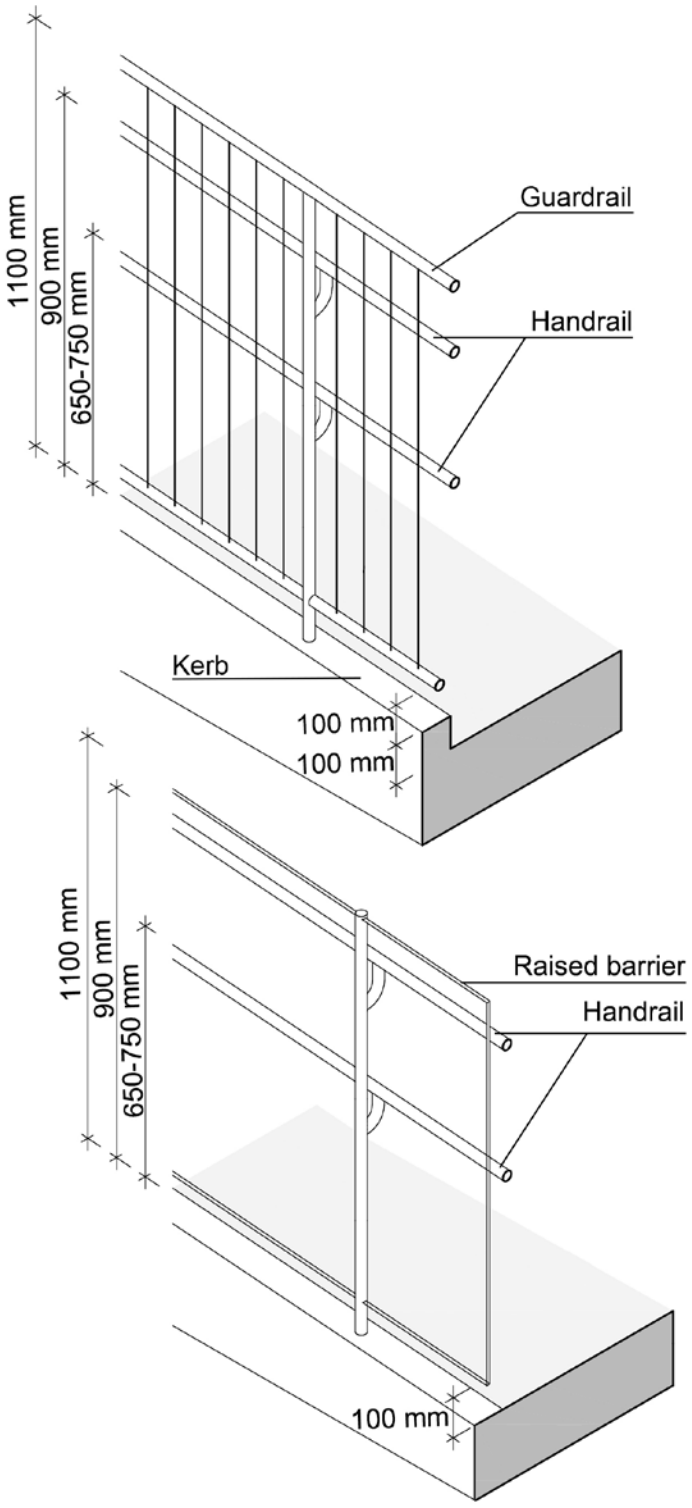


Figure 13. Section of guardrails with and without glass

5.7. Ramps

Ramps should be used when a change in level has a gradient greater than 5%.

The maximum slope is 8% or 1:12.

The maximum cross fall gradient is 2%.

The slope of a ramp must meet the following specifications:

Maximum Rise	Slope		Length between landings	
	Recommended	Maximum	Recommended	Maximum
1500 mm	5,1% - 6%	8%	7 meters	10 meters
1000 mm	≤ 7%	8%	5 meters	7 meters
500 mm	≤ 8%	8%	2 meters	5 meters

Table 4. Ramp rises

5.7.1. Ramp runs

Ramp runs shall fulfil the following requirements:

1. The maximum length is 10 meters between landings.
2. The beginning and the end of each ramp run shall have a warning surface following the requirements of section 5.3.
3. The run usable width shall be 1000 mm.
4. Ramp widths shall be free of obstacles. The usable width of 1000 mm is measured between the handrails. If the ramp is open, it shall have an outside edge protection or a lateral protection element of at least 100 mm in height.
5. Curved ramps are not permitted.

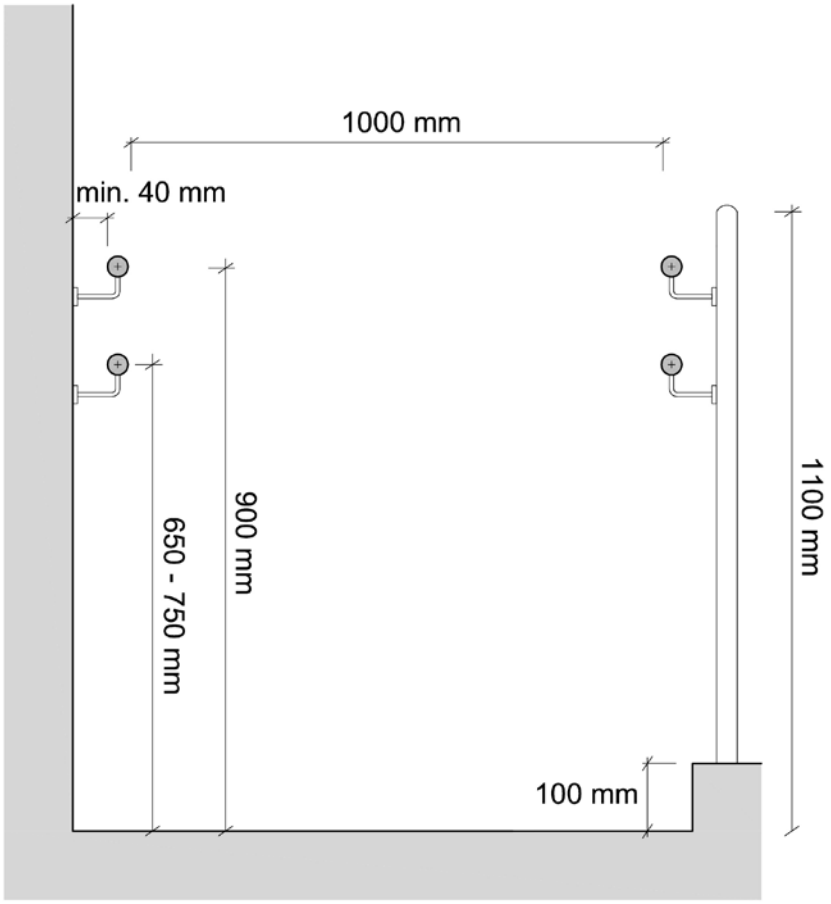


Figure 14. Transversal section of a ramp

5.7.2. Landings

Landings shall fulfil the following requirements:

1. There are level landings required at the beginning and at the end of every ramp run. These landings shall have a minimum surface of 1500 mm x 1500 mm.
2. Landings should be level with less than 2% slope in the course of travel and crosswise directions.
3. Corridors located in landings shall have no less than 1200 mm width.
4. Doors shall be located at least 1500 mm away from the start or end of each ramp run.

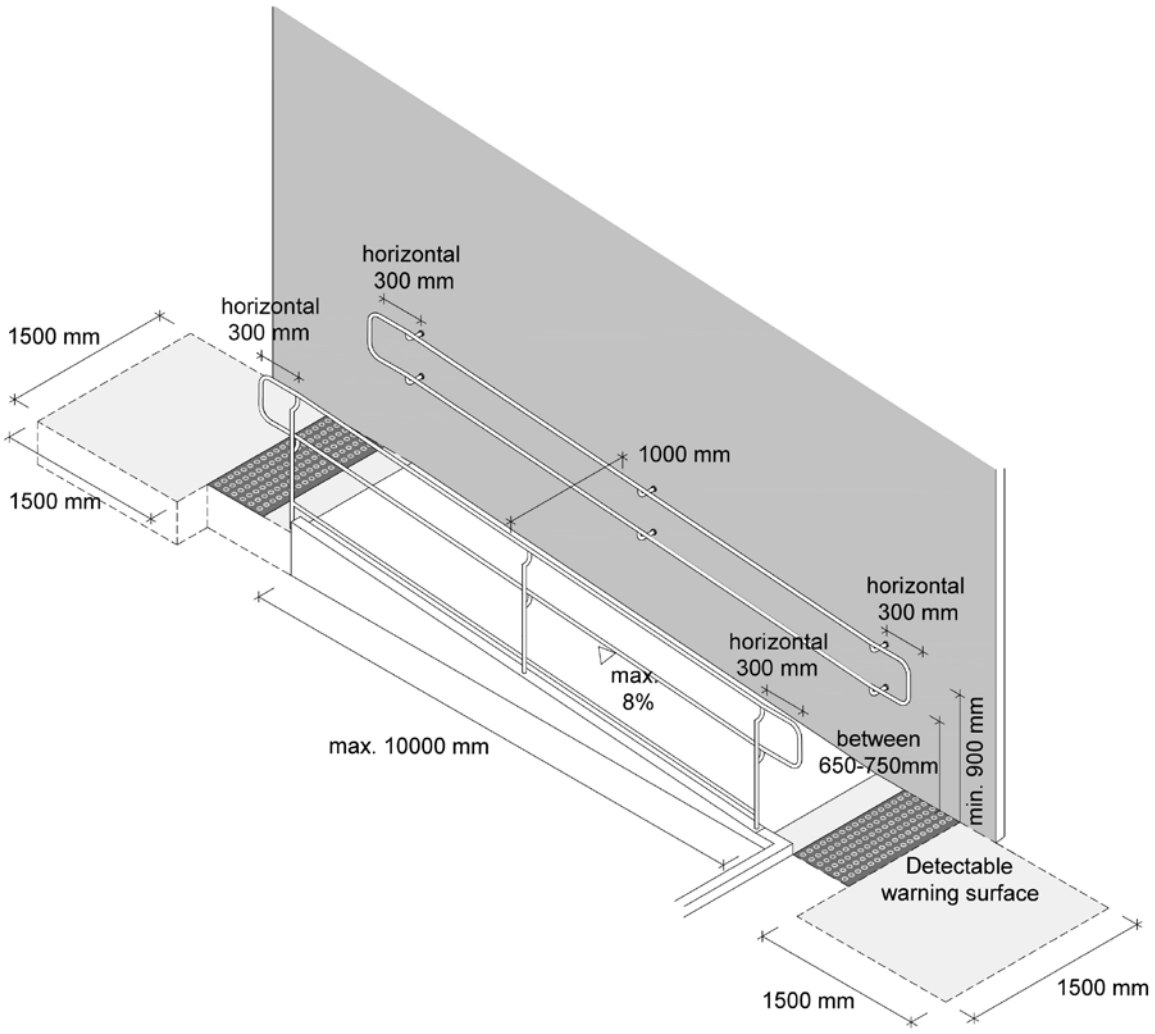


Figure 15. Maximum rise and length for ramps with details of handrails required and different alternatives for handrail ends

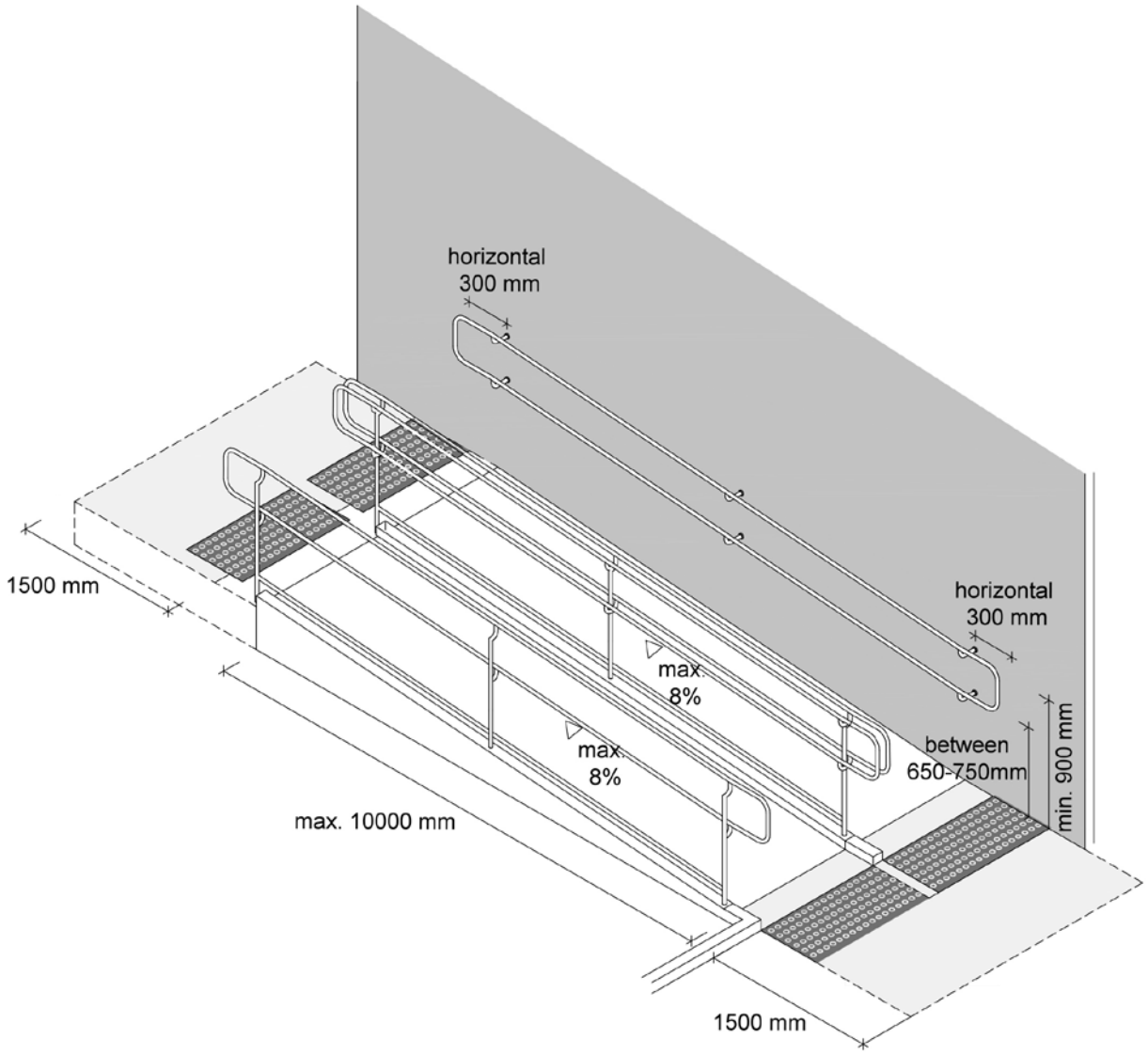


Figure 16. Example of a ramp with an intermediate handrail

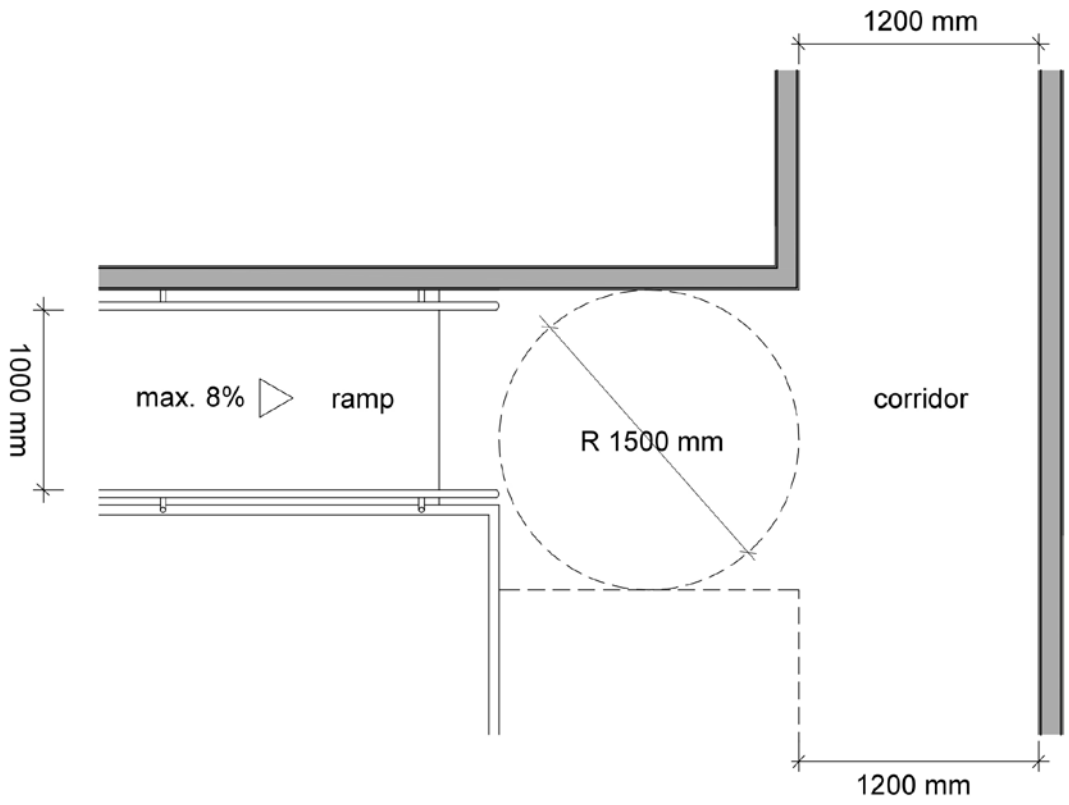


Figure 17. Dimension of corridors in landings

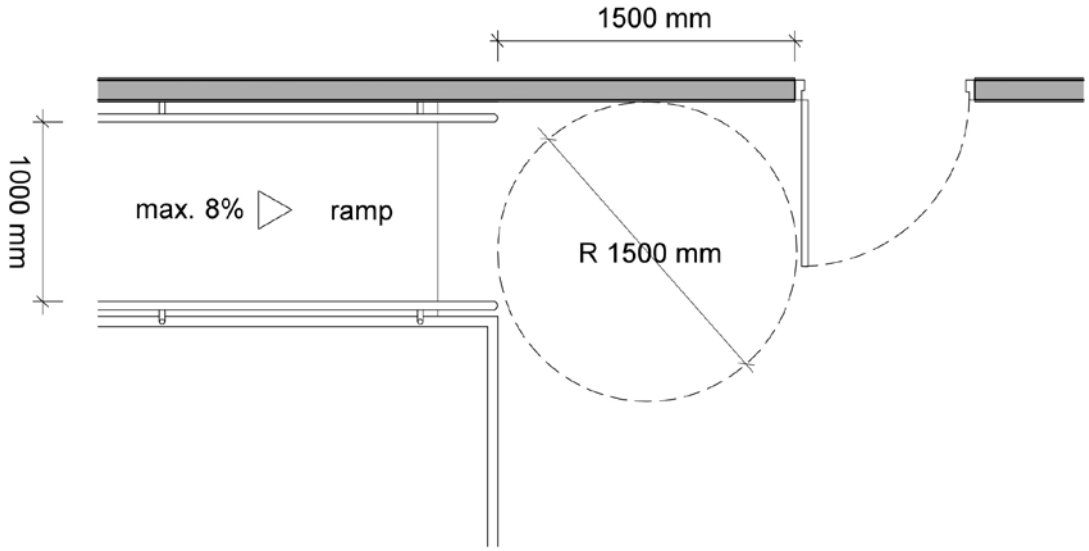


Figure 18. Door location near ramps

5.8. Stairs

Stairs should include as many accessible elements as possible.

5.8.1. Steps

Steps shall the following characteristics:

1. Rises shall have a maximum height between 150 mm and 176 mm.
2. In straight flights, the dimension of the stair tread must be between 300 mm and 340 mm.
3. The rise R and tread T must meet the following relation: 650 mm < 2R + T < 700 mm.
4. Curved stairs should be avoided.
5. No open risers or discontinued treads are allowed.

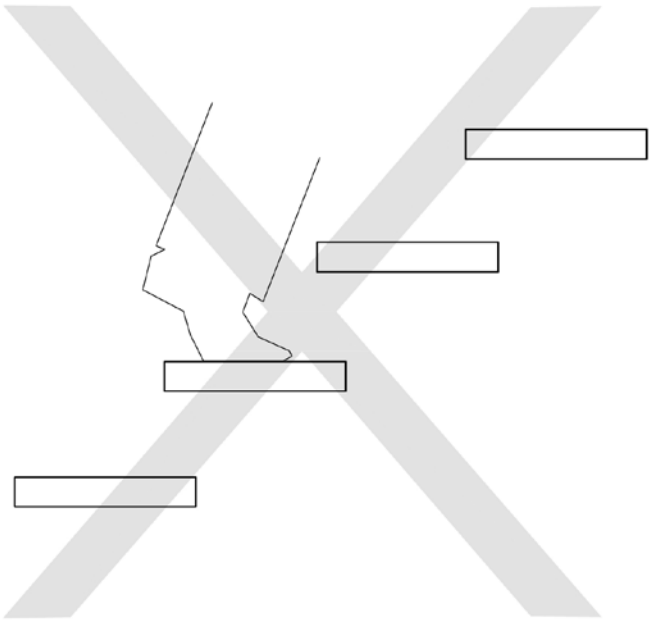


Figure 19. Open risers are not permitted

6. The run of a step is the dimension measured from the edge of the nosing of a tread to the vertical projection of the nosing of the next step.

7. The projection of a step nosing over the tread below shall be avoided, and if present, it shall be at a maximum of 25 mm.

8. At least 30 mm from the step edge shall present a reflectance contrast of at least 30 LRV points against the step surface.

9. In a staircase, all the steps shall have the same height with a tolerance of ± 4 mm.

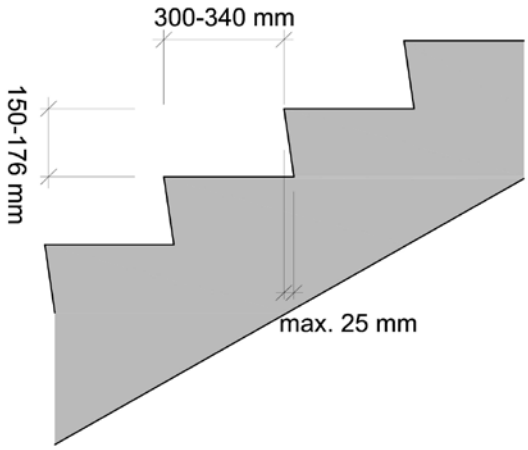


Figure 20. Step nosing is not advisable and is limited up to 25 mm

5.8.2. Stair flights

Each stair flight must meet the following characteristics:

1. A warning surface as per section 5.3 shall be provided at the beginning and the end of each stair flight.

2. Each flight shall have between 3 steps and maximum of 12.

3. The usable width of the flight shall be at least 1200 mm.

4. The width of stairs should be free of obstacles overhead, particularly the underside of the stairs themselves. The minimum usable width is measured between walls or guardrails, without deducting the space occupied by the handrails as long as they do not protrude from the walls or guardrails more than 120 mm.

5. Illumination at the top and bottom and along of the flight should be, at least 200 lux.

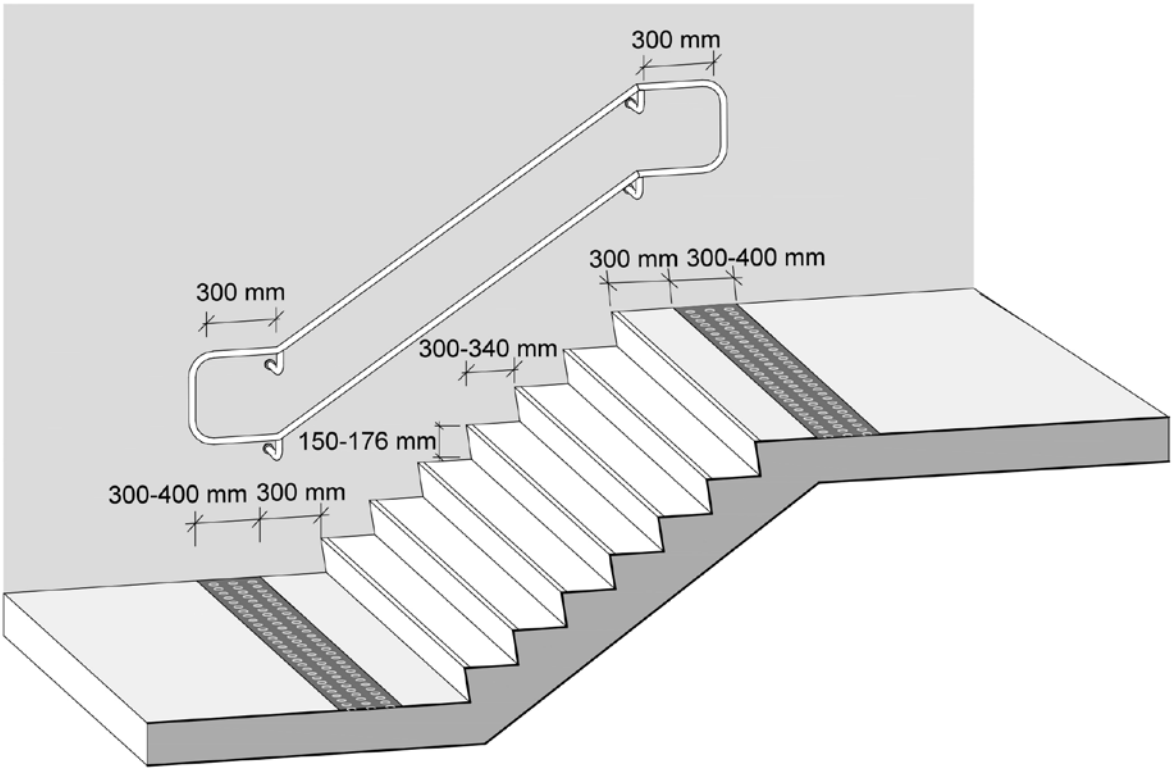


Figure 21. Section of a stair

5.8.3. Landings

Each stair landing must meet the following characteristics:

1. Landings located between stairs flights in the same direction should maintain at least the same stair width and have a minimum length of 1200 mm.

2. When there is a directional change between two flights, the width of the landing shall not be reduced. This width must be free of obstacles and free from any door opening.

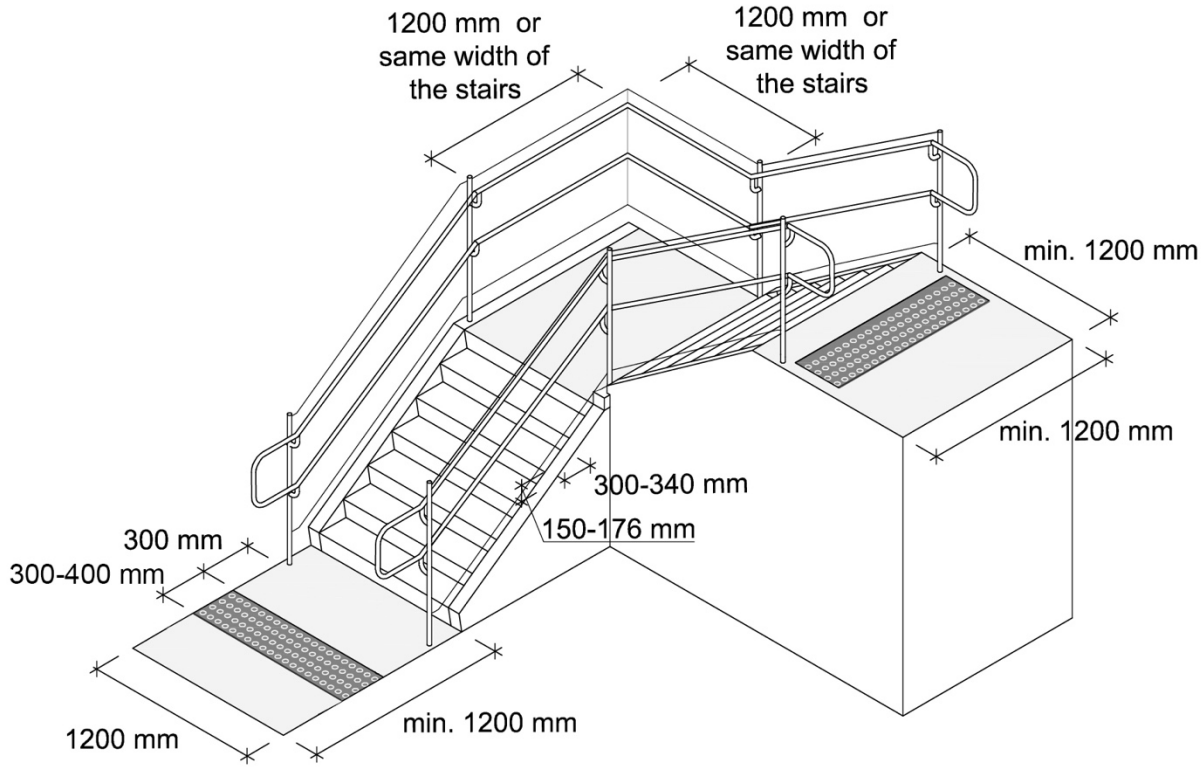


Figure 22. Stair with landings

All open spaces lower than 2400 mm under a stair shall be protected with a handrail or fixed equivalent element to protect people from the overhead hazard, according to the figure below.

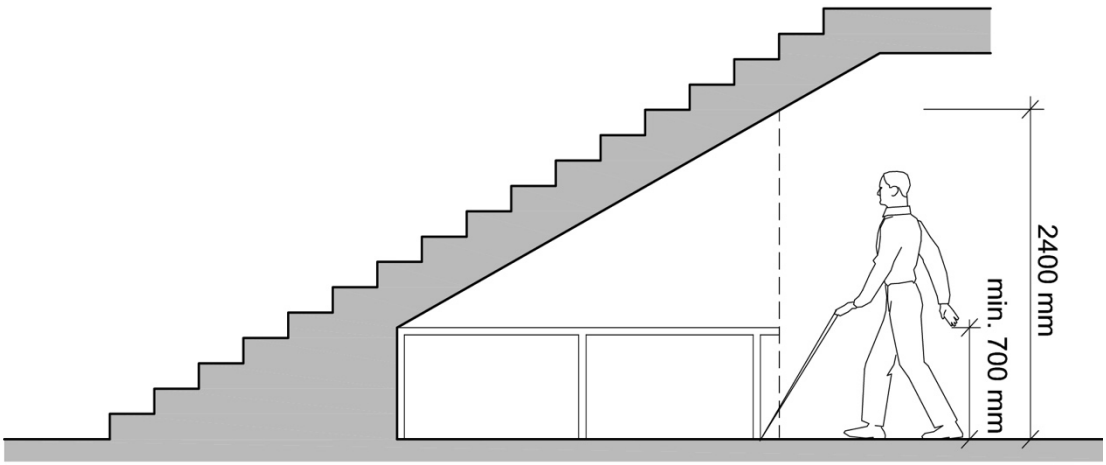


Figure 23. Spaces under stairs shall be protected

5.9. Handrails

Stair and ramp handrails must meet the following characteristics:

1. Stairs and ramps with a change in level greater than 500 mm must have continuous handrails on both sides with a 300 mm horizontal extension at its ends. Any of the three solutions displayed in the figure 15 can be applied.

2. When the stair widths are greater than 2100 mm an additional intermediate handrail should be installed. The width between intermediate handrails should be at most 2100 mm.

3. In ramps, the distance between the handrails shall be 1000 mm as displayed in figure 14.

4. The handrail should be mounted at a height of 900 mm. An additional handrail shall be provided at a height between 650 mm and 750 mm.

5. The handrails must be safely secured. Handrails must have an anatomical design that allows adjustment to the hand with a circular section of 30 mm to 40 mm diameter or an equivalent gripping surface. Handrails must be separated from the wall surface at least 40 mm. The handrail section and its mounting system should not interfere with the continuous gripping surface.

6. Handrails must have a contrasted reflectance of at least 30 points LRV against its background.

7. All handrail materials exposed to sun radiation shall not reach temperatures that may damage the users.

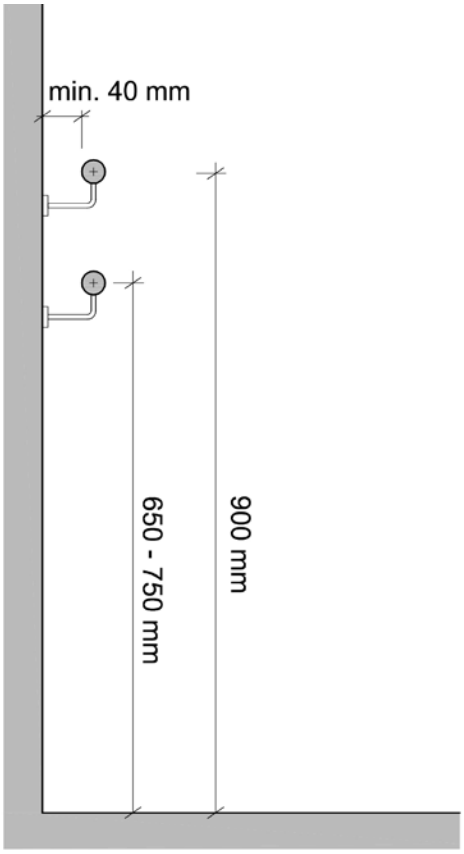


Figure 24. Dimensions of handrails

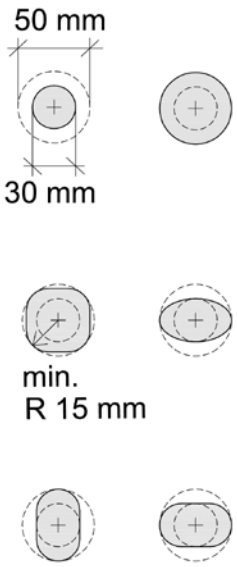


Figure 25. Examples of accessible handrail profile

5.10. Elevators

Elevators placed in public areas must be accessible from the ground floor.

An elevator, lift or platform should be provided in every building with more than one floor.

The requirements to be fulfilled by an accessible elevator are:

1. The dimensions should be appropriate for the intended number of users and in all instances equal to or bigger than the specified minimum dimensions of the cabin.
2. Depending on the number and position of the doors, dimensions are shown in the following table:

Dimensions of the cabin (wide x deep)		
	Minimum	**Recommended**
One door cabin	1200 mm x 1500 mm	1500 mm x 1500 mm
Cabin with two opposing doors	1200 mm x 1500 mm	1500 mm x 1500 mm
Cabin with two doors in 90° angle	1500 mm x 1500 mm	2000 mm x 2000 mm

Table 5. Dimensions of elevator cabins in public areas

3. The elevator doors of the floor and the cabin must be automatic, have a minimum width of 900 mm, minimum height of 2000 mm, and present colour contrast against the walls.
4. In front of the elevator access door and in front of the hall call button there should be a minimum clear manoeuvring space of 1500 mm x 1500 mm.
5. Elevator call buttons shall be located at a height between 900 mm and 1200 mm.
6. Floor indicators shall be located at a height of 1830 mm.
7. A mirror shall be placed inside the elevator on the wall opposite to the door, from the handrail height upward, covering the full back panel.
8. At least two handrails shall be placed at a height of 900 mm ± 100 mm from the floor.

9. Braille and tactile signage shall be provided on the door jamb at a height of 1500 mm.

10. Audible signals shall sound when each floor is reached or an audible voice announcement

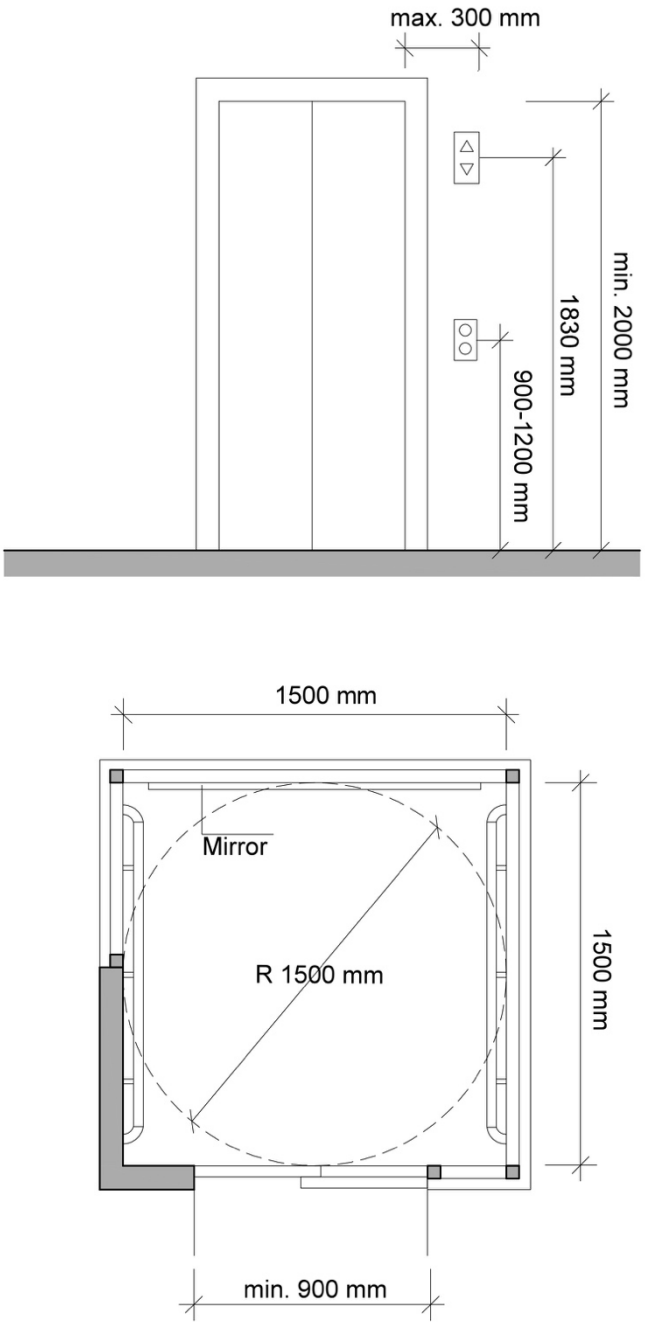


Figure 26. Elevator recommended dimensions for interior dimensions and door

11. Buttons shall be located at a height between 900 mm and 1200 mm. They shall present high-embossed European numerals. Braille numerals shall be located on the left lower side of each button.

12. For elevators serving a large number of floors, a keypad shall be installed at a maximum height of 1200 mm to ensure that all floors can be called.

13. The button to reach the exit floor (usually ground floor) shall be raised at least 3 mm from the other buttons and be circled with a green line at least 2 mm wide.

14. Call buttons in each floor can contain icons instead of digits in tactile and colour contrasted against the background.

15. Buttons shall always provide a two-channel feedback when pressed: visual and acoustic or visual and tactile. Touch buttons and touch screens are not permitted.

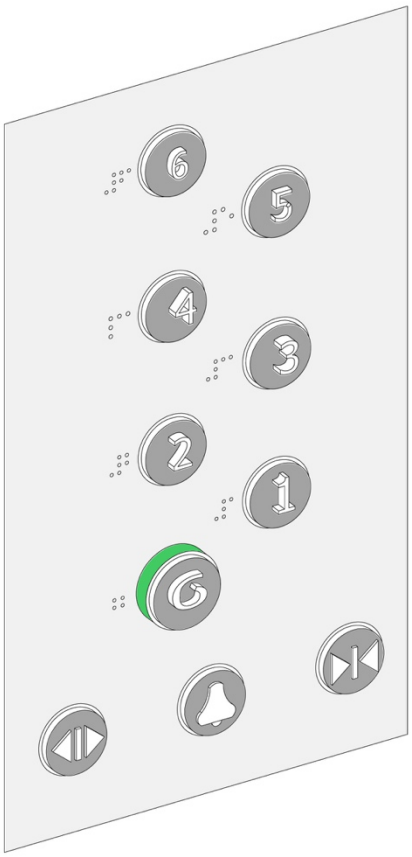


Figure 27. Example of buttons path

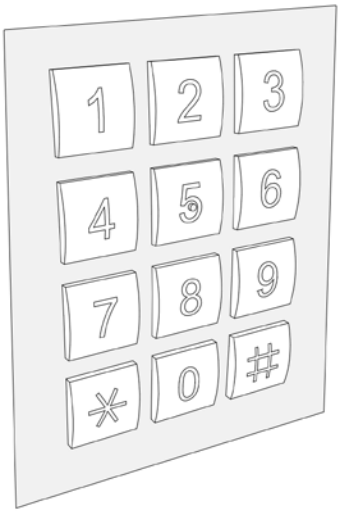


Figure 28. Example of a keypad with raised dot in number 5 key

16. It must have a sign (graphic and tactile) indicating the phone number of the alarm centre and the appropriate number to report an emergency.

17. To allow deaf users to communicate in an emergency the installation company must guarantee one of the following options:

    - A CCTV Intercom.
    - A means of sending and receiving emergency SMS from inside the cab by maintaining the necessary network coverage or through an alternative system.

18. Lights should be installed only on the ceiling to provide a uniform illumination of a minimum of 100 lux.

19. In panoramic elevators a full height opaque wall or corner section of 800 mm wide shall be provided.

20. Doors shall open automatically and shall remain opened at least 3 seconds.

21. If there is a user in the doorway, the door shall automatically reopen and shall not produce a force greater than 135 N. Sensors should be at two levels to ensure that it detects lower items.

22. Whenever there are various options of vertical circulation there shall be a sign indicating the direction to the accessible elevator.

5.10.1. Lifts and lift platforms

A vertical lift platform must fulfil the following requirements:

1. The lift platform must have dimensions that allow its use by a wheelchair user.

2. The surface of the platform has a free space of 900 mm x 1500 mm (width x length).

3. Access to the platform areas shall be free of obstacles in every landing of 1500 mm x 1500 mm.

4. A lateral space of interaction in front of the lift-calling button shall be at a height between 700 mm and 1200 mm.

5. The platform’s entrance or exit shall have minimum 900 mm width and be free of obstacles.

6. It must have side protection separating users from the walls of the lift platform shaft.

7. Inside the platform cabin, at least two handrails shall be placed at a height of 900 mm ± 100 mm from the floor.

8. The control buttons design shall be accessible. They shall have a continuous pressure button operation and shall be operable with the elbow.

9. There should be an additional external control for the platform that could be used by authorized personnel when necessary.

10. If the cabin is open, with walls only reaching halfway up the cabin, the maximum allowed travel height is 2000 mm in public buildings and 3000 mm in private housing.

11. If the platform lift is a full cabin model the maximum allowed travel height is 4000 mm.

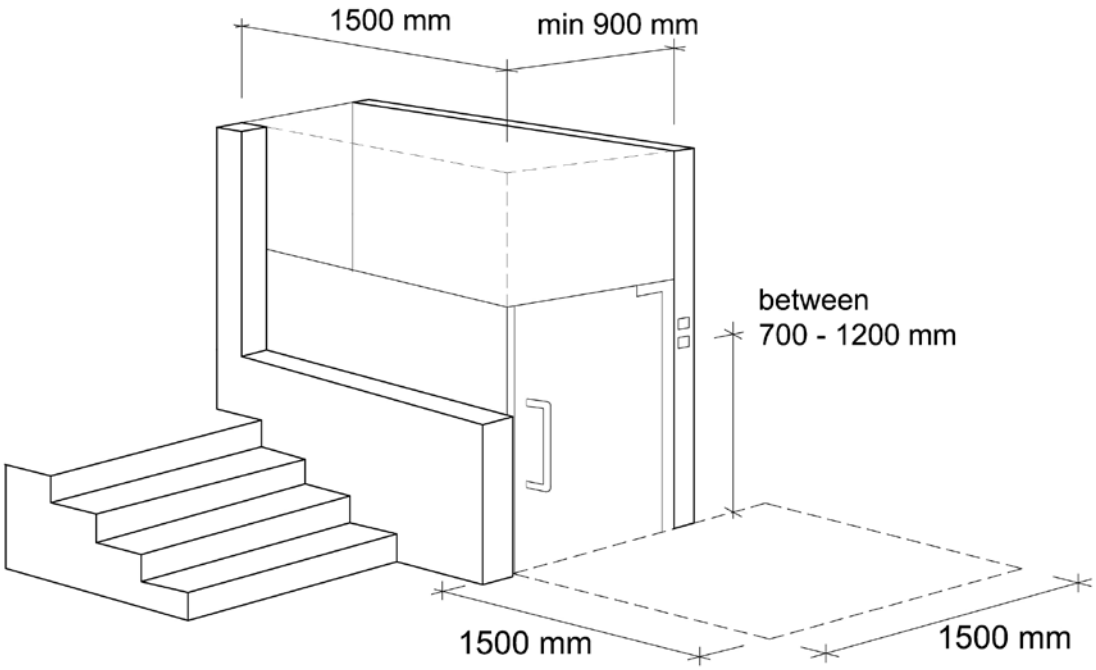


Figure 29. Lift platform dimensions

5.11. Escalators, travellators and mechanical ramps

Travellators are considered complementary elements of accessible pedestrian paths and shall have the following requirements:

1. The moving surface shall present a maximum gradient of ≤5%.
2. The beginning and the end of travellators shall present a contrasting pavement with the surroundings.
3. The direction of travel shall be marked.
4. It is recommended to install an audio system indicating the start and end of these devices.

Escalators and mechanical ramps are not considered part of the accessible path. Whenever provided they shall be accompanied by a non-mechanical accessible alternative route or an elevator that leads to the different levels.

5.12. Doors

Doors connected to accessible paths must meet the following requirements:

1. Automatic doors are preferred for public building entrances and high pedestrian traffic areas.
2. Doors should have a free passage width of minimum 900 mm. This free passage must be measured between the face of the door and the face of the doorstop with the door open at 90°.
3. Opening and closing mechanisms shall be placed between 900 mm and 1200 mm in height and shall be easy to grasp and use. Pressure mechanisms or levers shall be easy to operate with the elbow or be automatic.

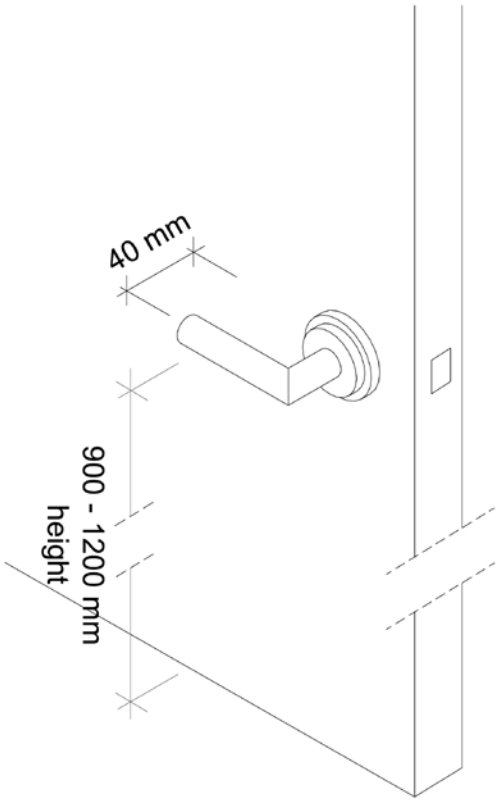


Figure 30. Door handle

4. If lever systems are provided, they must be separated from the door body by at least 40 mm.
5. Round knobs are not allowed.
6. For sliding doors, a vertical fixed bar shall be provided to open the door.
7. The opening space of a door shall not invade the manoeuvring spaces and the accessible paths.
8. Doors shall be level.
9. The force required to open a door shall be a maximum of 25 N.
10. A swinging doors leaf shall be able to open at 90 °.
11. Doorstoppers shall be provided to prevent the door from hitting and damaging the wall.

12. Where there are two or more door leaves at least one of the leaves of the door must be able to be considered an accessible door according to the above specifications.

13. In high use areas kick plates of at least 250 mm high are recommended.

14. If there is a revolving door, an alternative door shall be provided.

5.12.1. Manoeuvring spaces at doors

One-way swinging doors shall have a manoeuvring clear space on both sides.

The dimensions of these spaces shall fulfil the following requirements:

1. On the pull side, a minimum space of 600 mm adjacent to the leading edge of the door with a minimum clear floor space of 1500 mm x 1500 mm shall be provided.

2. On the push side, a minimum space of 300 mm adjacent to the leading edge of the door with a minimum clear floor space of 1200 mm x 1200 mm shall be provided.

3. In sliding doors, a minimum space of 300 mm adjacent to the leading edge of the door with a minimum clear floor space of 1200 mm x 1200 mm in both sides shall be provided.

4. Clear floor space shall not be obstructed by other swinging doors and they shall be free of obstacles.

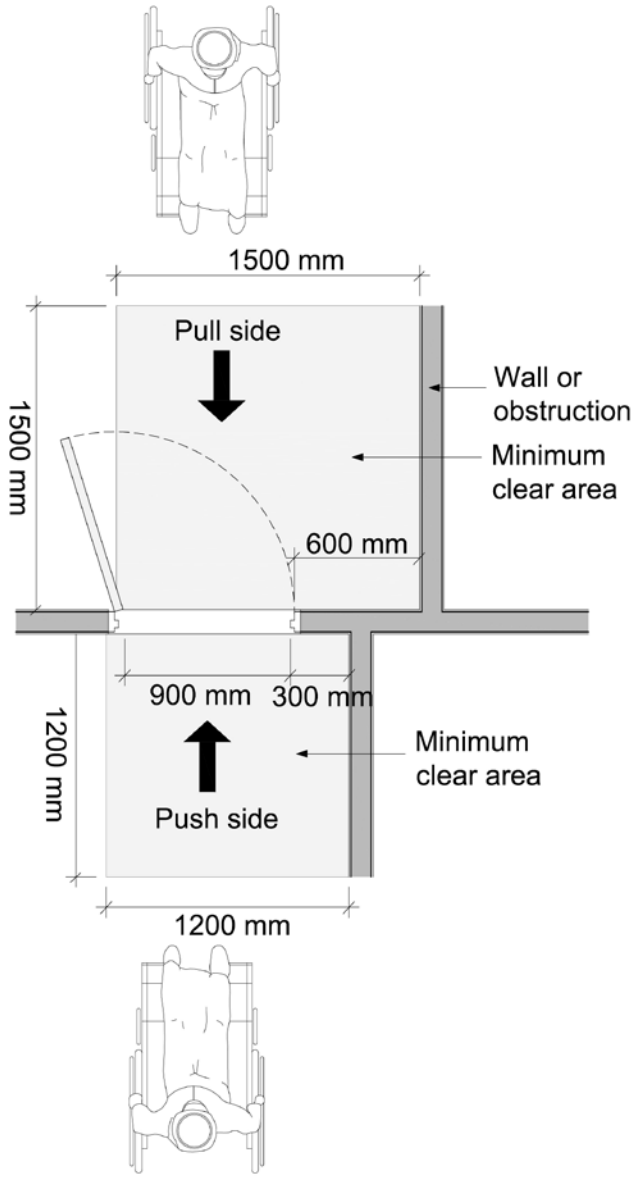


Figure 31. Minimum manoeuvring space in front of one push side swinging doors

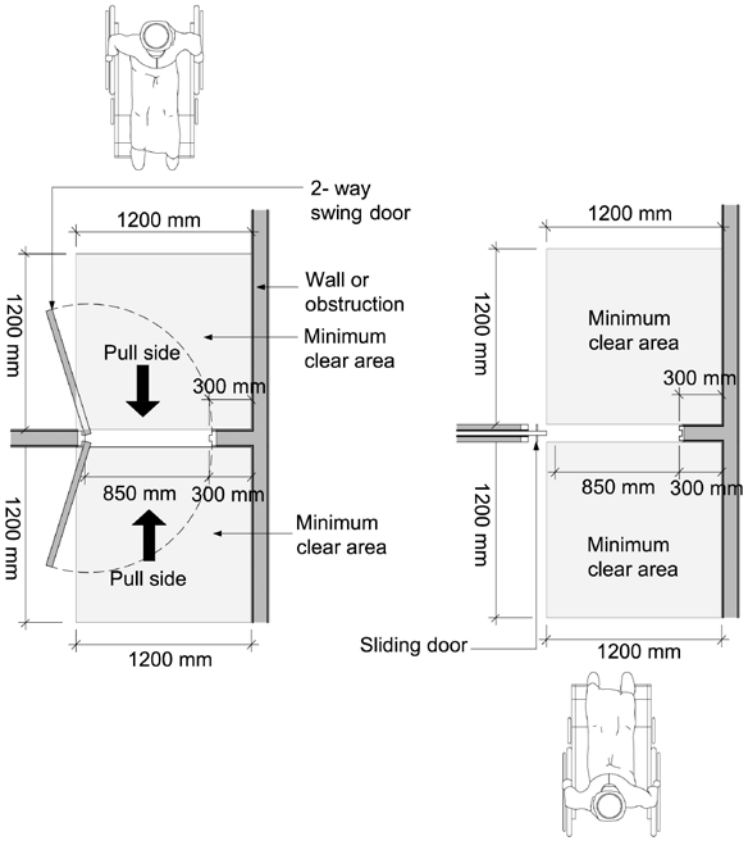


Figure 32. Minimum manoeuvring spaces in front of both-side push swinging doors and sliding doors

5.12.2. Two doors in a series

When two doors are installed in a series, they shall have a minimum space of 1200 mm between them plus the width of the door swinging into that space.

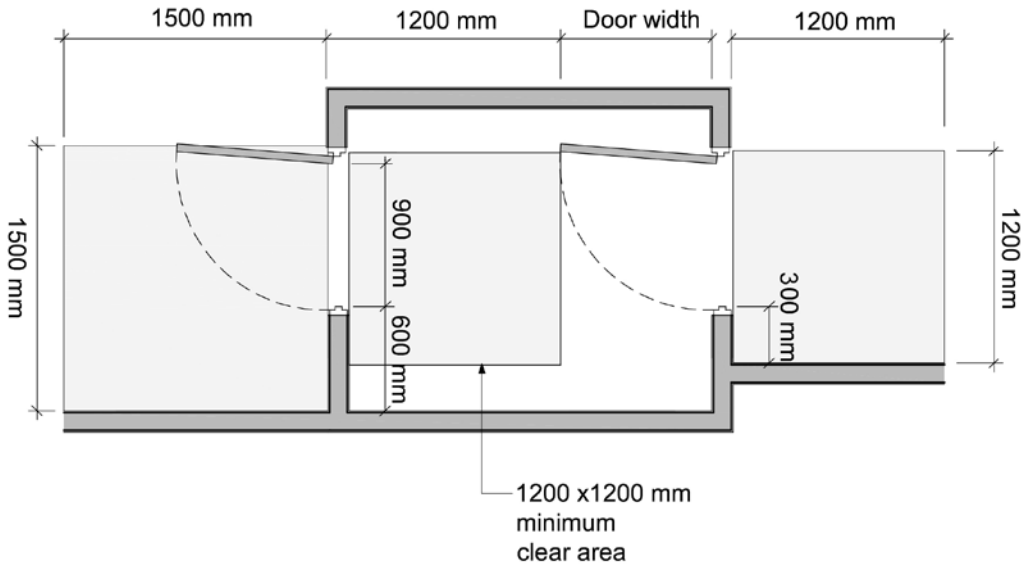


Figure 33. Minimum manoeuvring space for two aligned doors in a series

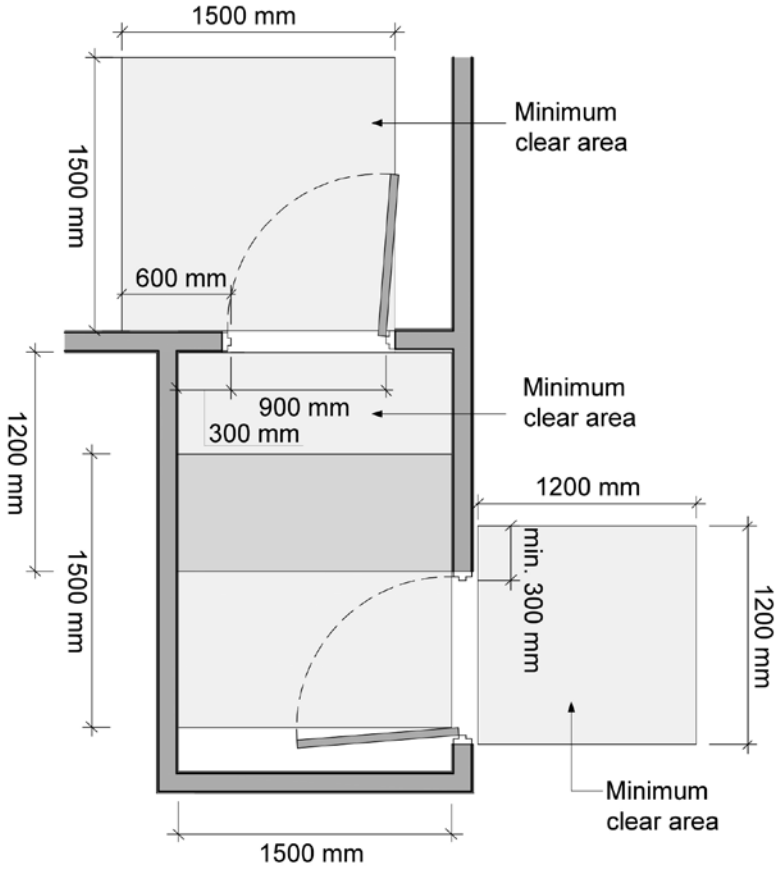


Figure 34. Minimum manoeuvring space for two angled doors in a series

5.13. Power-assisted doors

A motion detector or a floor-pad sensor and one that is manually activated by pushing a control can automatically activate power-assisted doors.

Automatic doors are preferable, being sliding doors they are most convenient to use and do not require guardrails for door-swing protection.

Power-assisted swinging doors shall:

- Take 3 s or more to move from a closed to a fully open position;
- Remain fully open for a minimum of 5 s;
- Require a force of not more than 66 N to stop door movement.

5.14. Windows and window hardware

Windows and window hardware shall fulfil the following requirements:

1. Opening windows either in facades, internal or external corridors, shall not project into pedestrian areas below a height of 2200 mm.

2. Pressure mechanisms or levers shall not require wrist turning, and should be easy to manipulate with one hand, elbow or automatically operated.

3. Whenever possible, prioritize natural light and air.

4. In order to provide exterior vision to children people with short stature and wheelchair users the glazing should be no higher than 900 mm from the floor. Guardrail protection shall be provided if windows can be opened lower than 1200 mm in order to prevent falls.

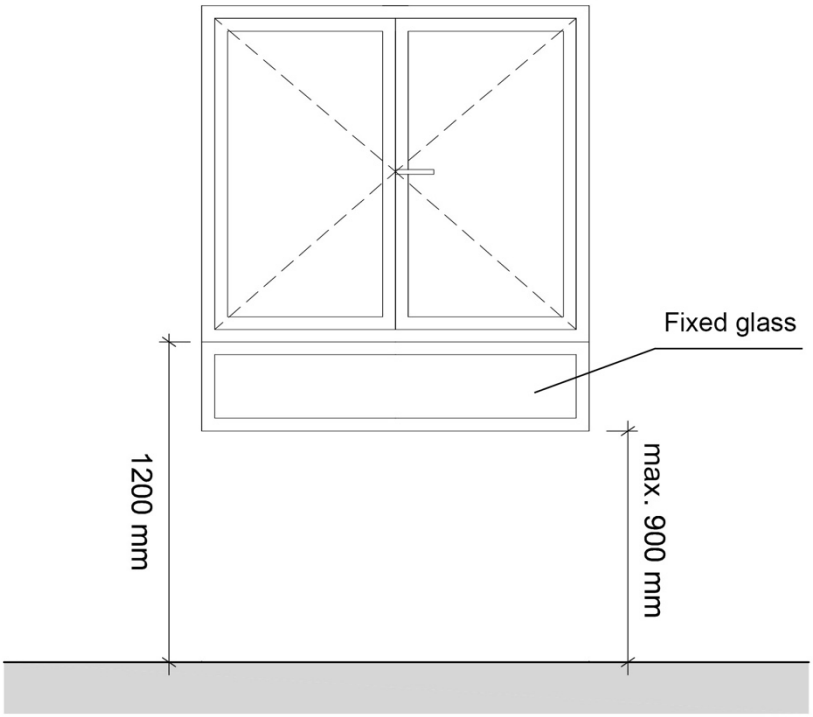


Figure 35. Window at 1200 mm with fixed glass at 900 mm from the floor

5.15. Switches

Switch controls and electric outlets shall be installed between 900 mm and 1200 mm height and be located a minimum of 600mm from any corner.

The switch plate shall present at least a contrast of 30 points LRV in relation with the surrounding wall.

It shall be possible to activate it with an elbow.

5.16. Glass surfaces

All glass surfaces that could be confused with doors or openings, as well as the glass doors that do not have elements that can be identified, such as frames or handles, shall contain visual elements that guarantee its detection.

The marks shall consist of two horizontal bands, each at least 100 mm high, and shall have a reflectance contrast with the glass background of at least 30 points LRV (Light Reflectance Value).

The upper band shall be affixed at a height between 1400 mm and 1600 mm and the lower band affixed at a height between 850 mm and 1000 mm above the floor.

Figure 36. Glass marks

It is not necessary to mark the glass surfaces with contrasted bands in the following cases:

1. In glass surfaces of less than 500 mm in width.
2. The highest point of the glass surface is less than 850 mm.
3. If it has other opaque elements between 850 mm and 1700 mm occupying its entire width.
4. If it has other types of marks (logo, artistic illustrations, etc.) that occupy 50% of the area between 850 mm and 1700 mm without empty spaces bigger than 500 mm wide.
5. Glass surfaces with fixed elements in front of it that block the entire approaching space.

5.17. Accessible toilets

All public facilities and new public mobile or fixed toilets installed in parks, gardens, squares, streets, exhibitions, fairs, concerts, and in outdoor public spaces and buildings for public use shall have at least one accessible toilet for each gender and in every bank

of toilets, or 1 toilets for male and females within a 150 meters distance from any part of the building.

If only one toilet for each gender is provided, then it must be accessible. Accessible toilets shall fulfil the following requirements:

1. The door should have a clear width of 900 mm and comply with Doors section of this Code.
2. Furniture shall have a reflectance contrast with the walls of at least 30 points LRV (Light Reflectance Value).
3. Every cabin door shall be provided with a latch operable with the elbow installed between 900 and 1200 mm and a coat hanger installed between 1100 and 1200 mm.
4. Each toilet block for both genders shall include a baby changing table duly marked.

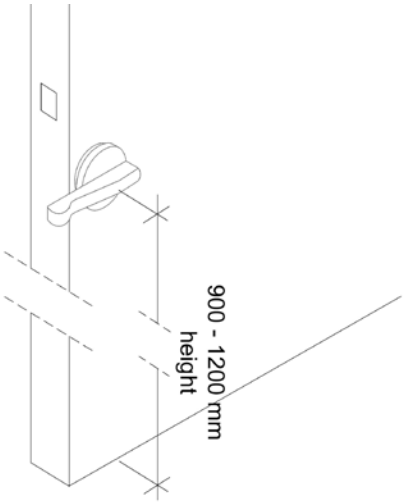


Figure 37. Cabin latch example

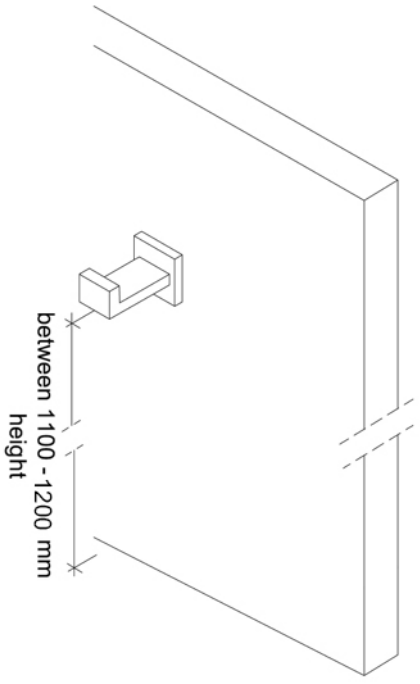


Figure 38. Door hanger

5.18. Urinals

At least one accessible urinal shall be provided wherever urinals are located.

Urinals that reach the floor and therefore are designed for all male heights are

preferred. The bottom lip should be at a maximum height of 300 mm.

Grab bars shall be provided on both sides of the urinal mounted vertically with the centreline at 1000 mm high and 380 – 450 mm from the centreline of the urinal. Where privacy screens are provided there should be a clearance of 920 mm.

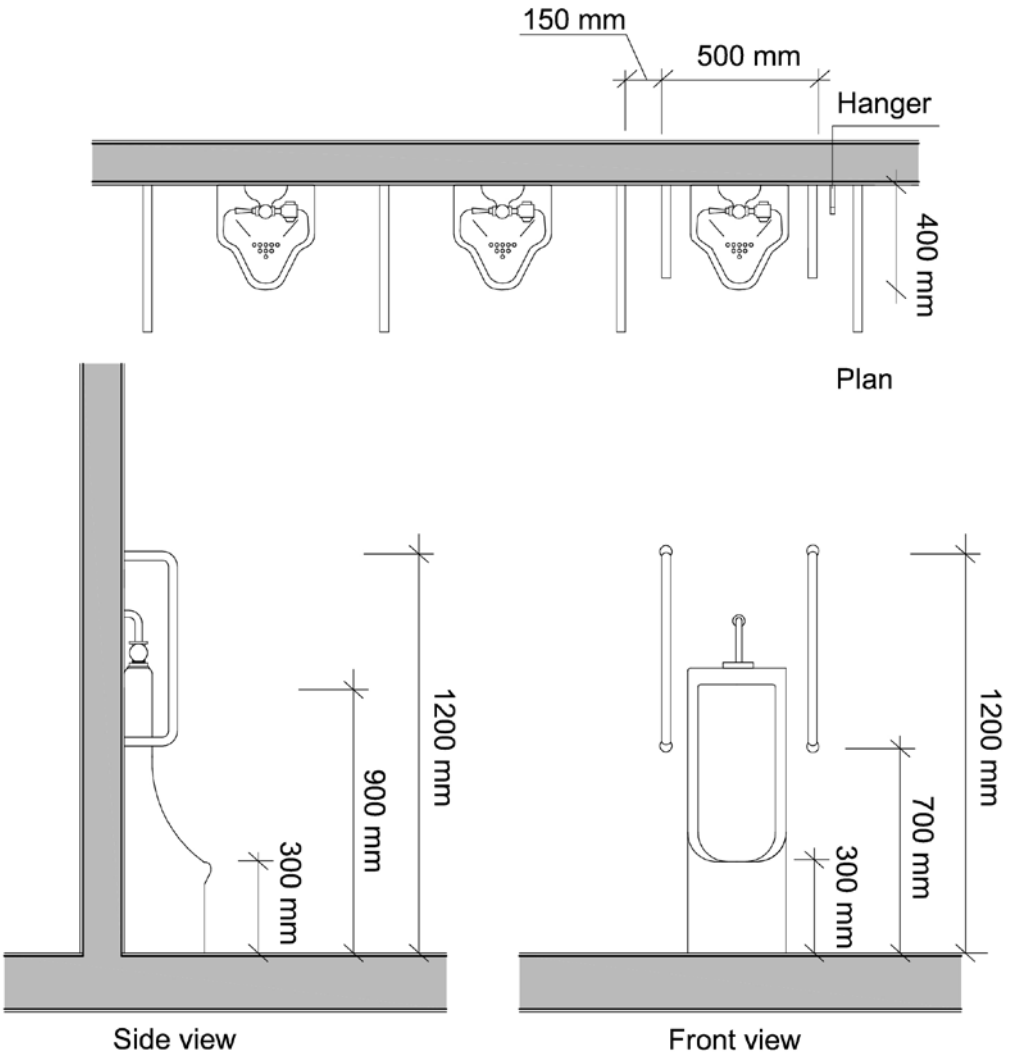


Figure 39. Urinal dimensions and grab bars

5.18.1. Floor surfaces

Public toilet shall have non-slippery floor surfaces.

Pendulum Test Value (PTV) must be greater than 45 and shall fulfil the requirements of section 5.2. Pendulum technique must consider both shoed and barefoot users.

5.18.2. Sinks

Sinks shall meet the following requirements:

1. Sinks shall not be the pedestal type and shall have clear knee space below. Dimensions of this clearance space are minimum 700 mm high and 250 mm deep, from the faucet to the edge. The usable surface height shall be between 800 mm and 850 mm.

2. When sinks are in a row at least one shall be possible to use with all the accessories.

3. Faucets shall be operated by pressure with a lever handle or with a sensor. Turning or pressure systems that require great effort to be operated are not allowed.

4. The distance from the sink edge to the faucet shall be less than 600 mm and its height from the floor shall be between 900 mm and 1200 mm. The lower edge of the mirror shall be mounted at a 900 mm height or less.

5. The pipes under the sink should be recessed.

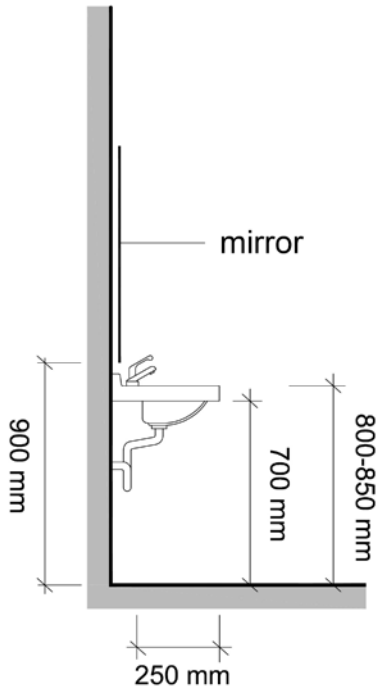


Figure 40. Dimensions for sinks

5.18.3. Controls and accessories

All controls and accessories shall meet the following requirements:

1. Flushing systems are operated by pressure or with a flush handle. Controls shall have a large surface and are operable with only one hand or elbow.

2. Controls and accessories such as soap dispensers or dryers among others, shall be mounted at a height between 700 mm and 1200 mm.

5.19. Accessible toilet stalls

Accessible toilet stalls can be located both inside the toilet blocks provided for each gender or outside the blocks. Family toilets should be located outside of the block of toilets. According to the tables of Annex 2 this is only allowed in certain types of buildings.

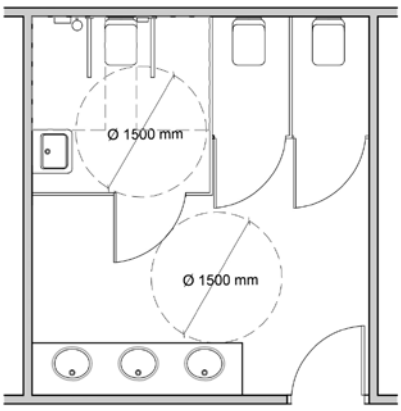
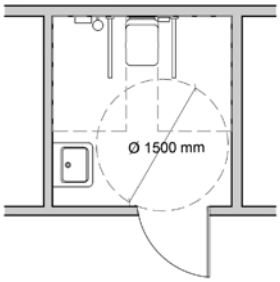
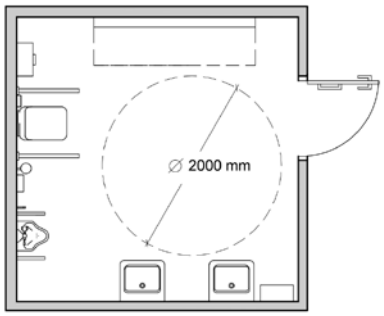
Types of toilets		
		
Accessible toilet within a toilet block	Detached accessible toilet that can be used as family toilet in certain building types	Full Family Toilet

Table 6. Types of toilets

The number of accessible toilets shall follow the table 7.

NUMBER OF ACCESSIBLE TOILETS	
Use of the Building, establishment or area	**Minimum Number of Toilets**
Any public use	1 Accessible toilets for each gender should be provided in every floor being at least 10% of the total number of toilets in every block or 1 independent accessible toilet for both genders
	1 accessible toilet within a 150 meters distance from any part of the building

Table 7. Number of Accessible Toilets

The following table indicates the minimum dimensional parameters required for accessible toilets:

Minimum dimensions for accessible toilets	
Dimensions of circulation spaces	
Corridor widths in toilets, showers, lockers spaces, etc.	1200 mm
Manoeuvring turning space diameter	1500 mm
Accessible toilets and cubicles conditions	
Manoeuvring space diameter between 0 and 700 mm height free of obstacles	1500 mm
Lateral interaction space	On both sides

Table 8. Minimum dimensional parameters for accessible toilets

Accessible toilets shall fulfil the following requirements:

1. There is a lateral interaction area on both sides of the toilet and beside the shower if one is provided. The requirement of lateral transfer space on both sides of the toilet in accessible restrooms can be substituted by only one if in the same block there are symmetrical units.

2. Shall provide grab bars as describe in section 5.17.2.

3. A changing table shall be provided in all accessible toilet rooms.

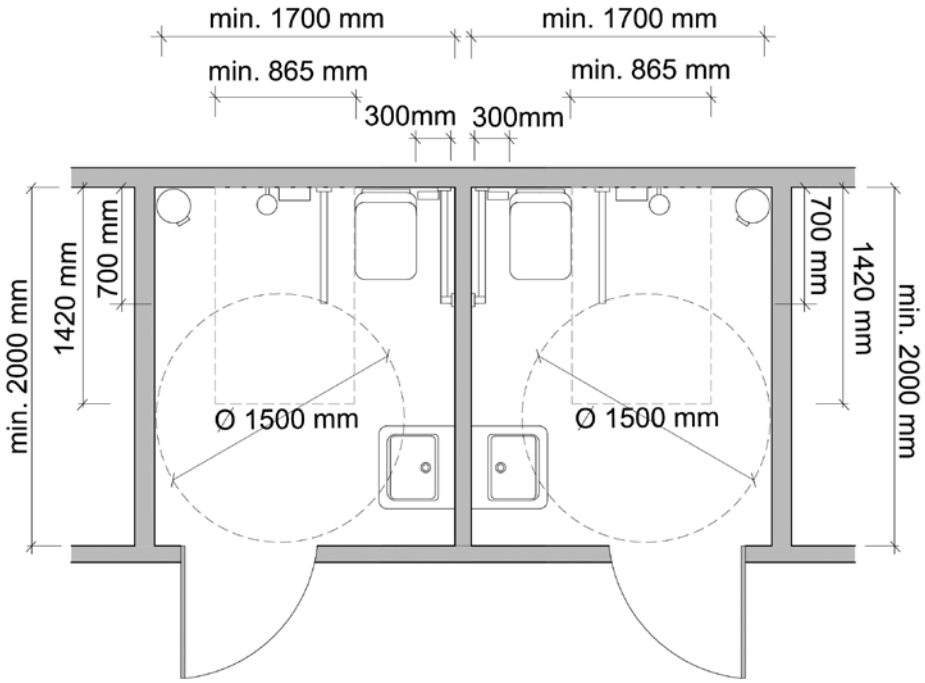


Figure 41. Symmetrical toilets may substitute interaction space on both sides

5.19.1. Doors

Doors must meet the following requirements:

1. Fulfil the door criteria set out in section 5.12.

2. Open outwards or be sliding.

3. A horizontal handle bar with a length of 300 mm shall be placed at a height between 900 mm and 1000 mm at 300 mm from the hinge side on the inside of the door and by the latch side on the outside of the door.

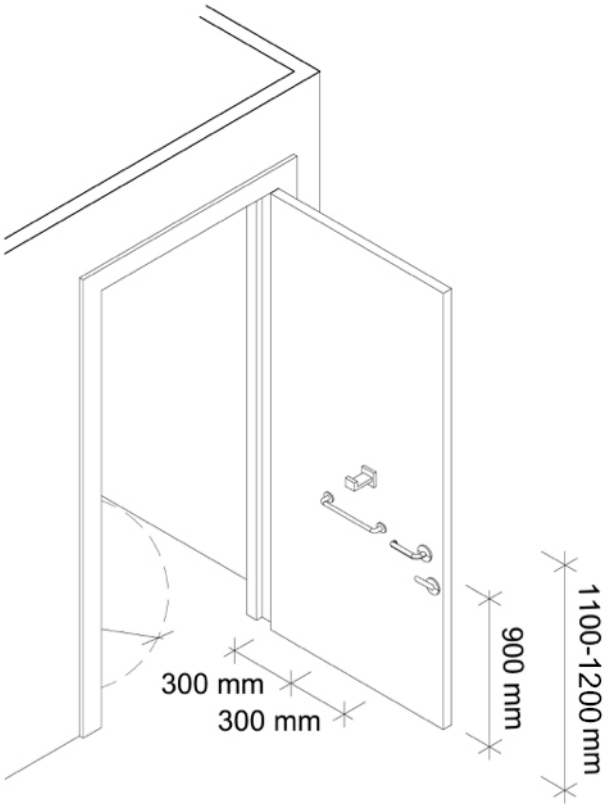


Figure 42. Required toilet door accessories

4. It shall be possible to use the door latch with an elbow.

5. It shall include a coat hanger installed between 1100 mm and 1200 mm.

5.19.2. Grab bars for toilet seats

Grab bars shall meet the following requirements:

1. Grab bars are stable and are separated from the wall a minimum of 45 mm. It must withstand a force of 1 kN in any direction and have a circular diameter between 30 mm and 40 mm.

2. The transfer horizontal grab bars are mounted at a height between 700 mm and 750 mm and have a support length of 700 mm. The bars mounted in the transfer space must be foldable.

3. The distance between both grab bars installed on both sides of the toilet shall be between 670 mm and 700 mm.

4. The toilet seat height shall be located between 450 mm and 500 mm.

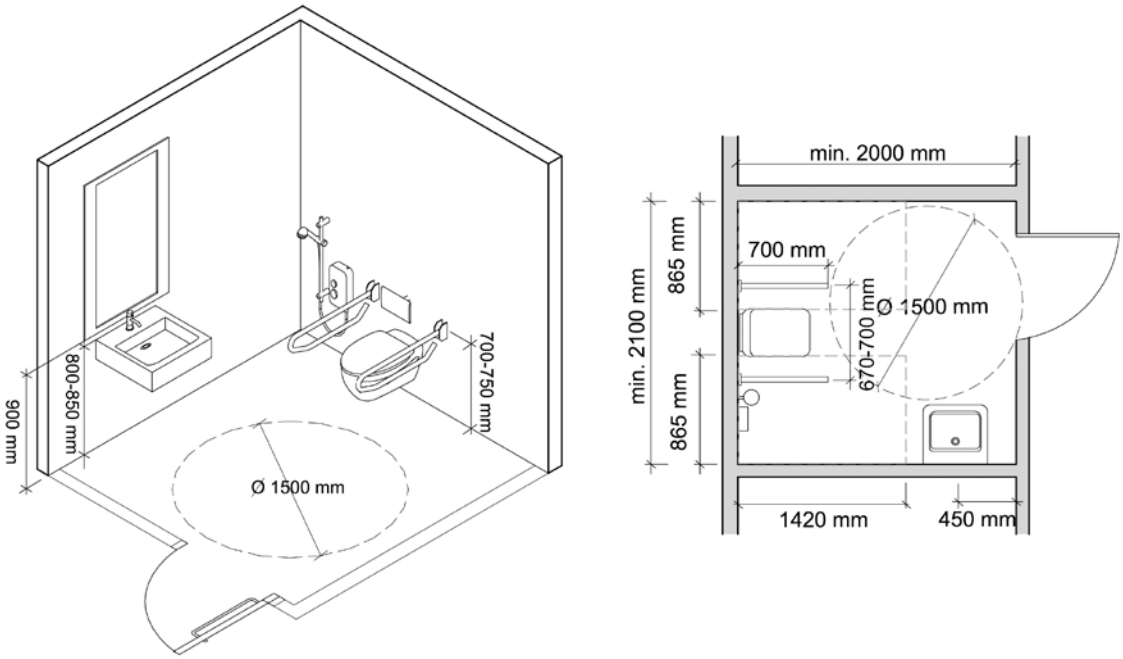


Figure 43. Transfer area on both sides of the toilet

5. In case of toilets with only one transfer area, a horizontal bar shall be mounted at 300 mm from the sanitary toilet edge with a minimum length of 700 mm and are mounted between 700 mm and 750 mm from floor level.

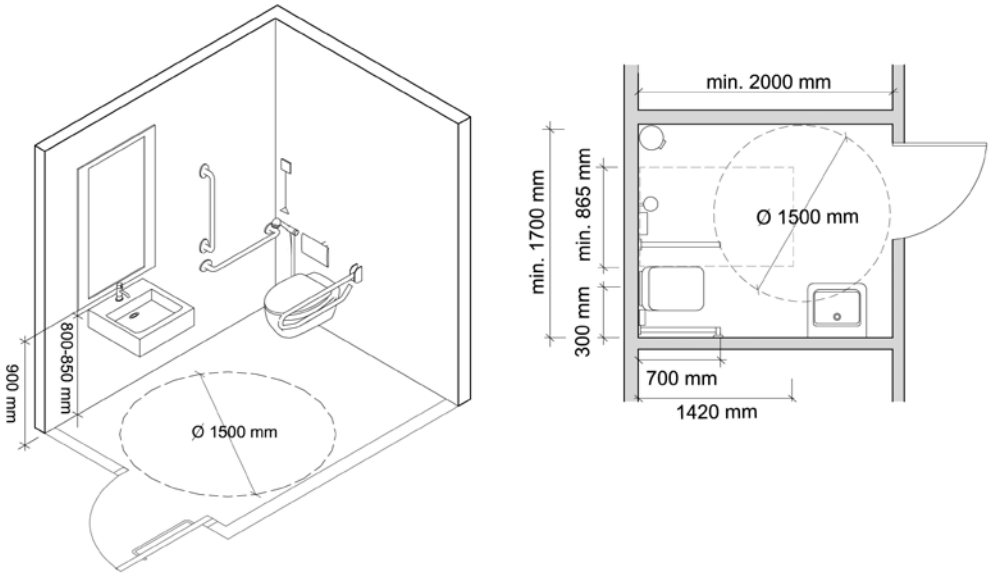


Figure 44. Minimal dimensions for toilets with only one interaction area when permitted

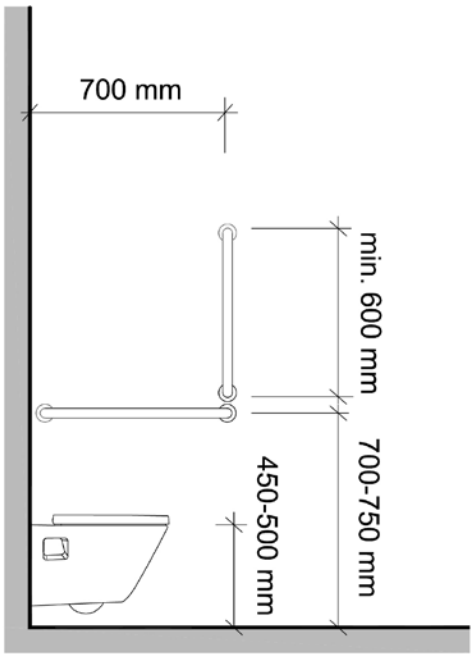


Figure 45. Fixed bars positions

6. An additional vertical bar with the dimensions of the above drawing shall also be installed.

5.20. Accessible showers

Where showers are provided, at least one shall be accessible

Showers shall meet the following requirements:

1. The shower floor surface shall be flush with the level of the surrounding area. The maximum slope for water evacuation is 4%.

2. If a shower is provided it shall have a minimum dimension of 865 mm x 1200 mm and have a seat of at least 400 mm x 400 mm. This seat shall be located at a height between 450mm and 500 mm from the floor and be separated from the wall between 150 mm and 200 mm. The seat shall be free of sharp edges. Adjustable height seats are preferred; especially in hotels and residences.

3. Accessible showers shall have a horizontal grab bar to assist in transferring and a vertical one for support. The horizontal bar shall have a length of 800 mm and be mounted at a height of 700 mm to 750 mm from the floor level in the wall beside the shower seat. The vertical bar with a length of 800 mm shall be installed in the lateral

wall of the shower seat at a height of 800 mm. The distance between both bars installed on both sides of the shower seat shall be between 670 mm and 700 mm.

4. Alternative systems such as bath chairs with the same features can be provided.
5. Controls should be within 500 mm of the seat.

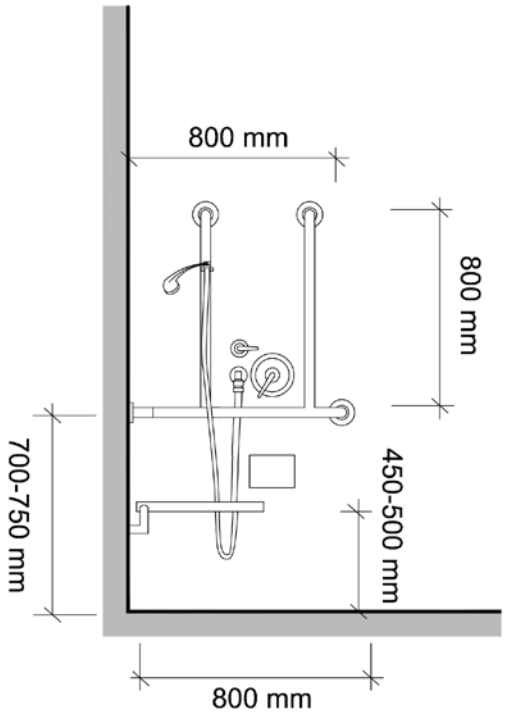


Figure 46. Bars dimensions in showers

5.21. Family toilets

It is recommended 1 family toilet for each block of toilets. At least 1 family toilet within 300 m distance from any part of the building shall be provided.

5.21.1. Full Family toilets

Full family toilets shall be provided in:

- Shopping malls
- Amusement parks and theme parks
- Leisure centres
- Airports

A full family toilet is considered accessible when it meets the requirements specified for accessible toilets and following these specifications:

1. Has a folding adult changing board for adults without interfering with any of the approaching manoeuvring and transfer spaces to the toilet and the sink. The board usable area shall be at a height of 500 mm from the floor.
2. It provides a second sink at a height of 500 mm from the floor.
3. There is a clear manoeuvring turning space of at least 2000 mm diameter free of obstacles.
4. In addition to the toilet, a urinal shall be provided with a usable height of 400 mm.
5. An emergency call button shall be provided.

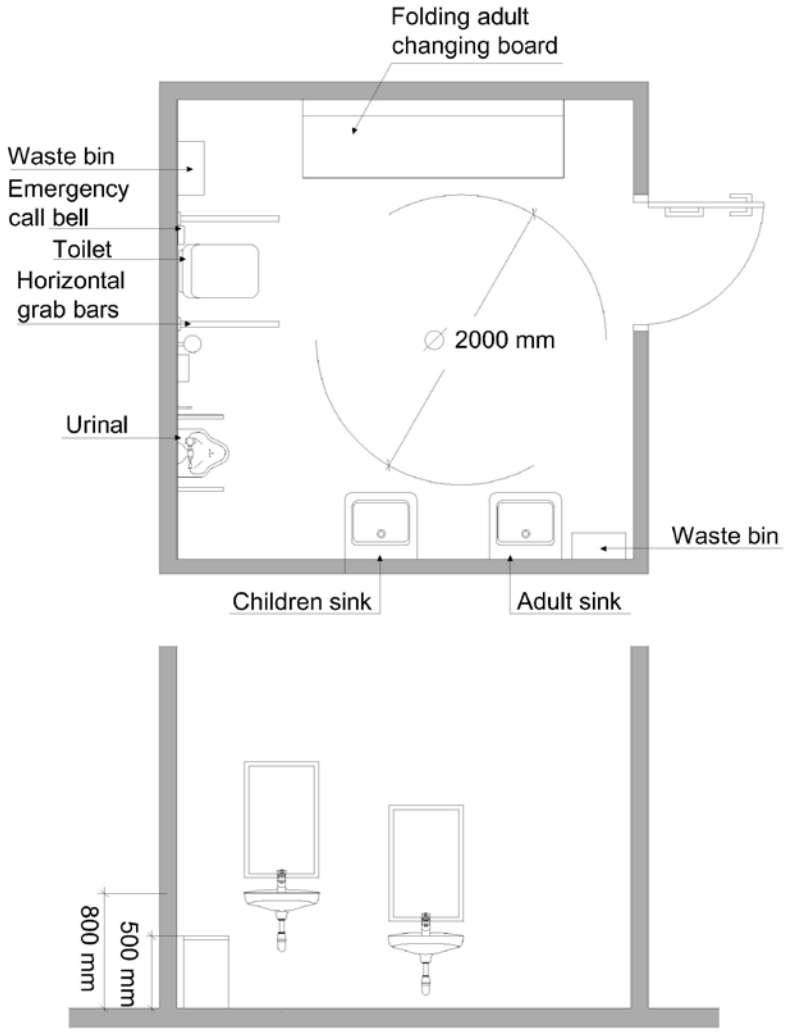


Figure 47. Example of full family restroom

5.22. Feeding rooms

Feeding rooms shall be provided in:

- Shopping malls
- Amusement parks and theme parks
- Leisure centres
- Airports

It is recommended that 1 feeding room be provided for each block of toilets. At least 1 feeding room within 300 m distance from any part of the building shall be provided.

A feeding room shall meet the following requirements:

1. Its surface shall be at least 7 sq. meters for individual feeding rooms and 10 sq. meters for dual feeding rooms.
2. Its design has to ensure an ease of movement with a pram and a child on the arms.
3. It shall have proper ventilation for any smell generated by the diaper waste bins as well as proper place for the diaper waste bins.
4. Furniture shall have a reflectance contrast with the walls of at least 30 points LRV (Light Reflectance Value).

All elements and appliances described in the drawing shall be provided although not necessarily with the same distribution.

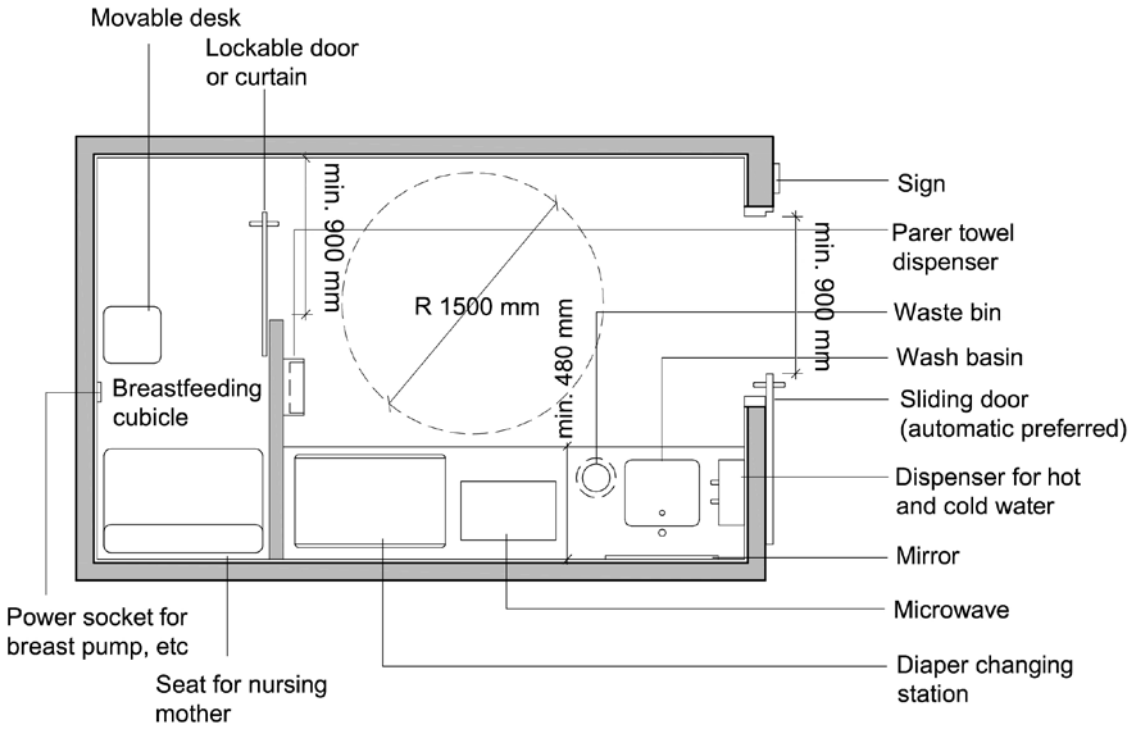


Figure 48. Example of individual feeding room - plan

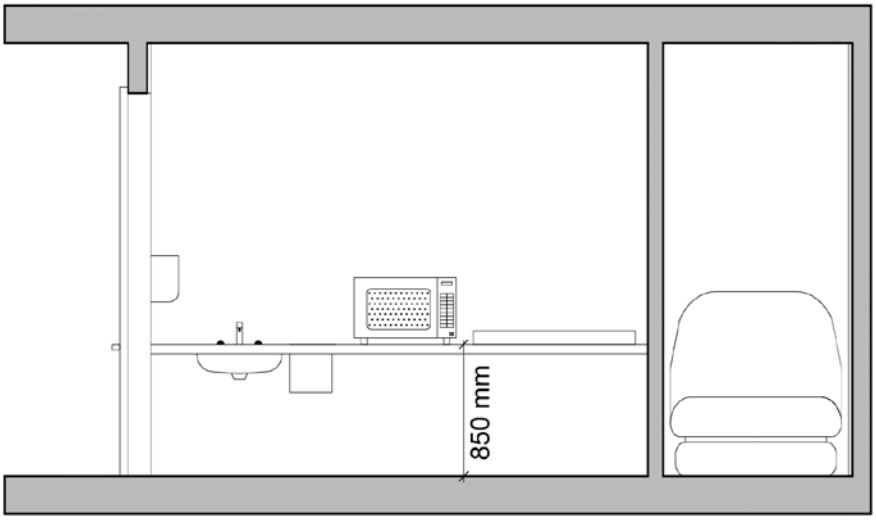


Figure 49. Example of individual feeding room - front view

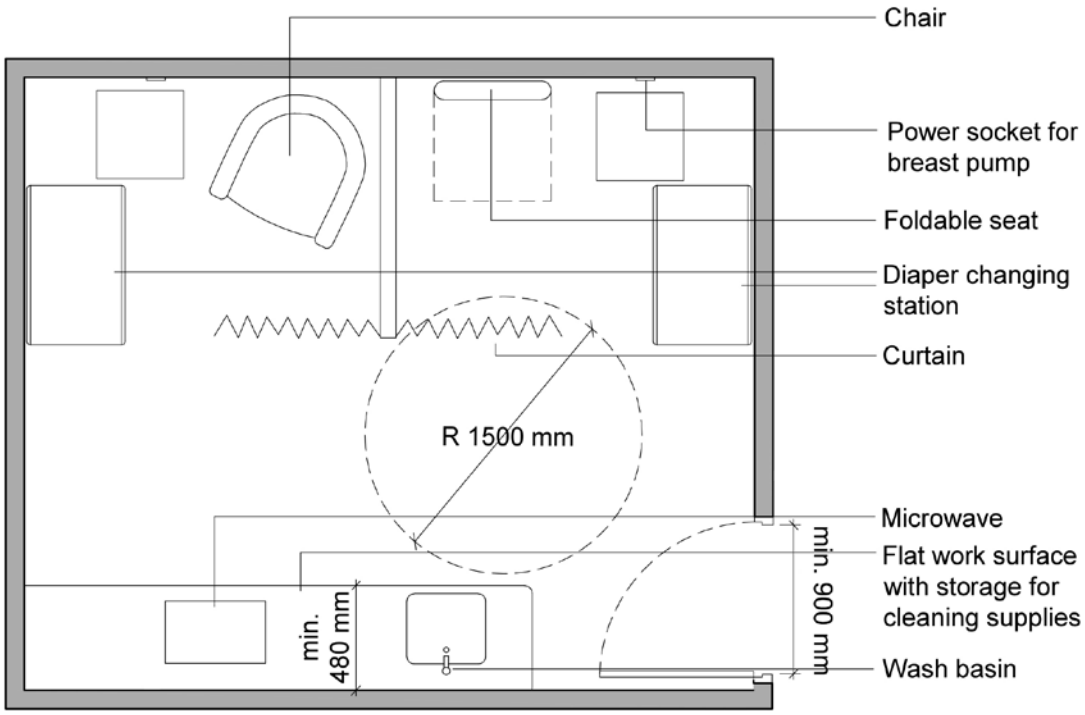


Figure 50. Example of dual feeding room - plan

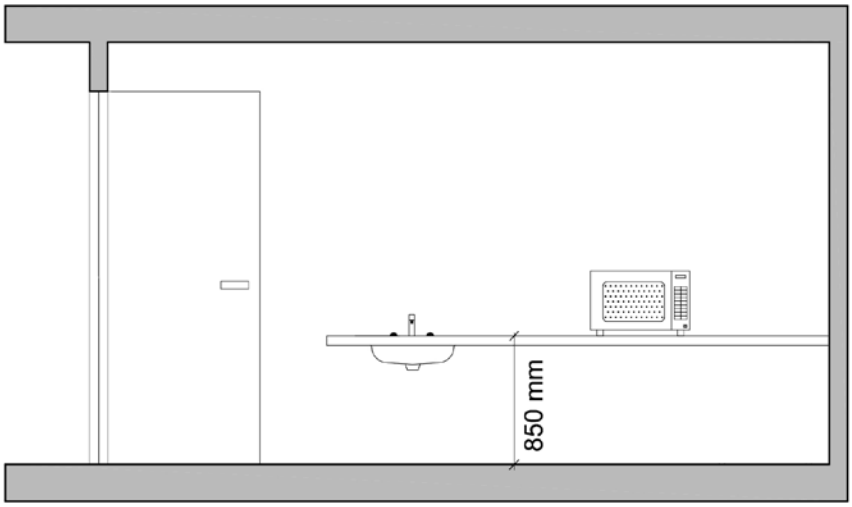


Figure 51. Example of dual feeding room - front view

5.23. Ablution areas

At least one accessible ablution unit shall be available in each ablution room.

Electronic or sensor faucets shall be installed in ablution areas to facilitate its use and to reduce water waste.

In addition to the dimensions and characteristics of the accessible sink described in section 5.17, ablution units shall meet the following requirements:

1. It shall be linked to an accessible path and shall be the closest to the entrance door.
2. Two horizontal grab bars, one in each side of the sink, shall be mounted at a height between 700 mm and 800 mm and have a support length, equal to the length of the sink.
3. A bidet shower system, soap and paper dispensers shall be mounted near the sink. All accessories of toilets, including the bidet shower should be mounted at a height between 700 mm and 1200 mm.
4. An approaching free space of 1200 mm width shall be provided. The pavement of this interaction space shall have a reflectance contrast with the surrounding pavement of at least 30 points LRV (Light Reflectance Value).

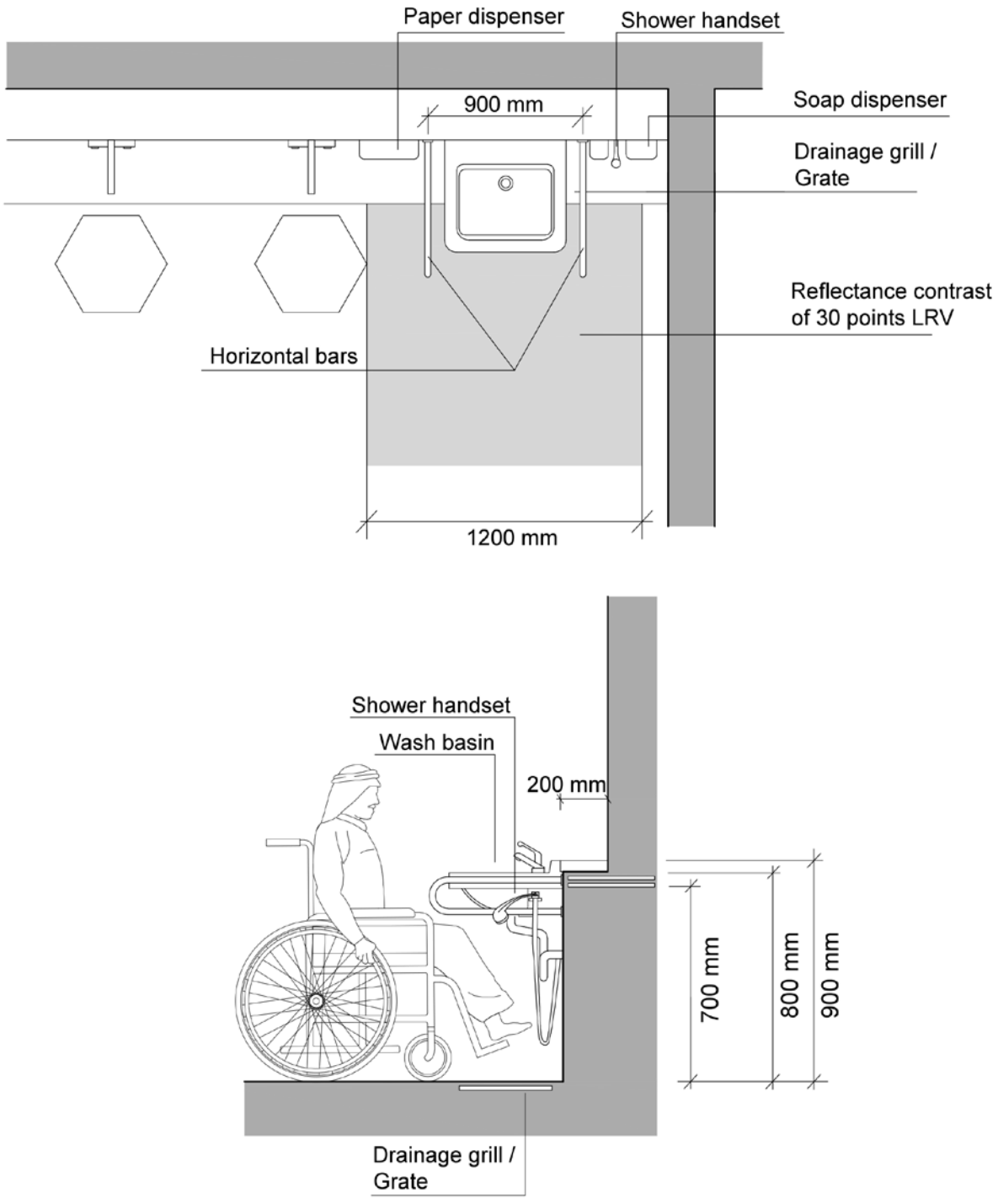


Figure 52. Free area and sink and accessories dimensions in ablution rooms

5.24. Furniture and other equipment

All furniture shall avoid sharp edges, protruding objects or burning surfaces and shall be visually contrasted with their background.

For surfaces that shall be touched, materials that retain heat from sun radiation shall be avoided.

Furniture shall be made with non-toxic material.

All accessible furniture shall be connected to an accessible path.

5.24.1. Tables

Tables shall fulfil the following requirements:

1. Tables shall not be higher than 800 mm with have a minimum clear room for leg space of 680 mm high and 480 mm deep.

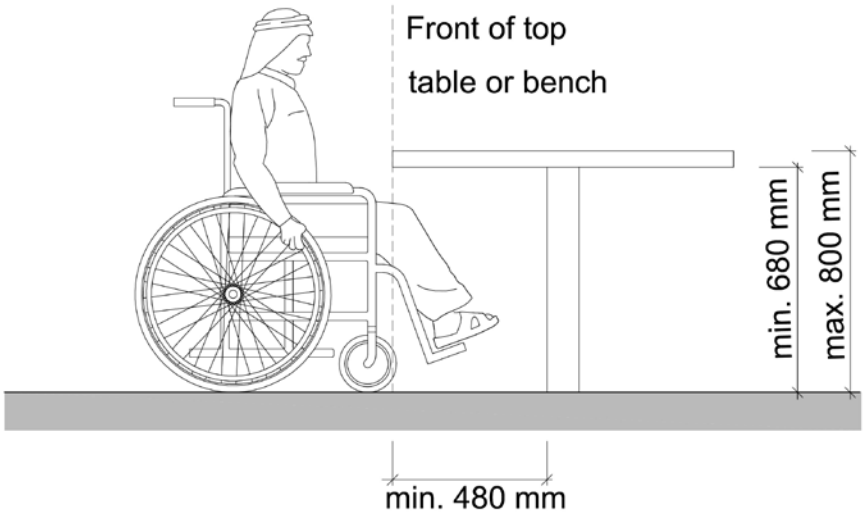


Figure 53. Table dimensions

2. Tables with integrated seats should be avoided.

5.24.2. Chairs and Benches

Accessible chairs and benches must fulfil the following requirements:

1. The seat height shall be 430 mm with a ± 30 mm tolerance.
2. The seat depth shall be between 400 mm and 450 mm.
3. It has a backrest and its height shall be between 400 mm and 460 mm.
4. Some seats should have armrests.
5. It has on one side a lateral interaction space out of the accessible path.

Given the diversity and dispersion of users, it is recommended to provide furniture with standing support, in combination with benches of varied height.

In urban spaces and parks benches shall be places at least every 100 meters while in big buildings like shopping malls or airports benches or other seat types shall be provided every 50 meters.

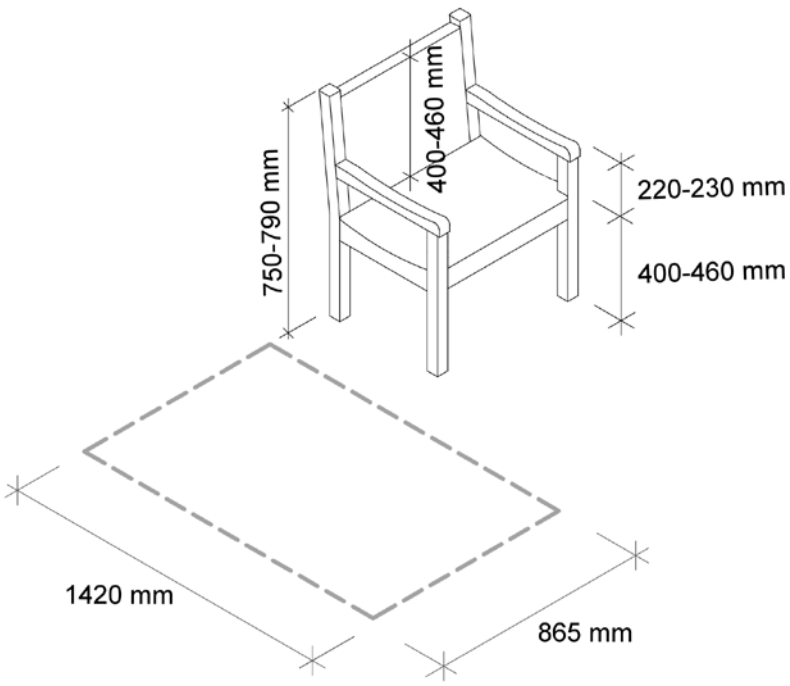


Figure. 54. Chair dimensions

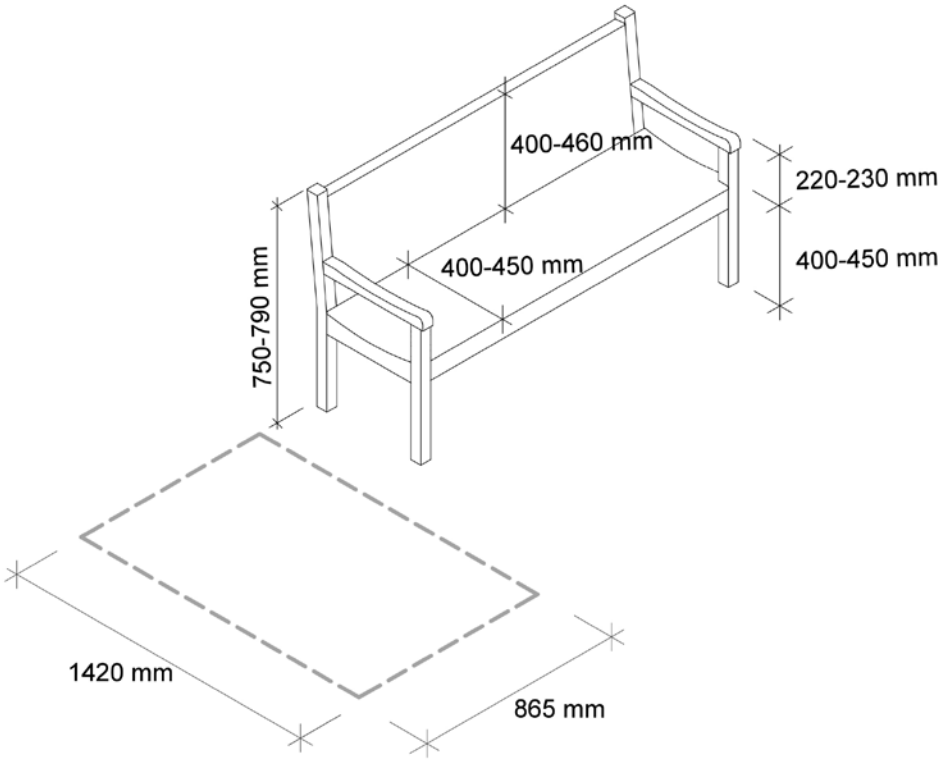


Figure 55. Bench with lateral interaction area

5.24.3. Drinking fountains

Drinking fountains in urban spaces and buildings must meet the following requirements:

1. Two fountains with different heights shall be provided, one no higher than 915 mm above the floor for the accessible unit.
2. Drinking fountains shall allow its use through frontal approach.
3. If the push button is manual, it shall be at a height of between 700 mm and 1200 mm and have an accessible mechanism that is easy to operate.
4. Water should be attainable at a height of between 600 mm and 850 mm ± 50 mm, and near to the approaching space. The design has to prevent the user from getting wet during use.
5. Drinking fountains should provide bottle fillers.
6. Drinking fountains should be located in an alcove where possible to ensure that it is not a protrusion hazard.

7. Drinking fountains should be installed against a contrasting background to increase visibility.

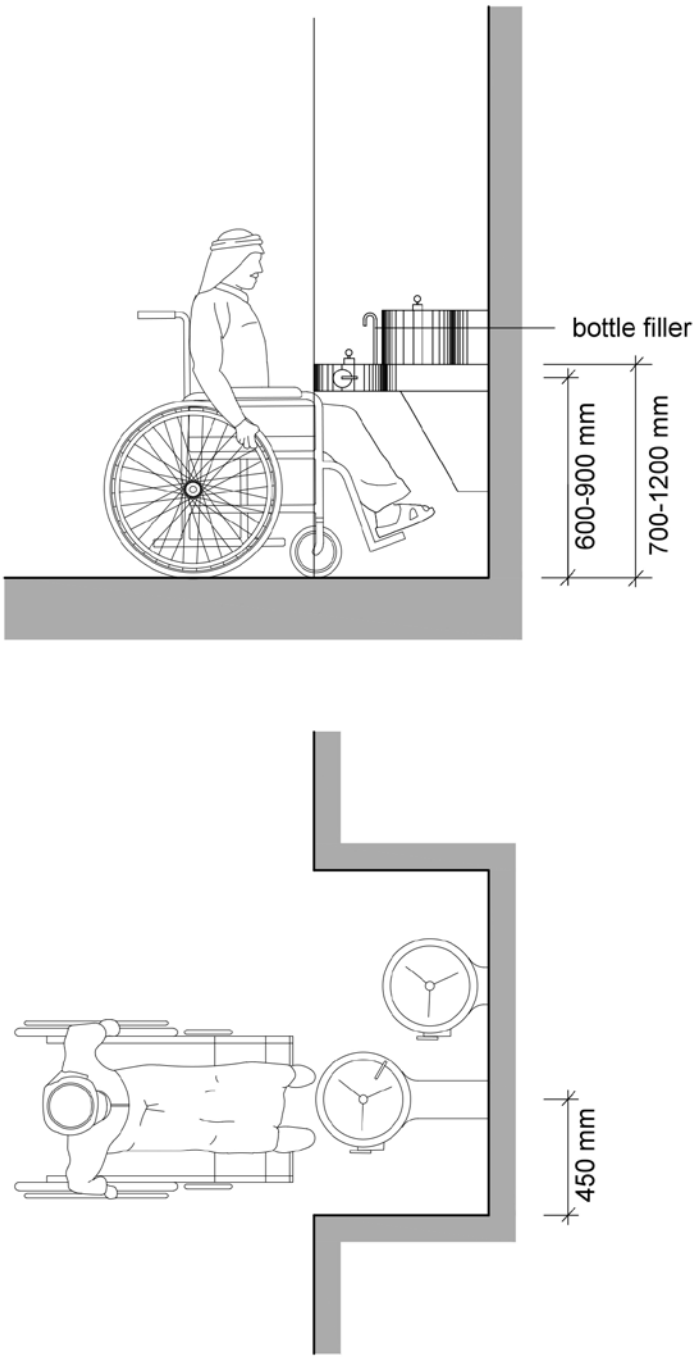


Figure 56. Drinking fountain dimensions

5.24.4. Trash bins

Accessible trash bins shall meet the following criteria:

1. They shall be located outside of the accessible path.
2. They shall have a lateral space of interaction. This space can overlay the associated path.
3. Whenever possible it be located besides pedestrian crossings.
4. The trash bin opening shall be placed at a maximum height of 900 mm.
5. Trash bins shall be distributed in the space in a way that any person can find a trash bin in 50 meters around.
6. Opening mechanisms shall be operable with an elbow.
7. Signage shall be well contrasted.

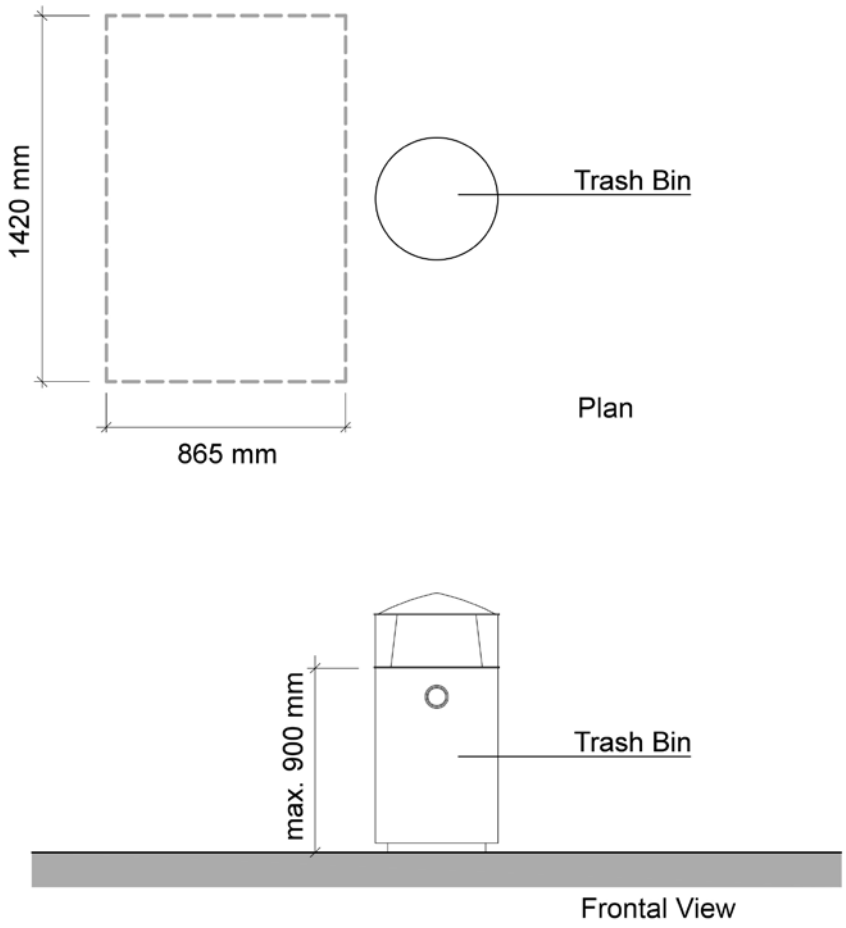


Figure 57. Example of a trash bin

5.24.5. Vending machines and ATM's

Vending machines and ATMs are considered accessible when they fulfil the following conditions:

1. There is at least one frontal or lateral interaction space ensuring privacy. The floor surface is smooth and non-slippery with a gradient of no more than 2%.

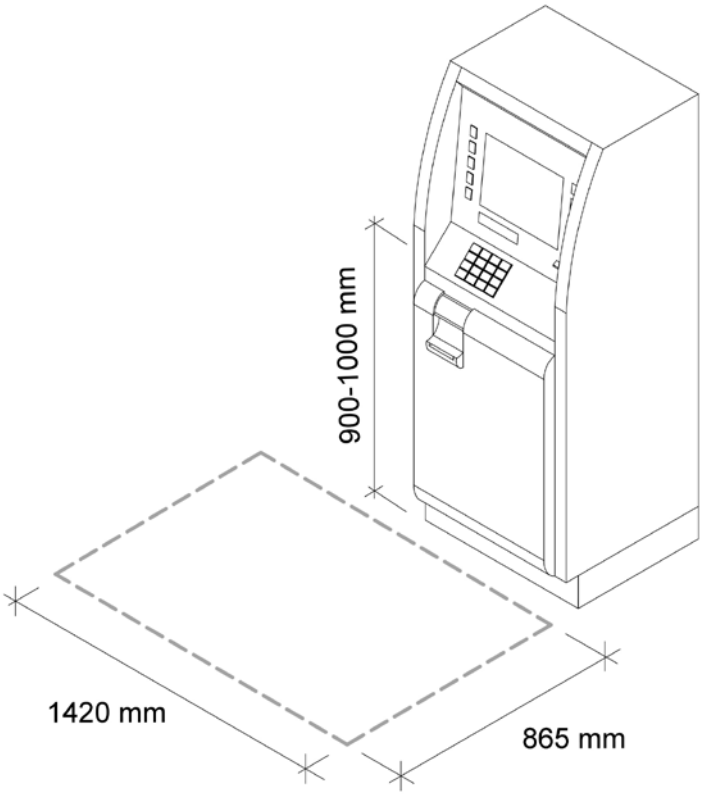


Figure 58. Lateral interaction space in ATM

2. If the vending machine protrudes from the vertical wall, edges must extend to the floor in all its plane projection.

3. Screen and keyboard are visible from a point located 1000 mm above the floor. There are no reflections or glare.

4. Direct illumination of the screen has to be avoided.

5. All interaction and control buttons, as well as containers for shipment of products, must be placed at a height between 400 mm and 1200 mm (preferred between 900 mm to 1000 mm) from the floor and must be separated at least 600 mm from any corner.

6. Control buttons shall present high embossed text and Braille.

7. When bank, identification or validation cards have to be used, the device must meet the following requirements:

    - The card slot is located at a height between 800 mm and 1200 mm from the floor level and is bevelled to facilitate its introduction.
    - It has contrasted colour with the background surface. Tactile symbols and graphics that represent the card inserting direction must be included.
    - It must have a visual and acoustic system to indicate validation of access to the service and to alert in case of forgetting card or money.
    - It shall provide audio for all information.

8. In the case of transport ticket vending machines or ATMs a CCTV Intercom shall be provided if personnel assistance is not available.

9. The slots are wide and have a funnel effect that facilitates the insertion of coins or cards.

In all instances, there shall be sufficient dimensions to collect products issued or to retrieve the card.

5.24.6. Bollards, planters, telephone booths and other furniture elements

Temporary and permanent installations, bollards, planters, telephone booths or any facility box shall be located outside the accessible path.

When this is not possible, the object shall present a clear reflectance contrast of at least 30 LRV points with the surrounding pavement. It shall have a geometry following the requirements of the detection cone in section 5.4.

Bollards, planters, telephone booths and other furniture elements shall not reduce the accessible travel path to less than 1200mm.

6. Public Spaces

6.1. Provisions for public spaces

The provisions of this chapter are applicable to streets in which at least 20% of the frontage is built and also in parks, beaches and open spaces for public use, including their facilities, services and urban furniture.

A street, park, open space or a beach is considered for public use when:

- It is part of the public environment and is designed for public use.
- It is part of a privately owned property but is used by public.
- It is part of privately owned property but is subject to a public easement.
- It is likely to be used by the public, either free or for a fee.

Public spaces shall meet the following requirements:

1. All urban furniture and signage shall be aligned without interfering with the accessible path. All urban elements and furniture related to this path should follow the design requirements of this Code.
2. In case of cycling paths on the sidewalk they shall be located between the urban furniture and the curb.
3. A tactile warning pavement as described in section 5.3 shall precede any pedestrian crossing.
4. In case of a crossing at a lower level the maximum permitted curb cut gradient is 8%.
5. Traffic lights with buttons at accessible pedestrian crossings shall follow the design criteria described in section 6.10 and provide visual and acoustic information.
6. Existing public streets and accessible paths in open spaces with running gradients greater than 5% are allowed due to topographic conditions only, where there is a technical impossibility to modify the existing gradient. In all instances it must adopt all other technical requirements that are applicable, according to this Code.

7. When the street is exclusively or mainly designed for pedestrians all areas between buildings or lots shall be level. In these cases, the path shall present the described characteristics and all kinds of vehicles shall have their speed limited to 10 Km/h. A physical speed-calming element shall be installed at all entrances to the area.

8. Benches or places to sit shall be designed according to section 5.22.2. In the exterior environment, they shall be placed in the urban furniture zone at least every 100 m. In large buildings like shopping malls, they shall be placed out of the accessible path at least every 50 m. Benches with and without arms should be provided to accommodate people of various sizes.

9. Shaded zones shall be provided at least every 50 m. Fully shaded walking zones can be achieved by means of a retracted façades or pergolas.

10. Street names shall be displayed at all crossing following the specifications of section D for information panels. Additionally, it is recommended to provide this information by audio via an accessible mobile application.

11. Information about the location of the nearest public transport, public toilets and interest points within the community shall be installed at least every two crossings following the requirements of section D for information panels. Additionally, it is recommended to provide this information by audio via an accessible mobile application.

12. Public toilets should be installed near the accessible walking path, if there are no toilets for public use within 400 m.

13. Bus shelters, signals, fountains and other urban furniture installed in the vicinity shall follow the design criteria contained in this Code.

14. When a cycling path cannot be installed in a separate strip between the urban furniture area and the curb, it is permissible to locate it between the urban furniture area and the accessible pedestrian path. They should be divided by a pavement strip of at least 300 mm width with a contrast of at least 30 points LRV (Light Reflectance Value) or by an easily perceptible texture change.

15. In accessible paths in the vicinity of park entrances, along the public beaches, near tourist attraction points, in shopping malls and in other places considered appropriate, electric mobility devices chargers with an interaction space shall be installed.

6.2. Street design options

This chapter describes the different types of options for street design that guarantee an appropriate and comfortable accessible path.

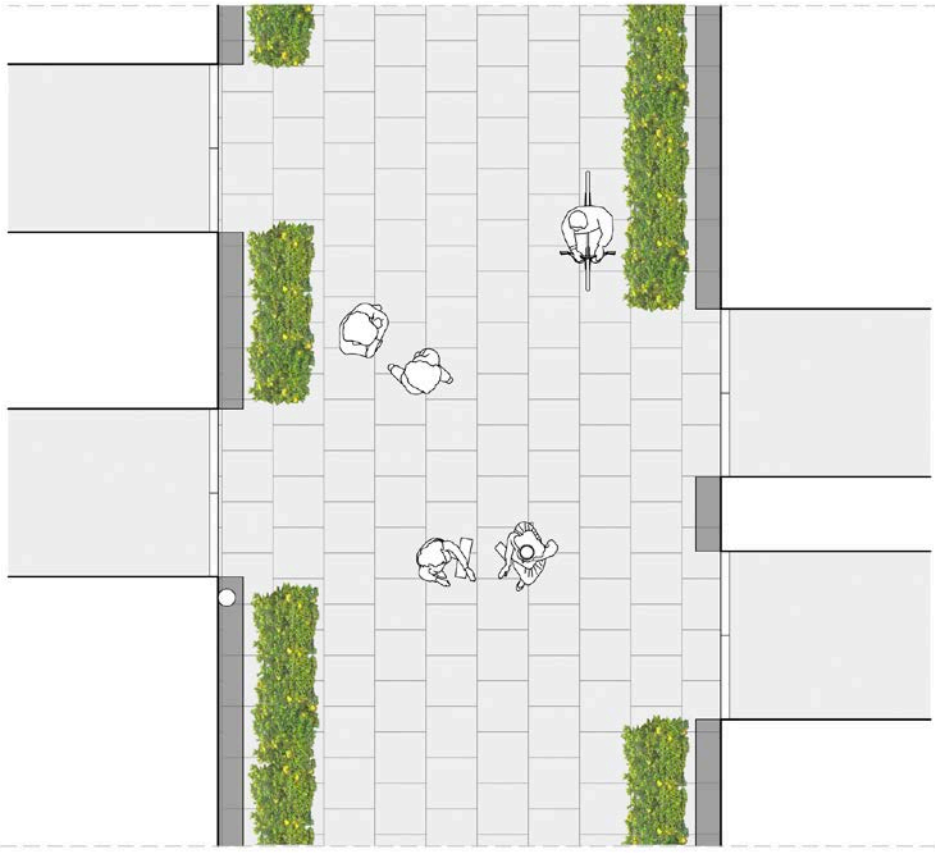


Figure 59. Street at the same level where pedestrians have preference and vehicles speed, if allowed is limited to 10Km/h

Only streets with sections bigger than 2000mm can be used as a pedestrian path.

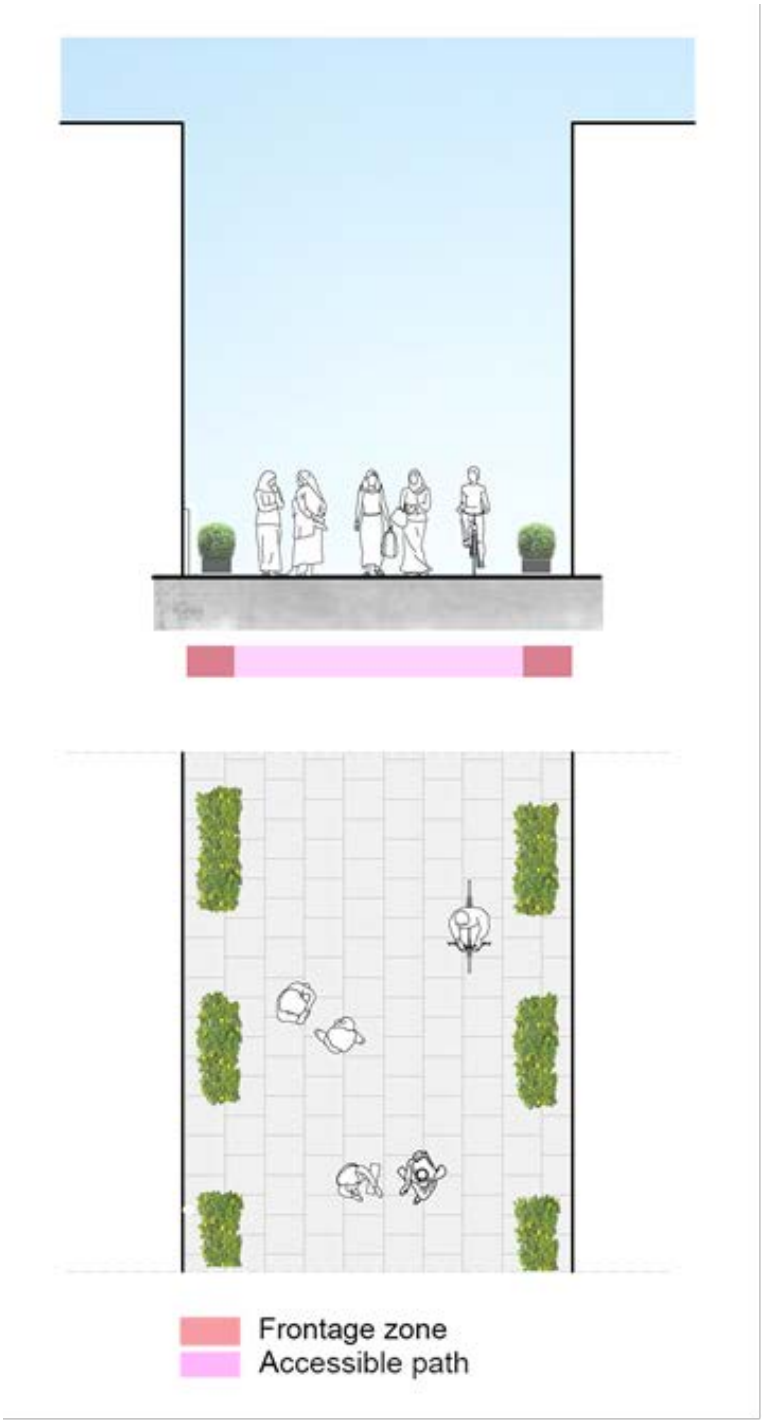


Figure 60. Standard section of a Sikka

Sikkas are excellent opportunities to create pedestrian spaces free of motor vehicles or, at least where pedestrians have priority.

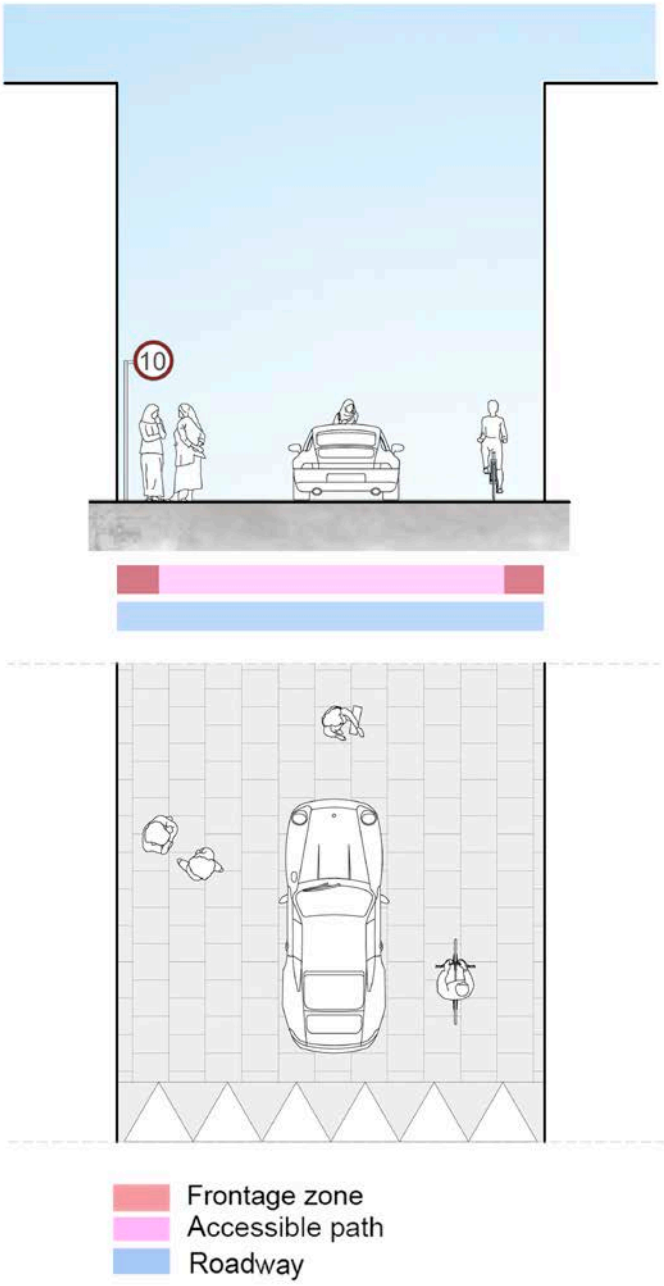


Figure 61. Standard section of a shared street

In the case of shared streets at the same level where motor vehicles are allowed the street section shall be at least 4000 mm wide and the speed limited to 10 Km/h.

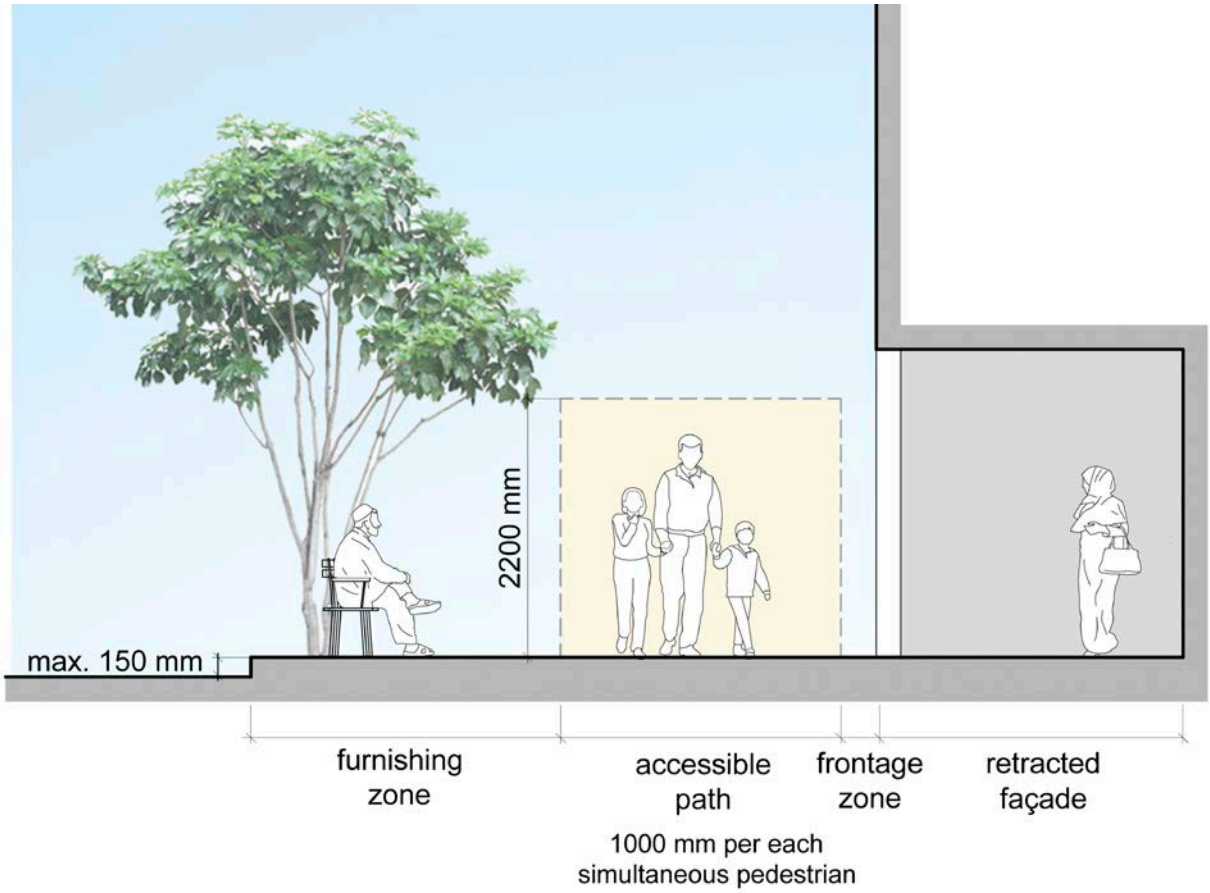


Figure 62. Section of a sidewalk with recessed façade

The design of the sidewalks shall guarantee a travel path with a minimum width of 2000mm although the planners should determine the width according to its foreseen use.

Retracted façades are also very convenient to provide shade areas to pedestrians.

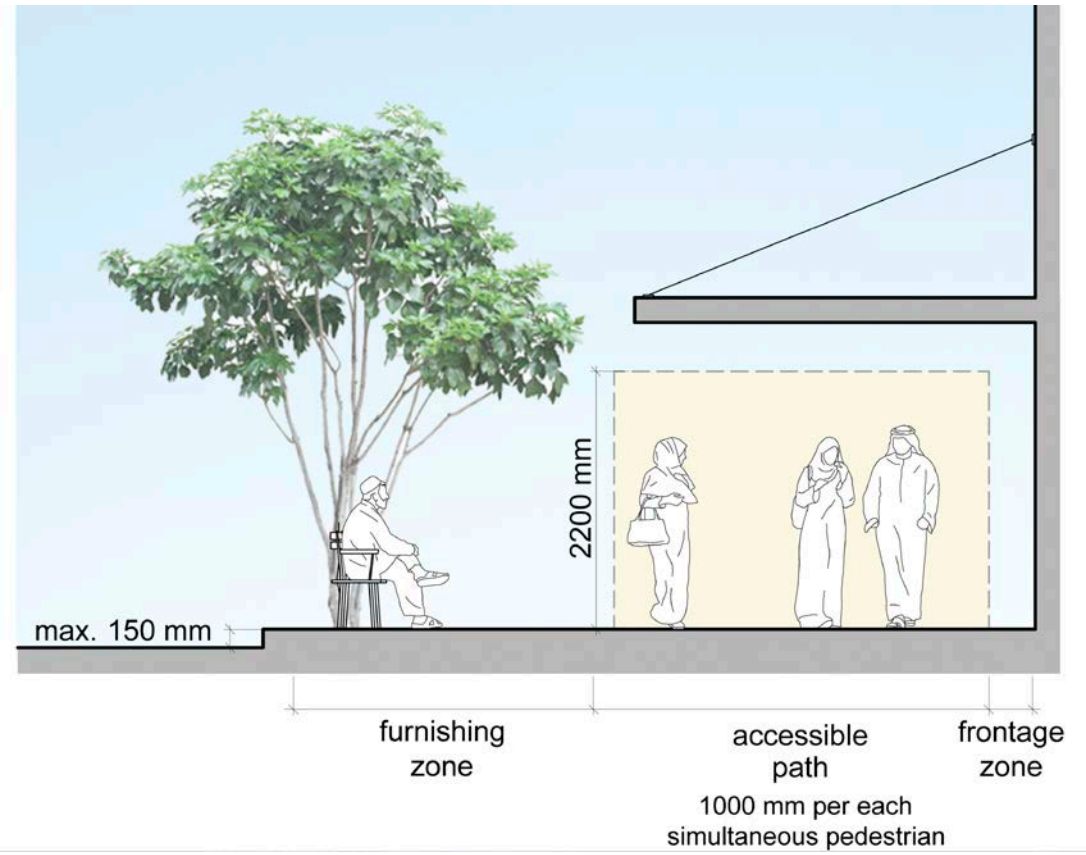


Figure 63. Section of a sidewalk with a pergola

When buildings do not provide retracted façades, pergolas can provide comfortable shaded areas.

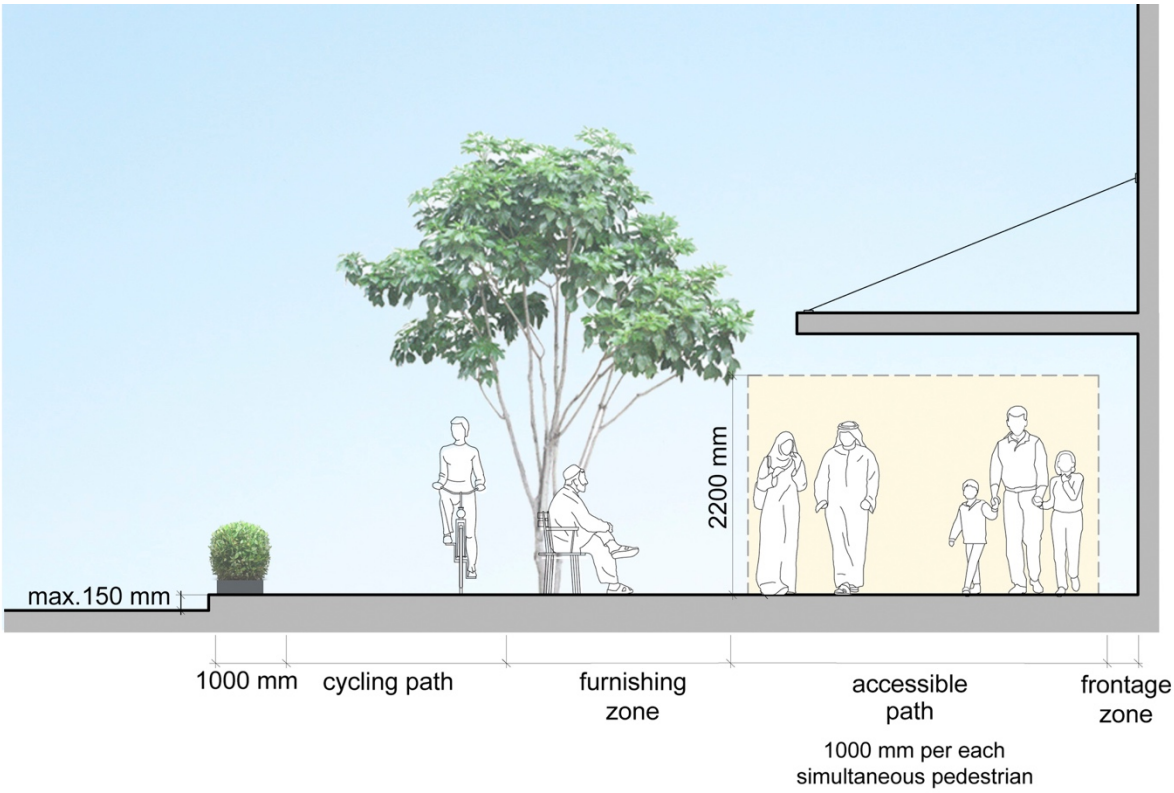


Figure 64. Section of a sidewalk with a cycle path

In new streets cycling lines shall be installed between the urban furniture section and the curb.

The distance between the cycling line and the parking bay or traffic shall be at least 1000 mm.

The criteria described shall be applied to all street sections that can be found in Dubai as per the examples below.

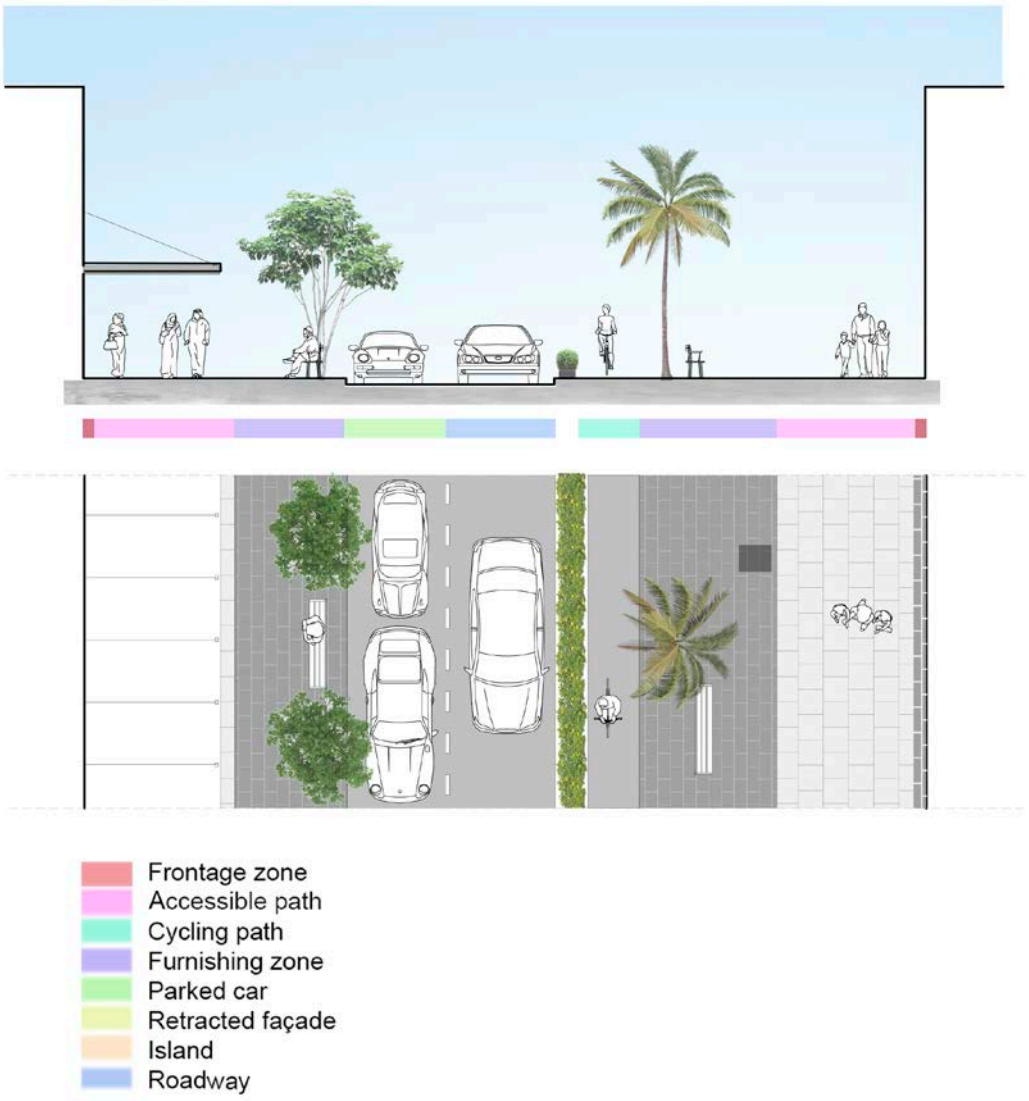


Figure 65. Standard section of a one-way street with a cycling path in one direction

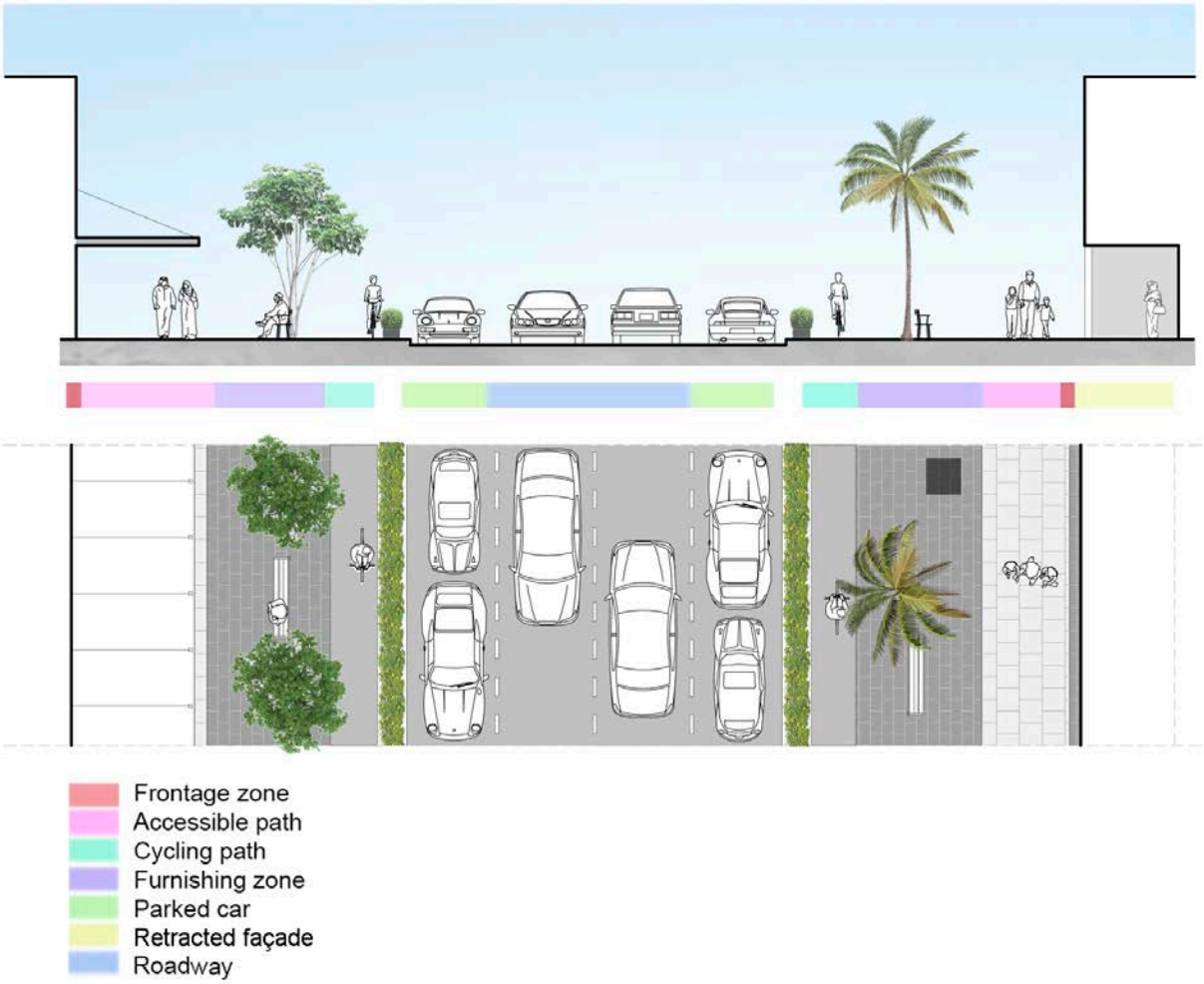


Figure 66. Standard section of a two-way street with cycling paths in both directions

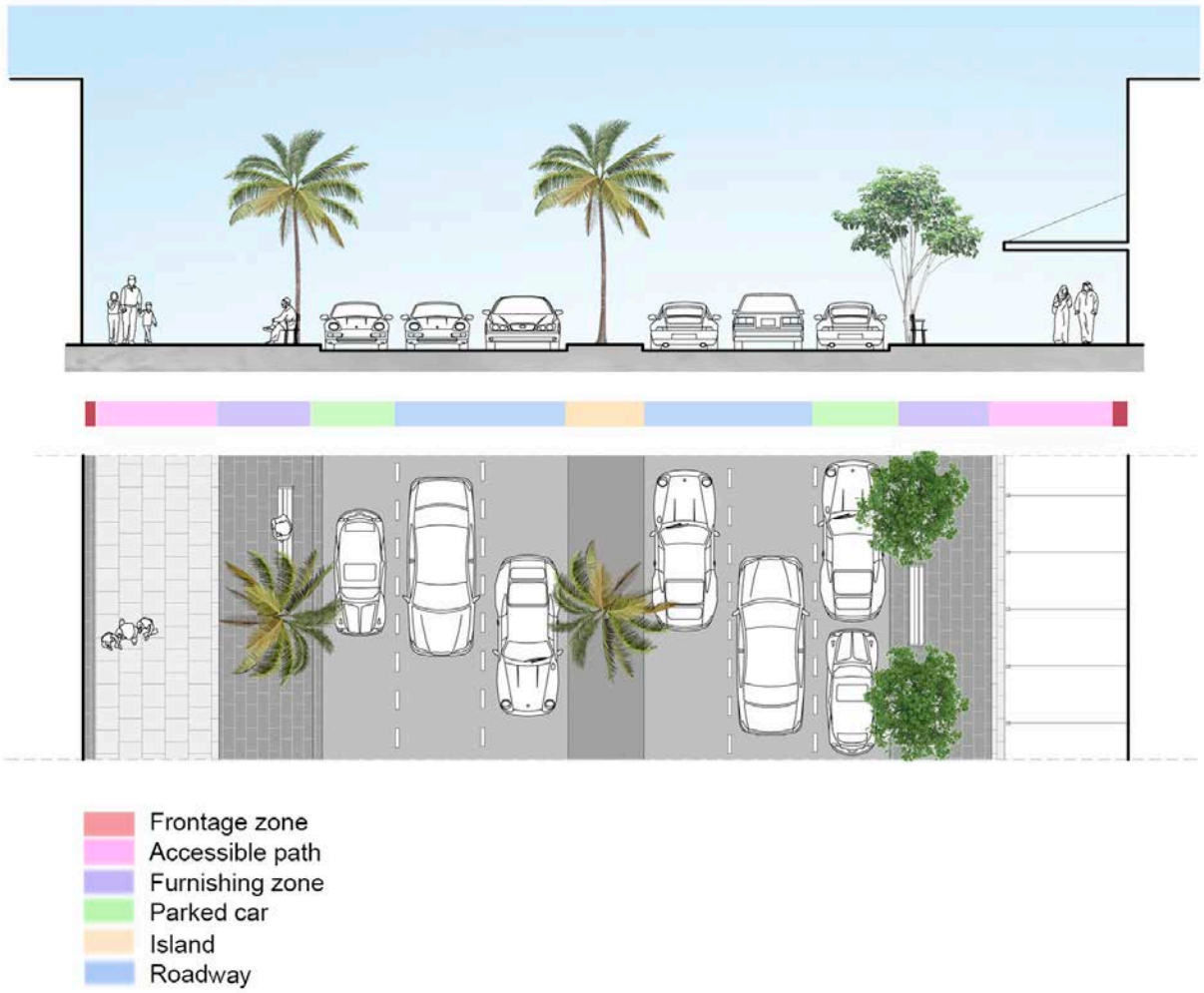


Figure 67. Standard section of a two-way street with an intermediate island

6.3. Curb Ramps

Curb ramps are elements of an accessible pedestrian path that connect different levels through inclined planes, usually between the roadway and the sidewalk.

Curb ramps, regardless of type must meet the following criteria:

1. The running gradient maximum is 8%. Depending on the height of the sidewalk the length will vary following table 9. The curb height shall be between 100 mm and 150 mm.

<table>
<tr><th>Sidewalk height</th><th colspan="3">Central passage dimensions</th><th colspan="2">Flared sides</th></tr>
<tr><th></th><th>Length</th><th>Width</th><th>Max. gradient</th><th>Length</th><th>Max. gradient</th></tr>
<tr><td>100 mm</td><td>1250 mm</td><td rowspan="3">Equal to crossing painting
>2,00m</td><td rowspan="3">8%</td><td>1250 mm</td><td rowspan="3">8%</td></tr>
<tr><td>150 mm</td><td>1875 mm</td><td>1875 mm</td></tr>
<tr><td>200 mm
(only for existing sidewalks)</td><td>2500 mm</td><td>2500 mm</td></tr>
</table>

Table 9. Dimensions and gradients of curb ramps

2. The total width of curb ramps in pedestrian crossings is the same as the accessible pedestrian path and never less than 2000 mm with no interruptions by any obstacle or any raised pavement. In accessible parking places or drop-off zones, curb ramps should have a minimum width of 1200 mm or the width of the lateral aisle.

3. Except for curb ramps in parking places, curb ramps shall have a warning tactile pavement at 300 mm from the edge.

4. Curb ramp edge surfaces have to be completely level with the road.

5. The colour and texture of the curb ramp shall be identical to the accessible pedestrian path.

6. Slip resistance value shall be higher than 45 PTV, as indicated in section 5.2.

7. The maximum cross slope gradient maximum is 2%.

8. Curb ramps must not interfere with the accessible path.

9. When the curb ramp design causes a step in its lateral edges, this level change should be protected by some element or urban furniture.

10. Curb ramps located on both sides of a street must be aligned.

11. Drain grids shall never be within the accessible pedestrian crossings.

6.3.1. Types of curb ramps

1. Curb ramps with flared sides

Curb ramps with flared sides are comprised of three slopes.

All gradients shall be a maximum of 8%. This type of curb ramp is preferred.

Exceptionally, flared sides of ramps located in parking and drop off areas can have higher cross gradient slopes, but never more than 12%.

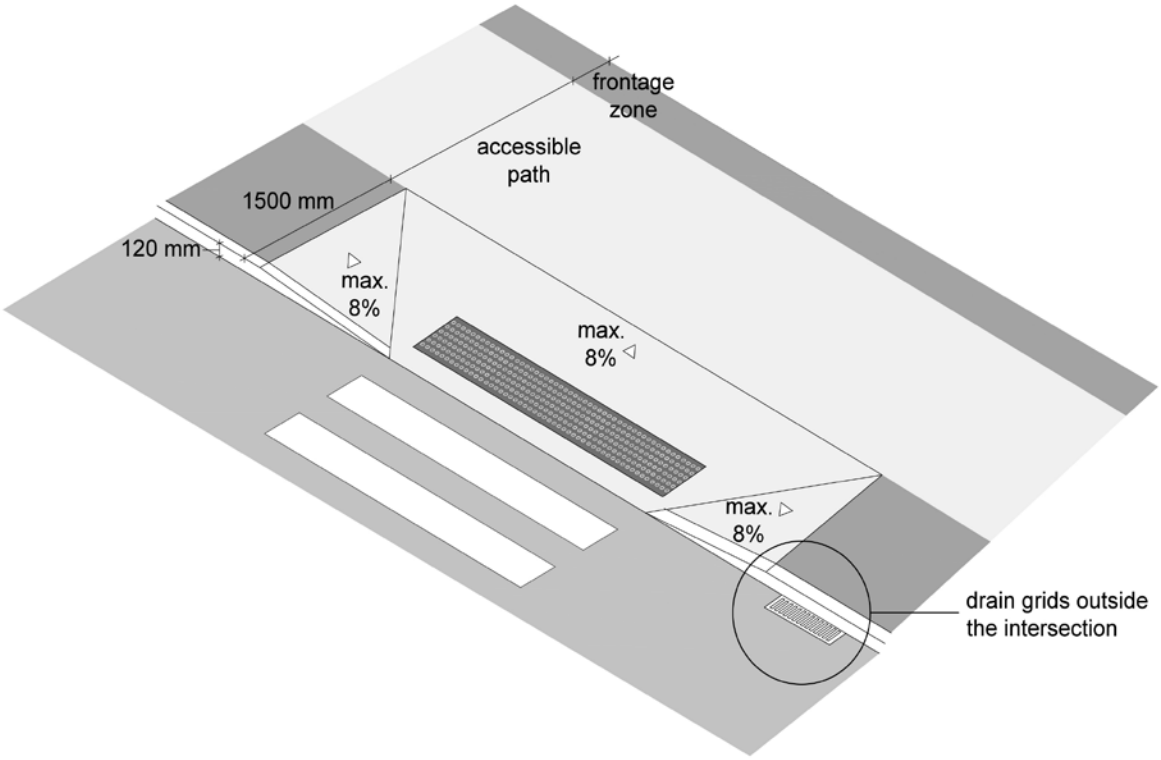


Figure 68. Example of flared side curb cuts

2. Returned curb ramps types

Returned curb ramps are comprised of a single slope placed longitudinally from the crossing direction, creating two different levels of variable heights on its sides.

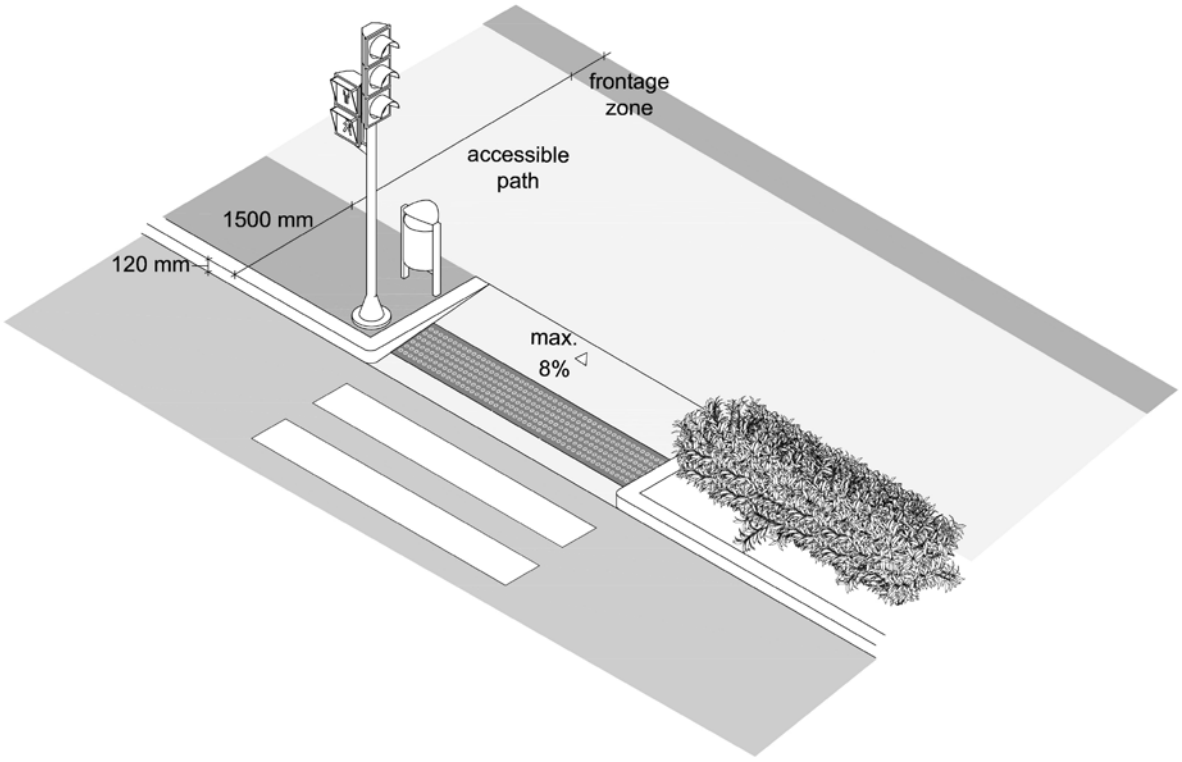


Figure 69. Example of returned curb cut

3. Curb ramps in curb extensions

This type is appropriate when the sidewalk is narrow. Extensions in the street corners can be created to reduce the pedestrian crossing distance.

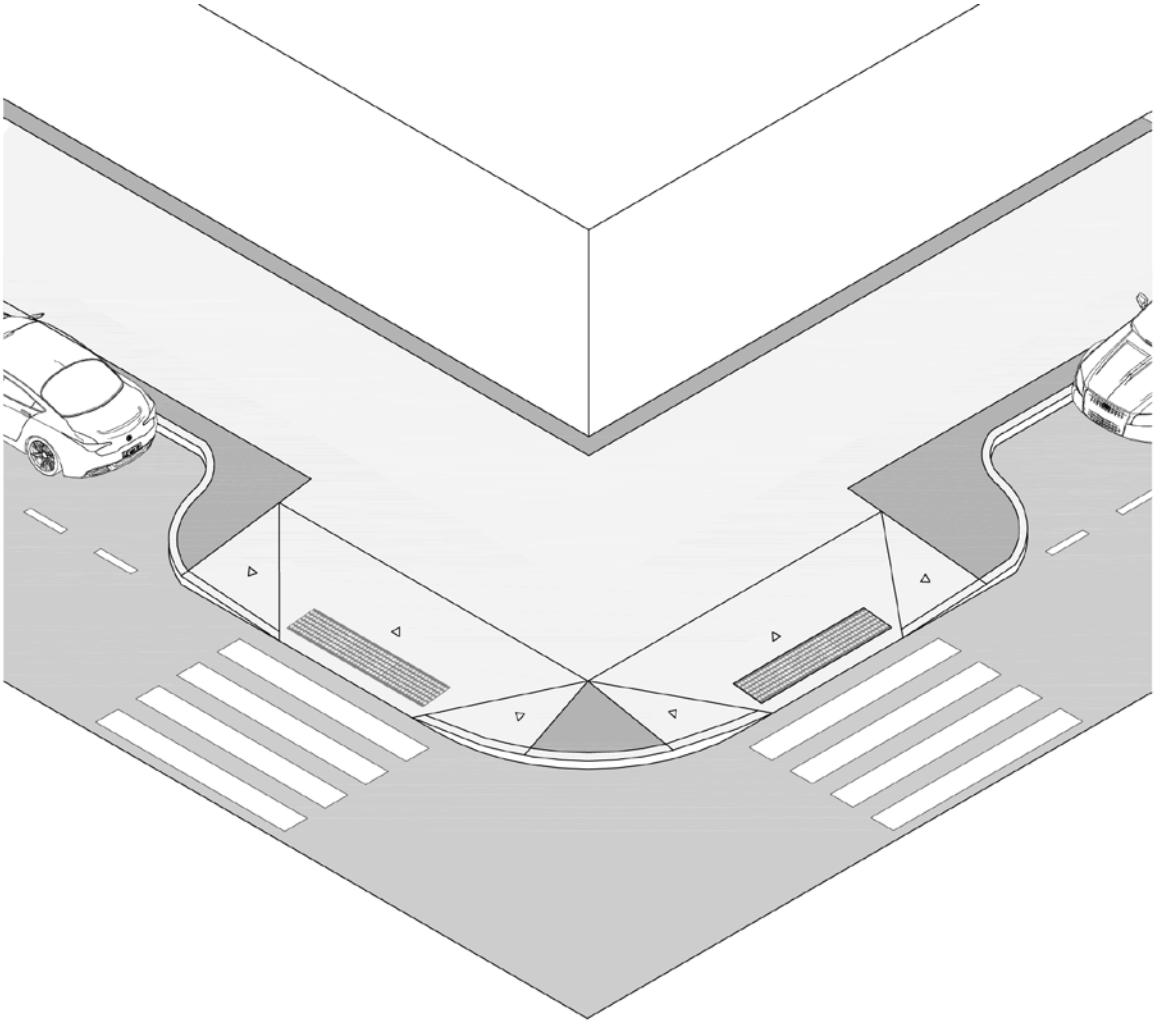


Figure 70. Example of curbs ramp extensions

4. Lowered sidewalk curb ramps

When the sidewalk width is too narrow to use the other curb cut types, lowered sidewalk curb ramps should be implemented.

This curb ramp is comprised of two running slopes that lower the sidewalk's full width to the roadway level. A landing of minimum 2000 mm long should be provided between the two slopes. The border level with the roadway shall include a tactile warning pavement.

This is the only curb ramp that can obstruct the pedestrian path.

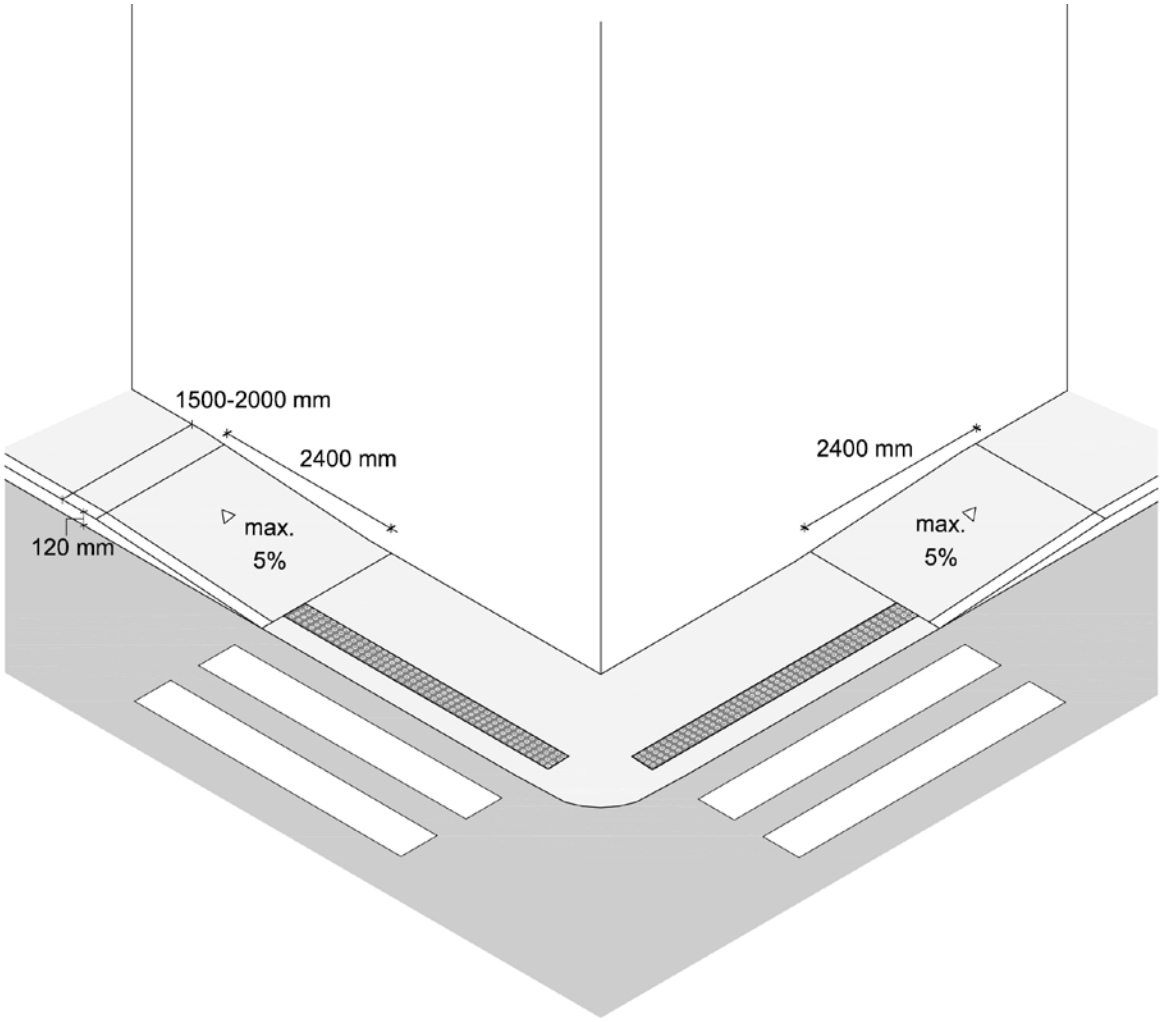


Figure 71. Example of depressed curb cut in a corner

6.4. Prohibition of accessible path alterations

The level difference between the sidewalk and the vehicle's access to parking should be solved preferably inside the building or lot.

Provisional or added ramps and steps shall not affect the shape or invade the accessible pedestrian path.

Parking or garage doors shall not obstruct an accessible pedestrian path.

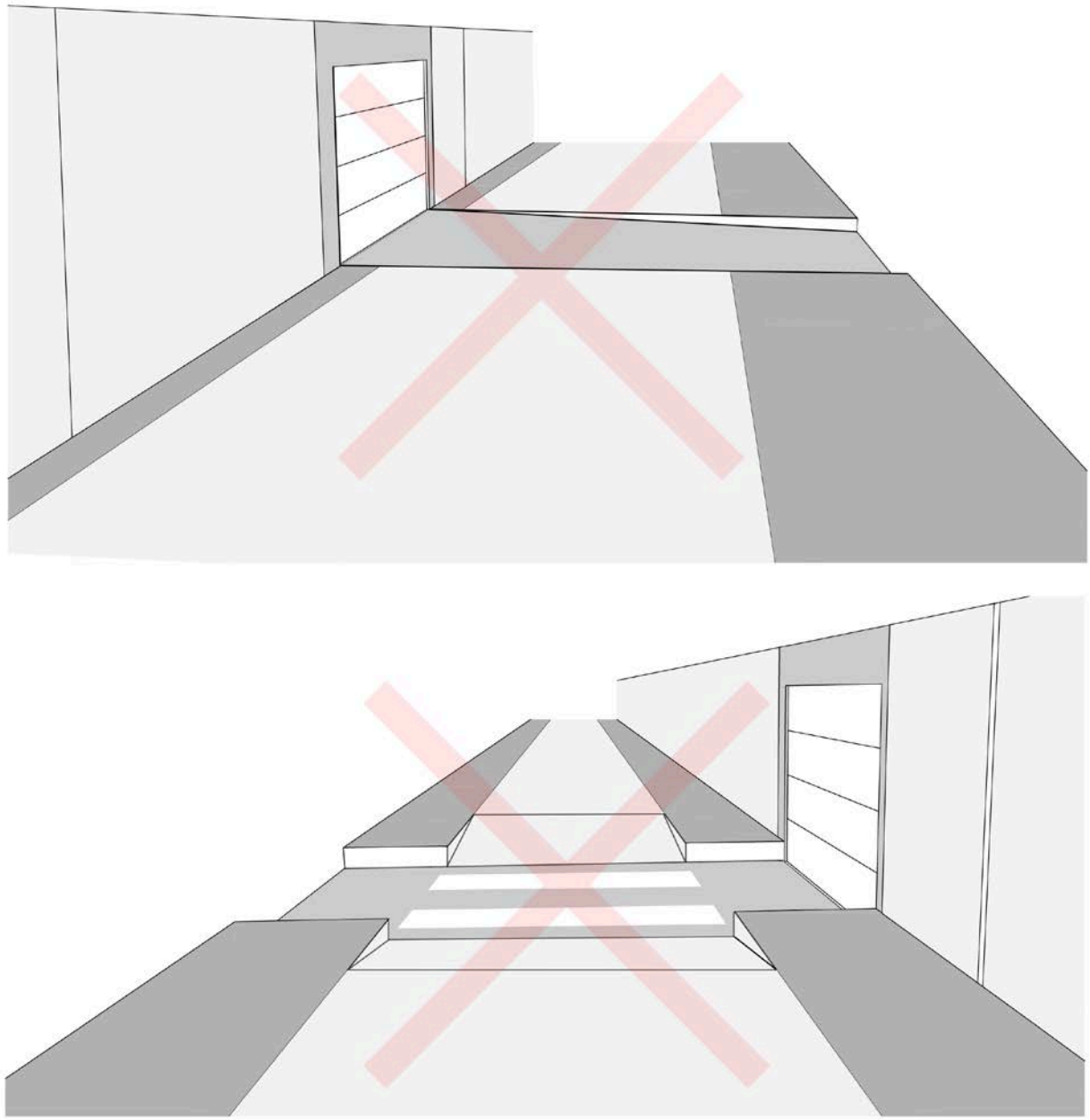


Figure 72. Incorrect solutions to provide access to garages

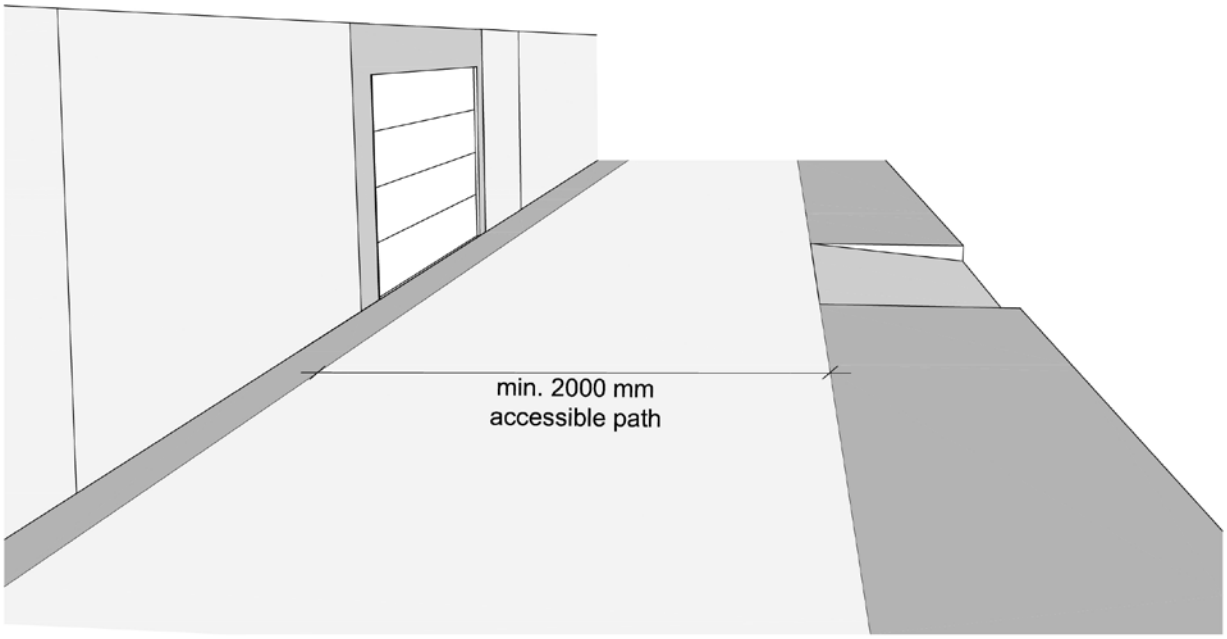


Figure 73. Possible solution to provide access to garages

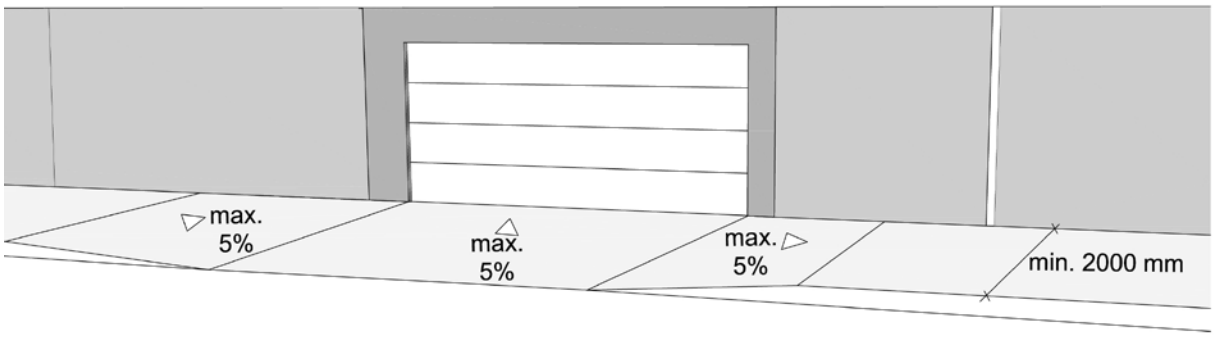


Figure 74. Slight depression of sidewalk is only allowed when this is the only alternative

6.5. Intersections

All intersections between pedestrian paths and roadways must be accessible in order to allow passage to all users, regardless of their functional limitations.

The pavement colour and texture of the surface that connects the accessible path to the crossing shall be identical to the pedestrian path.

If there are traffic lights at the pedestrian crossings, they should meet the specifications of section 6.10.

6.6. Intersections with raised pedestrian crossing

The sidewalk shall maintain a continuous surface without lowering to the roadway level during the crossing. Pedestrians should not experience any changes in ground level during the crossing of the intersection.

This intersection is considered accessible when it fulfils the following requirements:

1. The total width of the continuous raised surface above the roadway is:
    - At least 7000 mm when there are bus lanes or coaches or their passage is expected in the roadway.
    - The same crosswalk width or at least 2000 mm from the roadway ramp, without being interrupted by any obstacle or any pavement rising.
2. The surface height shall be between 100 mm and 150 mm above the road, and the longitudinal gradient of the roadway ramp cannot exceed more than 15%.
3. The crosswalk is marked on the raised surface for all its width.
4. The sidewalk edge of the pedestrian crossing should be marked with a strip of tactile warning surface. This tactile warning surface has to run the width of the pedestrian path and has to fulfil the requirements established in section 5.2.
5. Roadway water evacuation solutions should be resolved without causing a level change, a step or a gap across the crosswalk.

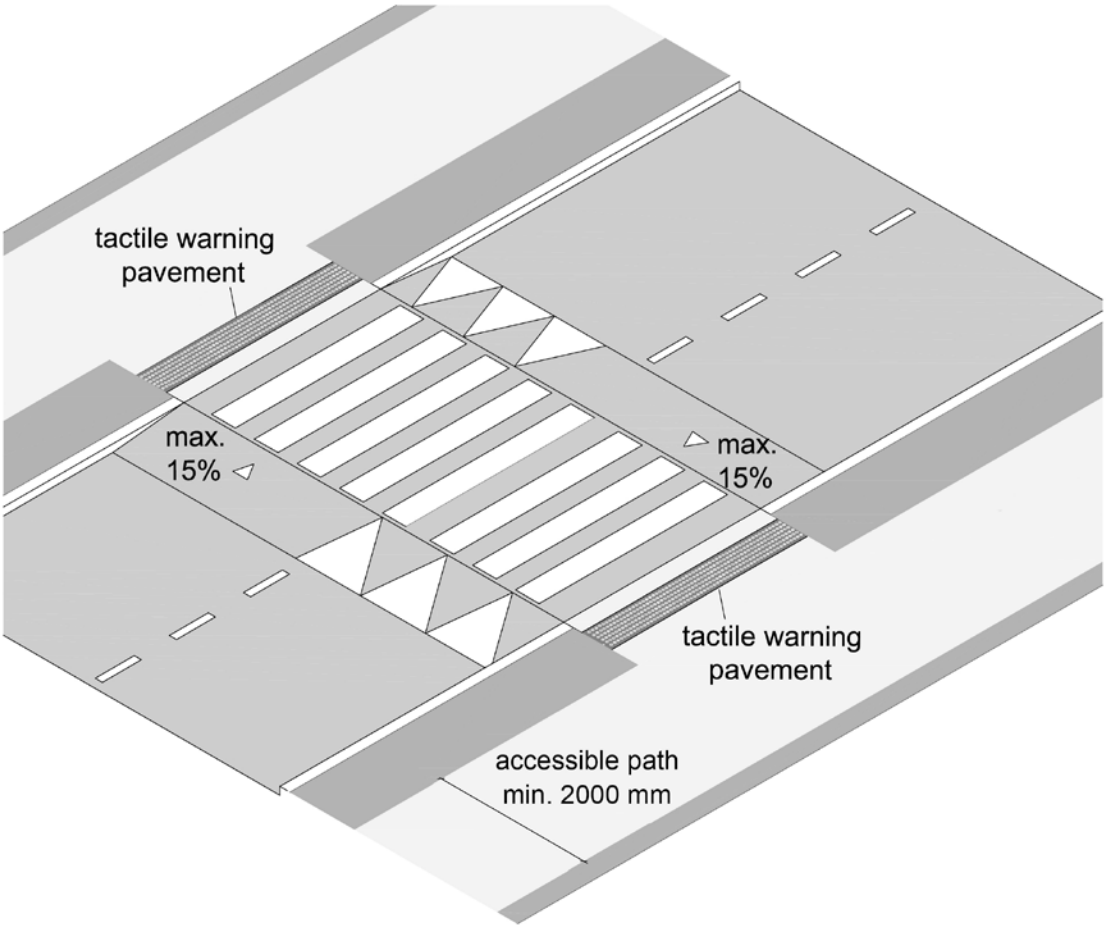


Figure 75. Example of a raised pedestrian crossing

6.7. Level roadway

The roadway shall maintain a continuous surface without a rise in level to the sidewalk. Pedestrians must go through two level changes during the crossing.

This intersection is considered accessible when it fulfils the following requirements:

1. There is a curb ramp at each end of the pedestrian crossing to connect the sidewalk and the roadway. The curb ramps on each end shall be aligned. These curb ramps have to fulfil the requirements of section 6.3.

2. The sidewalk edge of the pedestrian crossing should be marked with a strip of tactile warning pavement. This tactile pavement should run all the width of the pedestrian path and should fulfil the requirements of section 5.2.

3. If the intersection crosses a tramline, it shall not cause any unevenness or irregularity in the crosswalk, except for the longitudinal opening of the railway rails, which should be the minimum that is allowed by the transport system. At the crossing there must be a clear reflectance contrast of at least 50 LRV points between the railway tracks and the rest of the pavement, and 300 mm wide detectable warning pavement in both ends.

6.8. Intermediate islands

A pedestrian speed of 0,6 m/s should be used to assess the crossing speed of pedestrians. If the time to cross the crosswalk is not enough due to the street's length, an intermediate island should be provided.

The intermediate islands should fulfil the following requirements:

1. The length of the island shall be at least 1500 mm.

2. The island pavement should be the same colour as the pedestrian path. Both island edges should be marked with detectable warning pavement at least 300 mm wide and the same width as the pedestrian crossing.

When two traffic directions are separated by an intermediate island and have different green cycles, pedestrians should be required to wait in the central island for the green light and guardrails shall be placed to guarantee that pedestrians stop in the island.

The offset intermediate islands should fulfil the following requirements:

1. The entrance and exit of the pedestrian crossing at the intermediate island shall be misaligned.

2. The path between the entrance and the exit shall be protected on both sides with guardrails, dwarf walls or other protection elements.

3. The island pavement should be the same colour as the pedestrian path. Both island's edges should be marked with detectable warning pavement of at least 300 mm wide and the same width as the pedestrian path.

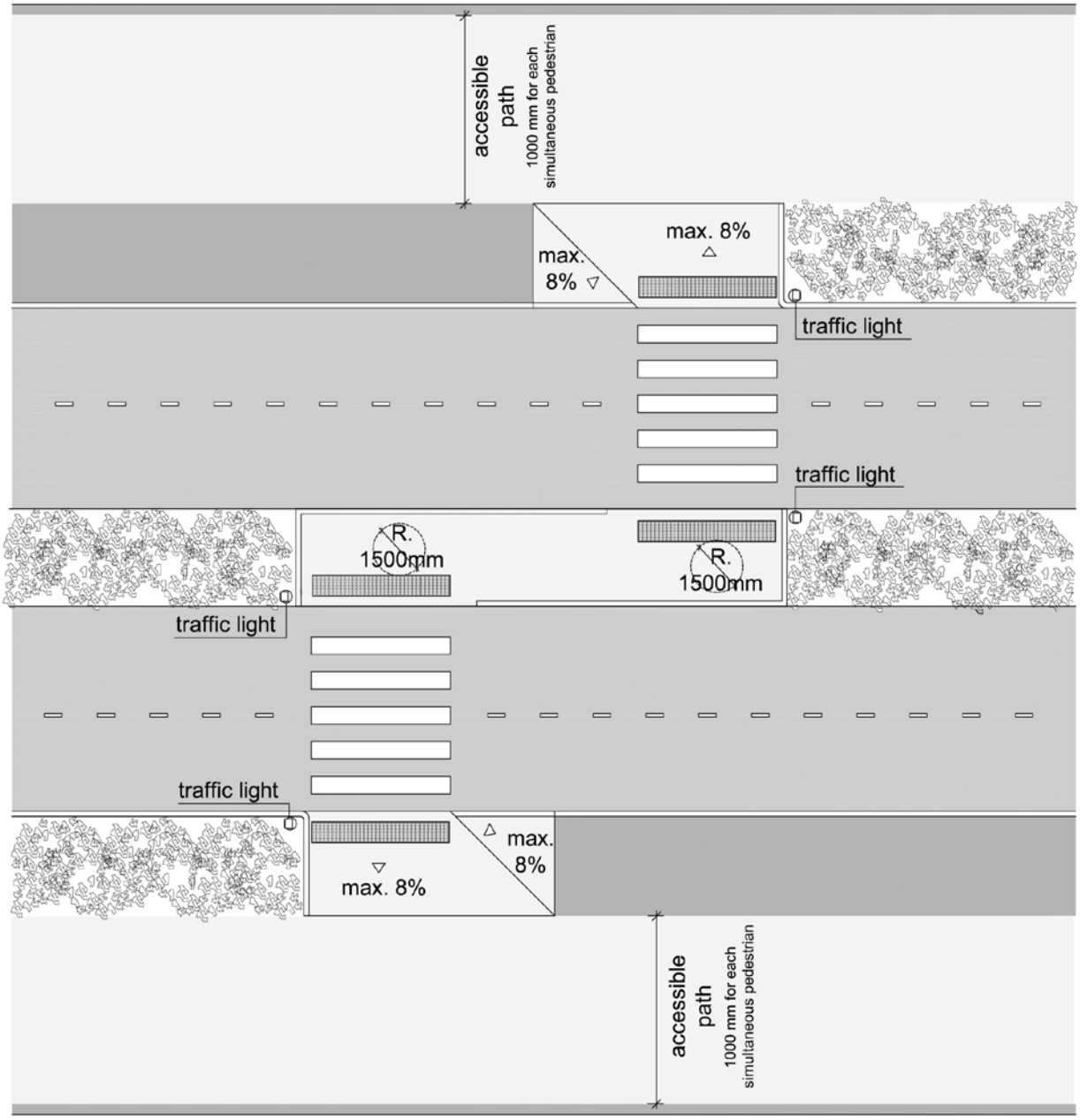


Figure 76. Offset intermediate island

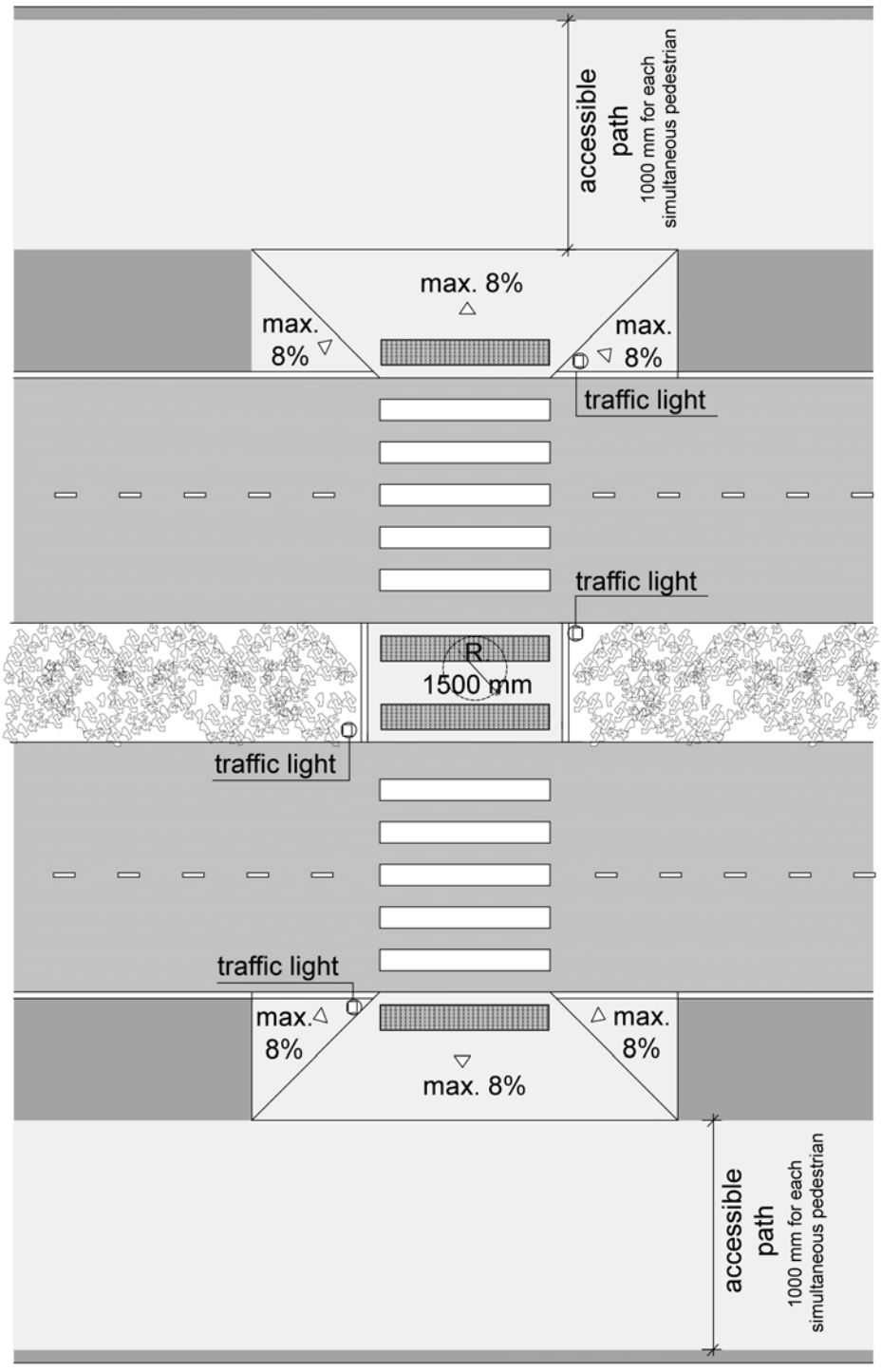


Figure 77. Aligned intermediate island

6.9. Intersections in shared streets

Neither pedestrians nor vehicles experience any changes in ground level during the passage of the crossing.

It is considered an accessible intersection when:

1. Pedestrians can cross the street at any designated crossing point.

2. If a tramline crosses a shared street, it shall not create any unevenness or irregularity in the crossing, except for the longitudinal opening of railway rails, which should be the minimum that is allowed by the transport system. At the crossing, there shall be a clear reflectance contrast of at least 50 LRV points between the railway tracks and the rest of the pavement 300 mm wide detectable warnings shall be located at the beginning and at the end.

6.10. Accessible pedestrian signals

In addition to the visual traffic signals, accessible pedestrian signals on the accessible pedestrian crossing shall have three types of sound signals that fulfil the following requirements:

1. Activation acoustic signals: it is activated by user demand by touching the area around the traffic light button or by a mobile application that links the user's phone with the traffic light. It identifies the exact location of the transmitter signal and the location of the pedestrian crossing. This signal informs the user of the activation of the pedestrian crossing signal in the next passage cycle. It should be of short duration, with eight tones in two rounds.

2. Pedestrian crossing signals: automatically emitted during the pedestrian crossing cycle and maintained throughout the cycle. It has a distinctive tone, slow and intermittent.

3. Pedestrian signals for final crossing: it matches the final flashing green light cycle and informs of the imminent finishing crossing time. It has a distinctive tone, fast and intermittent.

4. The sound shall be set to ensure the crossing time of the traffic light cycle, taking into account a maximum pedestrians' speed of 0,6 m/s. If this requirement cannot be fulfilled, it is mandatory to provide intermediate islands. These islands shall have traffic lights with their own systems of visual and acoustic signals.

Pedestrian Crossing Signals on public streets shall meet the following criteria:

1. Users with visual disabilities must be able to activate the acoustic signal of the traffic light using a smart phone application.

2. The pedestrian signal pushbutton shall be mounted at a height between 900 mm and 1200 mm and should be accessible with tactile characters. It must meet the criteria of strength and ergonomic shape to be operated with the elbow.

6.11. Shaded areas

The provision of continuous shaded paths is encouraged and at minimum-shaded areas shall be provided every 50 m in streets and squares. Each second area shall be provided with seating places and adequate space for wheelchair users without invading the accessible path. Shaded areas shall be provided by trees, pergolas and retracted façades.

6.12. Pick-up and drop-off areas

Pick-up and drop-off areas for taxis and private cars shall include curb ramps similar to those at accessible parking places.

Drop-off areas shall be provided in front of administration buildings, health care services, shopping malls, hotels, parks, transport buildings, theatres and cinemas and amusement parks.

6.13. Accessible parking bays and access to parking lots

Public or private parking areas associated with a public street, open space or building shall have accessible parking places for holders of accessible parking stickers issued by any jurisdiction.

The number of accessible parking places shall follow table 10.

ACCESSIBLE PARKING PLACES		
Use of the Building, establishment or area	**Minimum Number of Accessible Places**	
Residential	1 every 33 places	
Public Parking	≤ 200 spots	1 every 33 places
	201 to 1000 spots	1 more every 100 places
	> 1000 spots	1 more every 200 places
Others	10 to 200 spots	1 every 50 places
	201 to 1000 spots	1 more every 100 places
	> 1000 spots	1 more every 200 places
Buildings with reserved seating space for wheelchair users such us cinemas, sport facilities and others.	1 every 2 reserved seating spaces for wheelchair user	
Buildings and open spaces without parking facilities but with the following uses: - Administration headquarters - Hospitals - Education buildings - Sport facilities - Beaches with accessible paths - Rehabilitation and day care centres - Clinics	2 bays in the public areas. These placesshould be as close as possible to the entrance of the building. .	

Table 10. Number of accessible parking places

Accessible parking places shall meet the following technical requirements:

1. Accessible parking places should be located as near as possible to facilities such as: hospitals, clinics, schools, museums, cinemas, theatres, cultural centres and shopping malls and near access to beaches, parks, gardens and squares.

2. They shall be located as close as possible and no more than 50 meters from the building entrance. They should be located next to an accessible pedestrian path, to ensure access to the sidewalk from the road or they should provide an accessible curb ramp exclusively for each accessible parking place. A single curb ramp may be shared by two parking places.

3. The minimum dimensions for the accessible parking place shall be 2600 mm x 5500 mm for angled parking schemes and 2600 mm x 6000 mm for parking places along the sidewalk. For cases where accessible vans park frequently, the dimensions should be adapted to the vehicle size.

4. Accessible parking places shall have a lateral access aisle to allow for approach and transfer from the driver’s side for angled parking schemes, and a rear access aisle if parking places are along a sidewalk. These access aisles shall be at least 1200 mm wide. They shall connect to an accessible path.

5. They shall be properly marked with the international symbol of access, painted on the ground and on a signpost. This sign should be easily visible from the driving position and mounted at a height of 2200 mm.

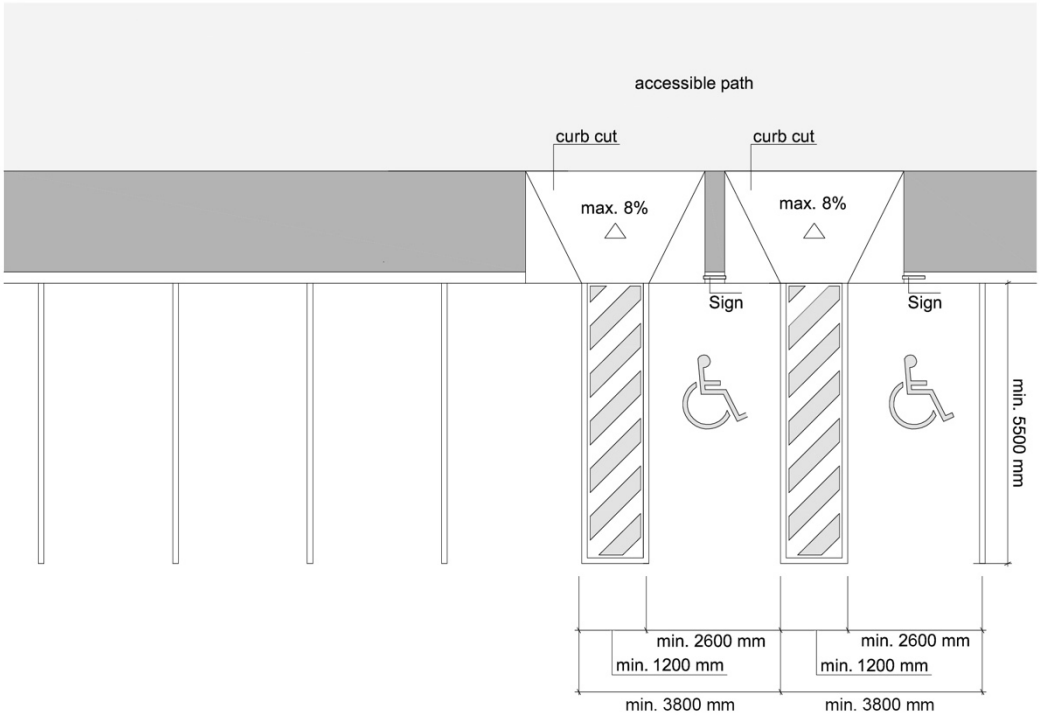


Figure 78. Example of accessible parking places with lateral aisle

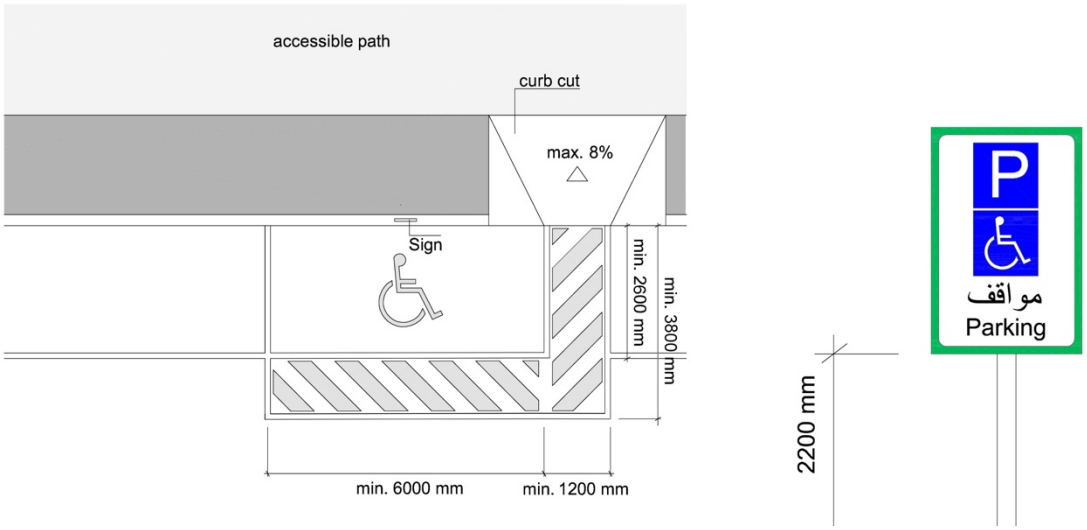


Figure 79. Example of an accessible parking place along the sidewalk with sign on post

6.14. Bicycle parking

Cycle parking located in public urban environments shall fulfil the following requirements:

1. They shall be located both close to entrances of public transport stations and to building entrances and near the pedestrian paths.

2. They should be installed at ground level without obstacles like stairs or steep slopes.

3. They shall be installed in the furnishing zone between the accessible path and the cycling path. They shall always be located out of the accessible path.

6.15. Mailboxes, parking meters, garbage and recycling containers

To ensure compliance with accessibility provisions the criteria listed below shall be fulfilled:

1. These shall provide a frontal or lateral interaction space that shall fulfil the requirements of section 5.5.

2. All interaction mechanisms must be accessible and be located at a height between 700 mm and 1200 mm.

3. At least one of the accessible garbage containers shall be operable by use of one hand and with a force less than 25 N.

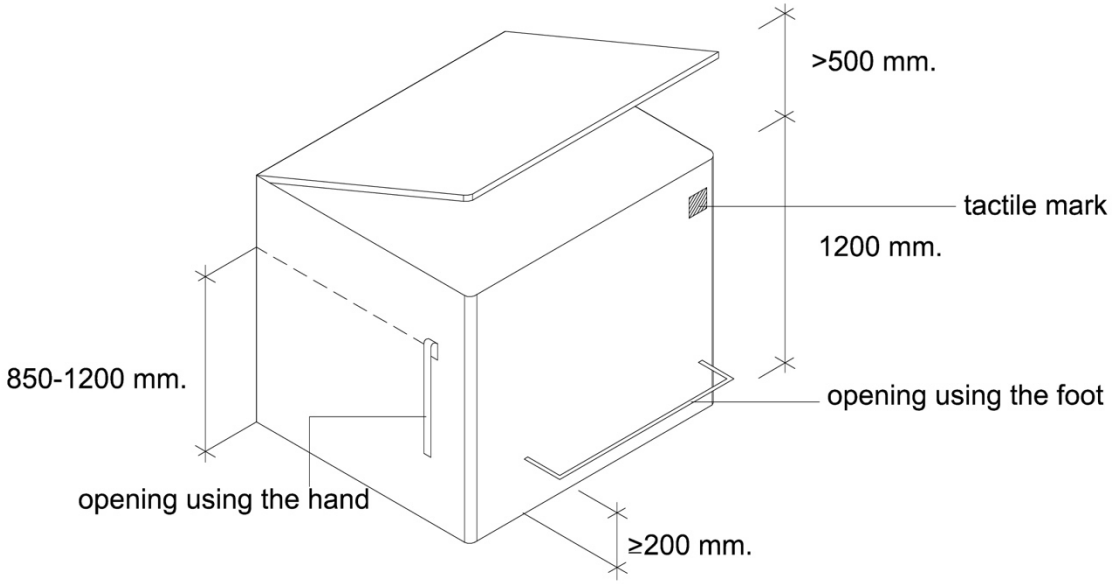


Figure 80. Example of an accessible garbage container

6.16. Restaurant terraces

Temporary facilities and signs located on sidewalks, squares and outdoor spaces such as terraces or signs for cafes and restaurants shall meet the following criteria:

1. They should not invade the accessible path and they shall not invade the headroom clearance.

2. They shall not interrupt the guidance element (façades, walls, guardrails...) without providing an alternative.

3. In case of interruption of the accessible path, the perimeter of the terrace shall be protected by a continuous element, except in the access areas, with a minimum height of 900 mm. This element must be easily detectable by people with visual disabilities.

4. The clear width required for accessible paths may be increased depending on the expected flow of pedestrians in the area but shall never be less than 2000 mm.

5. In the case where terraces are installed near the vehicles traffic bollards or other rigid obstacles they shall be installed every 1200 mm.

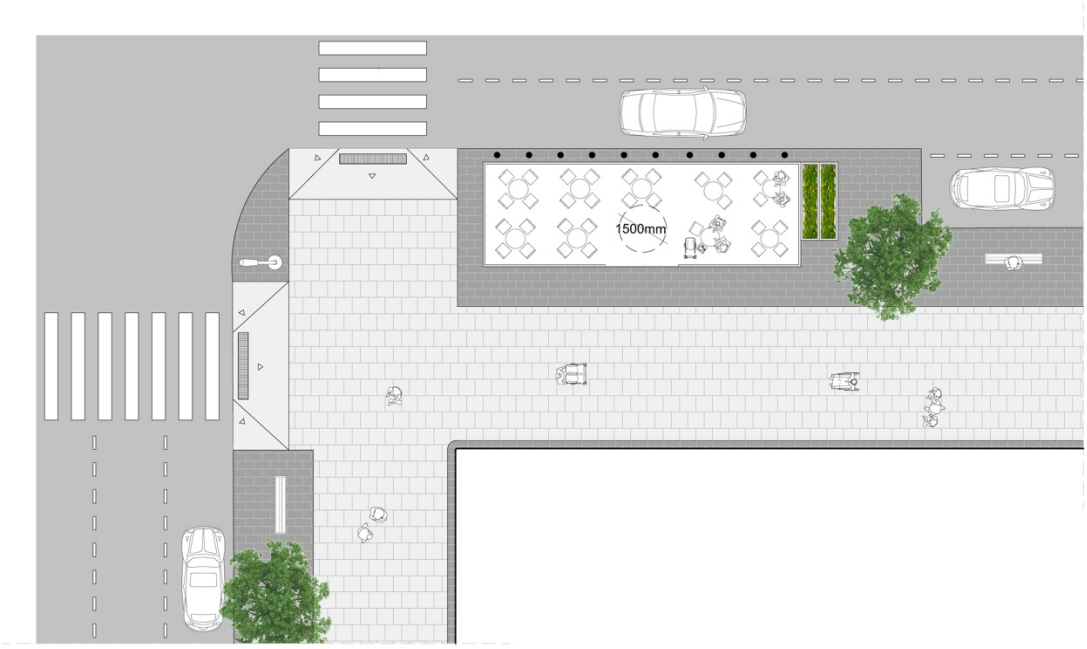


Figure 81. Terraces should be placed in the furniture zone of the sidewalk. Parking places can be integrated into the terrace

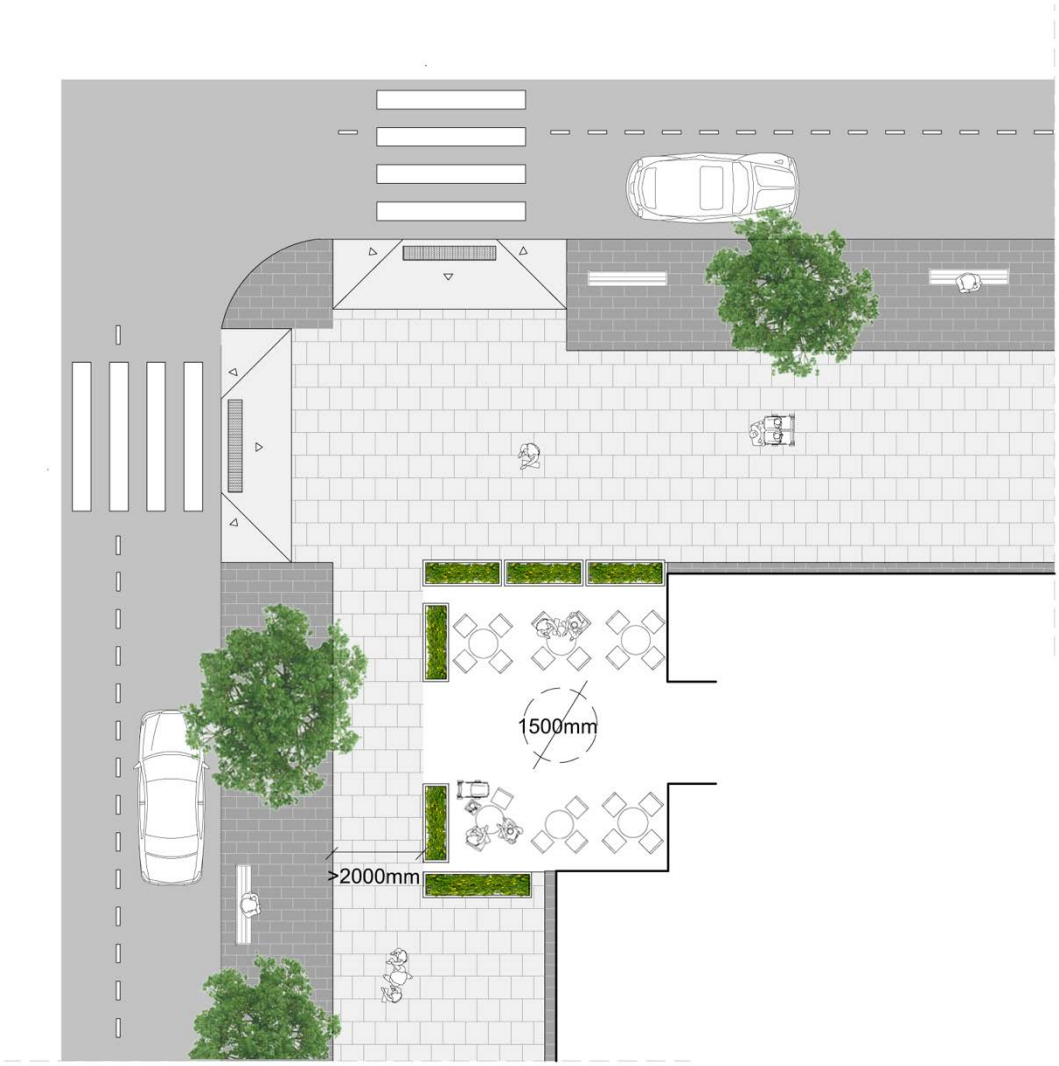


Figure 82. Terrace exceptionally invading the walking path but protected by a fence and leaving at least 2000 mm of clear walkway

6.17. Scaffolding, trenches and other construction works

No public or private work can lessen, permanently or temporally, the conditions of accessibility established in this Code.

Trenches and construction work in public spaces shall fulfil the following conditions:

1. They shall be protected with stable and solid fencing and protection elements that prevent people falling into the trenches or construction site.
2. People with visual disabilities shall be able to detect them easily; therefore, all protective and warning elements shall have a detectable edge at a maximum height of 680 mm.
3. Warning lights and audible signals shall be provided to alert people of the construction site at night.
4. An alternative path in the opposite sidewalk or even creating an alternative itinerary along other street shall be provided if it is not possible to allow a free passage, with the same conditions as those described for the scaffolding section.

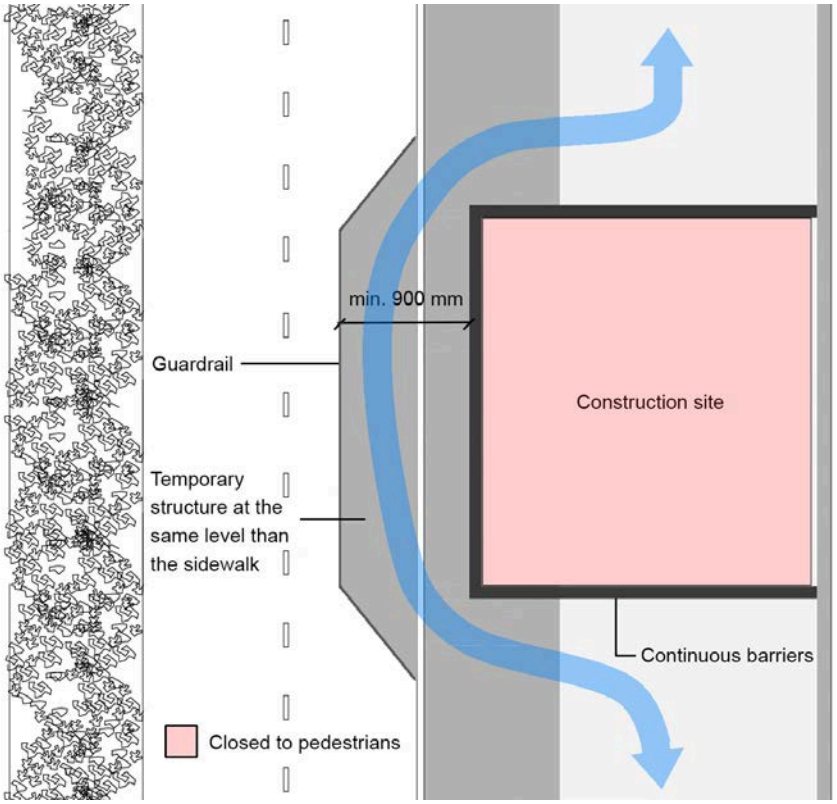


Figure 83. Alternative path in the same sidewalk

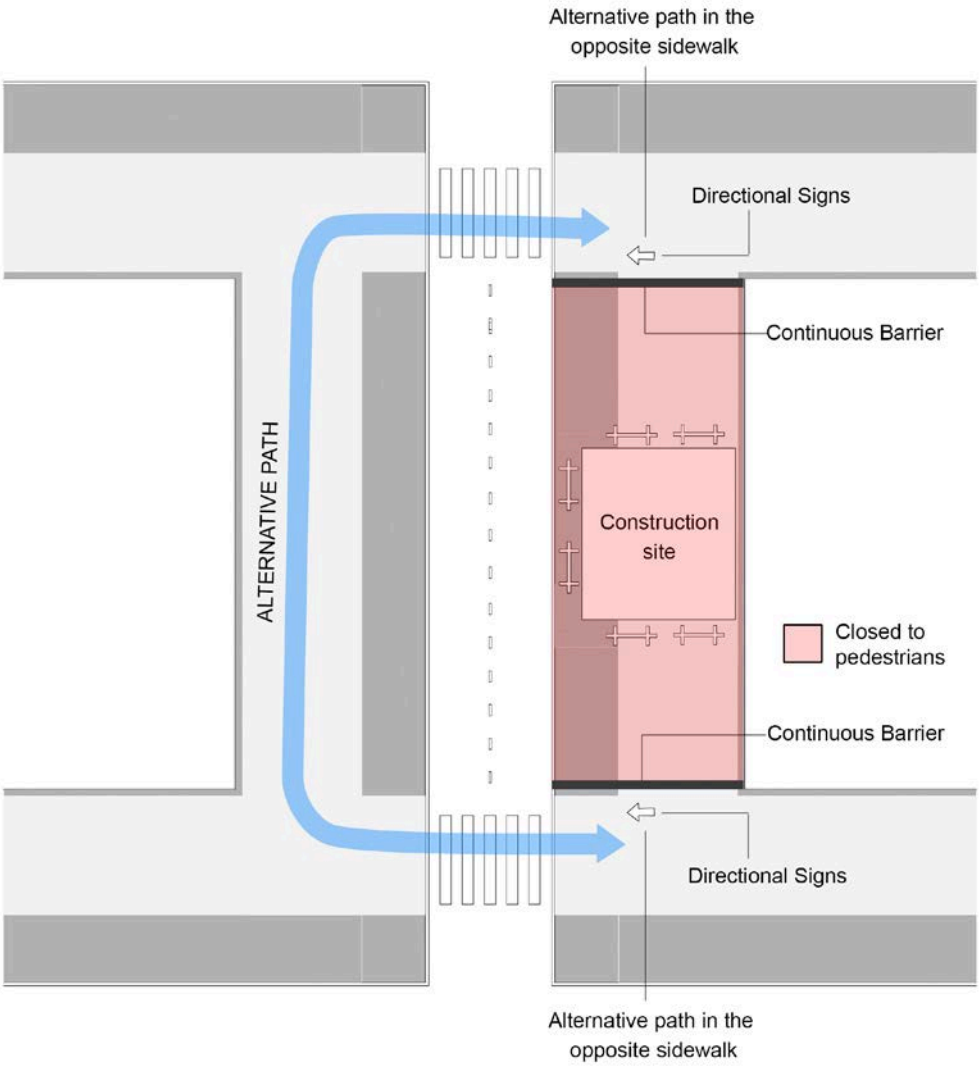


Figure 84. Alternative path in the opposite sidewalk

5. Accessible pedestrian paths shall not be obstructed during specific operations of loading, unloading and material supply.

6. Where material and debris generated by the construction have to be stored on the road, it shall be clearly marked and protected to ensure that it does not constitute a danger for pedestrians or vehicles.

7. In the case of pedestrians walking over trenches protected with metal plates, the metal structures shall have a minimum width of 900 mm, with guardrails on both sides. Guardrails must follow the requirements of section 5.5. These metal plates must provide a stable surface and be level with the surrounding surface.

6.17.1. Scaffolding

The following general criteria shall be fulfilled:

1. The temporary or alternative path shall have a minimum width of 900 mm and headroom of 2200 mm, free of obstacles. Where there are changes in direction, the minimum dimensions shall be 1500 mm x 1500 mm.

2. When the width of the sidewalk does not allow the installation of scaffolding, an additional walking surface beside the sidewalk shall be provided.

3. If the road does not allow this solution the passage under the scaffolding shall be closed and an alternative path shall be provided.

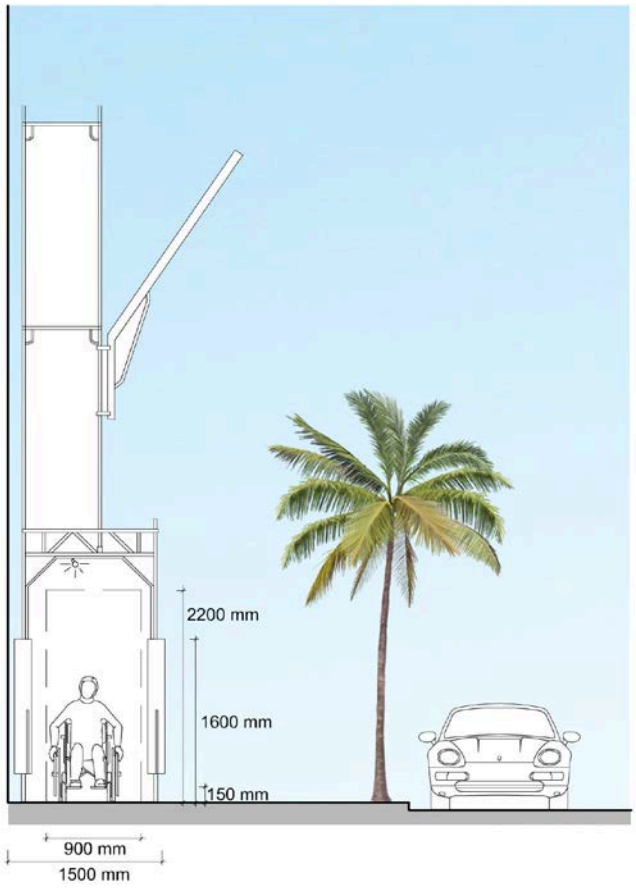


Figure 85. Alternative path under the scaffolding - frontal view

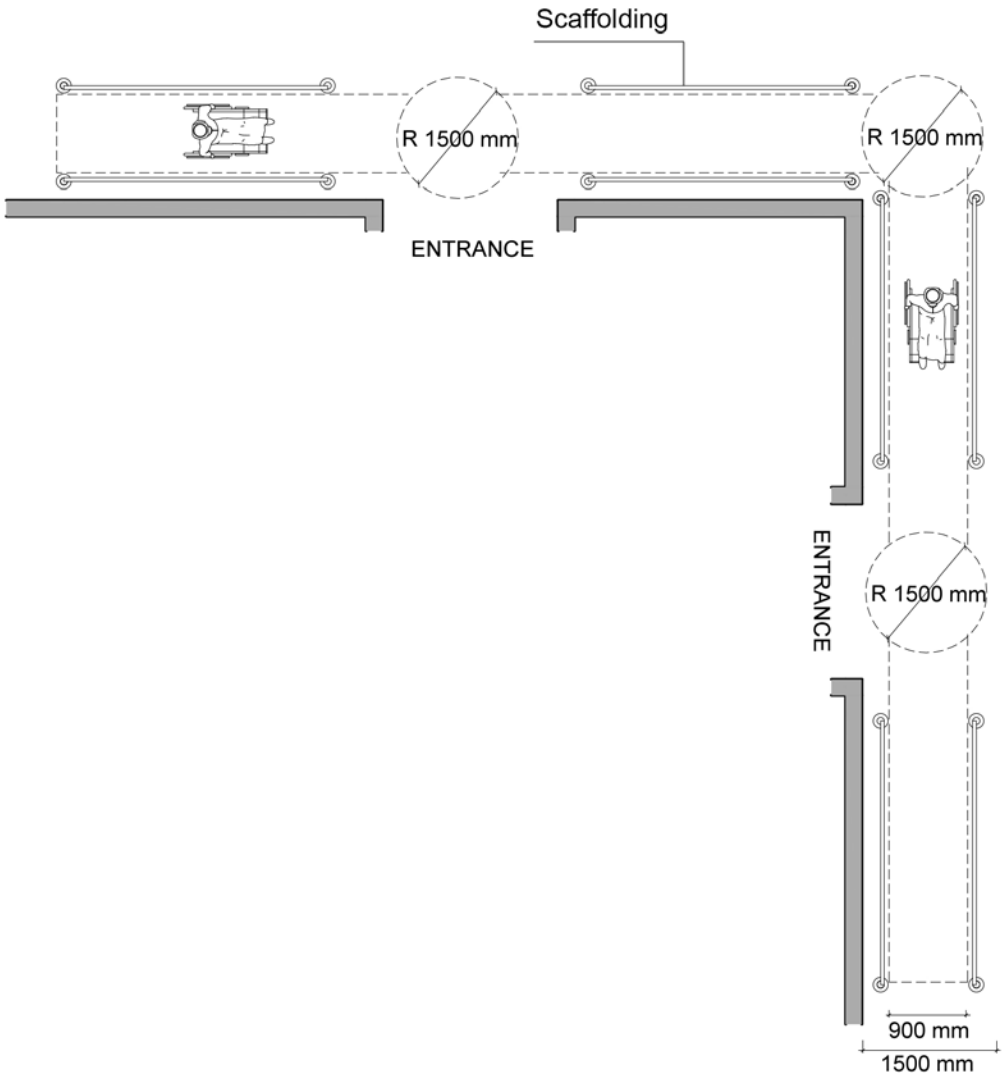


Figure 86. Alternative path under the scaffolding - plan

6.18. Bus shelters

A bus shelter is considered accessible when it fulfils the technical conditions specified below:

1. The location of the shelter does not invade the accessible pedestrian path, public space or transportation platform.

2. There is a path free of protruding and overhead obstacles on both sides. The path must have a minimum width of 1200 mm.

3. It shall be possible to manoeuvre inside the bus shelter providing a 1500 mm diameter area, free of obstacles without interfering with any of the vehicles manoeuvring or approaching.

4. The minimum height of the shelter shall be not less than 2200 mm.

5. There shall be no obstacle between the space covered by the bus shelter and the transport vehicle.

6. If any of the walls are glazed, they shall be marked as indicated in section 5.15.

7. Bus shelters shall provide at least one fixed bench with the following characteristics:

    - The seat height is between 430 mm ± 30 mm.
    - The seat depth is between 400 mm and 450 mm.
    - The backrest with a height of at least 400 mm and with armrest on one of its ends.

8. It shall have at least one standing support, located at a height between 700 mm and 750 mm, and separated at least 200 mm from the wall or vertical closure.

9. It shall have a minimum average illumination of 50 lux measured at the ground level during the service hours, and a minimum value of 100 lux at the boarding time.

10. The boarding area platform shall have a detectable warning surface as described in section 5.3.

6.19. Bus signposts

A signpost shall be provided at each bus shelter. The bus signposts shall not obstruct the accessible path.

The signpost shall be designed with the following requirements:

1. The sign is located above 2200 mm of height.
2. There are no elements that protrude below the 2200 mm height.
3. The bus information shall be provided in an area between 1200 mm and 1600 mm.
4. There is a bus line identification number with characters with a minimum height of 140 mm contrasted with the background. It shall also be tactile.
5. An information number and website should be posted.

6.20. Requirements for parks, beaches and natural spaces

Benches or places to sit in parks shall be designed according to the provision of this Code.

Information about the nearest public accessible toilets and interest points within the park or beach shall be installed at least in every path intersection, following the parameters for information panels described in section D.

Public accessible toilets shall be installed near the accessible path.

Supplementary paths can be used at beaches and natural landscapes where walking would be difficult.

A temporary path is considered accessible when it meets the following technical requirements:

1. It has a width of 1500 mm free of obstacles.
2. Whenever the natural slope of the terrain allows it, a path’s running gradient shall not be greater than 5% and the cross-fall gradients shall not be greater than 2%.
3. It is constructed of material that has a heat transmission coefficient that allows walking barefoot over them.

4. Supplementary paths shall reach as close as possible to the water’s edge.

5. There should be at least one accessible unit of each utility, such as toilets, lounges, beach coffees and restaurants, showers, changing rooms, furniture, emergency services among others. These utilities should be installed as close as possible to each other and shall be connected by an accessible path. Access to them shall also be via an accessible path from the beach’s access and from the accessible path to the water's edge.

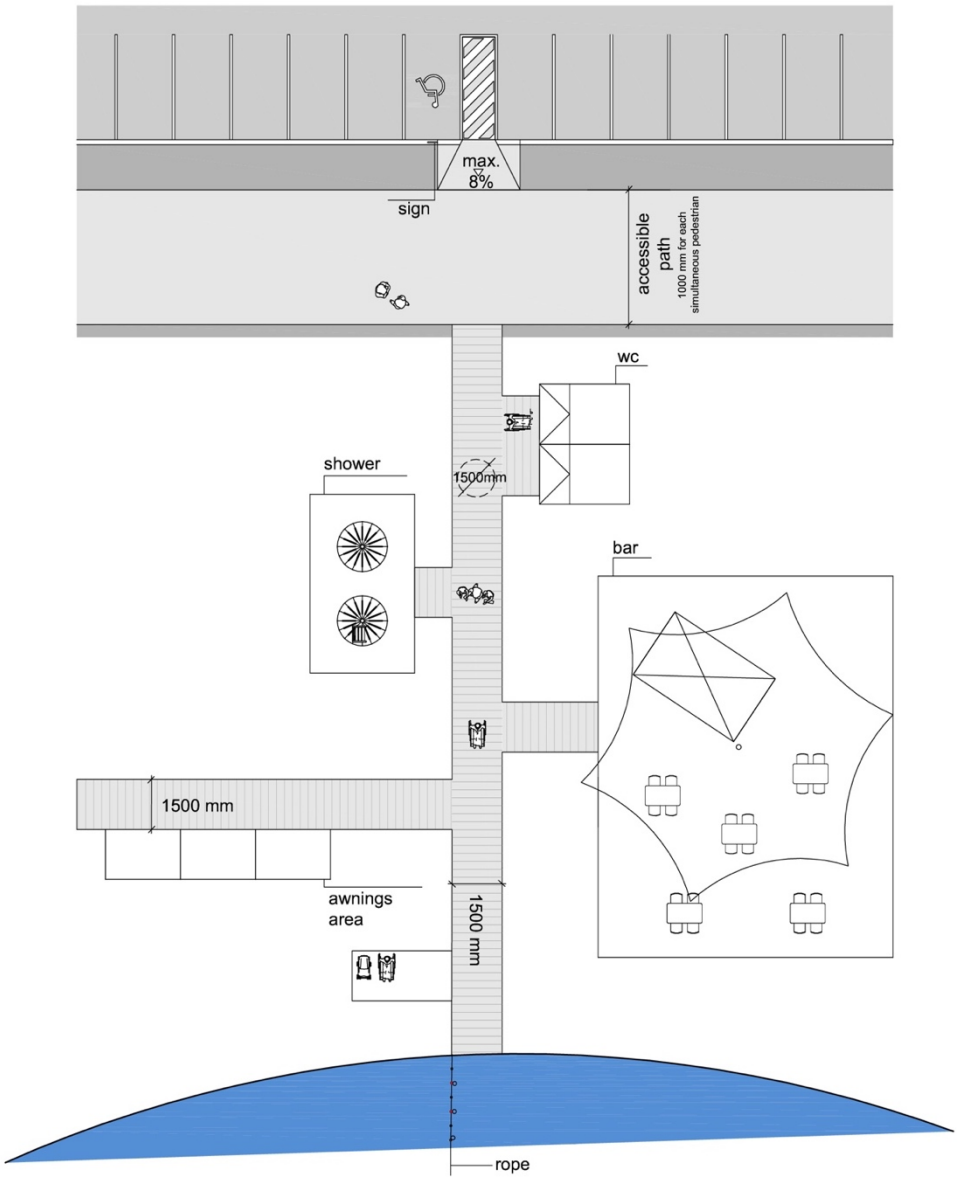


Figure 87. Path schemes connecting all beach services

6.20.1. Access to the water

In the case of lakes and sea, there shall be a rope to help users in the accessible point of access into the water. This rope remains floating and its length is adapted to the specific conditions of each swimming area.

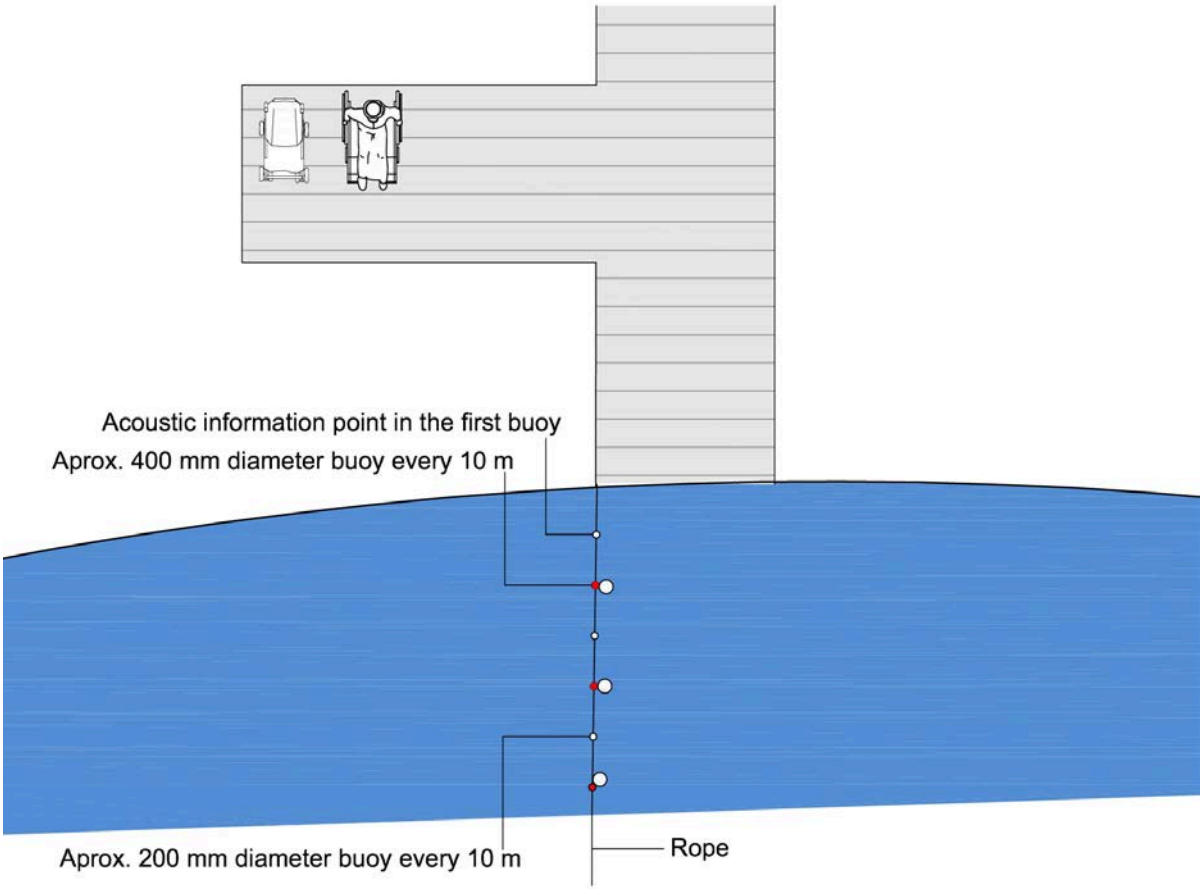


Figure 88. Orientation rope. Length will vary depending on water conditions

6.20.2. Outdoor showers

Outdoor accessible showers shall be provided at accessible beaches and swimming pools. These shall be linked via an accessible path and interaction space. They shall be at least 1800 mm in width and shall be provided with a bench without arms.

Shower controls shall be a button placed between 700 mm and 1200 mm and be possible to be activated with the elbow.

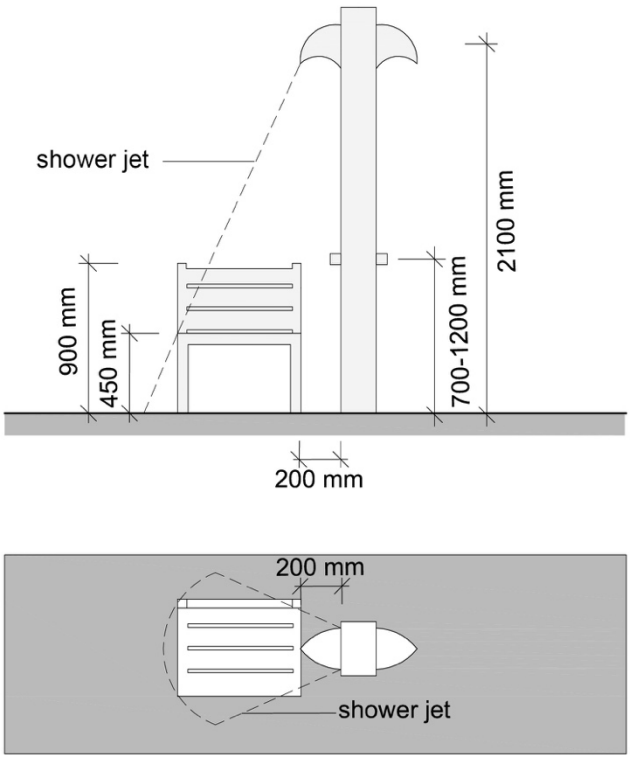


Figure 89. Outdoor shower

6.21. Playgrounds

Playgrounds that offer a variety of different types of play options (visual, auditory and tactile) should be provided. A playground is considered accessible when it fulfils the following conditions:

1. It meets the basic requirements relating to accessibility of fixed accessible urban furniture.
2. Playground surfaces shall consist of rubber or compacted sand.
3. The surface of the children play area shall be smooth & firm and free from any sharp objects, projections etc., in order to avoid injury to the children.
4. All children regardless their functional limitations, and according to the age group for which the playground is intended, shall enjoy and use, at least, 50% of individual and group expected activities.
5. All materials exposed to sun radiation shall not reach temperatures that may damage the users.
6. Materials used to design children's games; especially the sliding ones, shall not contain plastics or metals that produce electrostatic discharges that may deprogram hearing aids. In any case, the existing playgrounds that produce this effect must be marked with a symbol like the ISO with explanatory text or the ANSI DANGER Strong Magnetic Field.

Figure 90. Example of ISO and ANSI magnetic warning signs

6.22. Commercial Kiosk

Commercial kiosks must meet the following:

1. It shall have a customer counter with a lateral or frontal interaction space.
2. Outdoors kiosks shall have a pergola in the front side.
3. This interaction space shall be linked to an accessible path.
4. It shall be equipped with a hearing enhancement system and a post indicating such.
5. All controls shall be at a maximum height of 1200 mm.
6. All information shall be provided in audio and visual formats.
7. Visual information shall be well contrasted and in a minimum of 14 pt.

Figure 91. Example of an outdoors commercial kiosk

7. Buildings

All buildings shall comply with this Code. Whenever possible building façades should be retracted in order to provide a shaded walking path.

7.1. Entrances

Entrances to buildings shall be located and oriented in such a way to ensure the shortest distance for pedestrians between the buildings, parks and beach facilities and public transportation modes.

An accessible path shall link the parking area, designated accessible parking zones and the sidewalk to the main entrances of all building's or facilities'.

The accessible path from the street or public space shall avoid stairs and ramps. Gradients up to 2% are preferred, although up to 5% are acceptable to reach the main entrance(s) at street level. If over 5% it should be designed as a ramp.

The accessible and inaccessible paths shall be marked with clear signage.

In existing buildings when the accessible door is not the main entrance door the direction to the accessible entrance shall be marked with the International Symbol of Access (ISA).

Figure 92. International Symbol of Access with directional arrow

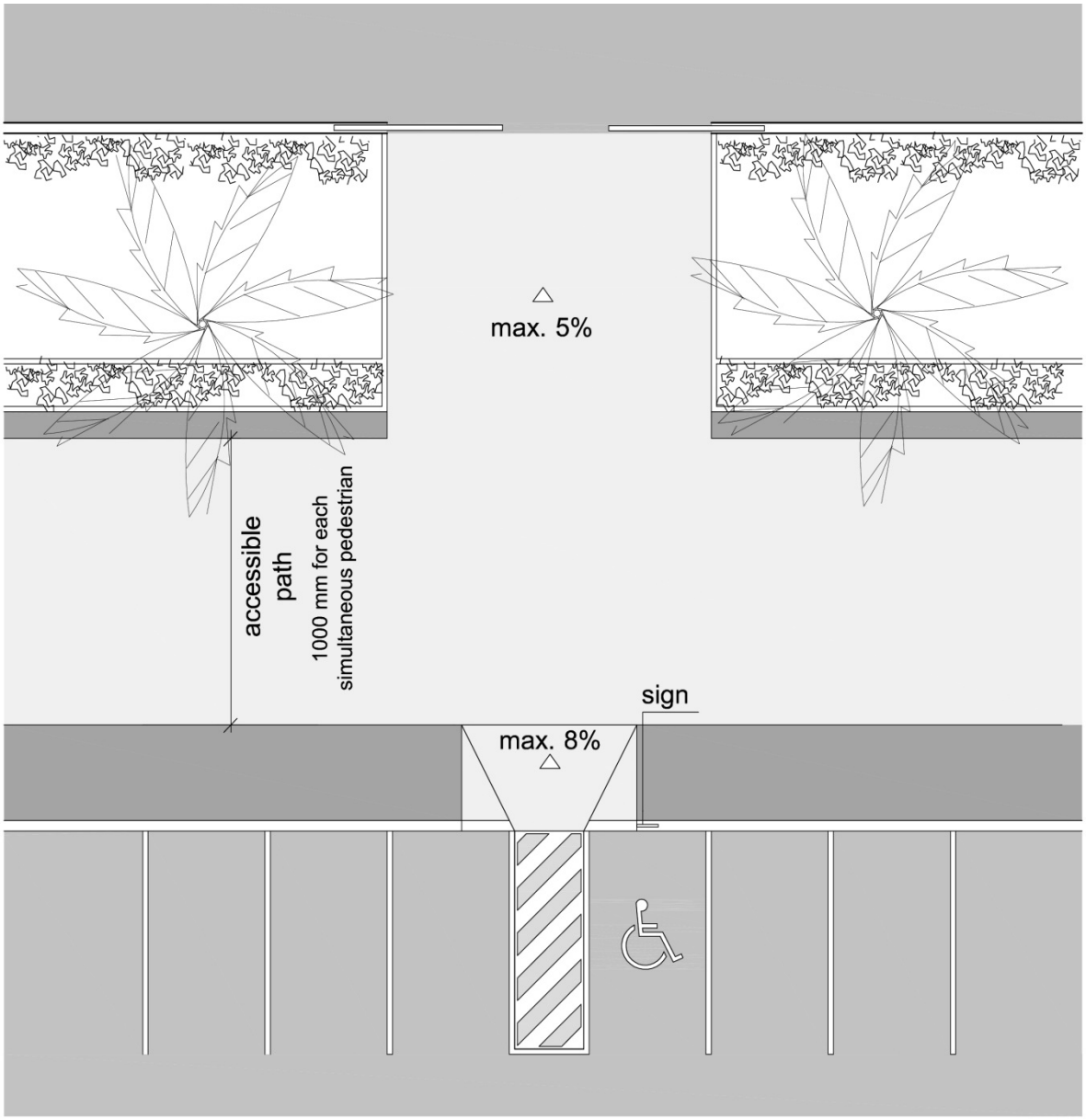


Figure 93. Direct access from parking area to building entrance

Each building entrance shall be provided with an identification number that shows the exact address.

Near the main entrance(s) a directory as specified in section D shall display the main departments and/or services provided in the building. This information may also be provided by voice via a mobile application or via costumer service. An information number and website should be posted.

A reception desk visible from and near the entrance shall be provided in all public use buildings.

All entrance doors must have a clear passage width adequate to the intended use of the building and the expected number of users. Minimum dimensions are 900 mm width x 2100 mm height.

In case of revolving doors, an alternative door shall be provided,

Entrance doors shall be power assisted, according to the specification of the Doors Section of this Code.

Doormats shall be levelled with the floor with a tolerance of ± 2 mm.

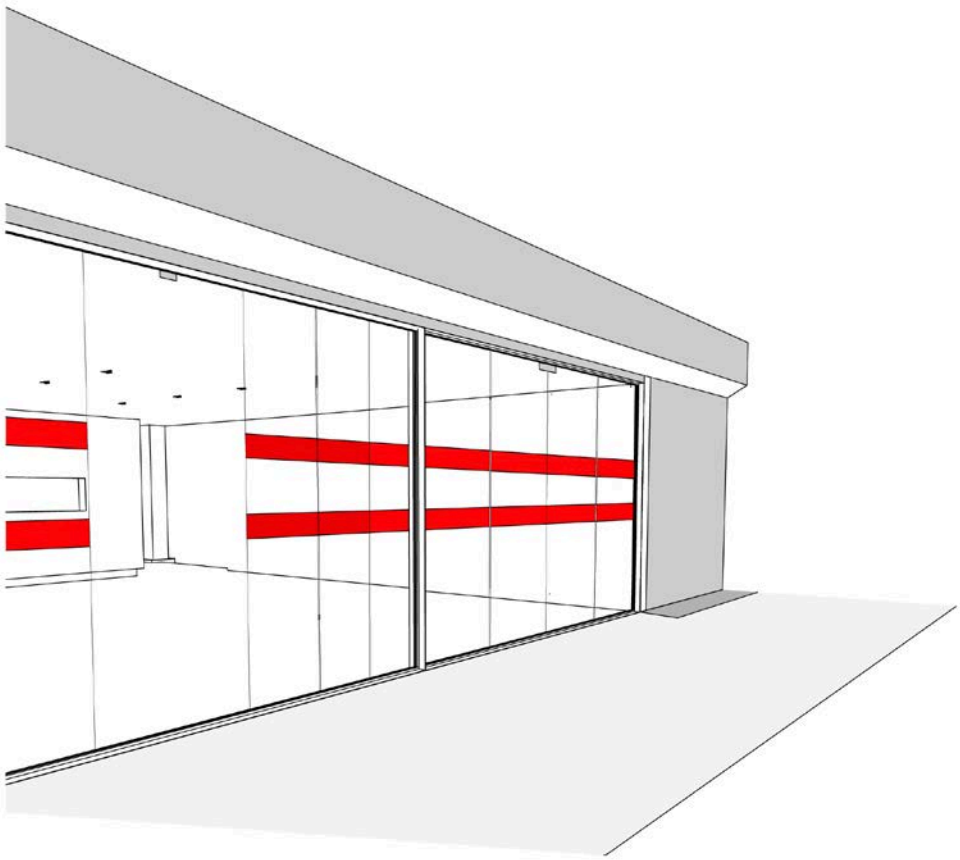


Figure 94. Building entrance

7.2. Access control barriers

When applicable, barriers shall provide at least one entrance with a width of 900 mm. Turnstiles is not permitted.

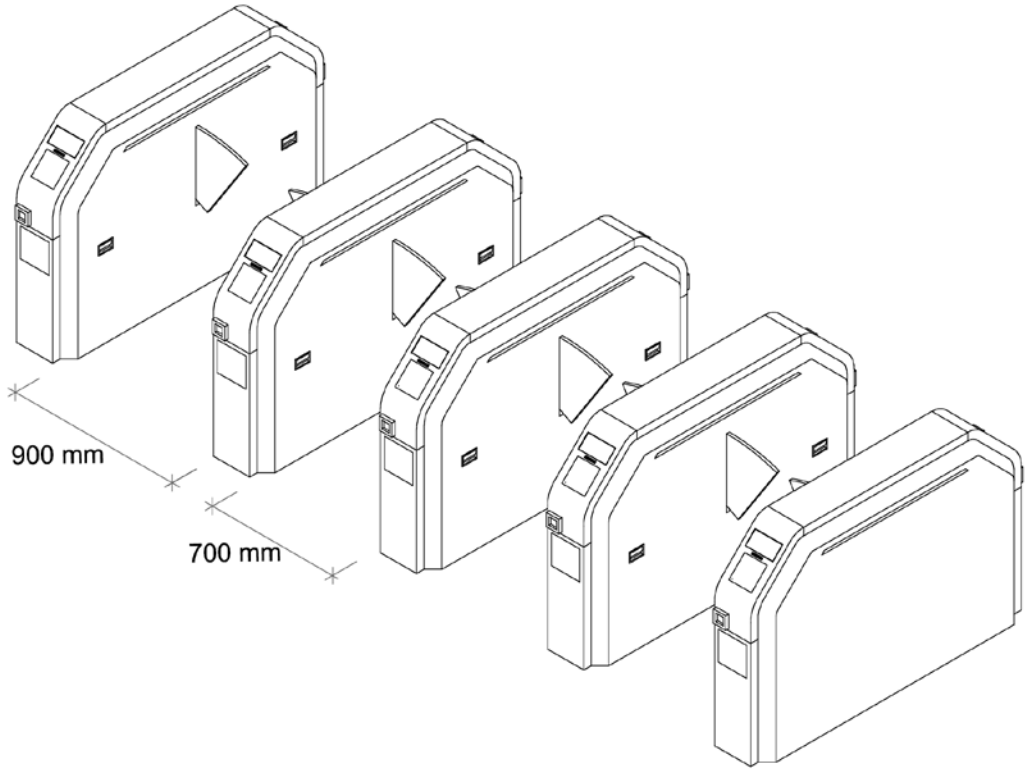


Figure 95. Access control barrier with at least one accessible gate

7.3. Counters and reception areas

Counters and reception areas shall provide:

1. Seating places and clear spaces to accommodate wheelchairs, scooters or strollers.
2. In reception areas enough seats for the foreseen waiting people shall be provided.
3. When providing sofas and additional regular chairs with a seat height of 430 mm with +/- 30 mm tolerance and armrests shall be provided.

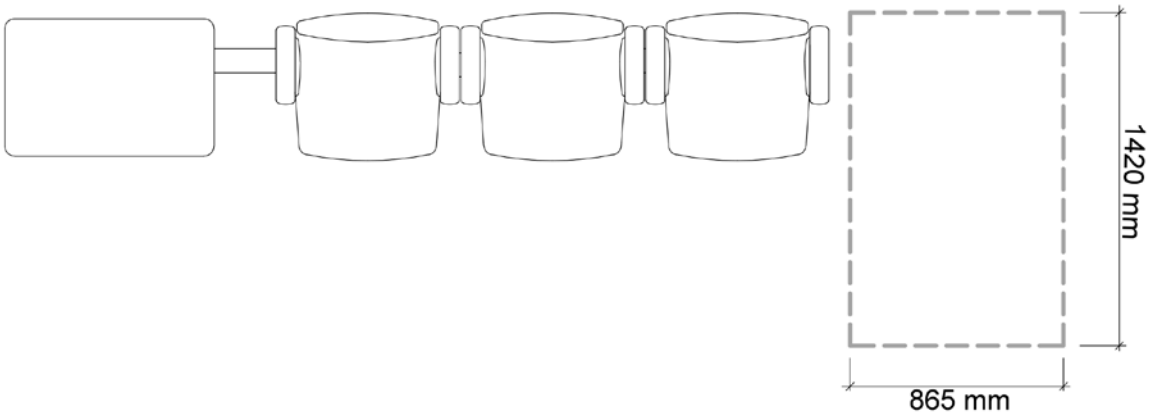


Figure 96. Seating Zone

4. Front desks shall provide a low counter between 750 mm and 790 mm and a high counter between 950 mm and 1250 mm.

5. Under the desk board a space 680 mm height and 480 mm deep shall be provided. These 480 mm can be included in the frontal interaction space of 1420 mm x 865 mm that shall be provided.

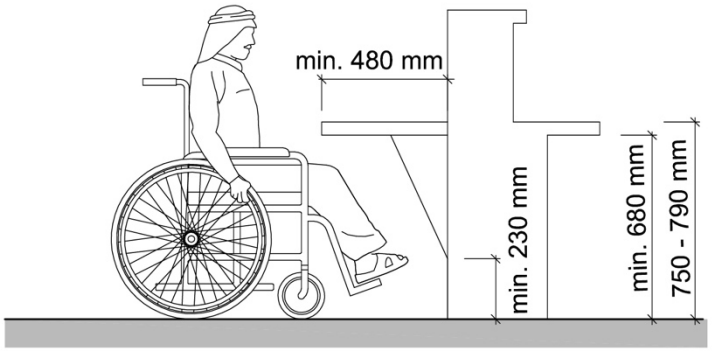


Figure 97. Front desk dimensions

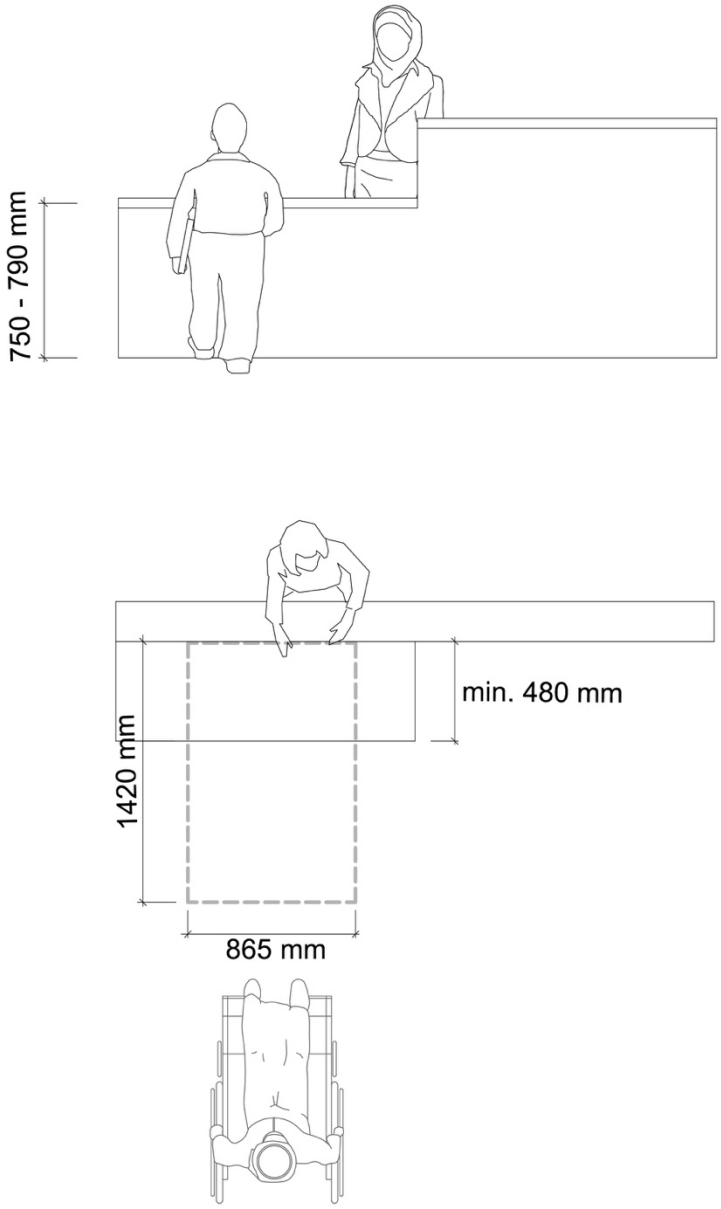


Figure 98. Front desk approaching space

7.4. Internal corridors

The width of corridors free of obstacles should be enough to allow all users passage in both directions, according to the building's use, considering a minimum of 1000 mm per each simultaneous pedestrian.

Where there are direction changes (180º and 90º), the clear passage width shall allow a manoeuvring turning space of 1500 mm diameter.

Floor surfaces shall be firm, smooth, stable, and level, without glare and slip resistant avoiding vibration in wheels produced by excessive joints. Rugs and carpets should be firmly fixed to the floor and not have a high pile.

The accessible pedestrian walking path shall present reflectance contrast with the pavement not intended for walking of at least 30 points LRV (Light Reflectance Value) and/or by an easily perceptible (by the foot or the cane) texture difference.

A tactile warning surface shall precede any sudden level change.

The average minimum illumination is 100 lux calculated at floor level, with a minimum value of 60 lux.

7.5. Alarms and means of egress

Audio and visual emergency alarms shall be provided throughout the building. Visual emergency alarms shall have a rate of 30 flashes per second. They shall be located in places where all building occupants can see them, including toilets, accessible toilets and family toilets. It is especially important to place visual alarms in locations where someone might be alone.

The procedures for evacuating a building should be posted, including evacuation procedures for persons with activity limitations.

Fire and life safety procedures should be posted in 14 pt san serif font.

Persons with activity limitations who are unable to evacuate independently may be evacuated with the assistance of an evacuation device or evacuation chair. Fire safety personnel can assist the person into the evacuation device and then take them down the stairs to a safe area.

Evacuation devices should be provided on every floor over one storey. The devices should be consistently located near the stairwell. Fire personnel should ensure that people, including those with activity limitations, are trained on how to use evacuation devices.

Fire protected elevators that can be used for evacuation are an alternative to the evacuation device.

Evacuation procedures and training should be developed in conjunction with the Civil Defence regulations.

7.6. Gender equality

In case of segregated use by gender of the building, the same level of accessibility will be provided for both genders.

7.7. Storage facilities

The storage facility design shall take into consideration all the minimum spaces and reachability recommended in Annex 3.

20% of shelves, boxes or lockers shall be within reaching distance for a wheelchair user or people with short stature, between 600 mm and 1200 mm above the floor.

Lockers numbers should be well contrasted and tactile.

If benches are provided, they should be moveable.

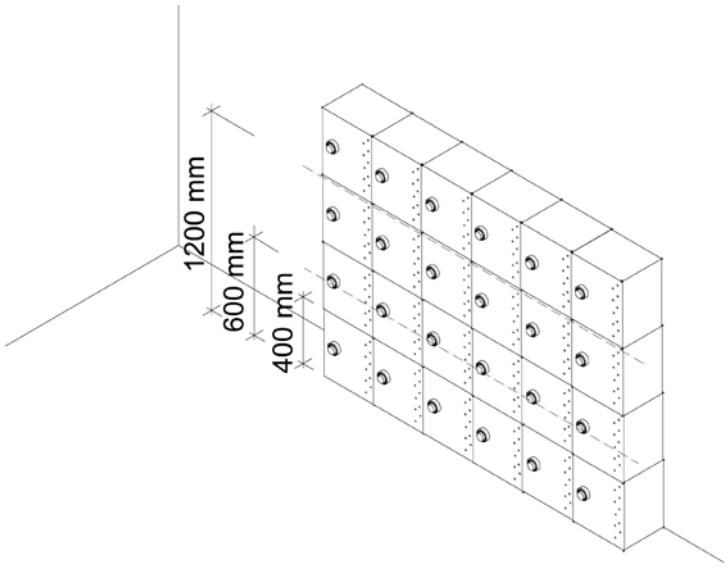


Figure 99. 20% of boxes between 600 mm and 1200 mm

7.8. Accessible dressing or change rooms

A dressing or change room is considered accessible when it fulfils the following conditions:

1. The interior corridors have a minimum width of 1000 mm. In direction changes, there is a clear manoeuvring turning space of 1500 mm diameter outside of any opening door space.
2. If there are lockers, the above provisions for storage facilities shall be respected.
3. Benches shall not obstruct access to lockers.
4. The approaching space for lockers, benches and furniture should have a minimum width of 865 mm and should connect to the accessible path of travel.
5. If there are showers, at least one of every ten shall meet the criteria for accessible showers described in this Code.
6. If there are toilets, 1 of every 10 shall be accessible.

7.9. First aid facilities

First aid facilities shall be provided with an accessible door and an accessible path to the treatment area.

It shall contain a changing table usable for changing adults' diapers if necessary.

7.10. Balconies

Terraces, verandas and balconies linked to accessible rooms or spaces shall be accessible to all people including people with mobility limitations.

To ensure this requirement, they shall fulfil the following characteristics:

1. The door to the balcony shall provide at least an obstacle free width of 900 mm.
2. The balcony exterior and interior levels shall be the same.
3. Wherever it is possible the balcony doors shall be installed flush with the floor level. When a raised threshold is necessary it shall have a maximum height of 20 mm and be bevelled down to a height of 10 mm chamfered.

4. The minimum dimensions of the balcony shall be 1500 mm x 1500 mm.

5. Walking surfaces shall be slip resistant and follow the requirements of section 5.2.

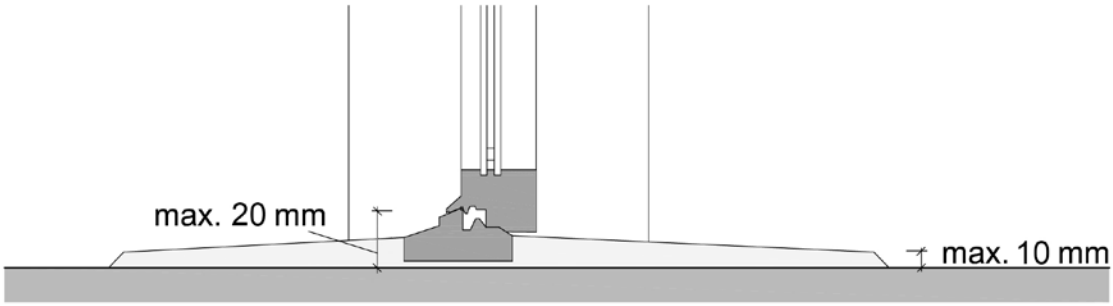


Figure 100. Maximum threshold rise

7.11. Acoustics

To ensure an adequate transmission of sound information in rooms, acoustic reverberation levels shall fulfil the requirements of the following table:

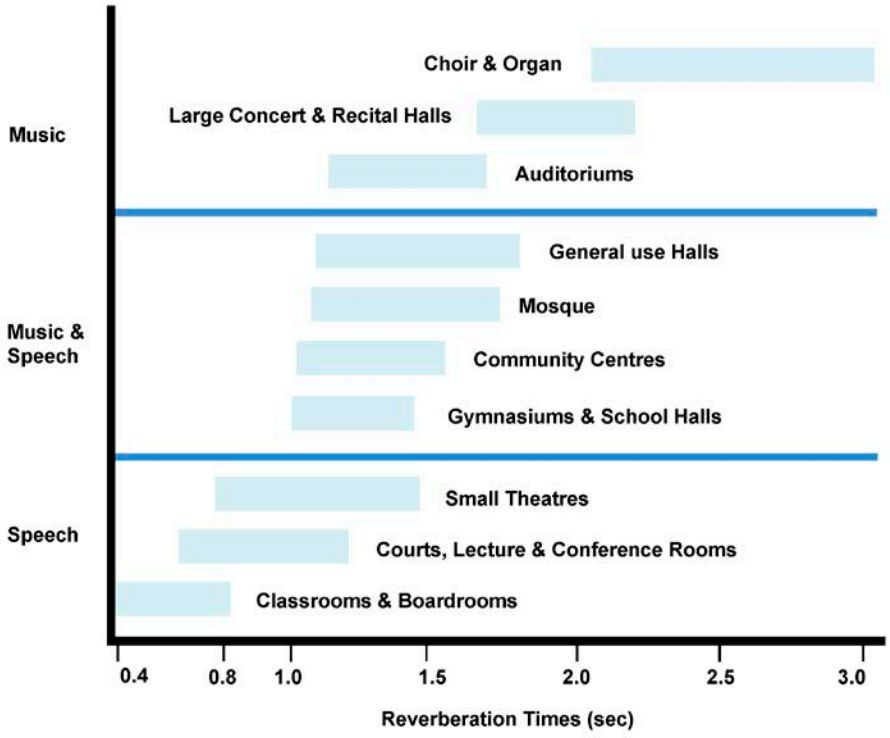


Figure 101. Recommended reverberation times

Rooms shall be designed with sound absorbing surfaces to reduce the transference of noise.

7.12. Hearing enhancement systems

A hearing enhancement system (such as an induction loop, FM or infrared) is required to communicate with hard of hearing persons and shall be provided in the following types of buildings: meeting rooms, auditoriums, service counters, theatres and concert halls.

A hearing enhancement system enables sound signals to be transmitted to persons using hearing aids without interference from background noise or excessive reverberation level.

In all meeting rooms of over 25 people, in all assembly areas and at service counters, a hearing enhancement system shall be provided.

Hearing enhancement systems that operate using induction loops, infrared and radio frequency are commonly used to provide enhanced level of sound.

Expert advice should be sought when selecting a hearing enhancement system appropriate for the situation and purpose.

Where hearing enhancement systems are provided for persons with hearing impairment, the international symbol of access for hearing loss shall be provided.

Hearing enhancement systems are compatible with language translation systems.

A sign should be posted indicating that the enhancement system is available.

7.13. Auditorium seating spaces

An auditorium seating space is considered accessible when it meets the following requirements:

1. It is connected to an accessible path.
2. Accessible seating can be provided with either permanent or removable seating.
3. Level wheelchair spaces with dimensions shall be of at least 865 mm x 1420 mm if approached frontally and 865 mm x 1500 mm if the approach is lateral shall be provided.

4. A level manoeuvring space of 1500 mm x 1500 mm must connect to each wheelchair space.

5. It shall be marked with the international symbol of access (ISA), whether as permanent seating spaces or removable seating areas.

6. Both the surface of wheelchair spaces and the clear manoeuvring space are level having a maximum longitudinal gradient of 1%.

7. For facilities with fixed seats, designated wheelchair spaces shall be arranged into groups of 2. Each group of wheelchair spaces must have at least an equal number of fixed seats.

8. If the designated wheelchair spaces include removable or foldable seats, the conversion process shall be quick and easy.

9. Wheelchair spaces shall be provided in all auditorium-seating sections.

10. The number of reserved wheelchair spaces shall comply: 1 reserved wheelchair space for every 50 seats or fraction thereof and beyond 500 seats, 1 more for every 100 seats or fraction thereof.

11. In theatres, cinemas, conference rooms, auditoriums and all the facilities where people are expected to sit or wait, it is recommended that some seats should have a space for service animals near the owner.

12. A space at the front of the hall or room where a sign language interpreter can be easily seen shall have an independent overhead light.

13. A sufficient number of designated accessible seats for people with hearing impairments should be provided in front of the sign language interpreter.

14. Aisle seats and its adjacent shall have foldable armrests.

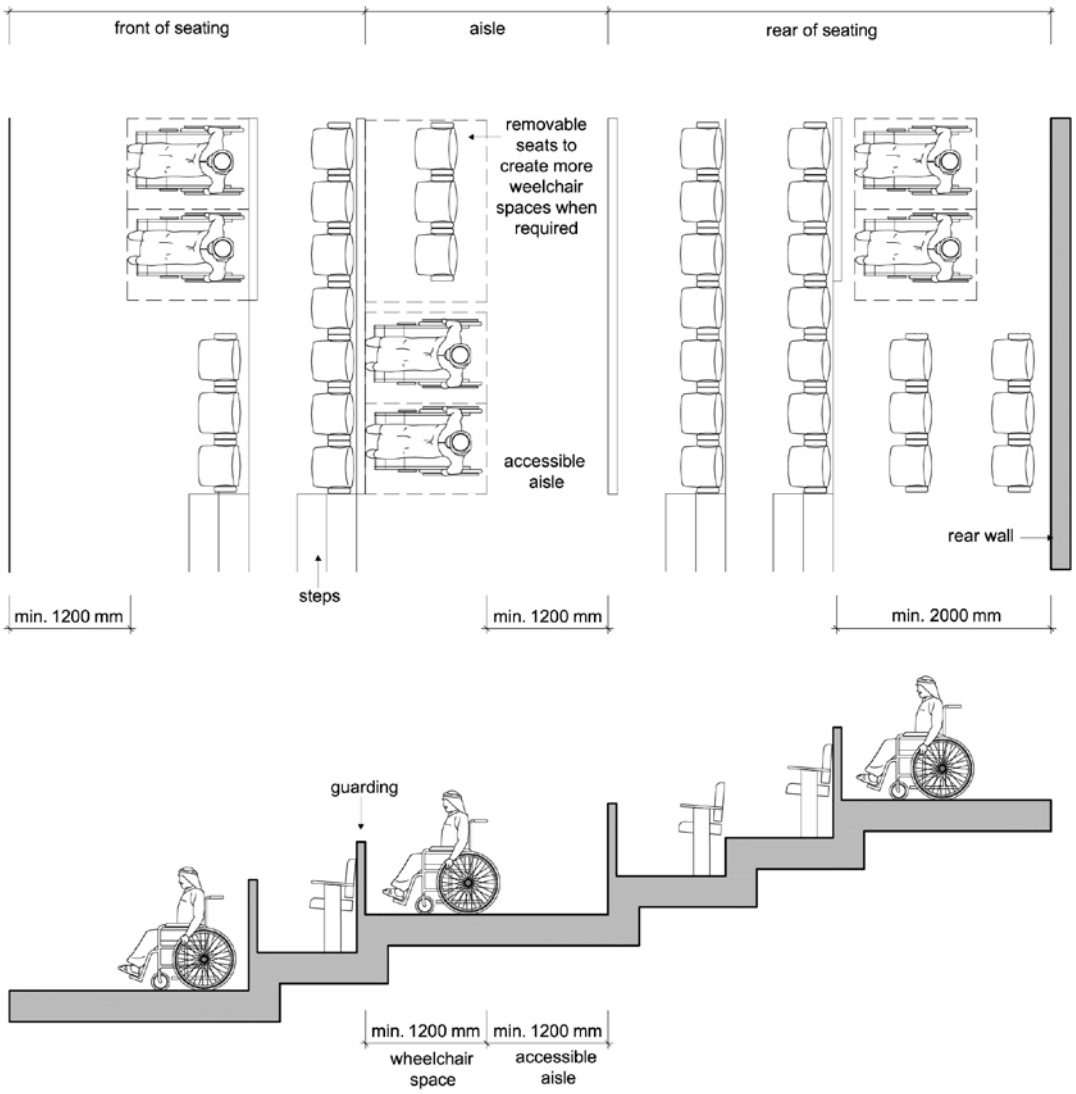


Figure 102. Example of reserved seating spaces in an auditorium

7.13.1. Stages and backstage

Stages shall be accessible to everyone via a ramp or lift. In an exceptional case a lift platform can be provided to make the stage accessible. The lift shall fulfil the requirements of section 5.10.1.

Buildings for public events with a capacity of over 100 spectators shall provide an accessible backstage. This accessible backstage area shall also provide an accessible toilet, including a shower, a change room and a space with an accessible mirror.

The path between the backstage and the stage shall comply with the requirements of accessible paths.

7.14. Swimming Pools

Swimming pools and other bathing pools for public use shall have at least one accessible means of entering the water and an accessible path linking the pool with the facilities and the common areas.

For private use swimming pools like in condominiums the accessible provisions shall be followed if a tenant requires it.

The floor surface of the swimming pool areas shall comply with the section 5.2.

If there is information messaging, the facility shall provide screens and loudspeakers, and the information shall be provided in two alternate formats simultaneously. The technical criteria of the messages displayed are described in section D.

If an accessible path for the entrance to the pool cannot be provided, a ramp or an assisted elevation chair or hoist shall be implemented.

Other requirements:

- Safety ladder
- Underwater illumination if night use is foreseen.
- Depth scale following the signs requirements presented in section D.
- It should be connected to an accessible change room for each gender.

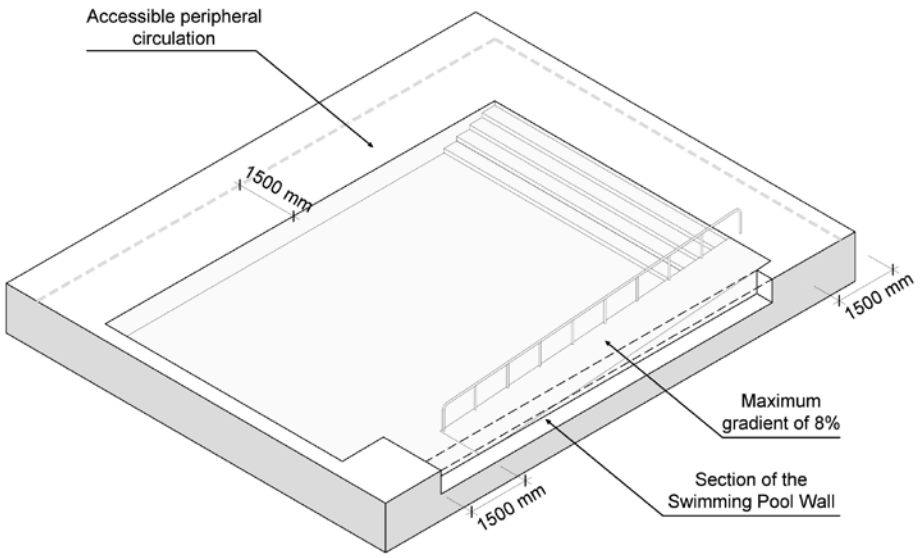


Figure 103. Swimming pool with access ramp

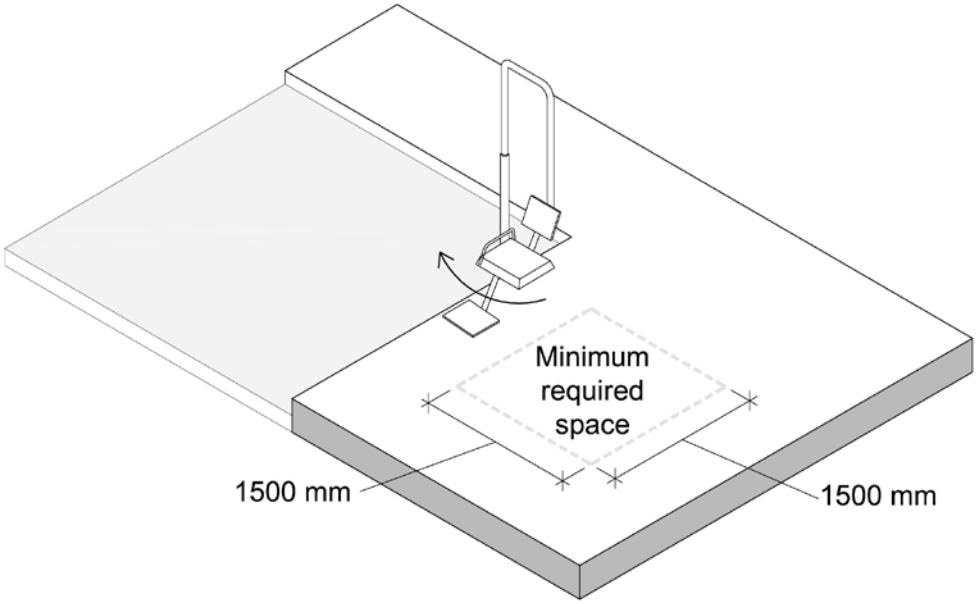


Figure 104. Swimming pool chair lift

7.15. Mosques and prayer rooms

Mosques and prayer room shall fulfil the following requirements:

1. An accessible path shall connect the public space with the building and the different rooms among them. An accessible entrance shall be provided.
2. A clear area shall be provided at the entrance to prevent shoes from blocking the accessible path. This shall be complemented with a KEEP CLEAR mat if the clear entrance is not guaranteed.
3. Seats shall be provided at entrances and at other locations where people are required to remove their shoes.
4. Seating should also be provided within the prayer hall to accommodate people who cannot bend to pray.
5. The route to the designated area crossing the prayer hall's carpeting shall have low pile carpeting.

7.16. Other temples and praying rooms

These buildings and rooms shall guarantee the same accessibility requirements that shall be observed in all public use buildings regarding circulation, lighting and wayfinding in this Code.

7.17. Accessible hotel rooms

Hotels shall comply with all elements in this Code. Hotel rooms shall fulfil the following requirements:

1. At least 10% of hotel rooms shall be accessible as well as all common spaces in the hotel premises.
2. An accessible toilet with grab bars, an accessible shower and vanity shall be provided in compliance with this Code.
3. Half of the accessible hotel rooms shall provide roll-in showers while the other half shall provide bathtubs following the requirements of the drawings below. In both cases an alarm string shall be provided.
4. The accessible rooms shall be provided with acoustic and visual fire alarms.

5. Controls shall be placed at a height between 700 mm to 1200 mm except for the ones to be used from the bed. These should be placed comfortably in reach of occupants. Electric outlets shall be provided at a height between 400 – 1000 mm.

6. A clear route shall be provided to the bed with a minimum clear space of 1500 x 1500 mm beside the bed.

7. The bed shall have a maximum height of 500 mm.

8. The accessible rooms shall be provided with acoustic and visual fire alarms as well as an audible doorbell.

9. A dressing mirror where the user can see his or her reflexion from 250 mm to 2000 mm shall be provided.

10. Shelves and drawers shall be provided between 700mm to 1200 mm from the floor, and whenever possible a clothes hanger should be placed at 1100 mm from the floor.

11. A clear route shall be provided to the bed with a minimum clear space of 1500 x 1500 mm beside the bed out of any furniture.

12. A minimum of illumination of 200 lux shall be provided by at least one lighting fixture in the room.

13. Connecting rooms shall have accessible doors.

14. A viewing device should be provided in the door at a height of between 800 mm – 1000 mm.

15. Clothes hangers and hooks should be provided at a maximum height of 1100 mm.

16. There shall be no change in level or lip in the washroom, including at the shower.

17. Reception desks shall provide a lower counter to assist people of short stature and people using wheelchairs. An approaching space in front of the reception desk has to be provided for wheelchair users.

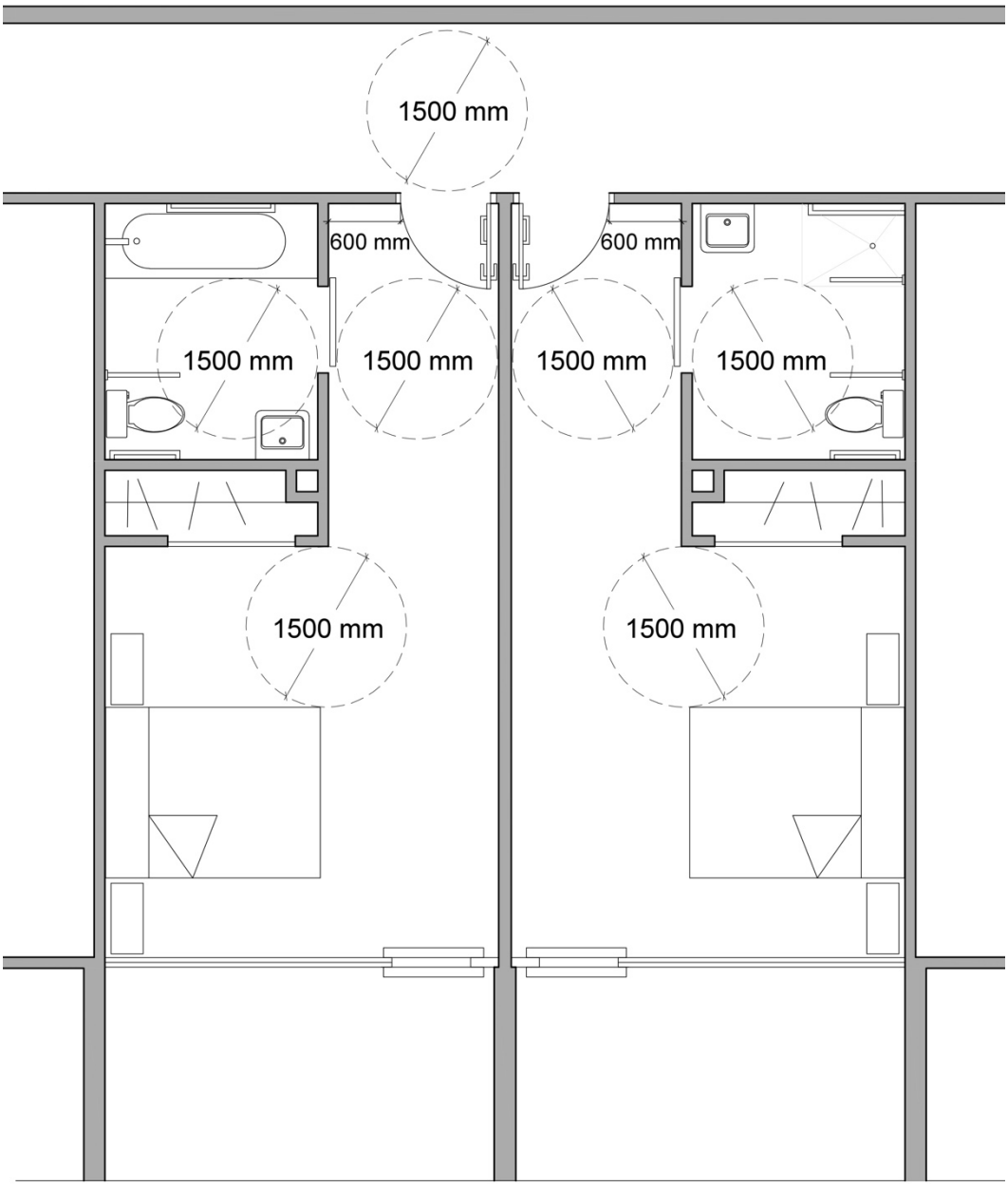


Figure 105. Example of two accessible rooms, one with roll-in shower and the other with accessible bathtub

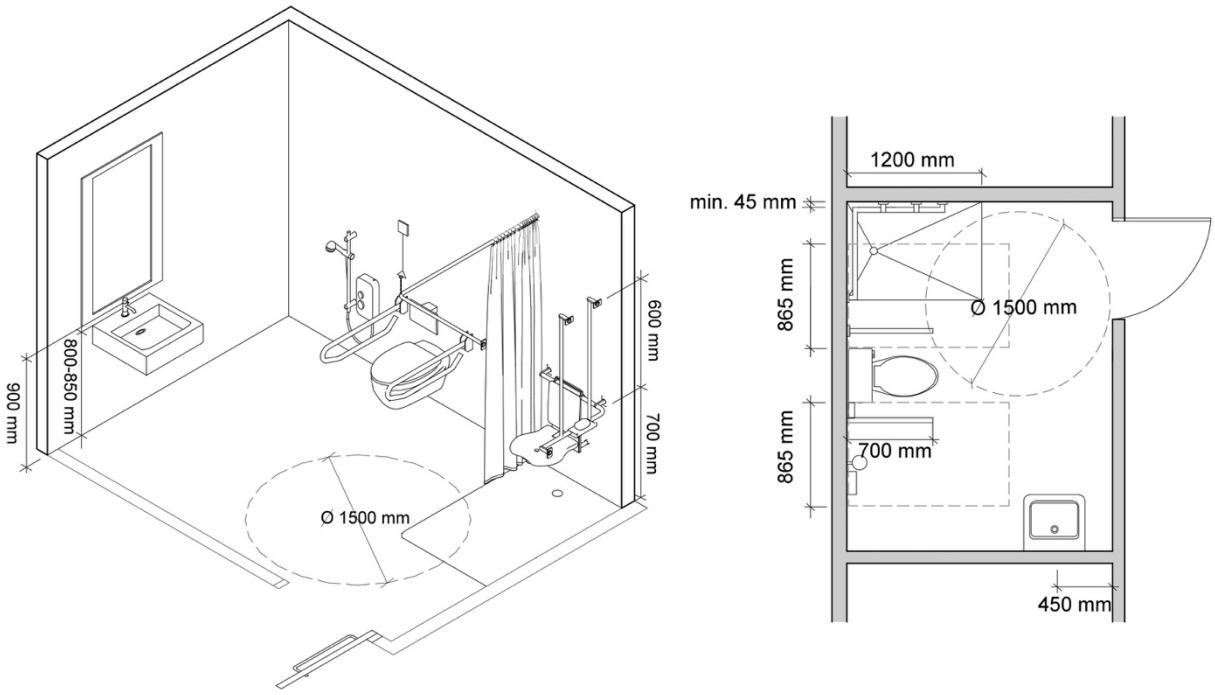


Figure 106. Example of toilet with approaching space in both sides and roll-in shower

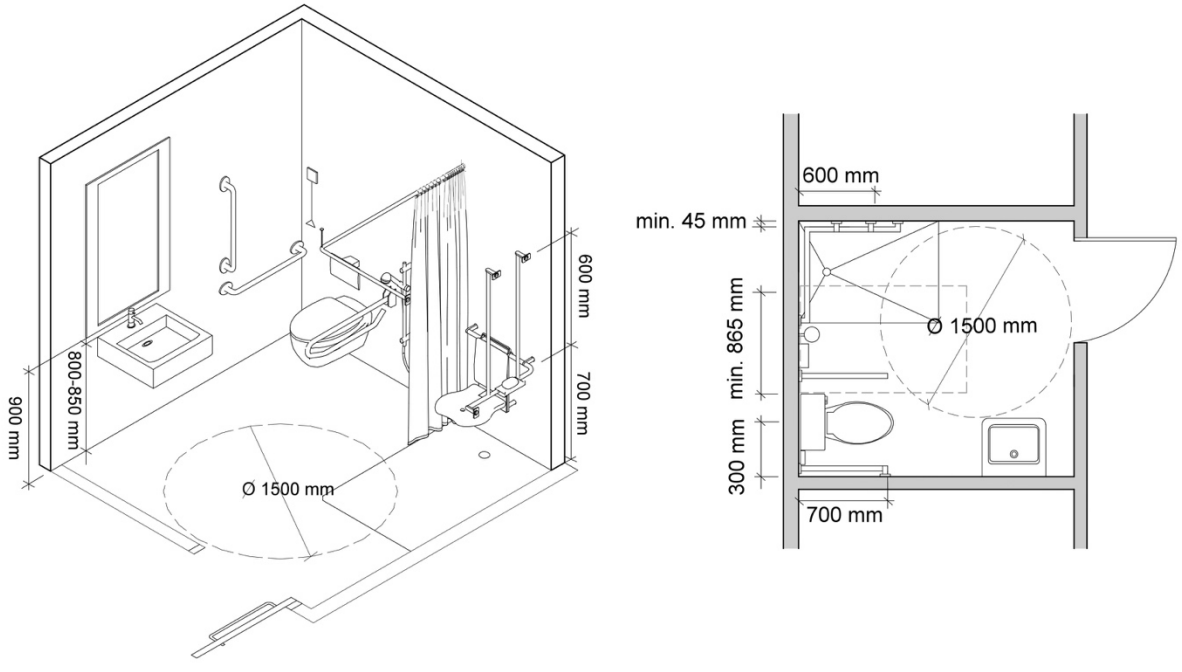


Figure 107. Example of toilet with approaching space in one side and roll-in shower

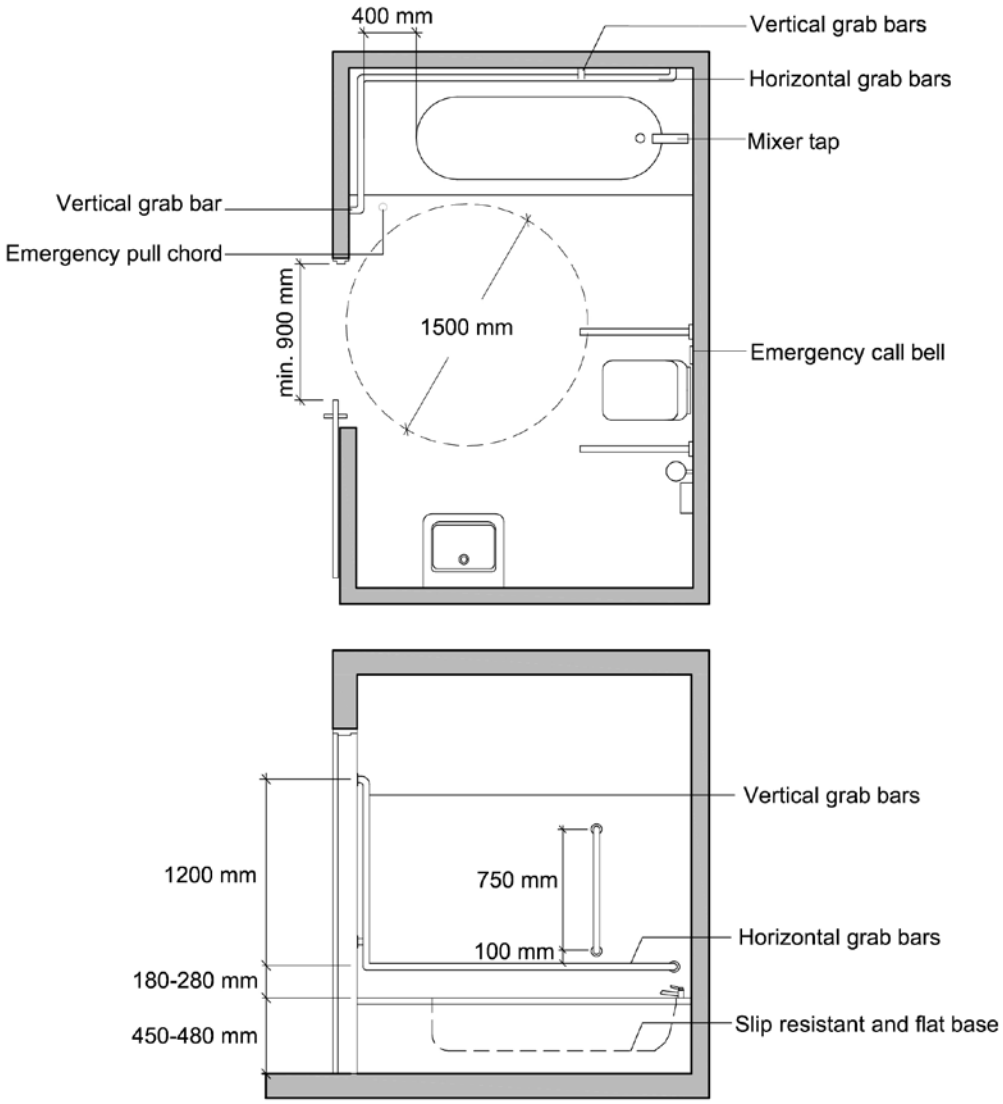


Figure 108. Accessible bathtub with bars' dimensions

7.18. Dining rooms

Dining rooms shall fulfil the following requirements:

1. An accessible path of travel shall be provided to at least half of the dining areas.
2. Illumination of at least 100 lux shall be provided in at least 10% of the dining room.
3. Sound reduction materials should be incorporated into dining rooms.
4. The floors, and walls shall be made of a smooth & washable material that is easily cleaned and non-absorbent.
5. At least 10% of the tables shall comply with the dimensional criteria for tables described in section 5.20 and shall be connected with an accessible path. At least 900 mm of clear width shall be provided to reach of these tables.
6. Where self-service aisles or tables are provided, all food, condiments and cutlery shall be located between 900 mm and 1200 mm from the floor.
7. A clear passage of a minimum of 900 mm should be provided to all food service areas, condiments and utensils.
8. Space for children strollers and mobility devices shall be provided.
9. At least 10% of seats shall be movable.

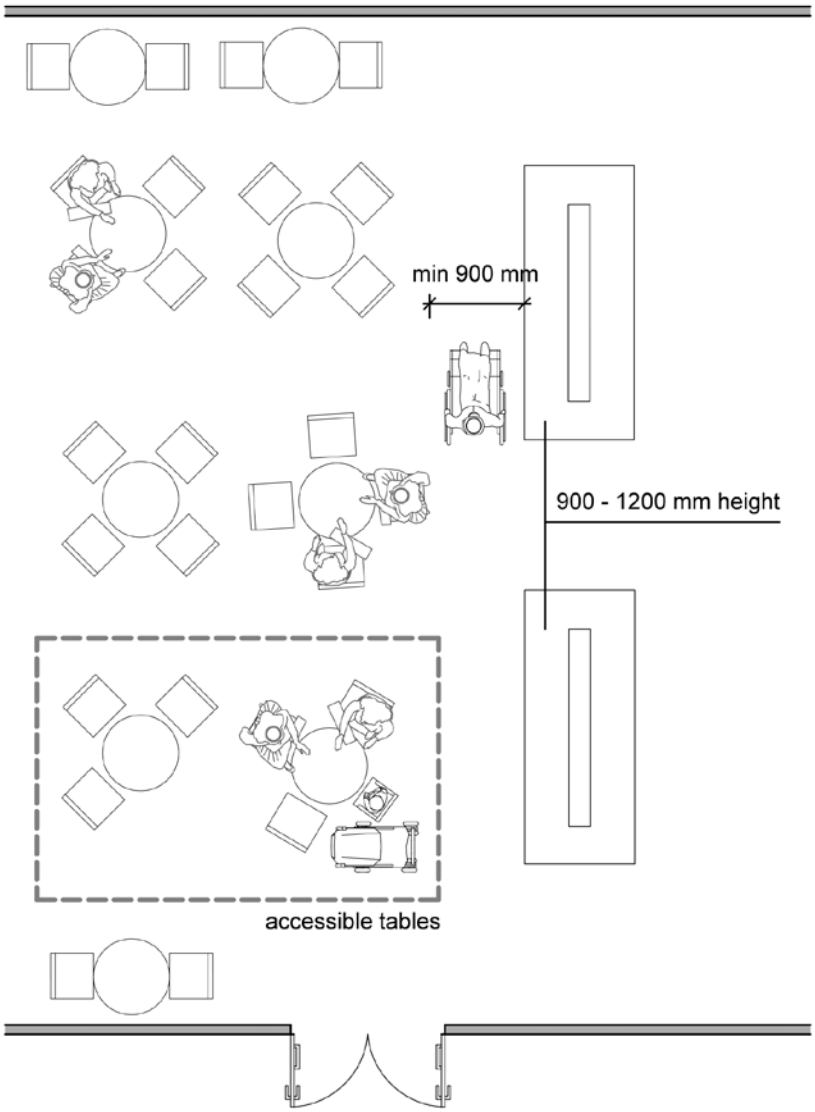


Figure 109. Example of an accessible dining room

7.19. Housing

7.19.1. Required accessibility in existing residential buildings

Multi-family buildings must have an accessible path for access to each of the residences and between each of the residences.

There shall be a level entrance to all residences.

In residential buildings, a video doorbell shall be provided.

Multi-storey buildings shall have an elevator to create an accessible path from the outside to the entrance of each residence.

7.19.2. Required accessibility in new housing buildings

The following dimensions and characteristics provides better quality of life for tenants and allow a low-cost conversion of any house to be accessible in the future if one of the tenants or family members has a disability.

These dimensions are compulsory for all new housing buildings:

1. The entrance and internals doors shall provide a free passage of at least 900 mm.
2. Wall mounted switches shall be between 900 mm and 1200 mm and be located a minimum of 600 mm from any corner.
3. Corridor width shall be at least 1000 mm and 1500 mm in direction changes.
4. Manoeuvring space inside kitchen, bathroom, living room and one bedroom shall be at least 1200 mm free of door openings and fixed elements, and 1500 mm where turning is required.
5. The bathroom shall contain at least a bathtub or roll-in shower, sink and toilet.
6. In houses with more than one level, at least the kitchen, one bathroom and one living room or bedroom shall be accessible from the entrance door.
7. Interior stairs width shall be at least 1100 mm wide.

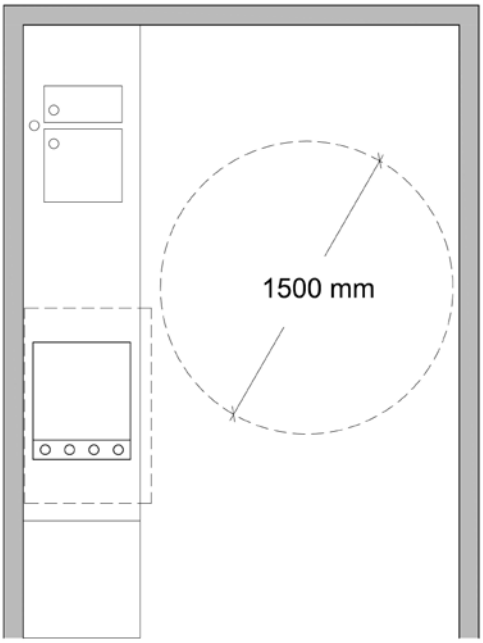


Figure 110. Manoeuvring space in an accessible level kitchen

In villas and apartments of two or more levels a vertical platform is allowed. See section 5.10.1.

7.20. Health and social care buildings

Health and social care buildings shall meet all requirements of this Code.

Large corridors and elevators in health and social care buildings shall fulfil the following requirements:

1. Besides the general requirements mentioned in the different sections of this Code regarding corridors and elevators, health and social care buildings' horizontal and vertical circulation should be designed to ease the movement of beds and gurneys.

2. This is particularly important at changes of directions and at access to rooms from corridors, and in the dimensions of the elevator cabins. Elevator cabins with doors on adjacent sides should be avoided.

3. Corridors shall have handrails in all their lengths, according to the criteria set in this Code.

4. Protected sections by firewalls shall be provided according to Dubai Civil Defence regulations:

- In order to ensure a safe evacuation of buildings in case of fire, different sectors shall be separated with fire protection walls and doors.
- These sectors shall be designed with a sufficient fire resistance time, to keep the users safe, while fire is extinguished or to evacuate the building.

5. All patient rooms in health and care buildings shall have an accessible toilet with shower.
6. At least one accessible toilet room for each gender shall be provided in each department or area.

7.21. Recreation buildings and amusement parks

In recreation buildings and amusements parks, the following requirements shall be fulfilled:

1. Queue management shall be implemented:
    - When queuing is required to enter or use a facility, a priority line shall be provided for people with functional limitations.
    - Moreover, when people are standing in line, signs and sound announcements should inform them of the expected time to enter in the facility. Seating places shall be provided for people that cannot stand in a line. The number of seats will be defined according to the expected age and number of users.
2. When the nature of the facility requires seating places, an adequate number of accessible seating spaces shall be provided. These seating spaces have to follow the requirements of auditorium seating spaces in section 7.13.
3. Amusement facilities should ensure the equal use for a maximum number of people to the highest extent possible.
4. In the case of providing different amusement facilities in the same recreational building or amusement park, the majority of them shall be accessible for a large number of users.
5. Depending on the facility dimensions, wheelchairs or other personal mobility devices shall be available at the users' disposal.

7.22. Cultural buildings, libraries, museums and exhibition rooms

Cultural building, libraries, museums and exhibitions shall comply with all components of this Code.

The content in cultural buildings, libraries, museums and exhibition rooms shall fulfil the following requirements:

1. Lights, smells, sounds, colours and other multi-sensorial elements can be used to assist visitors of cultural buildings, museums and exhibition rooms as different users can perceive information through different senses.

2. The exhibitions should be designed where exploration, discovery and enjoyment of different sensorial experiences are provided.

3. In museums, exhibition rooms or in any cultural buildings where an exhibition is displayed, audio guides should be provided to explain, guide and assist the visitor during the exhibition and induction loops shall be provided when acoustic information is provided.

4. Displays should visible at a maximum height of 1000 mm.

5. Signage shall be at least 14 pt and well illuminated.

7.23. Theatres, cinemas, conference rooms and auditoriums

Theatres, cinemas, conference rooms and auditoriums shall fulfil the following requirements:

1. In the case of performances containing audio (cinema, opera, conferences, etc.), subtitles and/or sign language should be provided for people with hearing impairments.

2. In the case where the performance contains action (movies, theatre, opera, etc.), an audio description system should be provided for people with visual impairments.

3. Accessible toilets should be located close to seating areas and in no case further than 150 meters.

7.24. Public administration buildings

The area of the reception desk where the induction loop is installed shall be marked with the hearing access logo. As shown in the drawing below the sign consists of an ear with a line through it, accompanied by a ‘T’ in the lower right side of the sign.

Figure 111. Induction loop sign

7.25. Education buildings

Education buildings shall meet all requirements of this Code.

Education buildings shall fulfil the following requirements:

1. In school entrances an accessible path segregated from buses circulation shall be provided.

2. There should be an accessible path from the bus yard to the school entrance.

3. Seats with different characteristics should be provided dependent on the students’ needs. Space flexibility shall be ensured to guarantee that places for wheelchair users, left handed users, people of big body shapes and mobility, breathing or communication accessories can be provided.

4. Seats at desks shall be removable and the dimensions of the table shall allow the use of people using wheelchairs. Seats and tables shall follow the requirements and dimensions of section 5.20.

5. In children's schools and nurseries toilets and furniture with the appropriate height shall be provided.

6. Students using assistive devices such as computers or optical character recognition systems, among others, need electrical plugs near their seats. These electrical plugs should be provided as close as possible to the person's seat and the cables between the device and the plug shall not obstruct the corridors.

7. The classrooms shall be well illuminated.

7.26. Garage and parking buildings

Garage and parking buildings shall fulfil the following requirements:

1. Wayfinding signs shall indicate the accessible parking places.

2. Wayfinding signs shall be provided at any directional change option inside the parking, and should use the symbols and colours of each area and floor to help people find their cars, toilets and exits.

3. Wayfinding and signage shall follow the communication accessibility criteria of section D.

4. Floor painting contrasted 30 points of LRV with the vehicles path shall be provided to identify the pedestrian paths.

5. In large parking areas with several pedestrian exits, accessible parking places should be distributed near each exit. The distribution of accessible parking has to ensure that all accessible parking spaces are not located in the same area and has to guarantee short distances from the parking spaces to the pedestrian exits.

6. Wayfinding signs shall indicate the accessible parking places.

7. Accessible parking places shall follow the criteria of section 6.13.

7.27. Industries and laboratories

All industries and laboratory facilities where people with disabilities may work shall be accessible and the working places adapted individually to each employee with a functional limitation.

Work places must ensure that there are no disadvantages for people with disabilities in the course of performing their daily duties.

7.28. Undefined use buildings

When designing a new building or part of a building with an undefined final use, the architect or engineer should take into account the possible future use, possible distribution changes or possible partitions of the building, guaranteeing that in all cases accessibility requirements will be followed.

In addition to basic accessibility characteristics, building spaces should have the possibility to be easily adapted to the needs of different users during the building's lifespan, particularly housing.

7.29. Facilities for service animals

The following recommendations should be considered in places where there is a possibility of people with service animals:

1. In theatres, cinemas, conference rooms, auditoriums and all the facilities where people are expected to sit or wait it is recommended that some seats should have a space for a service animal near their owner.

2. In large buildings, such as shopping malls, leisure or entertainment facilities, and mass transport facilities it is recommended to provide a relief facility for assistance animals.

3. The relief areas shall not be directly connected to spaces used by persons but shall be connected to the accessible path of travel.

4. The relief facility should have a minimum dimension of 3000 mm x 4000 mm and should be surrounded by a 1200 mm high fence. The entrance should be easy to operate and to find by a person with visual impairment. Moreover, the surface should be concrete with a smooth finish to assist in cleaning, with a cross fall of 3,5 % to assist in drainage.

5. It is recommended to provide a waste bin and a supply of plastic bags close to the entrance.

6. The service animal facility should have an accessible sign saying "For Service Animals only".

The facility should be regularly cleaned and well maintained.

7.30. Accessible emergency provisions

Persons with disabilities shall be provided with an equal level of emergency protection as others.

In addition to the accessibility provisions for buildings required in this Code, the requirements for emergency and egress issued by Civil Defence shall be fulfilled.

GOVERNMENT OF DUBAI

Section C

Accessible Transport

Section C – Accessible Transport

8. Planning before the trip

Trip planning is the first step in the travel chain. Before starting a trip, a traveller needs to acquire all the necessary information from origin (O) to destination (D) in order to complete a timely, convenient, comfortable and safe journey in three stages:

- Before starting a trip
- During the trip, and
- Ending the trip (exit and arrival)

To meet the requirements of persons with functional limitations a variety of information and communication shall be conveyed in various media: print in text or symbols, audio, visual, haptic, touch and data conversion formats.

The necessary information includes identifying where to obtain information, reading the information, identifying the travel route and mode of transport, the frequency and level of service, the number of transfers encountered, the costs and method of fare payment, baggage handling, security screening, and landmark identification.

Travel information is essential for all travellers, in particular for persons with vision, hearing and intellectual disabilities. Alternative formats in audio, visual and tactile are required to address their requirements.

8.1. Accessible websites

All websites that provide information to travellers shall comply with the international web access AA level of W3C standards.

8.2. Apps for accessibility

1. Apps shall be easily usable by residents and visitors, for persons who are blind in audio and tactile formats, with font enlargement for vision impaired; in text format for persons who are deaf/hearing impaired, and in audio, symbol and text formats for persons with intellectual impairments.

2. All applications that provide information to travellers shall comply with the international web access AA level of W3C standards.

3. All applications shall be available in different languages and symbols.

4. Print shall be in large 14 pt sans serif fonts, and in Braille if required.

5. Telephones shall be accessible in audio, and be compatible with hearing aids. Text options should be available for people who are deaf.

8.3. Maps

1. Maps shall be in high colour contrast, non-glare, with a minimum of 14 pt fonts and sans serif characters.

2. Red and green colours shall be avoided.

8.4. Terms of carriage

Terms of carriage should include:

1. Size of parcel/luggage allowed on-board vehicles:

    - First piece: Length 810 mm; Width 580 mm; Height 300 mm,

    - Second piece: Length 550 mm; Width 380 mm; Height 200 mm.

2. Service animals and comfort animals are allowed.

3. Allergy considerations shall be observed.

4. Non-smoking policy shall be applied in all vehicles and stations.

5. No food consumption is allowed in vehicles.

6. Use of cell phone and other electronic devices (MP3, etc.) on-board vehicles and in stations can be used only if the privacy of fellow passengers is observed.

8.5. Fare structure & ticketing

1. The universal accessible fare structure shall be based on a two for one fare policy, and discount rates for travellers with disabilities.

2. The provider shall issue a certificate on eligibility.

3. The same discount rates shall apply to foreign visitors with disabilities.

4. A person should be able to purchase all fare products using distance based media (e.g. web services).

8.6. During the trip – in station

In station information is important for all travellers in order to be able to navigate in a seamless trip chain. The information required includes wayfinding, counter services, the time of day, the identification of vehicles, the arrival and departure times at stops, the location of washrooms, food services and the ticketing systems.

8.6.1. Signage

Signage shall follow the provisions for wayfinding, Section D of this Code.

8.6.2. Ticketing & fare structure information

1. Automatic ticketing machines shall be accessible for persons using wheelchairs and mobility scooters, with all operating controls at a maximum height of 1200 mm from the floor. Instructions shall be in audio (several languages), text, symbol and pictogram display with tactile information for the location and identification of controls. The ticket itself shall be printed in large print.

2. At least one staffed ticketing counters shall be at a height of 780 mm from the floor.

3. At least one counter should be equipped with an induction loop.

4. Fare structure information shall be displayed in large fonts, minimum 14 point sans serif on printed material, indicating the two for one policy, discounts for visitors with disabilities, their attendants, and obese travellers.

8.6.3. Seating

Waiting seating shall be provided according to the provisions of Section B of this Code.

8.6.4. Emergencies and evacuations

Emergency and evacuation alarms shall be available for persons who are blind in audio format; and for persons who are deaf or hard of hearing in visual formats, e.g. strobe lights and electronic text. Information on evacuation procedures should be posted in large print. Additionally, information provided on evacuation procedures should be posted.

8.6.5. Staff assistance and help line

Staff assistance shall be available. There is no substitute for staff presence to assist passengers in need of help or to intervene in crisis situations.

8.6.6. Voice guidance systems

Voice guidance systems should be available in stations.

8.7. During the trip - In vehicle information

Information in visual and audio formats is required for on-board stop announcements, direction of travel, the destination and emergency instructions in vehicles

8.7.1. Next stop announcements

1. Call buttons in high contrast colours and location shall be provided in all vehicles.
2. Next stop announcements shall be provided in audio.
3. Text format in Arabic and English language should be used.
4. Visual information shall be left on the screen for at least twice the normal reading rate. A display time of 10 to 20 seconds shall be used.
    - Navigation of electronic information shall be clear and consistent.
    - Icons: Icons shall be recognizable by all expected users. International symbols shall be used where possible.
5. Display Time/Scroll Rate on Electronic Media: Text shall be displayed in a fixed manner if possible. If scrolling is used, information shall be left on the screen for at least twice the normal reading time. Since a fixed time of about 10 seconds is likely to avoid confusion, a display time of 10 to 20 seconds shall be used.
6. Flicker Rate Pages shall be designed to avoid screen flickering of a frequency greater than 2 Hz and lower than 55 Hz. Page elements that flicker at a rate of 2 to 55 cycles per second shall not be used in order to minimize the risk of optically induced seizures.
7. Audible messages should be adjusted to 15 dB(A) above surrounding noise level.
    - Peak noise criteria shall be no more than 40 PNC.
    - Signal to noise ratio shall be a minimum of +10 dB (S/N).

- The reverberation time shall be as low as possible, preferably less than 1 second.
- Noise level shall not exceed 72 dB(A) to avoid speech interference.
- Sound frequencies shall be between 500 and 3000 Hz, as the ear is most sensitive in this range.

8. The announcement - audio and text – shall be capable of being received on one's cell phone.

9. An inductive loop system should transmit all audio information, and a sign posted.

8.7.2. Direction of travel

A dynamic visual display shall be provided in order to allow one to follow the direction of travel with station identification by name and in number.

8.7.3. Emergencies and evacuations

Emergency and evacuation instructions shall be posted in vehicles in 14pt visual formats both in Arabic and English, and be capable of being received on personal communication devices, such as mobile phones, tablets, etc.

Information should include:

- The location of fire extinguisher.
- How to use the emergency tools (like axe to break the glass).
- How to manually open the door from the inside and outside.
- How to proceed in an emergency.
- How to proceed in an emergency for people who require assistance.
- Accessible egress routes shall be posted.

8.8. Exiting to destination

Information required includes the location of exits, time, location, instructions for transfer and exiting, information kiosks, directional signage, baggage retrieval, security screening, maps and landmarks.

8.8.1. Signage

Directional signage shall be provided to exits, showing streets, buildings, and transfers to other modes, with distance markers on walking distance in meters.

8.8.2. Baggage

Directional signage to baggage retrieval, if applicable, shall be provided.

8.8.3. Staff assistance & help line

1. A Help Line/post shall be available in shelters and stations.

9. Urban buses

Accessible urban buses are vehicles with a Gross Vehicle Weight Rating (GVWR) of at least 7000 kg and are designed to provide transit service to accommodate both ambulatory passengers and those using mobility aids. Urban buses in Dubai have a partial low floor. The Road and Transport Authority, RTA, in Dubai uses single level buses and coaches measuring from 10 to 13 meters in length, articulated buses up to 18 meters long width and bi-level (double decker) buses 14 meters long. Each bus has an on-board fare validation system whereby a passenger taps the Nol card upon entering and exiting. All buses are equipped with a manual ramp at the centre door and are capable of kneeling. Buses use a rear-facing wheelchair securement system. Capacities vary depending on the seating configuration and layout design.

9.1. Considerations

Step height and door widths on entering an urban bus are the biggest issues for children, seniors, parents with strollers, persons with baggage and persons with mobility impairments. In Dubai, due to social cultural consideration, there is a need to designate sections for family and gender seating within the vehicle. Passengers using a wheelchair require boarding and securement systems. Persons with functional limitations, sensory and/or cognitive disabilities as well as frail seniors require priority seating in close proximity to the driver for assistance and ease to disembark. Next-stop announcements, transfer information near the front door, and emergency evacuation instructions shall be provided in multiple formats throughout the bus to make the trip safer, more secure and stress-free for all passengers.

Education, sensitization, and training of both operators and passengers on their respective rights and responsibilities will contribute to making the Dubai transport system a universally accessible and socially responsible model.

Access to a bus shall be universal and apply to the dimensions and manoeuvring characteristics of all persons using mobility aids, luggage, prams/ strollers, service animals, persons with vision, hearing and cognitive disabilities.

9.2. Boarding

9.2.1. Doors

1. The door opening control shall be placed on the outside of the accessible door at a height of 1200 mm from the bus floor, and be operated automatically or by touch.

2. Clear horizontal door openings shall be a minimum of 900 mm, to accommodate persons with powered and non-powered mobility aids, persons with tandem prams, and persons with large luggage. This applies to single and multiple leaf doors.

3. Handrails with contrasting colors shall be positioned on each side of the door inside the bus when the door is open, without interfering with the clear width of 850 mm of the door. Doors shall have color contrast with their surroundings. Doors shall automatically open when detecting a person or obstacle in the doorway.

4. Audible warnings shall be provided to announce the opening and closing of vehicle doors, which will be especially helpful for passengers who are blind or have reduced vision. All passengers benefit from this assistance.

9.2.2. Ramp

A ramp shall be positioned at the door for the passengers with functional limitations and those using a wheelchair in order to board/alight the bus.

If the bus would be provided with power operated ramps (sliding or swing-out) they shall comply with the following requirements:

1. Have interlock devices (only operable when vehicle brakes are applied), emergency override, and supervised operation by the driver.

2. If the ramp is powered, it shall be operated by the driver from his position.

3. An audio warning signal shall be applied when deploying and retrieving the ramp.

4. Ramps shall have a maximum gradient of 1:12 measured from a level sidewalk surface to the ramp's intersection with the floor of the bus.

5. The ramp width shall be a minimum of 900 mm.

6. The payload shall be 350 kg.

7. The ramp shall have an anti-slip surface. The ramp shall have a raised lip of at least 50 mm along its sides to prevent people from wheeling off the ramp.

9.2.3. Parking

Driver shall park the bus close to the curb not to exceed 700 mm, to enable the proper deployment of the ramp.

9.3. Onboard circulations

9.3.1. Aisle width

The aisle width leading to a wheelchair spaces throughout the low floor sections of the bus shall be a minimum of 850 mm clear of protruding obstacles.

9.3.2. Wheelchair maneuvering spaces

1. Pathways for mobility devices, from the entrance door to the wheelchair space shall be a minimum of 850 mm wide.

2. A clear circle of 1500 mm shall be provided for the person using the wheelchair to maneuver in and out of the wheelchair space.

9.3.3. Handholds/ stanchions

1. Interior handrails and stanchions shall be located to permit sufficient turning and maneuvering space for people using mobility devices to reach a securement location from the lift or ramp. These handrails and stanchions shall allow for safe boarding and alighting, provide seating and standing assistance, and allow for easy circulation throughout the vehicle for persons with functional limitations.

2. To assist in the boarding process, persons with functional limitations shall be able to grasp vertical handrails from outside the vehicle to assist the boarding process at a height of 950 mm to 1200 mm.

3. Handrails shall be between 30 mm and 40 mm in diameter, have corner radii of 3 mm or greater, and have a clearance for knuckles of at least 35 mm from the nearest surface.

4. Stanchions shall be located in such a way as to not interfere or impede wheelchair footrests.

9.3.4. Floor surfaces

1. Floor surfaces shall be covered with non-slip, non-reflective material.

2. The floor slipperiness shall follow the parameters defined in Section B.

3. Floor pattern designs can be used for directional guidance or for identifying designated space e.g. mobility devices and luggage placement areas.

9.3.5. Onboard fare payment

Onboard fare validation shall be by tapping the Nol card at the validation device when entering and exiting the bus. The validation device shall be positioned at all entrance and exit doors at a height not exceeding 1200 mm.

9.4. Seating

9.4.1. Wheelchair spaces

1. Each bus shall have at least two positions to accommodate persons using a wheelchair/scooter.

2. Each accessible wheelchair position shall have a clear length along the longitudinal axis of the bus of 1500 mm and a clear width of 865 mm.

3. Side facing flip seats along the bus wall in the wheelchair space can be used when no passenger using a wheelchair is occupying the location. The seats shall be of the bench type to accommodate obese persons. The seats shall always be in the up position and should not interfere with the clear width for the person using a wheelchair of 865 mm. These seats shall not be designated as Priority seats.

9.4.2. Securements

1. Each wheelchair space shall be fitted with a rear-facing system, where the wheelchair and the occupant face the rear of the vehicle. The rear-facing system shall be provided with a padded back panel with the following dimensions:

    - Height from floor to bottom edge: 350–480 mm
    - Height from floor to top edge: 1300 mm min
    - Width: between 250 mm and 400 mm
    - Back panel shall withstand a decelerating force of 3 g.

2. The rear-facing securement shall have a pivoting aisle arm, which is also laterally adjustable to accommodate people using different wheelchair types and prevent them from moving longitudinally and laterally.

3. The vehicle shall be fitted with a horizontal handrail along the longitudinal side of 750 mm – 1000 mm from the floor, not to exceed the wheelchair space by more than 90 mm, and have a diameter of 30 mm – 40 mm with a clear knuckle space of 35 mm between any part of the vehicle and the handrail.

4. The wheelchair space shall have a call button to alert the driver, mounted on the bus wall or on the horizontal grab bar at a height of 750 mm – 1000 mm from the floor. The call button shall be clearly labeled and provided in tactile format, high contrasted characters and be operated by touch.

5. The driver shall be trained to operate the securement system and the ramp.

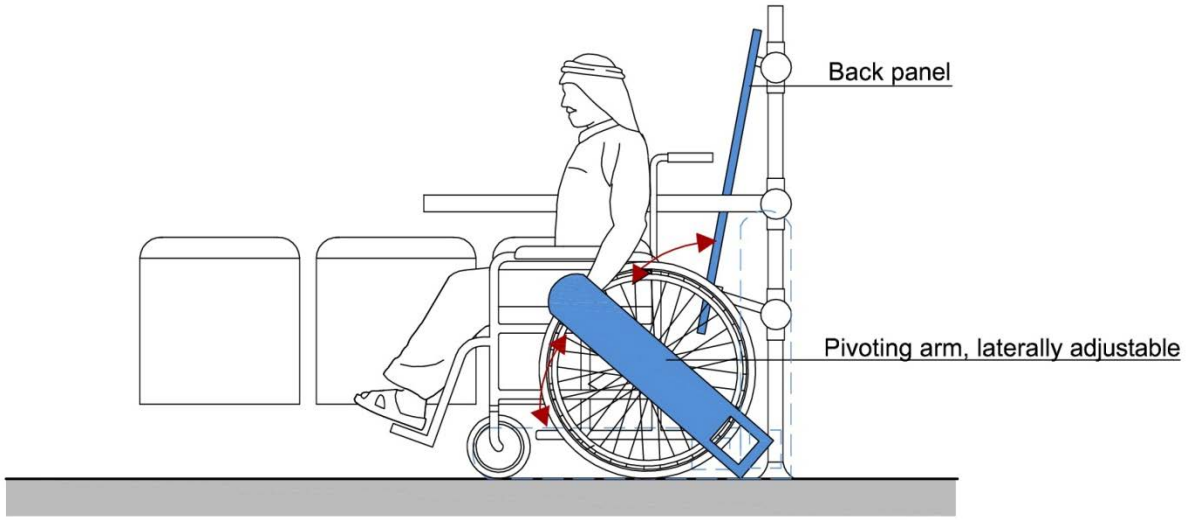


Figure 112. Rear-facing securement with pivoting aisle arm - securement technology for low g transportation in buses and rail

9.4.3. Stop announcements

For persons in seats that face the rear of the bus, a Next Stop text display shall be provided to be visible from their position.

9.4.4. Priority seating

1. At least one priority seat shall be located close to the driver and entrance door. The seats shall be reserved for passengers who have mobility, sensory or cognitive disabilities, and seniors. Hip-to-knee room shall be no less than 675 mm in front of the seat in a forward-facing position.

2. Each priority seat and wheelchair space shall be equipped with stanchions, handholds, or handrails.

3. Each bus shall post sign(s) to indicate that certain seats are designated priority seats for seniors and persons with functional limitations. Other passengers shall

make such seats available to those who wish to use them. Priority seats shall not be located in the area of the wheelchair space.

4. A sign following the criteria of Section D shall inform about seats priority.

9.4.5. Family and gender seating

1. Appropriate separate and designated seating for family and gender separation shall be provided according to local customs. Clear signage shall indicate the location(s).

2. Pregnant women, mothers with children, seniors and female passengers who have mobility, sensory or cognitive disabilities shall have the option of being accommodated separately in the section reserved for family seating.

9.4.6. Seat surfaces

1. Sitting surfaces, especially those of aisle-facing seats, shall be covered by materials with a coefficient of friction sufficient to prevent passengers from sliding back and forth during sudden starts and stops.

2. The seat profile shall be ergonomically contoured. Bench seats shall be provided for large/obese persons without armrests between the seats.

9.5. Illumination, lighting, signage

9.5.1. Lighting

1. Adequate lighting shall be provided for those with reduced vision, and for the safety and security of all passengers.

2. When the vehicle door is open, 30 lux of illumination as measured on the step tread or ramp platform shall be provided.

3. All vehicle doorways shall have outside lights that illuminate when the door is open and provide at least 10 lux of illumination on the street surface for a distance of 1000 mm perpendicular to the bottom step tread or ramp outer edge. These light(s) shall be shielded to protect the eyes of entering and exiting passengers.

9.5.2. Visual elements

1. Reflectance contrast of at least 30 points LRV shall be used for signage and for station features such as railings, turnstiles, wide fare gates, tactile warnings at bus

entry gates, folding seats, and perch supports. Specific colors shall be selected for persons who are colorblind and can only see red and green as gray.

2. Uniform signage shall be provided for everyone, including persons with cognitive impairments, visitors, tourists, and others who may not be able to read text.

9.5.3. Colour coding

The number of colors should be kept down to 5 and the number of datum per color equal. The colors should be arranged so that information arranged adjacently is always different colors.

Color shall be used consistently for the same functions.

9.6. Onboard passenger information

9.6.1. Alternative formats

Alternative audio and text display and inductive loop systems for information shall be used for next stop announcements, transfers and connections to address the requirements of seniors, deaf/hard of hearing, blind/vision and persons with cognitive impairments.

Noise level shall not exceed 70dB(A) to avoid hearing interference.

For foreigners who do not speak the local language(s), multi-language announcements, and symbols/pictograms shall be used.

Advanced technologies shall be considered to interface between driver announcements and personal communication devices (e.g. phones/tablets) via Bluetooth or similar systems for real time audio and text display.

9.6.2. Emergencies and evacuations

Clearly posted evacuation and emergency warnings and instruction, in large print, shall be provided in the vehicle.

Safety announcements shall be made in visual and audio format in case of emergencies and evacuations.

Staff training and drills shall be provided about emergency and evacuation situations to assist persons with mobility and sensory impairments.

9.6.3. Bus arrival systems

The number of the bus arriving and the route shall be shown in real time on monitors at bus stations, shelters and stops.

The number of the bus arriving and the route should be available on Bluetooth on a personal phone with audio.

9.7. Service animals and allergens

9.7.1. Service animals

Space shall be provided for service animals out of the pedestrian path but appropriately close to their owner.

9.7.2. Food, smoking & allergens

No food or drink shall be allowed in the urban bus.

Smoking is forbidden in all buses.

Cleaning products should not leave a residual odor.

Allergy considerations shall be observed.

In the event of a passenger identifying his/her allergies to the driver, he should make an announcement to the other passengers to observe the allergy condition. He should than set up a buffer zone.

9.8. Group travel

9.8.1. Group vehicles

A single level coach shall be equipped with the following features (Fig. 16):

Ramps at service doors.

Side facing flip seats on both sides of the low floor sections of the bus.

Four (4) rear-facing wheelchair securement systems, two (2) on each side.

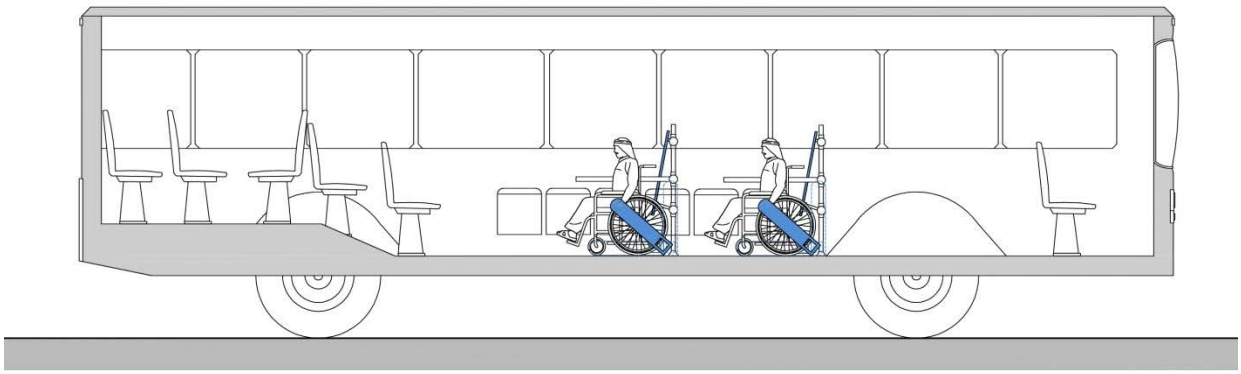


Figure 113. Bus layout for group travel with four wheelchair positions, two on each side

9.9. Vehicle infrastructure interfaces

9.10. Stops

As a minimum, stop locations shall have a level paved, slip-resistant surface with a signpost indicating the vehicle route. The front edge of the paved surface shall have a bright colored strip. If not leveled with the road, a curb cut shall provide access for disabled and elderly persons. Stops shall include a bench for seating. A large print schedule, route map, fares, and Help Line number shall be attached to the post. Stops shall be located in an area with cover/shade to protect against sun and heat.

9.10.1. Shelter

Bus shelters shall consist of a minimum sheltered structure with a roof and protected sides. The platform surface shall be flat, level, slip-resistant and solid.

A bench shall provide seating with provisions for obese persons and pregnant women without armrests in between seats, but with armrests at both ends of the bench. A space for a wheelchair/scooter shall be 865 mm x 1400 mm to enter, turn and exit.

The sidewalk shall have a minimum depth of 2700 mm from the curb for a wheelchair/scooter to board a vehicle over a ramp.

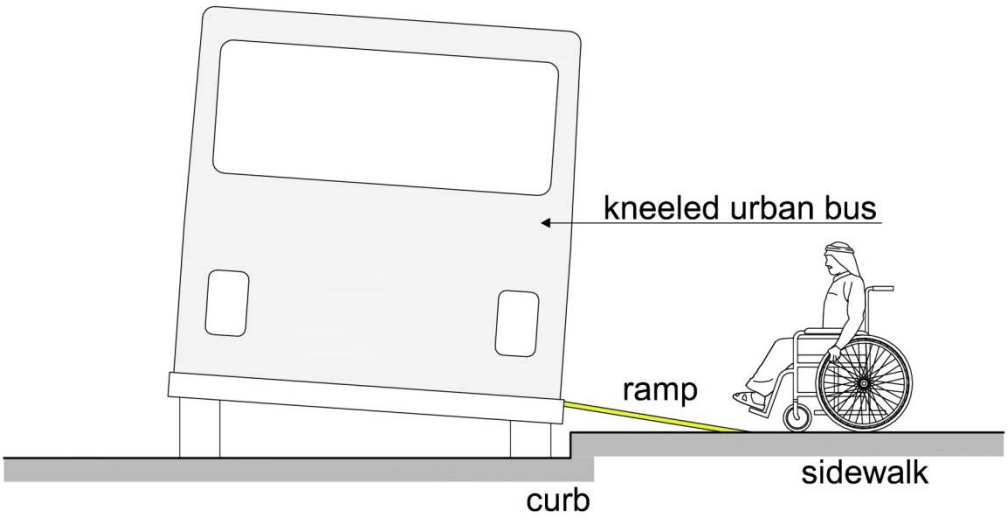


Figure 114. Ramp from curb to bus with landings

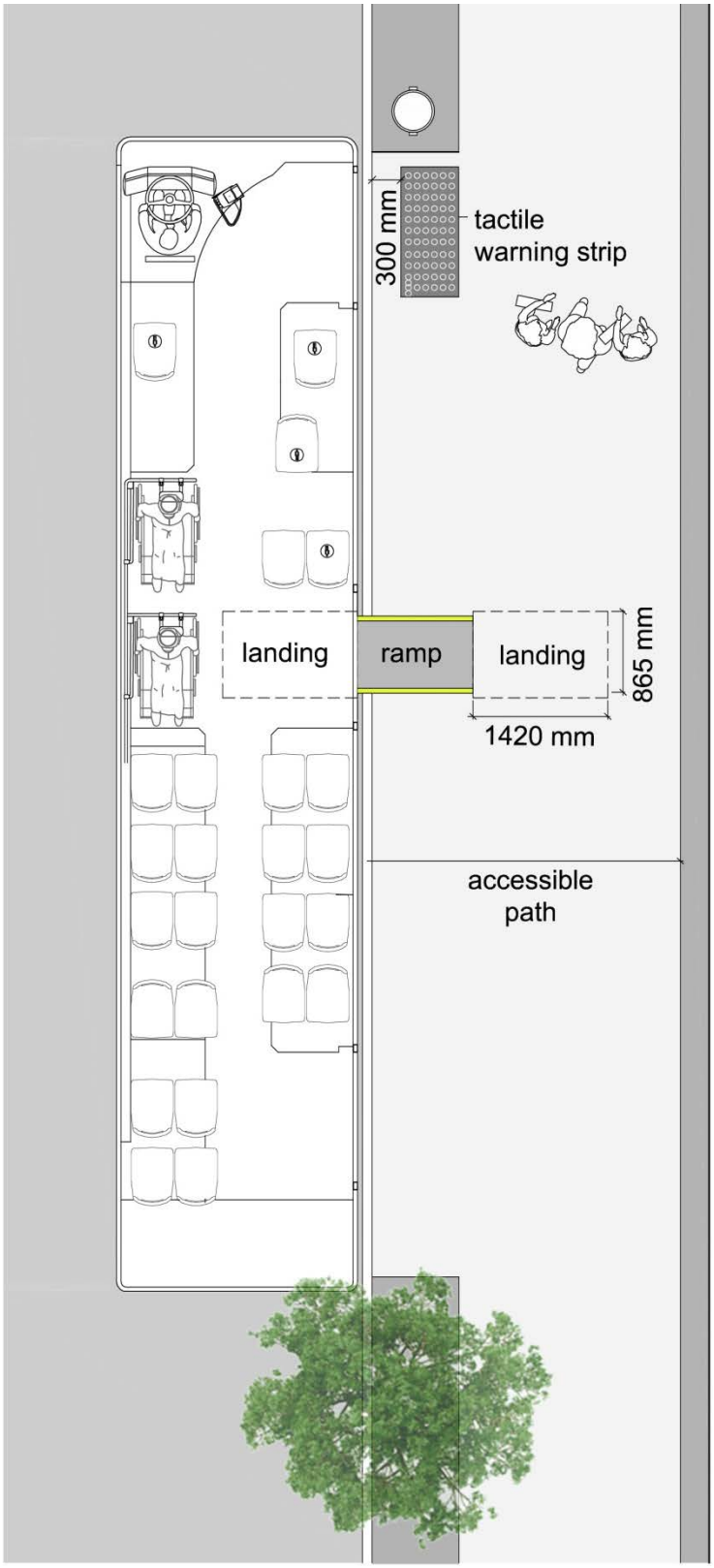


Figure 115. Bus interface with infrastructure

Along the front edge of the platform shall be a high contrast color-warning strip for persons who are blind or have low vision.

A large print schedule and route map shall be shown.

Transparent sides/windows shall be provided for safety during day times, as well as for safety at night with interior and exterior lighting.

A “Help Line” phone shall be available to provide information and help. The help line phone shall be at a maximum height of 1100 mm, be color contrasted and should have tactile and Braille controls. There should be an alternative means of communication for people who are deaf in the form of a visual display.

10. Metro Trains

10.1. Considerations

Automatic door closings are the biggest issues for children, seniors, and parents with strollers, persons with baggage and persons with mobility impairments, in particular at rush hour with large crowds entering and exiting the cars.

In Dubai, due to social cultural consideration, there is a need to designate sections for family and gender seating within the vehicle or in separate cars.

Next-stop announcements, a dynamic visual route display and announcements in audio and text of the station number would improve information for visitors not familiar with the local environments.

Consideration should be given to avoiding known allergens. Education, sensitization, and training of both operators and passengers on their respective rights and responsibilities will contribute to making the Dubai transport system a universally accessible and socially responsible model.

Access to a Metro shall be universal and apply to the dimensions and maneuvering characteristics of all persons using mobility aids, luggage, prams/ strollers, service animals, persons with vision, hearing and cognitive and other disabilities.

10.2. Boarding and alighting

10.2.1. Gaps of train

There shall not be any significant gaps between the platform and the train to hinder passengers using mobility devices from boarding and disembarking.

The low floor train car shall be level with the platform.

A horizontal gap between the train and the platform not to exceed 50 mm.
Vertical gap not to exceed 15 mm.

10.2.2. Doors

Doors leading into cars with designated seats or designated wheelchair space shall have an obstacle free minimum clearance of 900 mm.

All doors shall be automatic. When a door is opening or closing there shall be an acoustic and visual warning signal to alert/inform passengers.

When the car door is enabled for opening, a signal shall be given that is clearly visible and audible to persons inside and outside the train. This acoustic alert signal shall sound for a minimum of 5 seconds. This visual alert signal shall flicker during the same period. When a door is automatically or remotely opened by the driver or member of the train crew, the acoustic alert signal shall sound for a minimum 3 seconds from the moment that the door starts to open. This visual alert signal shall flicker during the same period.

When a door is automatically or remotely closed, or is about to operate, a signal shall be given to persons inside and outside the train. The acoustic alert signal shall sound for a minimum of 2 seconds before the door starts to close and shall be different in tone to that used when the door is released. This visual alert signal shall flicker during the same period. The signal shall continue while the door is closing.

The door, once opened, shall remain open for a period of not less than 5 seconds before it closes.

Automatic doors shall incorporate devices that detect if any door is about to close on a passenger. When a passenger is detected, the doors shall stop automatically and remain open for a limited period of time. Sensors at two heights shall be provided to avoid doors trapping persons using mobility devices or guide dogs.

Doors shall be contrast marked, at least LRV 30, to be easy to locate from the inside and outside of the vehicle.

10.2.3. Designated seats

1. Number of designated seats

Not less than 10 percent of the fixed seats by train set or individual car and by class shall be designated as priority seats for the use of persons with functional limitations. These seats shall be designated by accessibility symbols.

2. Location

Designated seats shall be located close to an accessible door for boarding and alighting.

3. Design:

Seats shall be at the height of 430 mm to 500 mm. The sitting area shall have a depth of 400 mm to 450 mm and minimum width of 440 mm. The seats shall have backrests and foldable armrests mounted on the aisle side.

There shall be an obstacle free head clearance of minimum 1860 mm above the floor surface except on bi-level trains on which luggage racks are provided above the seats. In such case, reduced headroom of 1520 mm is permitted for priority seats underneath the luggage racks, provided that at least 50% of priority seats maintain headroom of 1860 mm.

There shall be an appropriate leg space in front of a seat. The minimum distance between a backrest and the backrest at the seat in front shall be 680 mm and there shall be an appropriate clear foot space under the seat in front.

There shall also be a clear space between the front edge of the seat cushion and the vertical plane for the seat in front of a minimum of 230 mm.

Where facing priority seats are provided, the distance between the front edges of the seat shall be a minimum of 600 mm.

Where facing priority seats are equipped with a table, there shall be a minimum clear horizontal distance between the front edge of the seat cushion and the leading edge of the table of at least 230 mm.

At least two designated seats shall have enough space to allow for accommodation of a guide dog.

None of the designated seats shall be foldable.

Sitting surfaces, especially those of aisle-facing seats, shall be covered by materials with a coefficient of friction sufficient to prevent passengers from sliding back and forth during sudden starts and stops.

The seat profile shall be ergonomically contoured. Bench seats shall be provided for large/obese persons without armrests between seats.

10.2.4. Wheelchair space

1. Location of wheelchair space

The designated wheelchair space shall be close to an accessible door in the low floor area of the car.

To ensure stability, the wheelchair space shall always be positioned either facing forward or with its back in the direction of travel.

Flip-up seats may be fitted in the wheelchair space longitudinally along the sidewall or transversely at the opposite end from the designated wheelchair space or at the back of the wheelchair space.

2. Design of wheelchair space

There shall be a designated floor space for wheelchairs with a minimum of 1400 mm in length parallel to the side of the car. The minimum clear width of the space shall be 865 mm.

If there is a passenger seat facing the wheelchair space, the minimum distance shall be not less than 300 mm between the designated space and the seat.

If there is a passenger seat with its back against the wheelchair space, or there is a partition or a closed flip-up or foldable seat in front of a wheelchair space, the minimum distance shall be not less than 200 mm between the designated space and the seat.

There shall be an obstacle-free maneuvering space at a minimum of 1500 mm x 1500 mm to move from the entrance door to the designated space. The wheelchair space may be part of the turning circle.

3. Wheelchair Securement

There is no requirement for securing a wheelchair onboard Metro cars according to international best practices.

4. Alarm device/call button

The wheelchair space shall be fitted with an alarm device/call button to enable the person in a wheelchair to call the operator/ staff for assistance in case of need.

The call button shall be placed within easy reach of the passenger in the wheelchair and shall be operated by the palm of the hand or elbow.

Minimum dimension of the alarm device/call button shall be square (50 mm x 50 mm) or round (diameter of 50 mm).

It shall be at a maximum height of 1100 mm.

Operation force for buttons shall be 2.5 N to 5.0 N. When the button is pushed, a visible and audible signal shall be given as feedback upon activation.

10.2.5. Floor

1. Surface

Floor surfaces shall be firm, level, non-glare and slip resistant.

Inside the vehicle, the path to and position of external doorways shall clearly be marked by contrasting floor patterns and color contrast, LRV 30.

2. Height difference

The floor surface shall be level for the entire set of train cars.

There shall not be any rise over 15 mm from the vestibule of a wheelchair accessible exterior door to designated seats and wheelchair space except for a door threshold strip not exceeding 15 mm in height and shall be chamfered.

10.2.6. Handrails and grab bars

1. Provision of handrails

Handrails and grab bars shall be provided at designated seats and by the wheelchair space.

Handholds or vertical handrails or other items that can be used for personal stability, while using the aisle, shall be provided on seat backs of all aisle-side seats unless the seat touches the back of another seat facing in the opposite direction which is already fitted with a handhold or touches a partition.

Handholds or other items that can be used for personal stability shall be positioned at a height of between 800 mm and 1200 mm above the floor, shall not protrude into the pathway and shall contrast with the seat.

In seating areas with fixed longitudinal seats, handrails shall be used for personal stability. These handrails shall be at a maximum distance of 2000 mm apart, shall be positioned at a height of between 800 mm and 1200 mm above the floor and shall color contrast with the vehicle interior surroundings.

Any handrail fitted to a priority seat shall be movable to the extent required to permit unrestricted access by a person to that seat or any other priority seat to which access may be gained.

The handholds or other items shall not have sharp edges.

Handrails and grab bars should be color contrasted.

2. Design of handrails and grab bars

Handrails and grab bars shall have an elliptical profile of 50 mm width and 40 mm depth, or thereabout, or have a circular profile of not less than 30-35 mm or not more than 50 mm.

The handrail or grab bar shall be located to provide a space within a range of 30 mm to 60 mm from an adjacent wall or other obstructions.

The handrail or grab bar shall be supported vertically from below, with no less than 50 mm between the underside of the handrail and the top surface of the support.

There shall be a minimum of 600 mm clear space above the handrail or grab bar.

The surface of the handrail shall be slip resistant and contrasting at least LRV 30 to the background.

10.2.7. Signage

1. Doors

All accessible doors shall be clearly marked both inside and outside of a vehicle with the international symbol for access, unless they all meet clear width requirements.

The symbol shall be placed on or beside the door at a height of 1100 mm to 1400 mm from the ground surface (outside symbol) and from the floor surface of the train (inside symbol).

2. Designated seats and wheelchair space

All designated seats shall be clearly marked for its purpose.

The wheelchair space shall be clearly marked with the international symbol of access.

10.2.8. Onboard travel information

1. Multi-media information

All information shall be provided at least in audio and visual formats, tactile or haptic as appropriate. Information shall be given about the route number, station number, destination, next stop and, if applicable, transfer connections. Automatic information shall be turned on all the time. Travel information shall not be combined with commercial ads or announcements.

2. Route and destinations signs

On each vehicle, the route and destination shall be clearly displayed in the front and back and on both sides of the car.

3. Route map

There shall be a map showing the route of a vehicle. The map shall be posted on the wall or on the wall close to the ceiling inside the vehicle, the map should be clear enough and color contrasted with its surroundings. An additional route map can be presented on the digital display. It is recommended that, if possible according to the vehicle's layout, the map could be tactile and with raised text or icons.

4. Audio announcement system

Audio information shall be given for emergency messages and travel information, e.g. next and coming stops, transfer connections to other modes of transport, delays, cancellations, etc.

Where provided, oral/audio information shall be consistent with essential visual information being displayed.

Oral/audio information can be given in synthetic or by a human voice – recorded or in real time.

All spoken information shall be easy to understand, clear and without echo.

An audio system shall be clearly audible and complemented with hearing enhancement system. The information shall have a minimum RASTI level of 0,5 in all areas. The audible message shall be adjusted to 15 dB(A) above surrounding noise level.

An induction loop should be installed.

An audio announcement shall be made for people waiting at the platform, e.g. to announce route number and direction of the vehicle.

5. Electronic text displays

Screens and displays of moving texts providing onboard travel information shall be visible from all seats. The minimum height from the floor surface shall be 2100 mm to the bottom of the display.

Electronic displays shall be of as high resolution as possible. The front glass shall be anti-reflective.

When displays are mounted at the minimum height of 2100 mm above floor surface, the letters shall have a minimum height of 30 mm from a reading distance of 3000 mm.

It is preferable that the electronic display is tilted or is fitted with a glass that permits reading of the text within an angle of 30º, which is the maximum angle for a comfortable tilt of the head.

Letters and symbols shall be presented with light color on a dark background at LRV 30.

White text on black, or dark blue is preferable. The use of red, and green shall be avoided for persons with color blindness.

Screen fonts shall be specially designed for the display using them – letter type shall be san serif.

When using scrolling text, it shall preferably be horizontal and not vertical. Latin text shall scroll right to left and Arabic text left to right.

Audio information should have a self-adjusting volume depending on background noise.

Sign Language interpretation for all audio information should be provided on a monitor.

Looping or scrolling text shall have a speed not to exceed 6 characters per second.

10.2.9. Service animals, food consumption, smoking and allergens

1. Service Animals

Space shall be provided for service animals out of the pedestrian path but appropriately close to their owner.

2. Food Consumption

No food consumption shall be allowed in Metro cars.

3. Smoking is forbidden in all Metro cars

4. Cleaning products should not leave a residual odor

5. Allergy considerations shall be observed

10.2.10. Lighting & illumination

1. Lighting

There shall be sufficient light to safely board, alight and move inside a vehicle.

2. Illumination

The lighting shall be even and non-glare.

The luminance shall be 100 lux outside a vehicle at the entrance doors.

The luminance shall be 50 lux in the aisle from the accessible door/doors to the designated seats and at the designated wheelchair space.

10.2.11. Infrastructure interface

The interface of the train with the platform shall comply with the following:

A straight-line platform for the whole length of the train.

Platform screen doors at full height.

A tactile and high contrast warning strip along the length of the platform edge facing the train.

A horizontal gap between the train and the platform not to exceed 50 mm.

Vertical gap not to exceed 15 mm.

“Mind the Gap” sign on the platform at all door entrances and on train doors.

10.2.12. Emergency and evacuation

Emergency and evacuation information shall be provided in audio and visuals format in real time.

Staff training and drills shall be provided for emergency and evacuation situations to assist persons with mobility and sensory impairments.

11. Trams

11.1. Considerations

In Dubai, due to social cultural considerations, there is a need to designate sections for family and gender seating within the vehicle.

Next-stop announcements, a dynamic visual route display and announcements in audio and text of the station number would especially help visitors not familiar with the local environments.

Education, sensitization, and training of both operators and passengers on their respective rights and responsibilities will contribute to making the Dubai transport system a universally accessible and socially responsible model.

Access to a tram shall be universal and apply to the dimensions and maneuvering characteristics of all persons using mobility aids, luggage, prams/ strollers, service animals, persons with vision, hearing and cognitive and other disabilities.

11.2. Boarding

11.2.1. Gaps of tram

There shall not be any significant gaps between the platform and the tramcars to hinder passengers using mobility devices from boarding and disembarking. The low floor tramcar shall be level with the platform.

The maximum gap between the doorsill of a car and the edge of a platform shall be:

- 75 mm measured horizontally
- 50 mm measured vertically

If a gap is wider than 75 mm, it shall be connected with a foldable bridge plate or a ramp.

If a gap is higher than 50 mm, it shall be overcome with a ramp.

11.2.2. Doors

Doors leading into tramcars with designated seats or designated wheelchair space(s) shall have an obstacle-free width of one single door of 900 mm. If a double door is used, the obstacle free width of each door shall be 900 mm. The width may be reduced by 100mm when measured between handholds.

All doors shall be automatic. When a door is opening or closing, there shall be an acoustic and visual warning signal to alert/inform passengers.

When the car door is enabled for opening, a signal shall be given that is clearly visible and audible to persons inside and outside the train. This acoustic alert signal shall sound for a minimum of 5 seconds. This visual alert signal, e.g. a red light, shall flash during the same period. When a door is automatically or remotely opened by the driver or member of the train crew, the acoustic alert signal shall sound for a minimum 3 seconds from the moment that the door starts to open. This visual alert signal shall flash during the same period.

When a door is automatically or remotely closed, or about to operate, a signal shall be given to passengers inside and outside the train. The acoustic alert signal shall sound for a minimum of 2 seconds before the door starts to close and shall be different in tone to that used when the door is opened. This visual alert signal shall flash during the same period. The signal shall continue while the door is closing.

The door, once opened, shall remain open for a period of not less than 5 seconds before it closes.

Automatic doors shall incorporate devices that detect if any door is about to close on a passenger. When a passenger is detected, the doors shall stop automatically and remain open for a limited period of time. Sensors at two heights shall be provided to avoid doors trapping persons using mobility devices or guide dogs.

Doors shall be color contrasted, at least LRV 30, in order to be easy to locate from the inside and outside of the vehicle.

11.2.3. Boarding Equipment

1. Ramp

If there is a need for a ramp, it shall have the following features:

A ramp shall have a minimum width of 900 mm. It shall be provided with side guards of 50 mm high and color contrasted on both sides to prevent the passenger falling off the ramp.

The gradient shall be maximum 8%.

A ramp shall have a payload of 350 kg.

Edges of a ramp shall be contrast marked with a 50 mm to 75 mm line along the entire edges of the ramp and with contrast LRV 30 against the background.

When a ramp is folding/sliding out or folding/sliding in there shall be acoustic and visual warnings.

2. Buttons

There shall be a push-button to call the driver or crews' attention when someone needs to use the boarding equipment, to embark or disembark.

The stop request button shall be placed within reach of passengers in priority seats and in the wheelchair space, and at a height above the floor surface with the central line of the button at 700 mm to 1200 mm, preferable at 1100 mm, at the wheelchair space.

If push-buttons or other remote control devices are provided for the operation of doors, these shall be placed at the inside and at the outside of the vehicle close to the accessible door/doors or at the door, at a height with the central line of the button at 900 mm to 1200 mm, preferable at 1100 mm, above the ground surface (Fig. 1).

All push buttons shall be tactile and contrast marked LRV 30, and capable of being operated with the palm of the hand or elbow.

The minimum dimension of a push button shall be square (50 mm x 50 mm) or round (diameter 50 mm).

The operation force for buttons shall be 2.5 N to 5.0 N. When the button is pushed, there shall be a visible and audible signal as feedback.

In the seat-free low floor area of the tramcar the central line of the button shall be at a height of 900 mm to 1200 mm, preferably 1100 mm above the floor surface.

11.2.4. Designated seats

1. Number of designated seats

There shall be at least 4 seats designated for persons with functional limitations in each tramcar. The seats shall be clearly marked. The space for the wheelchair shall be marked with the international symbol of access.

2. Location

Designated seats shall be located close to an accessible door for boarding.

3. Design

Designated seats shall be at the height of 430 mm to 500 mm. The sitting area shall have a depth of 400 mm to 450 mm and minimum width of 440 mm. The seats shall have backrests and foldable armrests mounted on the aisle side.

There shall be an obstacle free head clearance of a minimum of 1300 mm above the seat surface of a seat.

There shall be an appropriate leg space in front of a seat. The minimum distance between a backrest and the backrest at the seat in front shall be 680 mm and there shall be a clear foot space of 280 mm from front edge of seat under the seat in front.

At least one of the designated seats shall have an appropriate space to accommodate a guide dog. Guide dogs come in various sizes and can range in length from 700 mm to 100 cm and in height from 450 mm to 600 mm.

None of the designated seats shall be foldable.

Sitting surfaces, especially those of aisle-facing seats, shall be covered by materials with a coefficient of friction sufficient to prevent passengers from sliding back and forth during sudden starts and stops.

The seat profile shall be ergonomically contoured. Bench seats shall be provided for large/obese persons without armrests between seats.

11.2.5. Wheelchair space

There shall be at least one wheelchair space for a person using a wheelchair in each car. The space shall be clearly marked with the international symbol of access.

1. Location of wheelchair space

The designated wheelchair space shall be close to an accessible door in the low floor area of the car.

To ensure stability, the wheelchair space shall always be positioned either facing forward or with its back in the direction of travel.

Passengers using wheelchairs shall be asked to apply the brakes of their device during travel.

Flip-up seats may be fitted in the wheelchair space longitudinally along the sidewall or transversely at the opposite end from the designated wheelchair space or at the back of the wheelchair space.

2. Design of wheelchair space

There shall be a designated floor space for wheelchairs with a minimum of 1400 mm in length parallel to the side of the car. The minimum width of the space shall be 865 mm.

There shall be an obstacle-free maneuvering space at a minimum of 1500 mm x 1500 mm to move from the entrance door to the designated space. The wheelchair space may be part of the turning circle.

3. Wheelchair securement

There is no requirement for securing a wheelchair onboard tramcars according to international best practices. If a rear-facing wheelchair position is used, the person in a wheelchair shall back against the support panel.

11.2.6. Floor

1. Surface

Floor surfaces shall be firm, level, non-glare and slip resistant.

Inside the vehicle, the path to and position of external doorways shall be clearly marked by contrasting floor patterns and color contrast of LRV 30.

2. Height difference

The floor surface shall be level for the entire set of tramcars.

There shall not be any internal step from the vestibule of a wheelchair accessible exterior door to designated seats and the wheelchair space.

11.2.7. Handrails and grab bars

1. Provision of handrails

Handrails and grab bars shall be provided at designated seats and in the wheelchair space.

Handholds or vertical handrails or other items that can be used for personal stability, while using the aisle, shall be provided on seat backs of all aisle-side seats unless the seat touches the back of another seat facing in the opposite direction which is already fitted with a handhold or touches a partition.

Handholds or other items that can be used for personal stability shall be positioned at a height of between 800 mm and 1200 mm above the floor. It shall not protrude into the pathway and shall contrast with the seat.

In seating areas with fixed longitudinal seats, handrails shall be used for personal stability. These handrails shall be at a maximum distance of 2000 mm apart, shall be positioned at a height of between 800 mm and 1200 mm above the floor and shall contrast with the vehicle interior surroundings.

Any handrail fitted to a priority seat shall be movable to the extent required to permit unrestricted access by a person to that seat or any other priority seat to which access may be gained.

The handholds or other items shall not have sharp edges.

Handrails and grab bars should be color contrasted.

2. Design of handrails and grab bars

Handrails and grab bars shall have an elliptical profile of 50 mm width and 40 mm depth, or thereabout, or have a circular profile of not less than 30-35 mm or not more than 50 mm.

The handrail or grab bar shall be located to provide a space within a range of 30 mm to 60 mm from an adjacent wall or other obstructions.

The handrail or grab bar shall be supported ventrally from below, with no less than 50 mm between the underside of the handrail and the top surface of the support.

There shall be a minimum of 600 mm clear space above the handrail or grab bar.

The surface of the handrail shall be slip resistant and contrasting at least LRV 30 to the background.

11.2.8. Signage

1. Doors

All accessible tramcar doors shall be clearly marked both inside and outside of a vehicle with the international symbol of access, unless they all meet clear width requirements.

The symbol shall be placed on or beside the door at a height of 1100 mm to 1400 mm from the ground surface (outside symbol) and from the floor surface of the train (inside symbol).

2. Designated seats and wheelchair space

All designated seats shall be clearly marked for its purpose.

The wheelchair space shall be clearly marked with the international symbol of access.

11.2.9. Onboard travel information

1. Multi-media information

All information shall be provided in at least audio and visual formats, tactile or haptic as appropriate. Information shall be given about the route number, station number, destination, next stop and, if applicable, transfer connections. Automatic information shall be turned on all the time. Travel information shall not be combined with commercial advertisements or announcements.

2. Route and destinations signs

On each vehicle, the route and destination shall be clearly displayed in the front and back and on both sides of the tramcar.

3. Route map

There shall be a map showing the route of the vehicle. The map shall be posted on the wall or on the wall close to the ceiling inside the vehicle, the map should be clear enough and color contrasted with its surroundings. An additional route map can be presented on the digital display. It is recommended that, if possible according to the vehicle's layout, the map could be tactile and with raised text or icons.

4. Audio announcement system

Audio information shall be given for emergency and evacuation messages and travel information, e.g. next and upcoming stops, transfer connections to other modes of transport, delays, cancellations, etc.

Where provided, oral/audio information shall be consistent with essential visual information being displayed.

Oral/audio information can be given in synthetic or by a human voice – recorded or in real time.

All audio information shall be easy to understand, clear and without echo. Sound level should be self-adjustable.

An audio system shall be clearly audible and complemented with a hearing augmentation system. The information shall have a minimum RASTI level of 0,5 in all areas. The audible message shall be adjusted to 15 dB(A) above surrounding noise level.

An induction loop should be installed for people using hearing aids and a sign posted.

An audio announcement shall be made for people waiting at the platform, e.g. to announce the route number and direction of the vehicle.

5. Electronic text displays

Screens and displays of moving texts providing onboard travel information shall be visible from all seats. The minimum height from the floor surface shall be 2100 mm to the bottom of the display.

Electronic displays shall be of as high resolution as possible. The front glass shall be anti-reflective.

It is preferable that the electronic display is tilted or is fitted with a glass that permits reading of the text within an angle of 30º, which is the maximum angle for a comfortable tilt of the head.

Letters and symbols shall be presented with light color on a dark background at LRV 30.

White text on black, or dark blue is preferable. The use of red, and green shall be avoided for persons with color blindness.

Screen fonts shall be specially designed for the display using them – the letter type shall be san serif.

When using scrolling text, it shall preferably be horizontal and not vertical. Latin text shall scroll right to left and Arabic text left to right.

Looping or scrolling text shall have a speed not exceed 6 characters per second.

11.2.10. Lighting & illumination

1. Lighting

There shall be sufficient light to safely board, alight and move inside a vehicle.

2. Illumination

The lighting shall be even and non-glare.

The luminance shall be 100 lux outside a vehicle at the entrance doors.

The luminance shall be 50 lux in the aisle from the accessible door/doors to the designated seats and at the designated wheelchair space.

11.2.11. Service animals, smoking, food and allergens

1. Service Animals

Space shall be provided for service animals out of the pedestrian path but appropriately close to their owner.

2. Smoking is forbidden on al tramcars, platforms and terminals

3. No food consumption shall be allowed in tram cars.

4. Cleaning products should not leave a residual odor
5. Allergy considerations shall be observed

11.2.12. Infrastructure interface

The interface of the train with the platform shall comply with the following:

1. A straight line platform for the whole length of the train.
2. The platform screen doors at full height
3. Tactile and high contrast warning strips along the length of the platform edge facing the train.
4. A horizontal gap between the train and the platform not to exceed 50 mm
5. A vertical gap not to exceed 15 mm
6. “Watch the Gap” sign on the platform at all door entrances and on and train doors.

11.2.13. Emergency and evacuation

Emergency and evacuation information shall be provided in audio and visuals format in real time.

Staff training and drills shall be provided for emergency and evacuation situations to assist person with mobility and sensory impairments.

12. Marine vessels

There is a difference in the capacity, level of service, frequency and technology between the passenger vessels operated by RTA. Single deck ferries are fully equipped and travel over longer times and distances. Abras operate on shorter distances and travel times. Water taxis provide service on demand only.

Ferry Dubai has a dual base (Catamaran Low Wash), an air-conditioned interior, and comfortable seating for 100 passengers (84 seats as economy class, 14 seats as business class and 2 seats for people with functional limitations). The ferry is fitted with three LCD and DVD monitors, three toilets (for men, women and persons with disabilities), and a kiosk for selling gift items and snacks. Ferry Dubai extends 32 meters in length and 7.2 meters in width, and has a designed speed of up to 24 knots per hour. Each boat weighs around 20 tons and is fitted with twin diesel engines of 450 hp.

The new AC Abra has wooden seats for 20 passengers, with an enclosed cabin, with air conditioning and LCD monitors. There are no spaces for persons using mobility devices.

The AC Abra has a single-base low-wash fibreglass body, and two eco-friendly engines powered by high-octane gasoline that produces minimal gas emissions. Measuring 10 metres in length and 3.4 metres in width, it conforms to the highest standards of security and safety worldwide. It has a robust hull ensuring high safety levels, and easy driving offering 360-degree vision with the possibility of side movement and smooth manoeuvring.

12.1. Considerations

For children, seniors, parents with strollers, persons with baggage and persons with mobility devices, the major obstacles for the marine mode are the horizontal and vertical gaps between the vessel and the berth. Except for the ferry, the steps to the cabin and the door width present an issue for users of mobility devices. Passengers using mobility devices require boarding and securement systems. Next-stop announcements, transfer information; safety, emergency and evacuation/rescue instructions in multiple formats throughout the vessel are required to make the trip safe, secure and stress-free for all passengers.

Access to marine vessels shall be universal and apply to the dimensions and maneuvering characteristics of all persons using mobility aids, luggage, prams/ strollers, service animals, persons with vision, hearing and cognitive and other disabilities.

12.2. Embarking and disembarking

12.2.1. Gangway/ramp

1. A gangway shall be used for embarking and disembarking from the berth and to and from the vessel.

2. Gangway shall have a maximum gradient of 8%, measured from the vessel or berth surface to the gangway's intersection with the berth surface or vessel landing deck.

3. The width of the gangway should be appropriate to the vessel infrastructure and shall guarantee a free of obstacles passage of at least 900 mm.

4. The gangway/ramp interface with the berth surface and the vessel landing deck should be leveled and not exceed a vertical gap of 15 mm chamfered.

5. A gangway/ramp run with a rise greater than 150 mm should have handrails on both sides and be of a uniform height above the floor. The handrail should extend horizontally at least 300 mm beyond the top and bottom of the gangway/ramp and return to the wall, or post. There should be an upper and lower handrail on each side of the gangway/ramp. The upper handrail should be 875-925 mm and a lower handrail 600-750 mm above the gangway/ramp surface to the top of the handrail. Handrails shall have a circular section with an outside diameter of 30 to 40 mm.

6. Handrails shall have at least a reflectance contrast of 30 LRV points.

7. Detectable warning surfaces shall be designed and installed according to the requirements set on Section B of this Code.

8. The full run of the gangway/ramp including all landings should be evenly illuminated to at least 100 lux at all interior and exterior gangway/ramps and landings.

9. The gangway/ramp shall have an anti-slip and non-reflective surface.

12.3. Onboard circulation and facilities

12.3.1. Ferry

1. <u>Wheelchair spaces</u>

2 wheelchair positions shall be provided onboard a ferry, each with a floor space of 865 mm x 1400 mm to manoeuver in and out of the location.

A forward-facing securement with two tie-down straps at the front and two at the rear shall be applied to each wheelchair.

For safety reasons, any wheelchair or scooter must be anchored to the vessel's floor. Onboard staff prior to departure shall perform this.

An independent occupant restraint shall be applied to secure the passenger in the wheelchair.

Each wheelchair space shall have a call button to alert the driver, mounted on the wall or on the horizontal grab bar at a height of 750 mm – 1000 mm from the floor. The call button shall be operated by touch.

If the space for the wheelchair user is not occupied by persons using a mobility aid or a stroller, luggage can be stored in this location unless the vessel has a designated space for luggage.

Flip seats may be made available in wheelchair spaces when a wheelchair user does not occupy these positions.

2. Onboard information

Announcements to passengers about delays, schedule changes, and on-board services should by provided visually and verbally in English and Arabic by the operator while onboard the vessel. Pen and paper should be made available at all points of contact between carrier staff and passengers in order to facilitate communication.

Audio announcements of the same nature shall be provided in English and Arabic.

Noise level should not exceed 70dB(A) to avoid speech interference.

For foreigners who do not speak the local languages, either multi-language announcements or symbols and pictograms for information shall be used.

Advanced technologies shall be considered that interface between operator announcements and personal communication devices (e.g. phones/tablets) via Bluetooth or similar systems for real time audio and text display.

3. Handrails

Handrails shall be installed at all onboard circulation routes and facilities used by passengers, including those using a wheelchair.

Handrails should be rounded and free of any sharp or abrasive element. They should have an exterior diameter of 30 – 40 mm. They should not have any obstructions that could break a handhold.

Handrails should be color contrasted from their surrounding area.

Handrails should also return to the wall, floor or post in a smooth curve or have a tactile cue at the end. The method used should be consistent throughout the vessel.

4. Corridors and Passageways

Corridors and passageways on a ferry shall have minimum clear headroom of 2100 mm from the floor. They should also have a minimum clear width that is manoeuvrable by a person in a wheelchair and not reduced by protruding fixed objects. ("Wheelchair" means a passenger owned wheelchair that requires a minimum clear floor area of 865 mm by 1420 mm to accommodate a wheelchair and its occupant and a minimum clear turning space of 1500 mm in diameter).

Vertical level changes shall provide ramped access with a slope ratio not greater than 8%, an anti-slip surface, a minimum width of 900 mm and color contrasting handrails on both sides.

5. Floors

Floor surfaces on a ferry should be slip-resistant and glare free as far as practicable. If carpeting is used on a ferry, it should be securely attached. It should have a short pile and a firm under pad or no under pad at all.

6. Doorways and Doors

Doorways on a ferry should be a minimum of 850 mm wide.

Full length/height glass doors or windows should be marked with colour contrasting decals. Doors to cabins, washrooms and other enclosed spaces, which have no other exit doors, should not be equipped with deadbolts.

If door sills are necessary, they should be at maximum height of 15mm they should be bevelled or ramped on a permanent or movable basis and should present a contrasting strip with a reflectance contrast of at least 50 LRV points.

Door handles, pulls, latches, locks and other operational devices should be operable with the elbow. They should be mounted at a height of 1200 mm from the floor that permits use by a person in a wheelchair and be colour contrasted from their surrounding

area. If sliding doors are used, these operational devices should be exposed and usable from both sides when in a fully open position.

Crewmembers should be available to assist passengers with the use of watertight doors.

7. Counters

If counters for serving the public are provided on a ferry, they should have at least one section that is of a height of 780 mm. This section should not have any obstructions that could impede verbal or visual communications between the person and the counter personnel.

Counter surfaces should have a non-glare finish and be color contrasted from their surrounding area.

Counters should be equipped with inductive loop systems and a sign posted.

8. Alarms

If a ferry is equipped with an alarm system, the system should be visual and audible and, when activated, display continuously in all public places.

Visual alarms should be a flashing light that is strategically placed and significantly brighter than the ambient light. Flashing lights are considered harmful to people who have seizures if there is a frequency of five to thirty flashes per second.

9. Cafeterias

At least 10% of the tables in a cafeteria shall follow the criteria for accessible chairs and tables.

There should be some tables free of fixed seating.

The cafeteria should connect to an accessible route.

10. Washrooms

Washroom layouts shall be accessible according to Section B of this Code.

Especially on moving vessels it is very important to prevent water spills as these increases the risk of slipping. A pavement over 45 PTV shall be installed in potentially wet areas.

11. Emergencies and Evacuations

Safety announcements shall be made in visual and audio format in case of emergencies and evacuations. Staff should be trained and have drills to assist passengers with functional limitations.

12. Seating

Priority seating for seniors, pregnant women, users of mobility devices (canes, crutches) shall be located near the entry and exit points.

Family seating in a more secluded area (to avoid noise from kids) and for women may be desirable.

Sitting surfaces, especially those of aisle-facing seats, shall be covered by materials with a coefficient of friction sufficient to prevent passengers from sliding back and forth during sudden movements.

The seat profile shall be ergonomically contoured. Bench seats shall be provided for large/obese persons without armrests between seats.

13. Lighting

When the access area is open, 30 lux of illumination as measured on the step tread or gangway/ramp platform shall be provided.

All vessel areas shall have outside lights that illuminate when the access is open and provide at least 10 lux of illumination on the berth/ramp surface for a distance of 1000 mm perpendicular to the bottom step tread or gangway/ramp outer edge. These light(s) shall be shielded to protect the eyes of entering and exiting passengers.

14. Service Animals

Space shall be provided for service animals out of the pedestrian path but appropriately close to their owner.

15. Smoking is forbidden on all vessels, platforms and in terminals.

16. No food consumption shall be allowed in Ferries, outside of the cafeteria.

17. Cleaning products should not leave a residual odor.

18. Allergy considerations shall be observed on all vessels.

In the event of a passenger identifying his/her allergies to the staff, staff shall make a public announcement for other passengers to observe the allergy condition. A buffer zone shall be allowed for passengers with allergies to be separated from source of allergens.

12.3.2. Heritage Abra

Heritage Abras are wooden open-air vessels with a canopy, a landing deck and wooden seats.

1. Gangways/ramps shall be provided to bridge the horizontal and vertical gaps between the vessel and the berth.

2. On the rear deck the existing seating shall be removed to make room for two side-by-side accessible locations.

3. A forward facing securement shall be provided for each wheelchair position.

4. Staff shall be responsible to attach and detach the securement system and be trained on how to do so.

5. Visual and audio onboard announcement and safety displays shall be provided within the vicinity of the wheelchair travelers.

6. Handrails shall be provided on both sides of the stairs leading from the deck to the lower seating deck.

7. Emergency and evacuation procedures shall be provided in real time in audio and visual display.

12.3.3. AC Abra

AC Abras are the new generation of Abras with an enclosed air-conditioned cabin.

1. Gangways/ramps shall be provided to bridge the horizontal and vertical gaps between the vessel and the berth.

2. The door from the landing deck to the cabin shall be 850 mm wide.

3. A ramp with a slope of 8% shall lead from the landing deck to the enclosed cabin. The width of the gangway should be the appropriate to the vessel infrastructure and shall guarantee a passage free of obstacles passage of at least 900 mm.

4. 2 wheelchair positions shall be provided in the cabin with a floor space of 865 mm by 1420 mm.

5. A forward facing securement shall be provided for each wheelchair position.

6. Staff shall be responsible to attach and detach the securement systems.

7. Visual and audio onboard announcement and safety displays shall be provided within the vicinity of the wheelchair travelers.

8. Emergency and evacuation procedures shall be provided in real time in audio and visual display.

12.3.4. Water taxi

Water taxis are enclosed cabin vessels and are available by demand through online reservations.

1. Gangways/ramps shall be provided to bridge the horizontal and vertical gaps between the vessel and the berth.

2. The door from the landing deck to the cabin shall be 850 mm wide.

3. Door thresholds shall not exceed a height of 15 mm otherwise a bridge plate shall be used.

4. 2 accessible locations shall be provided in the cabin with a floor space of 865 mm by 1420 mm.

5. A forward facing securement shall be provided for each wheelchair position.

6. Staff shall be responsible to attach and detach the securement systems.

7. Visual and audio onboard announcement and printed safety manuals and displays shall be provided within the vicinity of the wheelchair travelers.

8. Emergency and evacuation procedures shall be provided in real time in audio and visual display.

12.4. Group travel

12.4.1. Group vessel

A single level vessel shall be equipped with the following features:

1. Gangway/ramps at service doors.
2. Flip seats to make room for additional wheelchair spaces.
3. At least 4 forward-facing wheelchair securement systems.
4. Onboard information system.

12.5. Vessel infrastructure interfaces

12.5.1. Gangways

Gangways connecting the building and/or the berth shall conform to the following requirements:

1. Be at least 2000mm wide with handrails on each side.
2. There should be an upper and lower handrail on each side of the gangway. The upper handrail should be 875-925 mm and a lower handrail 600-750 mm above the gangway surface to the top of the handrail. Handrails shall have a circular section with an outside diameter of 30 to 40 mm.
3. Surfaces shall be non-slip and non-reflective with a warning strip in contrasting color at each end of the gangway of 300 mm wide across the width of the gangway.
4. When intersecting with the berth surface a beveled edge of maximum 15 mm in height shall be provided.

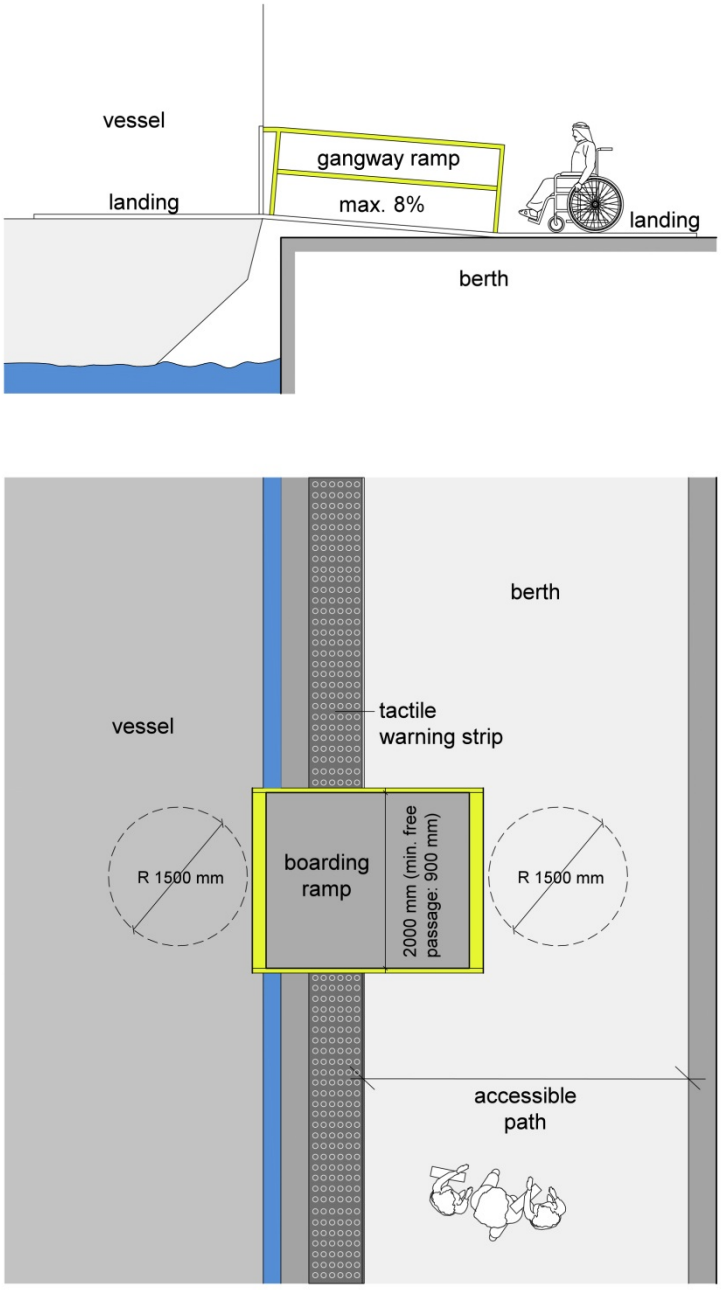


Figure 116. Access for marine vessel

12.5.2. Landside ramps

Landside ramps connecting the building with the berth shall be according to Section B of this Code.

As a minimum, the berth should have a paved, slip-resistant surface with a sign post indicating the vessel route. The front edge of the paved surface should have a bright colored strip. If the berth is not leveled with the vessel, a gangway shall be provided.

Seating shall be provided for passengers to wait and rest.

A cover shall be provided to protect passengers from the weather.

12.5.3. Stations

Marine stations should have a minimum of a sheltered structure with a roof and protected sides. Station buildings shall be accessible as per Section B of this Code.

A bench should provide seating with provisions for obese persons and pregnant women without armrests in between seats, but with armrests at the end of the bench. A space for a wheelchair/scooter should be 865 mm x 1400 mm.

A large print schedule and a route map should be displayed.

Transparent sides/windows should be provided for safety during day times, as well as for safety by night with interior and exterior lighting.

A “Help” phone should be available for information and safety. A text option should be available for people who are deaf.

Ticketing counters should have a section accessible for persons using wheelchairs at the height of 780 mm. and shall have an induction loop for person with hearing aids.

Accessible washrooms shall be provided according to Section B of this Code.

Floors shall be non-slip and non-glare.

Schedules shall be provided in audio and visual displays.

13. School Buses

13.1. Considerations

A variety of vehicles are suitable to be used for accessible school transportation. This includes low floor 10 meters long regular coaches, low floor 6.7 meters long medium size buses, and low floor accessible taxis.

The school shall establish responsibility for the provision of services with the school bus operator. A special dispatch center shall coordinate scheduling and coordinate with parents in case of cancellations, emergencies and extreme weather. The use of the Nol card for students with functional limitations shall be implemented with a discount fare.

For students with functional limitations, in particular those with mobility impairments, transportation to and from school present a major obstacle due to the lack of accessible school bus vehicles. As an alternative, accessible taxis can be used.

Drivers shall be trained for hands-on instruction on how to achieve effective securement and occupant restraint.

The major obstacles for the school bus mode are the horizontal and vertical gaps between the vehicle and the road. Students using walkers and wheelchairs require boarding and securement systems. On board safety, emergency and evacuation/rescue instructions in multiple formats throughout the vehicle are required to make the trip safe, secure and stress-free for all students.

Access to an accessible school bus shall be universal and apply to the dimensions and maneuvering characteristics of all persons using mobility aids, luggage, prams/ strollers, service animals, including persons with vision, hearing and cognitive disabilities.

13.2. Boarding and alighting

13.2.1. Vehicle type

Accessible school buses shall have a front and center low floor section with kneeling capability.

13.2.2. Doors

The door opening control shall be placed on the outside of the accessible door at a maximum height of 1200 mm from the bus floor, and be operated by touch.

Clear horizontal door openings shall be a minimum of 850 mm, to accommodate students with powered and non-powered mobility aids. This applies to single and multiple leaf doors.

Handrails with contrasting colors shall be positioned on each side inside the door when it is open, without interfering with the clear width of 850 mm of the door.

Audible warnings shall be provided to announce the opening and closing of vehicle doors, which will be especially helpful for students who are blind or have reduced vision. All students' benefit from this assistance.

13.3. Ramp

In order to board the bus, a powered ramp shall be positioned at the door for the students with functional limitations and those using a mobility aid board the bus.

Power operated ramps (sliding or swing-out) shall have interlock devices (only operable when vehicle brakes are applied), emergency override, and supervised operation by the driver.

The driver from his position shall operate the powered ramp.

The driver shall be trained to operate the securement system and the ramp.

An audio warning signal shall be applied for deploying and retrieving the ramp.

Ramps shall have a maximum gradient of 8% measured from the sidewalk level to the ramp's intersection with the floor of the bus for unassisted boarding.

The ramp width shall be a minimum of 900 mm.

The ramp shall have guards on each side, 50 mm in height with high contrasting colors.

The payload shall be 350 kg.

The ramp surface shall have an anti-slip surface.

13.4. Onboard circulation

13.4.1. Aisle width

The aisle width throughout the low floor sections of the bus shall be a minimum of 850 mm clear of protruding obstacles.

13.4.2. Wheelchair maneuvering spaces

Pathways for mobility devices, from the entrance door to the wheelchair location shall be 850 mm wide.

A clear circle of 1500 mm shall be provided for the wheelchair to maneuver in and out of the wheelchair station.

13.4.3. Handholds/ stanchions

Interior handrails and stanchions shall be located to permit sufficient turning and maneuvering space for mobility aids to reach a securement location from the ramp. These handrails and stanchions shall allow for safe boarding and alighting, provide seating and standing assistance, and allow for easy circulation throughout the vehicle for students with functional limitations. Handrails and grab bars shall have at each end a tactile or Braille application for students who are blind.

Students with functional limitations shall be able to grasp handrails from outside the vehicle to assist in the boarding process.

Handrails shall be between 30 mm and 40 mm in diameter, have corner radii of 3 mm or greater, and have a clearance for knuckles of at least 35 mm from the nearest surface.

Where ramps are located at the front entrance, stanchions shall be located in such a way as not to interfere or impede the wheelchair footrests.

13.4.4. Floor surface

The floor surface shall be covered with non-slip, non-reflective material.

Floor pattern design can be used for directional guidance or for designated space e.g. mobility devices and luggage placement areas.

13.5. Seating

13.5.1. Wheelchair spaces

Each large bus over 6.7 m shall have at least four wheelchair positions to accommodate students using a wheelchair/scooter.

Each wheelchair position shall have a clear length along the longitudinal axis of the bus of 1400 mm and a clear width of 865 mm.

Side facing flip seats along the bus wall in the wheelchair position can be used when no wheelchair student is occupying the location. These seats shall be of the bench type to accommodate obese students. The seats shall always be in the up position and not interfere with the clear width for the wheelchair of 800 mm. These seats shall not be designated as Priority seats.

13.5.2. Securements

Each wheelchair position shall be fitted with a rear-facing securement system, where the wheelchair and the occupant face the rear of the vehicle. The rear-facing system shall be provided with a padded back panel and have the following dimensions:

Height of panel from floor to bottom edge: 350–480 mm

Height of panel from floor to top edge: 1300 mm min

Width of panel: between 250 mm and 400 mm

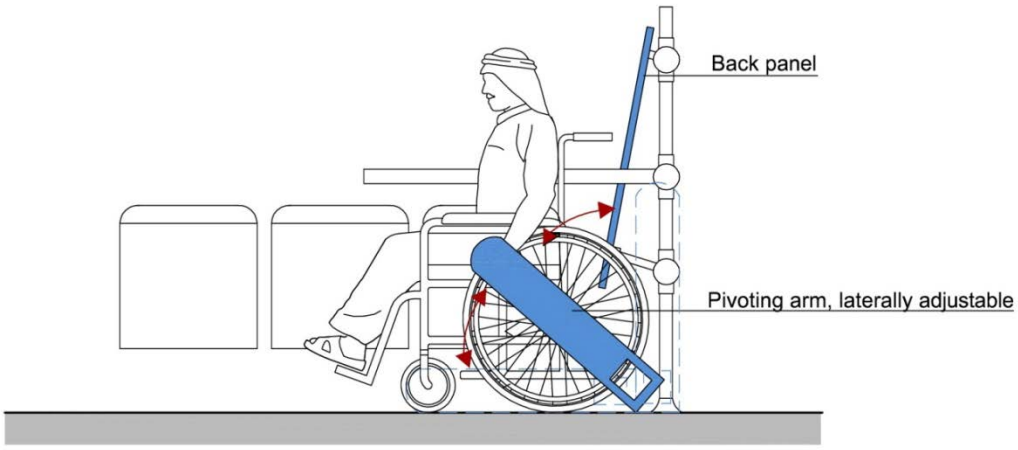


Figure 117. Rear-facing securement with pivoting aisle arm - securement technology for low transportation in buses and rail

The back panel shall withstand a decelerating force of 3 g. The rear-facing securement shall have a pivoting aisle arm, which is also laterally adjustable to accommodate different wheelchair types and prevent them from moving longitudinally and laterally.

The vehicle shall be fitted with a horizontal handrail along the longitudinal side of 750 mm – 1000 mm from the floor, not to exceed the mobility aid space by more than 90 mm, and have a diameter of 30 mm – 40 mm with a clear knuckle space of 35 mm between any part of the vehicle and the handrail. Handrails and grab bars shall have at each end a tactile or Braille application for students who are blind.

The wheelchair position shall have a call button to alert the driver, mounted on the bus wall or on the horizontal grab bar at a height of 750 mm – 1000 mm from the floor. The call button shall be operated by touch.

13.5.3. Stop announcements

A Next Stop audio and text display shall be provided to be visible from their position.

13.5.4. Priority seating for non-school use

This will only be required if the RTA or a private school bus is used for other purposes. At least two priority seats shall be located close to the driver and entrance door. The seats shall be reserved for persons who have mobility, sensory or cognitive disabilities and seniors. Hip-to-knee room shall be no less than 675 mm in front of the seat in a forward-facing position.

Each priority seat or mobility aid position shall be equipped with stanchions, handholds, or handrails.

Each bus shall contain sign(s), which indicate that certain seats are priority seats for seniors and persons with functional limitations. Other passengers shall make such seats available to those who wish to use them. Priority seats shall not be located in the area of the wheelchair station.

13.5.5. Seat surfaces

Sitting surfaces, especially those of aisle-facing seats, shall be covered by materials with a coefficient of friction sufficient to prevent students from sliding back and forth during sudden starts and stops.

The seat profile shall be ergonomically contoured.

Bench seats shall be provided for large/obese students without armrests between seats.

There shall be a compartment for bags and storage for canes and crutches, provided that it neither obstructs students' movement nor falls on students in cases of a sudden stop, accidents or during the normal bus movement.

13.5.6. Specifications of seats and bus interior

The number of seats specified by the manufacturing company shall be adhered to, and no collapsible middle seats to be used.

The side hand rests; arm support, and any other solid materials shall be removed from the back side of seats.

The two doors of the bus shall be fitted with handrails to assist in the boarding process.

The driver shall control the door opening and closing mechanism, and electronic control is preferred.

13.6. Illumination, lighting, signage

13.6.1. Lighting

When the vehicle door is opened, 30 lux of illumination as measured on the step tread or ramp platform shall be provided.

All vehicle doorways shall have outside lights that illuminate when the door is opened and provides at least 10 lux of illumination on the street surface for a distance of 1000 mm perpendicular to the bottom step tread or ramp outer edge. These light(s) shall be shielded to protect the eyes of students coming in or out.

13.6.2. Visual elements

Reflectance values over 30 LRV points shall be used for signage and for tactile warnings at folding seats. Specific colors shall be selected for students who are colorblind and may only see red and green as gray.

Uniform signage shall be provided for all students, who may not be able to read text.

13.7. Onboard information and safety

13.7.1. Alternative formats

Audio, text and sign language displays and inductive loop systems for information shall be used to address the needs of students, deaf/heard of hearing, blind/vision-impaired and cognitively impaired.

Noise level inside the bus shall not exceed 70dB(A) to avoid speech interference.

Technologies shall be considered to interface between driver announcements and personal communication devices (e.g. phones/tablets) via Bluetooth or similar systems for real time audio and text display.

13.7.2. Emergencies and evacuations

Clearly posted evacuation and emergency warnings and instruction, in 14-point print, in electronic text, and in video formats with sign language shall be provided in the vehicle.

Safety announcements shall be made in visual and audio format in case of emergencies and evacuations. For students with hearing impairments, inductive loop shall be installed within the vehicle.

Safety drills shall be conducted at least twice a year, involving students with functional limitations.

13.7.3. Bus safety standards

All seats shall have elevated backrests of at least 710 mm high. The distance between seats shall not be less than 640 mm and the size of the seat shall not be less than 400 mm (a single seat) and 900 mm (double seats). Triple-seats are prohibited in school buses.

All seats shall be padded from all sides and made from shock-absorbing & fireproof pads.

13.8. Service animals, smoking and allergens

13.8.1. Service animals

Space shall be provided for service animals out of harm's way close to their patron.

13.8.2. Food & smoking, allergens

Food consumption and smoking is forbidden on all school buses.

Allergy considerations shall be observed

In the event of a passenger identifying his/her allergies to the driver, he should make an announcement to the other passengers to observe the allergy condition. He should then set up a buffer zone.

13.9. Group travel

13.9.1. Group vehicle

A single level coach shall be equipped with the following features:

Ramps at service doors.

Side facing flip seats on both sides of the low floor sections of the bus.

4 rear-facing wheelchair securement systems, 2 on each side.

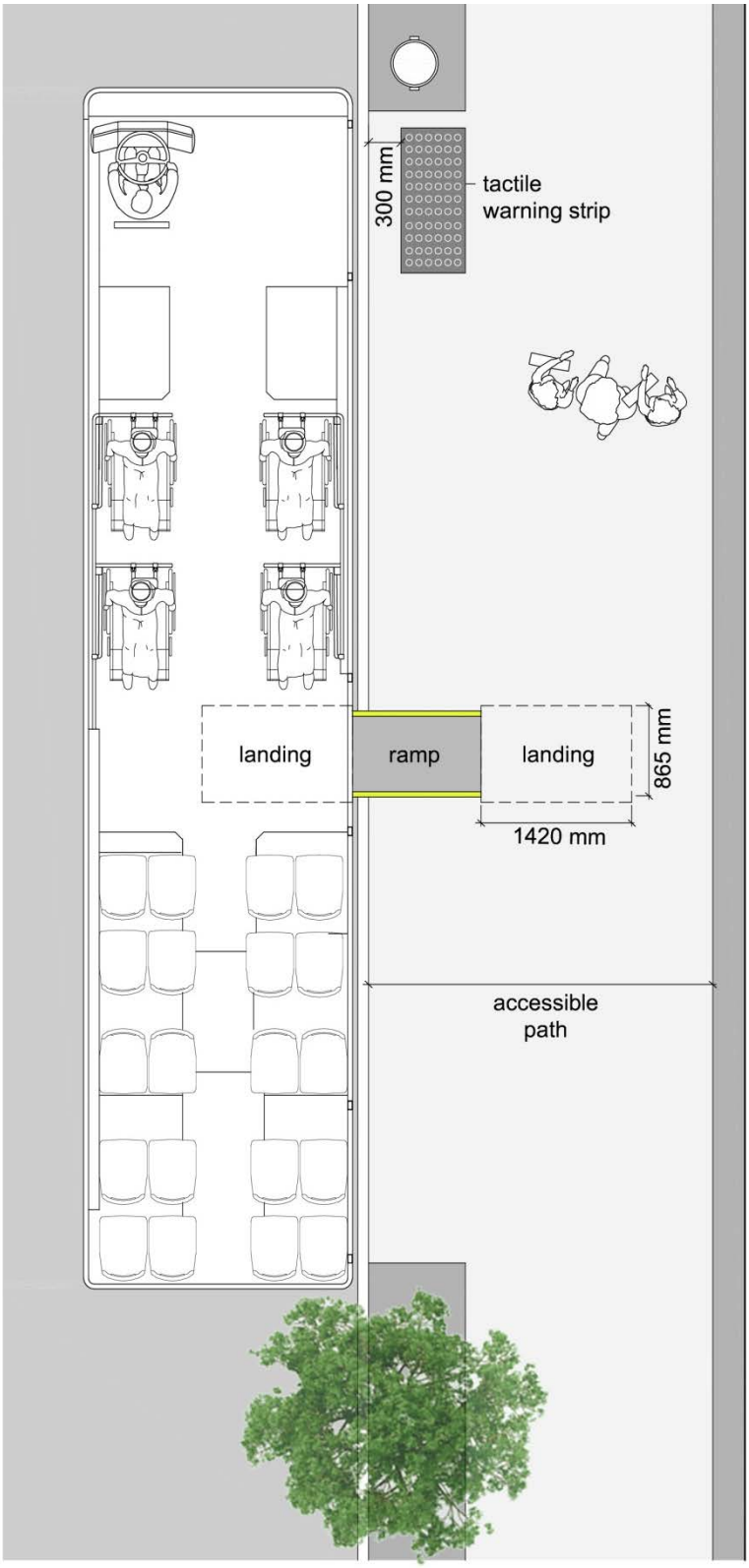


Figure 118. School bus layout and interface with infrastructure

13.9.2. Conductors or attendants

There shall be a team of two-person staff (conductors or attendants) to assist in deploying securement systems, and to act as safety monitors (Ref. Item 10).

Training of staff performing the above duties is mandatory.

13.10. Vehicle infrastructure interfaces

13.10.1. Stops

As a minimum, stops shall have a paved, non-slip surface. On public bus stops, the front edge of the paved surface shall have a bright colored strip. If the sidewalk is not leveled with the road, a curb cut shall be provided. Stops shall be located in an area with cover/shade to protect against weather elements.

13.10.2. Shelters

Bus shelters shall consist of a minimum sheltered structure with a roof and protected sides. The platform surface shall be flat, level, slip-resistant and solid.

A bench shall provide seating with provisions for obese students without armrests in between seats, but with armrests at both ends of the bench. A space for a wheelchair/scooter shall be 900 mm x 1500 mm to enter, turn and exit.

There shall be a minimum depth of 2700 mm from the curb for a wheelchair/scooter to board a vehicle over a ramp (Fig. 24).

Along the front edge of the platform shall be a tactile warning surface with color contrast, aligned to the place where the bus door shall be when parked.

Transparent sides/windows shall be provided for safety during day times, as well as for safety by night with interior and exterior lighting.

A “Help Line” phone shall be available to provide information and help, with text capabilities.

14. Accessible taxis

14.1. Considerations

The present supply of 7 accessible taxis is severely lagging behind the demand. It resulted in long waiting time of an hour or more. This will be exacerbated by the anticipated increased demand by visitors for EXPO 2020. There is also a need to provide accessible taxis for intercity service. The major technical and customer service obstacles are the dated technology of present accessible taxis, a lift- equipped rear boarding system with limited headroom for the user. With only one space for wheelchair per vehicle, it prevents two persons in wheelchairs, e.g. a couple, travelling together in the same vehicle. Although it is mandatory to use the wheelchair securement system, some users refuse its use. In the case of female passengers, a male driver would be unable to help with the boarding process or the tied down of securement belts due to social cultural considerations. A female driver is required to service female clients with disabilities.

Onboard information and communication alternatives for sensory-impaired passengers should be provided as well as fare payment options. Fare payment methods should account for persons with limited agility and vision. The use of NoI cards has recently been introduced to facilitate fare payments. Designated pick-up and drop-off places should be made available to facilitate seamless interface.

Access to an accessible taxi shall be universal and apply to the dimensions and maneuvering characteristics of all persons using mobility aids, luggage, prams/ strollers, service animals, persons with vision, hearing and cognitive disabilities.

New technologies shall recognize the development of driverless cars, and in the case of accessible taxis they can be automatically driven but will always need a driver to assist passengers with disabilities.

14.2. Boarding and alighting

14.2.1. Vehicle

Accessible taxis shall have a low floor and accessible doors on both sides with ramps that should be used where possible to accommodate the full height of a large person in a wheelchair with clear headroom, and persons with strollers.

The international symbol of access shall be placed on the side passenger door and rear window.

Raised taxi registration numbers are to be placed on the exterior passenger doors.

Low floor taxis with side doors facilitate easier boarding from curb level with less ramp gradients than rear door taxis that board from the road level and require a longer ramp.

The vehicle shall be equipped with a Body Fluid/Spill Kit and a First Aid Kit.

14.2.2. Vehicle capacity

The accessible taxi shall have the capacity of carrying at least 2 persons in a wheelchair, and provide additional regular seats.

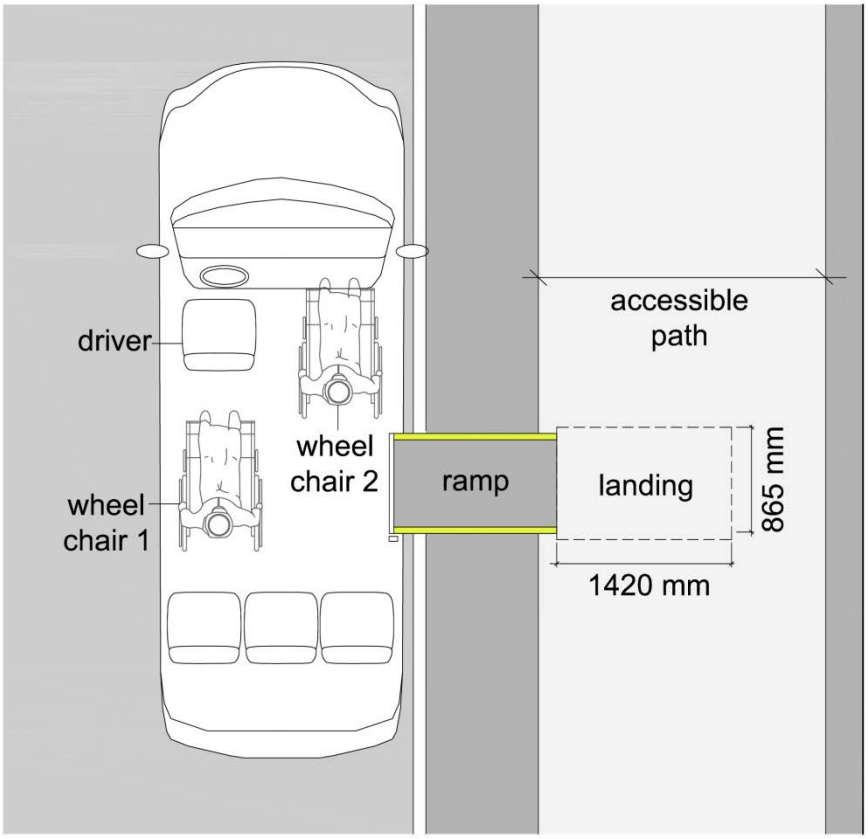


Figure 119. Accessible Taxi lay-out for two passengers in wheelchairs

14.2.3. Doors

Clear horizontal door openings shall be a minimum of 810 mm.

Handrails with contrasting colors shall be positioned on each side inside when door is open, without interfering with the clear width of 810 mm of the door.

Doors must have an unobstructed vertical height of at least 1500 mm.

14.2.4. Ramp

A manual or power-assisted boarding device shall be available at any accessible entrance to a taxi that has a vertical rise exceeding 12 mm or a horizontal gap exceeding 40 mm.

A ramp shall be positioned at the door for persons with functional limitations and those using a wheelchair to board/alight the taxi.

Manual or power operated ramps (sliding or swing-out) shall have interlock devices (only operable when the vehicle brakes are applied), emergency override, and supervised operation by the driver.

The driver shall operate the ramp.

An audio warning signal shall be applied for deploying and retrieving the ramp.

Ramps shall have a maximum gradient of 8% measured from a level ground surface to the ramp's intersection with the floor of the taxi. The ramp width shall be a minimum of 900 mm.

The ramp shall have guards on each side, 50 mm in height with high contrasting colors.

The payload shall be 350 kg.

The ramp shall have an anti-slip surface.

The ramp shall be firmly attached to the vehicle so that it is not subject to displacement when loading or unloading a heavy mobility device and that no gap between the vehicle and ramp exceeds 15 mm.

The ramp shall be stowed in such as manner as not to pose a hazard to passengers or impinge on passenger's mobility device.

14.2.5. Handrails and grab bars

Handrails and grab bars shall be provided at the entrance of the vehicle which allows people to grasp them from the outside the vehicle while boarding, and to continue using them throughout the boarding and alighting process.

14.2.6. Driver's role

The driver shall be responsible for the safe operation of the ramp, as well as for the deployment and detachment of the wheelchair securement and passenger occupant restraint system.

The transportation provider should ensure that the driver provide routine boarding/alighting assistance to passengers with disabilities when required in accordance with Islamic custom without jeopardizing the health and safety for both parties. This includes assisting the passenger in a wheelchair into the securement position or transferring the passenger from a wheelchair into a seat.

The transportation provider should ensure that drivers do not request the assistance of other persons, other than personal care attendants, for routine boarding/alighting assistance for a passenger with a disability except upon the requests or consents of the said passenger.

All drivers should be trained in disability awareness and on how to properly secure a person in a wheelchair

14.2.7. Wheelchair space

A minimum floor space of 760 mm in width and 1500 mm in length including the space for front and rear straps shall be provided for each wheelchair space.

A clear turning circle of 1500 mm shall be provided for the wheelchair to enter and exit to and from its position.

14.2.8. Wheelchair securement

A forward facing securement shall be available for each wheelchair position, consisting of 2 front and 2 rear straps connected to the vehicle floor.

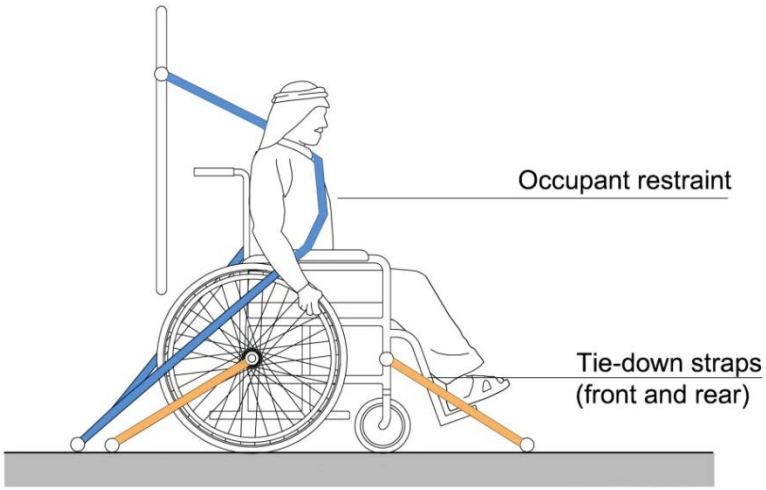


Figure 120. Forward facing securement with occupant restraint

An occupant restraint system for the person in the wheelchair shall be applied, consisting of a three-point belt and lap system, separately anchored to the floor and wall of the vehicle.

14.2.9. Floor surfaces

All floor surfaces where passengers walk and at the securement locations shall have slip-resistant surfaces.

The floor of the wheelchair space is to be flat and level.

14.2.10. Fare structure & payment

Rates and communication or emergency information notices should be clearly posted for persons with sensory impairments and foreigners.

For passengers with sensory, cognitive-impairments, foreigners and illiterate persons, the transportation provider should provide alternative means of communicating fare information, such as talking meters, and onboard induction loop systems. Fare display should be in text and audio format. The vehicle should be equipped with a printer for the issuance of receipts.

Pen and paper should be made available at all points of contact between the driver and passengers in order to facilitate communication.

Prepaid proximity cards with discounts for persons with functional limitations – The RTA Nol cards - that require less hand dexterity and benefit persons with limited mobility could be used.

Discounted Nol cards for visitors with functional limitations shall be available at the Emirate's entry points, especially in view of the upcoming EXPO 2020.

14.2.11. Pick-up and drop off points

Where a passenger is unable to board/alight at a designated accessible stop because of a temporary barrier, the transportation provider should ensure that the driver allows passengers to board/alight at the next available safe location. This is especially important in unpaved areas.

14.2.12. Emergency and evacuation

Clearly posted evacuation and emergency warnings and instruction, in large print and should be provided in the vehicle.

14.2.13. Service animals, food, smoking

The following types of service animals shall be transported with their patrons.

1. Guide dogs trained by a guide dog organization
2. Hearing dogs
3. Comfort animals

Smoking and food consumption are forbidden in all accessible taxis.

14.2.14. Vehicle interfaces with stops and stands

Designated stops and stands for accessible taxis shall be available at major trip generators, e.g., Metro, Tram, Bus, Marine stations, shopping malls, places of worship, hospitals, government buildings, universities, etc.

Accessible taxi stands and stops should have at least a signpost with a telephone number, fare structure and street name. Stops should have a paved, slip-resistant surface. The front edge of the paved surface should have a bright colored band. If not leveled with the road, a curb cut should provide access for disabled and elderly persons. Stops shall be covered against sun and heat and include a bench for seating.

14.2.15. Door lighting

Vehicle doors in which a ramp is installed shall have outside light(s), which when the door is opened, provide at least 10 lux of illumination on the street surface for a distance of 1 meter perpendicular to the ramp. Such light shall be shielded to protect the eyes of entering and exciting passengers.

Illumination is to be provided from the top of the door or depending on the configuration.

GOVERNMENT OF DUBAI

Section D

Wayfinding

Section D - Wayfinding

Previous sections of this Code have already covered the aspects related to the identification of the accessible path and the prevention of risks by means of tactile warning pavements and obstacle identification.

In this section the process of wayfinding is addressed.

Wayfinding encompasses all of the ways in which people orient themselves in physical space and navigate from place to place. When there is a well-designed wayfinding system, people shall be able to understand their environment. This provides users with a sense of control and reduces anxiety, fear and stress.

Wayfinding can be particularly challenging for some people with disabilities. For example, someone who is deaf or hard of hearing will rely on visual information but may not be able to hear someone providing directions. Someone who is blind will not be able to see a directory, but if it is in a predictable location and has information in a tactile format, they can read it and they will use sound and even smell to gather more information about their environment.

It is important to provide wayfinding information in a variety of different formats as visual, auditory, olfactory and physically. All people use different forms of information gathering to find their way to their destination but this is especially important for people with disabilities.

From the user perspective, the wayfinding process involves four stages:

Wayfinding process	
1 Orientation	Is the attempt to determine one's own location in a concrete space in relation to the chosen destination
2 Route decision	Is the selection of a course of direction to the destination
3 Route monitoring	Is checking to make sure that the selected route is heading towards to the destination.
4 Destination recognition	Is when the destination is recognized

Table 11. Wayfinding process

14.3. General aspects

Considering the diversity of the population visual, acoustic and tactile references shall be used to guide a person to avoid risks and to reduce confusion.

Signs with texts and symbols, visual references, tactile information like high-embossed characters or Braille text are the elements that shall be used.

Although technological means like smartphone Apps can be a very valuable tool to assist in the wayfinding process, these are not described in this Code.

The elements to be used to assist a person in the wayfinding process shall guarantee that:

1. Every person, even a person with low vision, can easily identify in which part of the city or building they are in at a concrete moment, without walking more than 70 meters in open spaces and 30 meters inside buildings.
2. All park entrances shall display the main facilities in a visual and tactile map.
3. All business and administration buildings shall display the name of the building in the façade and a provide a directory in the hall listing the companies or services contained in the facility.
4. In buildings, orientation signs to the exit, toilet and other services shall be present at any corridor intersection at every 30 meters.
5. All door frames shall provide information about the service provided in the space.

From a design point of view, the following general design requirements shall be taken into account:

1. Avoid visual clutter due to inappropriately designed or located signage and other elements in the environment.
2. Communicate the environment’s identity clearly and consistently through the design of graphic elements to increase the users’ recognition and sense of confidence in the signage system during navigation.
3. Signage information on a sign should be kept to the minimum and organised with hierarchy, without duplication. Complex information should be broken down, beginning with general information and moving towards more specific information.

4. Colour coding should be used to differentiate zones or hierarchies of text messages. Colours that create confusion in case of colour blindness should be avoided.

5. Standardised nomenclature should be adopted to organise information in similar environments.

6. Signage should be positioned at key decision-making points on the path of movement. It should be positioned over the path of travel at a height well above head level in high pedestrian traffic areas, but in a manner that a person in a wheelchair or a child can see it easily. Signage should be positioned to avoid shaded areas and glare.

7. Letters, numbers, symbols and pictographs should be glare-free and presented in high reflectance contrast.

8. Illuminated signs where the text is light on a dark background shall be avoided.

9. Printed characters shall be placed on top, centred (where there is only one word) and aligned to the left (when there is more than one word).

10. When both Arabic and English languages are used, being Arabic being the primary language texts shall be aligned to the right.

11. Braille characters will be located at the bottom left, at a minimum distance of 10 mm and a maximum of 30 mm from the left side and bottom of the sign. Accessibility pictograms shall follow the ISO 7000: 2004 standard.

12. Safety and evacuation pictograms in workplaces and public places shall follow the ISO 3864-1: 2002 international standard.

13. If signage is supplemented with Braille, it should be located at the bottom of the sign and presented in Grade One Braille that meets the standards in English.

14. Wayfinding signage is classified into the following categories according to the wayfinding processes required for the users:

Wayfinding processes	Sign type	Use of the sign
Orientation	Information sign	Indicates specific locations within an environment, helping in understanding.
Route decision and monitoring	Directional sign	Guide users through the environment to their destination.
Recognition	Identity sign	Display necessary information for users to identify a place.
Advice	Advisory sign	Draw attention to objects, situations or behaviours that may affect the well being and convenience of users or operations in the environment.

Table 12. Sign types according to wayfinding processes

14.4. Information signs

Information signs are meant to inform the user about their own position relating to their destination. Therefore, it is necessary that:

At any street corner the name of the street in both Arabic and English shall be posted.

- Information about the nearest means of public transport and the distance to them shall be displayed at least at every second street corner
- A map of the community containing the main services within this community and a map showing the position of the community in relation with the city shall be displayed in all bus shelters, metros, tramways and ferry stations.
- Information displaying the nearest exit, nearest toilets and the distance to them shall be displayed at least every 70 meters in all parks.
- All maps presented in open spaces shall be designed with the North in the upper part and displaying a North symbol.
- Maps and directories shall be mounted in entrances to help visitors to navigate.
- Maps shall be easy to understand, without too much information and they shall use contrasted colours and symbols.

14.4.1. Tactile maps

Tactile maps that offer embossed visual information and acoustic information should be provided when required. Acoustic information shall also be provided when possible.

14.4.1.1. General features

Tactile maps shall include only essential information: location of services and paths and position of elements such as information, main services, toilets, etc.

Concepts used should be easy to understand.

Graphic plane representation (lines, surfaces) should be defined through embossment, textures and colour contrasts.

The signs and lettering of the map shall be represented taking into account contrast between fonts and background colours. The font size shall be at least 20 mm in a sans serif type font. Furthermore, the information shall be represented in Braille.

The maximum dimensions of horizontal fixed tactile maps will be of 800 mm x 450 mm.

The symbols should be clearly differentiated (form, colour and texture) and shall be easily associated with their representation.

For complex maps buttons providing oral information shall be provided.

14.4.1.2. Location of tactile maps

When a tactile map is provided, it will be located within the accessible path and its location shall be indicated with a tactile orientation and warning surface. It should be in a well-lit area. Obstacles in front shall be avoided such as glass protections.

When they are mounted in busy public places, they shall include sound information.

In large buildings and open spaces for public use (parks, beaches), they shall be located at the main entrance area, near the door, on the right side, within 1000 mm. In a building with more than one floor, it shall be located near the stairs or the elevator.

When fixed to a vertical surface, it shall be centred between 1250 mm and 1750 mm above the floor. On horizontal or inclined surfaces, the height shall be between 900 mm and 1200 mm from the floor and the inclination will be between 30º and 45º from the horizontal level.

14.4.2. Digital screens

Screens should be matt and with a wide angle of vision and provide a good contrast. In all instances, screens must fulfil the following criteria:

Whenever installed in walls, screens should be located at a height between 1700 mm and 2000 mm without interfering with the accessible path with a slight inclination (15º-30º). They should be visible from a minimum distance of 1000 mm, applying the requirements of size and contrast specified in this Section.

An interaction space shall be provided in front of the screen.

14.5. Directional signs

Directional signs shall give information to the users how to reach their destination.

14.5.1. Directional arrows in directional signs

An acceptable arrow design shall have the shaft longer than the header stem. Moreover, the thickness shall be the same in all arrow lines and header lines shall have an angle of 45 degrees.

Figure 121. Example of a good arrow design

The table 13 shows the different arrow typologies allowed depending on the direction they point to and the arrow alignment on the sign. Furthermore, the table shows the hierarchy of arrows from the top to the bottom of a sign.

Arrow alignment, typology and hierarchy

Hierarchy	Arrows to be aligned on the left	Arrows to be aligned on the right
Top of the sign		Straight up 
	 To the left, then ahead	To the right, then ahead 
	 Ahead, then to the left	Ahead, then to the right 
	 Go up on the left	Go up on the right 
	 Turn left	Turn right 
	 Go down on the left	Go down on the right 
Bottom of the sign		Go down ahead 

Table 13. Arrow alignment, typology and hierarchy

Figure 122. Example of a directional signs with the correct alignment and hierarchy of arrows

14.5.2. Tactile wayfinding

Tactile wayfinding is very useful for people with low vision and people who are blind if they use a white cane.

Tactile references include walls, façades, doors and changes of texture in pavements and differences between tiles and grass.

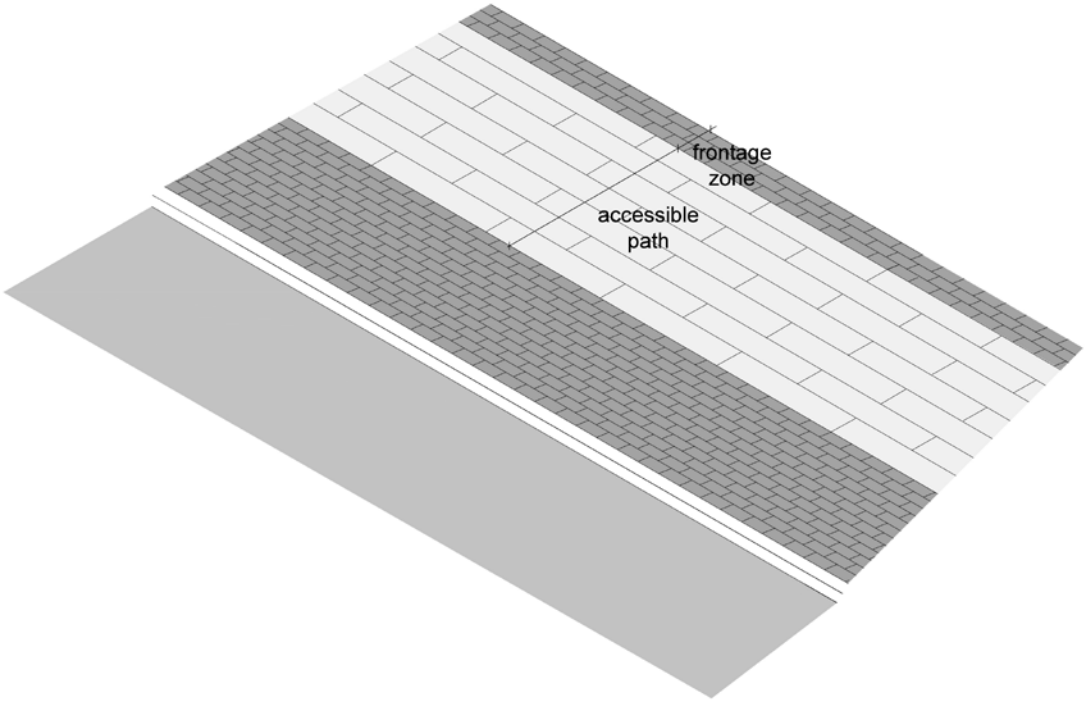


Figure 123. Accessible path pavements with different textures from the surrounding pavement

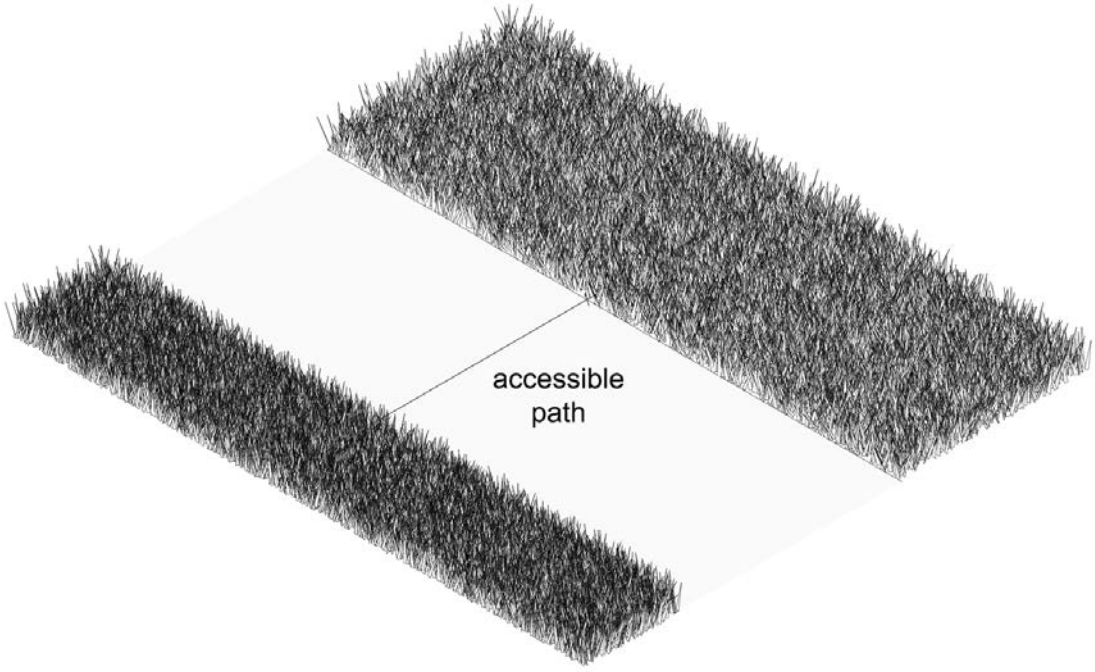


Figure 124. Accessible path pavement with a different texture than the grass

When differences in surface treatments are missing, a guiding tactile pavement as described in Section B shall be provided.

Guiding surfaces pavements are compulsory in:

- Open squares without defined walking paths.
- Metro, tramway and ferry networks.
- From building entrances to information desks or receptions in administration buildings.

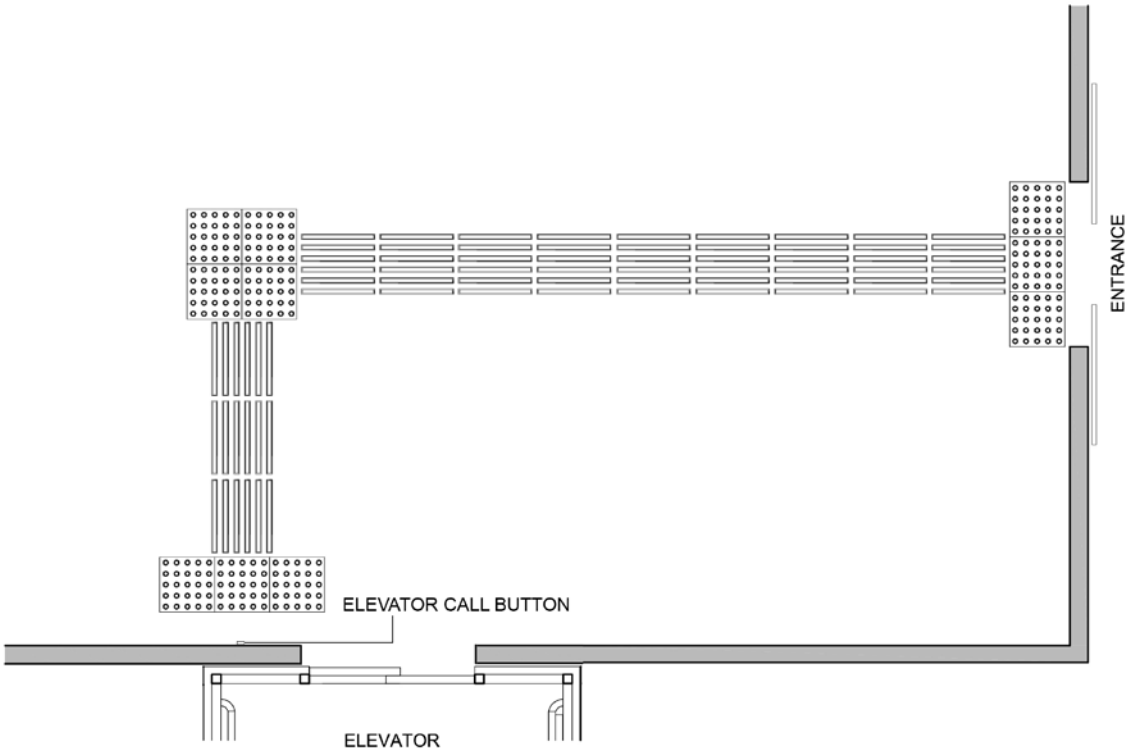


Figure 125. Use of tactile pavement

Where public transportation is provided, guiding tactile surfaces shall start at the entrance and be continued to all accessible services. The surfaces indicate the walking route. Warning tactile surfaces shall be in place at any direction change, at any level change and in front of all the services provided.

14.6. Identity signs

Identity signs are meant to identify a destination. Therefore, is it necessary that:

- All fenced open spaces like parks, golf courses or hotels shall display their name at the entrance door.
- All building façades shall display the name of the building as well as the Makani number.
- All doorframes shall present information on the service(s) available in the space. Embossed standardized pictograms and text with contrasted colour must be used to identify the different services. Signage must be mounted at a height between 1200 mm and 1600 mm on the left of the door.

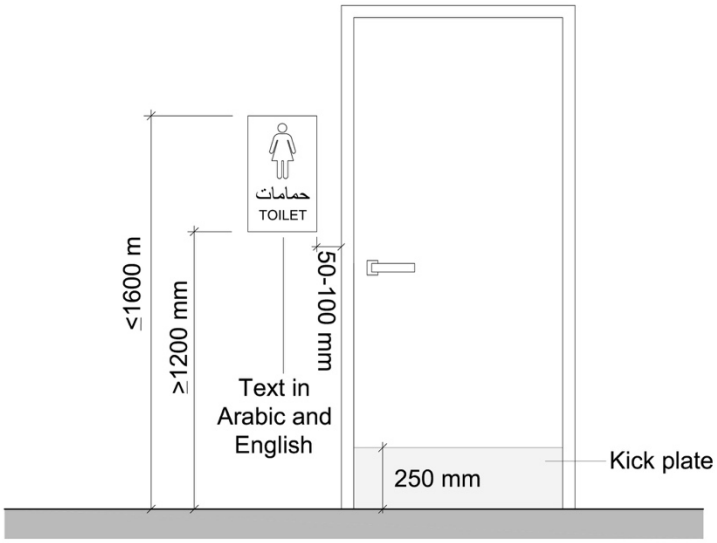


Figure 126. Doors signage

14.7. Advisory signs

Advisory signs shall be mounted to indicate safety procedures such as fire escape routes, no smoking areas and other regulatory information.

Advisory signs shall also be placed at rest areas, lifts, access points, etc., to inform users about giving priority or give way to others (such as the elderly, people with prams, pregnant women and persons with disabilities).

14.8. Colour and contrast

Colour contrast between text and its background shall have a clear reflectance contrast of at least 50 LRV.

14.9. Typography

1. In public spaces internationally recognizable icons and signs are preferred instead of text.
2. All relevant textual information will be provided both in Arabic and English. When numerals are used at least English numerals will be displayed.
3. Sans-serif fonts as Arial, Tahoma, Verdana, Avenir and Avenir Heavy shall be used.
4. Within a sign, not more than 2 typefaces should be used.
5. The distance at which a person can read the sign has to be taken into account adjusting the font size according to the following table:

Signs font size according to reading distance

Reading distance	Minimum size	Recommended size
≥50 meters	170 mm	200 mm
20 meters	140 mm	180 mm
5 meters	70 mm	140 mm
4 meters	56 mm	110 mm
3 meters	42 mm	84 mm
2 meters	28 mm	56 mm
1 meter	14 mm	28 mm
0.5 meters	7 mm	14 mm

Table 14. Accessible text according to reading distances

6. Signs should present chromatic contrast against their background where it is located and between the texts or icons and the sign background, avoiding reflections.
7. Only long texts should be aligned to the left in Latin languages and to the right in Arabic language.

8. For short texts, tactile format following the criteria explained in section 1.10. must be used when the sign is located in the hand interaction space (in vertical parameters, between 1250 mm and 1750 mm and in horizontal parameters, between 900 mm and 1250 mm).

14.9.1. Layout and line spacing

Layout and line spacing shall fulfil the following criteria:

1. Line spacing shall be identical to the height of the lowercase letters.
2. When more than one letter size is used, the larger text height should be referenced to determine the line spacing between different letter sizes.
3. Word spacing shall be a maximum of 0.5 times the height of the lower-case letters.

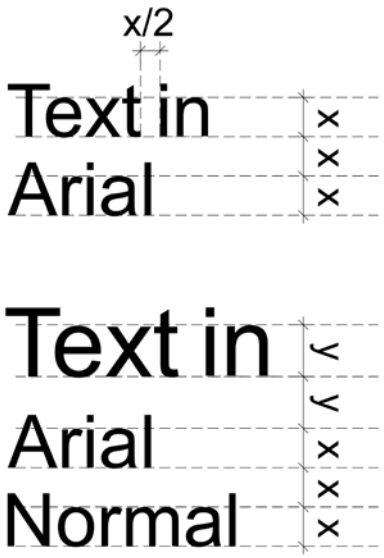


Figure 127. Line and word spacing

14.10. Symbols

1. Accessibility pictograms and symbols shall follow the ISO 7000: 2004 standard.
2. Standard symbols can be used independently or combined with text messages, where appropriate. Text messages may facilitate the understanding of less well-established symbols.

3. For short text messages, symbols shall be placed as a prefix to the description in text.

4. Examples of symbols that should be use:

1. Male toilet

2. Female toilet

3. Toilet

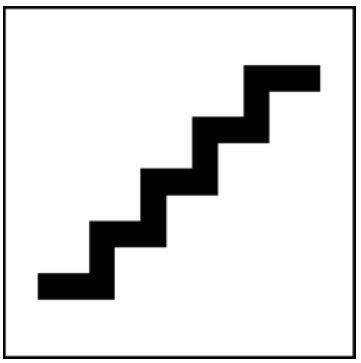
4. Family toilet

5. Nursery

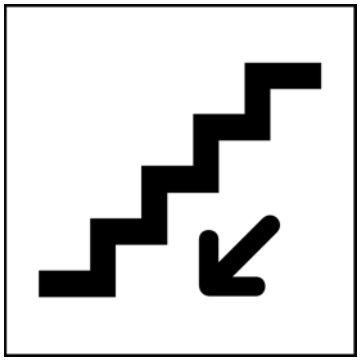
6. Escalator

7. Escalator down

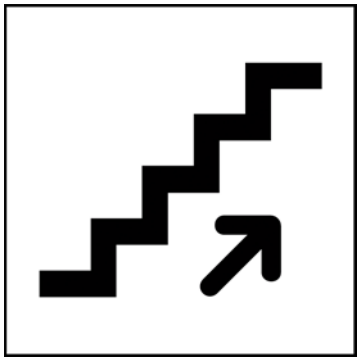
8. Escalator up



9. Stairs



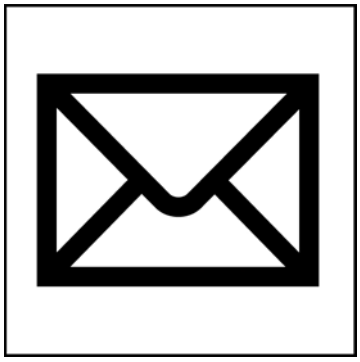
10. Stairs down



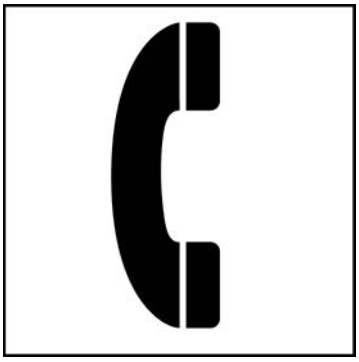
11. Stairs up

12. Stair with message

13. Elevator

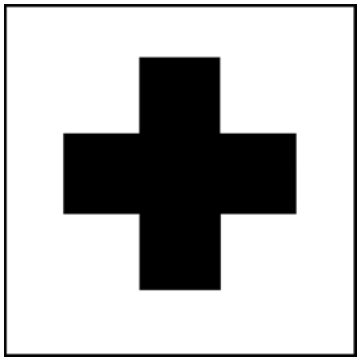


14. Post Office



15. Telephone

16. Drinking Fountain



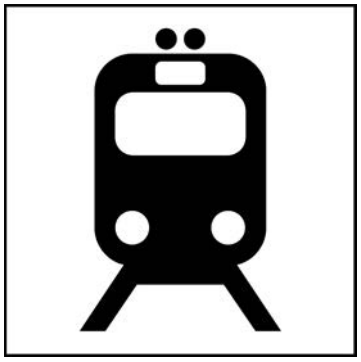
17. First Aid

18. Waiting Area

19. Airport

20. Taxi

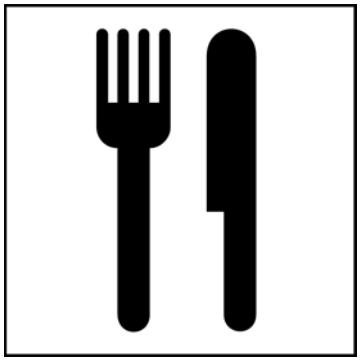
21. Bus



22. Metro

23. Water transportation

24. Coffee Shop



25. Restaurant

26. Shopping

27. Ticket Purchase

14.11. High embossment

1. Tactile signage should be used, letters, numbers, symbols and pictographs should be raised at least 0.8 mm and should be between 16 mm and 50 mm high. If a tactile sign is mounted on a wall, its center should be at a height of 1500 mm ±25 mm above the floor.

2. Long messages should be avoided for reading of letters and symbols in high embossment.

3. It should be used for rooms or spaces identification signs. These signs preferably represent a single icon or character; for example, the number of an elevator floor, restrooms icon, etc.

4. High embossment letters shall be in upper case.

5. The tactile signs must be in high embossment and not engraved.

6. Symbol height shall not be less than 30 mm. The embossment thickness will be of between 2 mm and 5 mm for letters and of 2 mm for symbols.

14.12. Braille

Although a minority of people with visual impairments use Braille, it is a good design practice to include this form of writing in signage following the criteria of this Code.

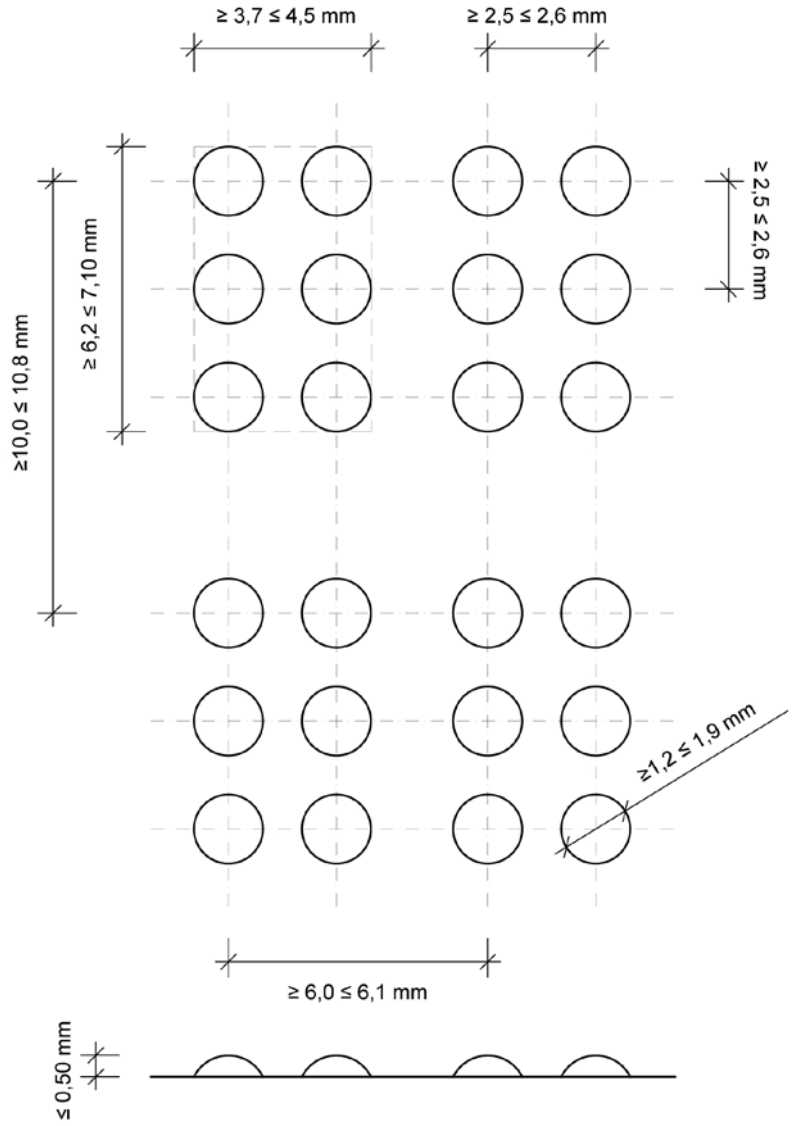


Figure 128. Dimensions of Braille

14.13. Position

1. Signs shall be mounted out of the accessible path and must not interfere with clear headroom along the entire path of at least 2200 mm.

2. Place signs in consistent, predictable locations. Standardise the position of the same family of signs in the same areas of the environment.

3. Signs shall be well illuminated at all times. Lighting and sun should not produce shadows or glare on the signs. For signs that are illuminated externally by ambient lighting, the preferred graphics is a dark colour against a light-coloured background.

4. Avoid the backgrounds of signs in strong visual textures or that are reflective.
5. Obstacles between signs and the observers shall be avoided.
6. Signs in walls must be centred at a height of 1600 mm and the upper edge to a maximum height of 1750 mm above the ground. If mainly children use a space, a second level shall be installed, placing the second sign at a maximum height of 1250 mm.
7. When the sign is mounted on a horizontal or inclined plane, inclination should be of between 30º and 45º from the horizontal level.

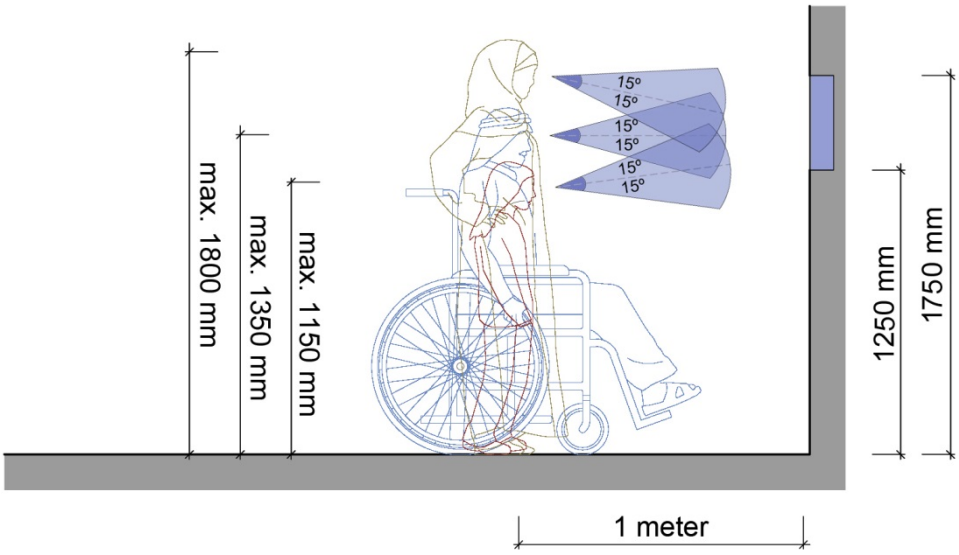


Figure 129. Vertical visual reach - close distance

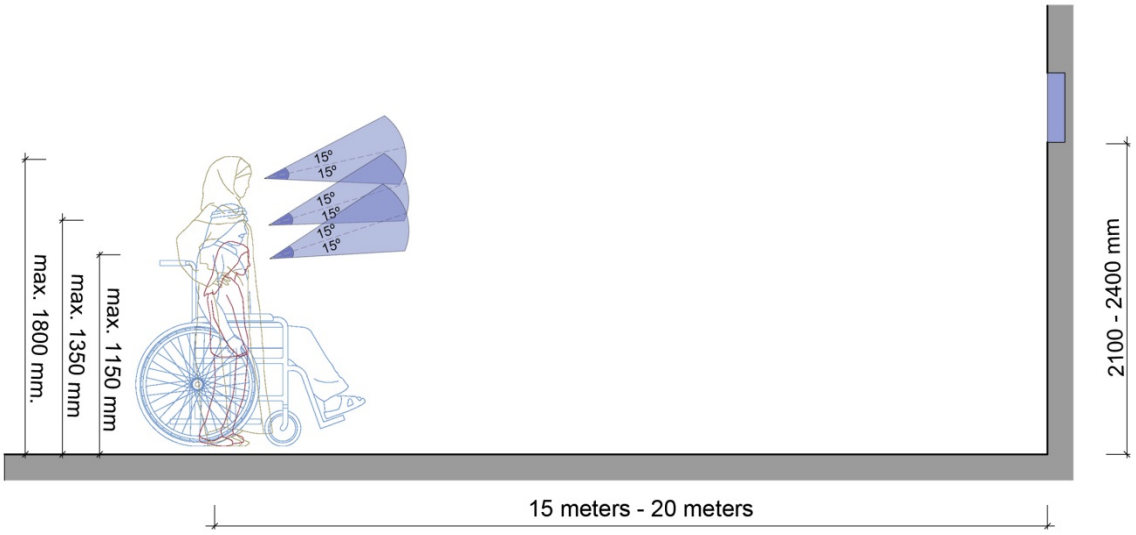


Figure 130. Vertical visual reach - far distance

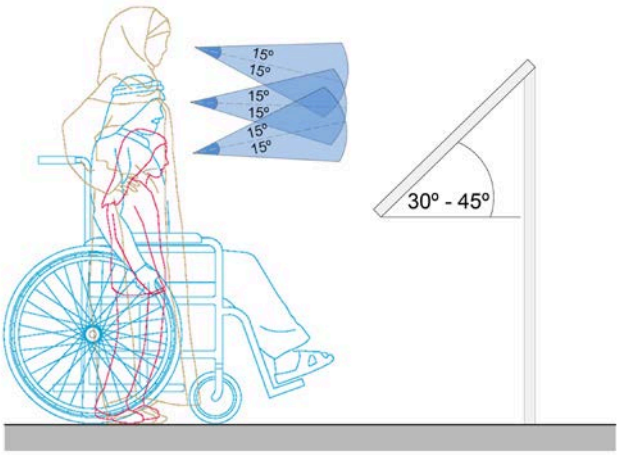


Figure 131. Inclined sign and tactile maps

8. Directional signs on a long route should be repeated sequentially starting from the decision-making point/junction, with a maximum spacing of 30 m. They serve as confirmation signs and repeater signs along the route.

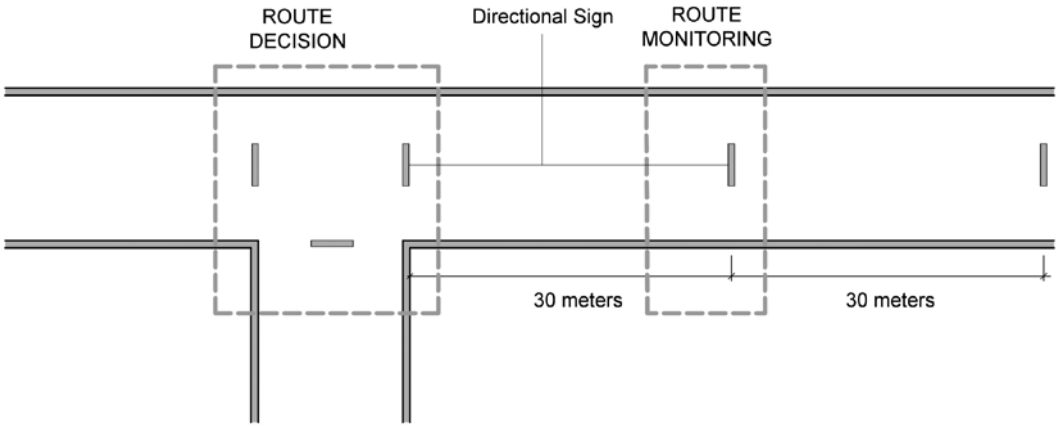


Figure 132. Position of signs during the navigation

14.14. Combination of communication processes

To ensure an accessible communication process, a combination of different communication channels must be provided depending on the environment or service. The communication must include at least two of the three channels of communication: acoustic, visual and tactile.

A number of possible valid combinations of an accessible communication process are displayed in the table below:

Combination of communication channels				
Alphabetical and symbolic writing	+	Tactile references / guiding tactile pavement		
Alphabetical and symbolic writing	+	Alphabetical and symbolic embossed writing		
Alphabetical and symbolic writing	+	Alphabetical and symbolic embossed writing	+	Braille
Alphabetical and symbolic writing	+	Oral information		
Alphabetical writing	+	Braille		
Light signal	+	Simultaneous sound signal		
Oral Communication	+	Sign language/written text		

Table 15. Accessible communication combinations

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Annexes

Annex 1 - Licensing procedures

14.15. Accessible path drawings

Building projects shall include a floor plan drawing providing evidence that all dimensional requirements are fulfilled.

In this drawing the following information shall be clearly illustrated:

- The passage width, doors and manoeuvring dimensions.
- The situation of the building stairs, elevators and toilets.
- The distance between the furthest point from the facilities and the facilities indicated on the preceding point. This distance shall be drawn on the floor plan and the distance shall be calculated and written.

14.16. Way finding drawings

Building projects shall include a floor plan drawing providing evidences of way finding coherence and continuity.

In this drawing the following information shall be clearly illustrated:

- All directional signs with the text, colours and symbols. Moreover, the signs location shall be indicated.
- The situation of the building's main different facilities, including stairs and elevators, toilets, offices, stores… The directional signs shall be coherent with the facilities location.

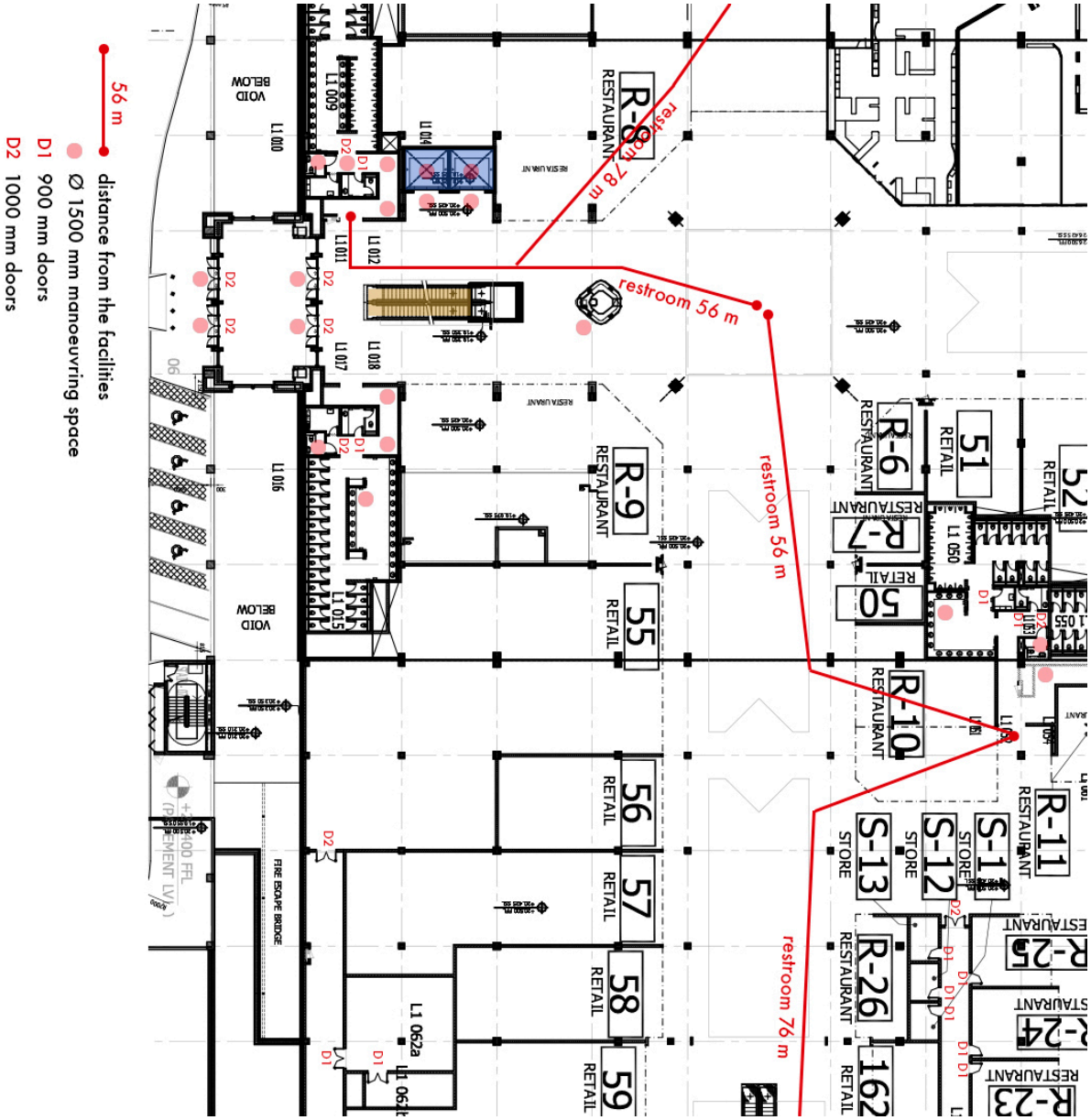

Figure 133. Example of accessible path drawing

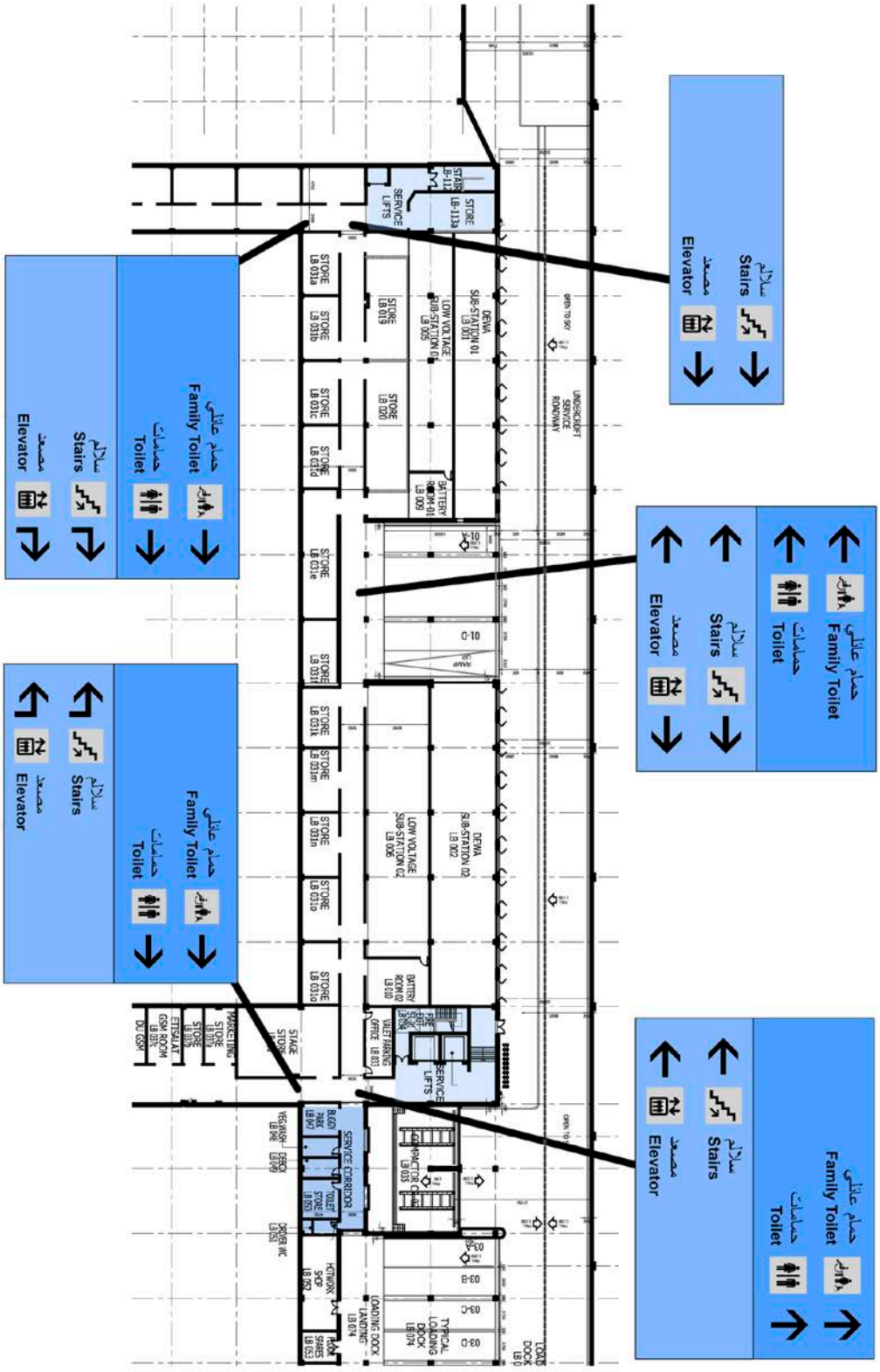

Figure 134. Example of accessible wayfinding drawing

Annex 2 - Anthropometrics

The drawings below present population's extreme dimensions that are considered for this Code and certain functional aspects that shall be also considered when designing.

14.17.Interaction area

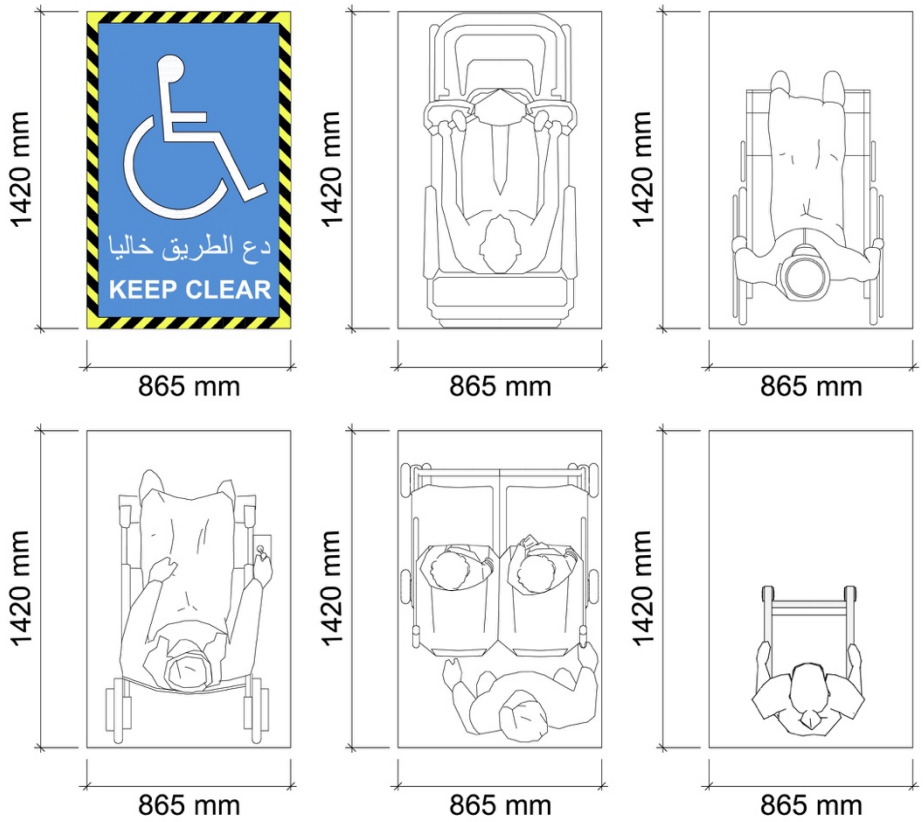

Figure 135. Extreme horizontal dimensions

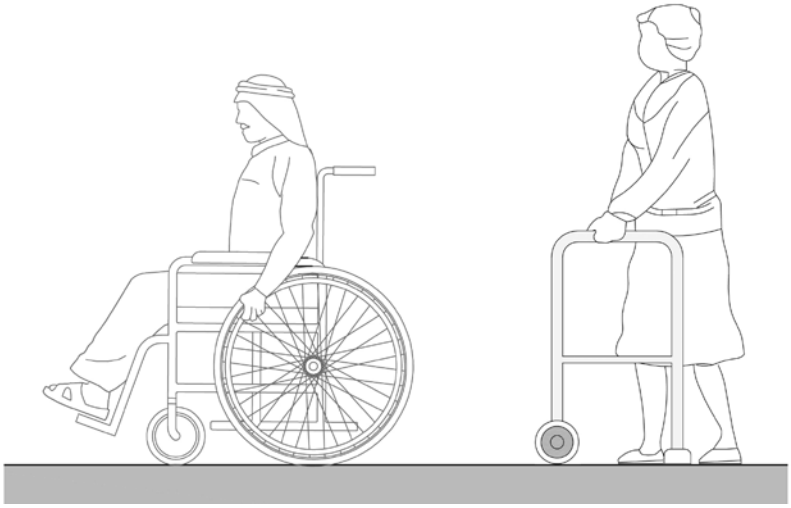

Figure 136. Elevation of a wheelchair and a walker user

14.18. Vertical reach

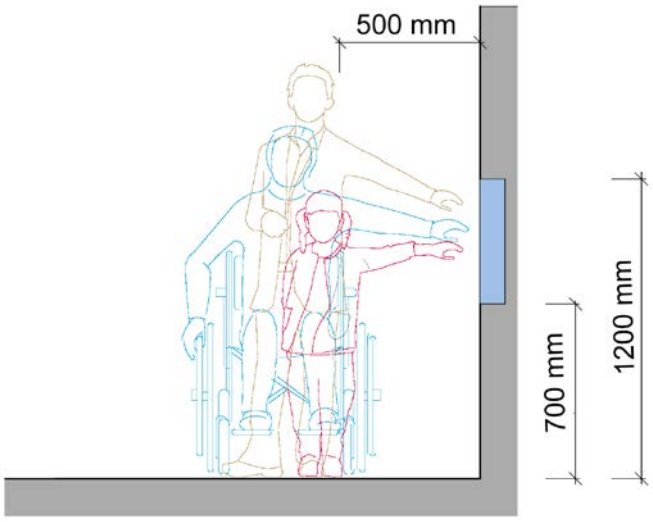

Figure 137. Vertical reach

14.19. Walking and running speed

To be aware of walking and running speeds is relevant when designing parks and streets.

Especially relevant is to consider people walking slowly when defining the green time for pedestrians in traffic lights.

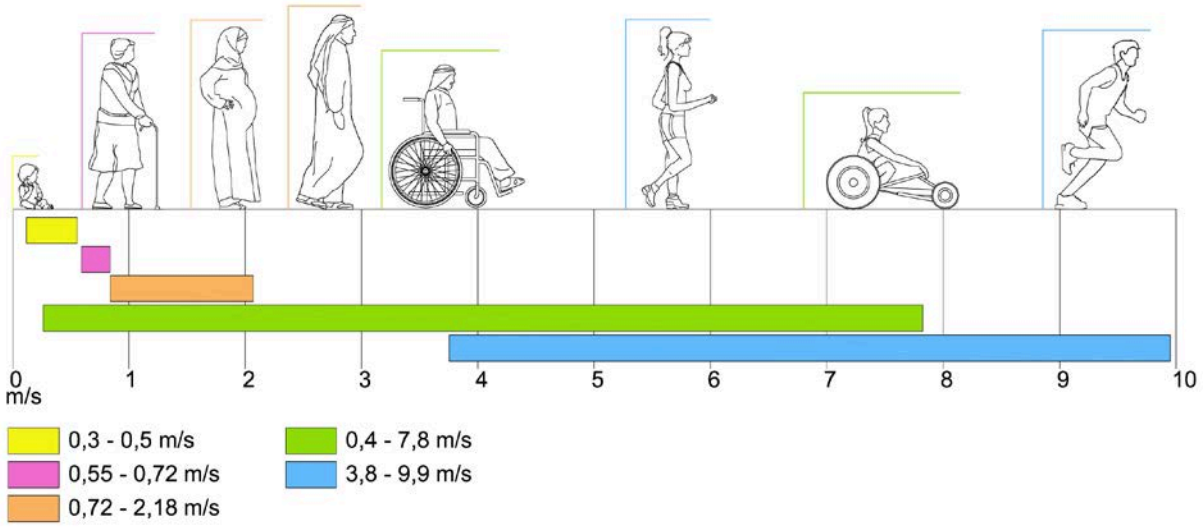

Figure 138. Usual walking, rolling and running speeds

Audible communication in the range of 500-2.000 Hz should be favoured in acoustic signals, alarms and voice messages in Public Announcement Systems.

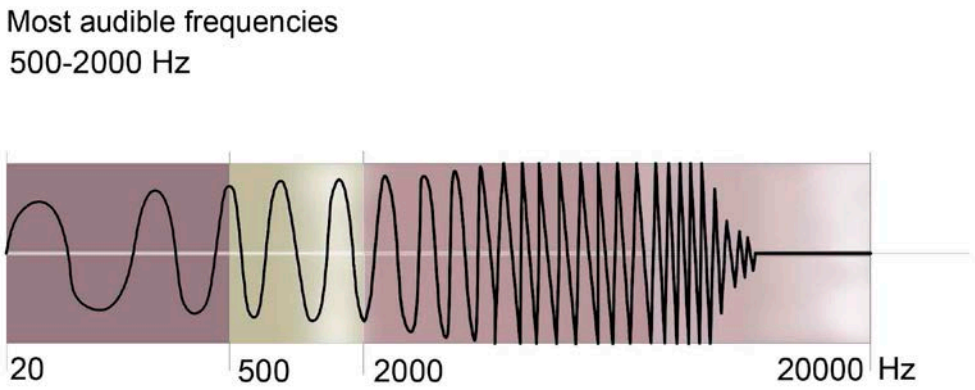

Figure 139. Audible frequencies

Annex 3 - Required accessibility in each building type

Legend	
UA	Universally Accessible
UA*	When the building is built in a floodable zone the entrances of the building can have a change in level from the exterior floor level. In this exceptional case the entrances solutions may be permitted.
UA/P	Only for small new and existing buildings: paths can be smaller respecting the Tolerance Limits and is permitted interaction space only in one side in the toilet. Only for retrofitting existing buildings: The building facility shall be Universally Accessible; however, if the Universal Accessibility level is technically or economically impossible exceptions can be accepted respecting the Tolerance Limits.
C	Convertible. Presents dimensions that allow transform the house or apartment to reach at least the Permissible level in a future at a low cost.
UA/PM	The facility shall follow the Paralympics Committee requirements as long as these requirements are greater than the Dubai Universal Accessibility Code requirements. If not the facility shall be Universally Accessible.
TA/FT	Tactile maps are required and accessible toilets outside toilets blocks are not accepted as family toilets.
FT/F	Additional to the Universal Accessible toilets a Family toilet and a feeding room are requested.
All*	All industrial buildings and laboratories areas except: - The ones that handle oil and gas, refinery industry, chemicals, toxic materials and potential explosive compounds. - Areas with activities that require a “gowning regime”. - Production areas with heavy machinery. - Areas for warehousing and storage.

14.20. Required accessibility provisions for new buildings

For buildings and facilities built with a permit to build issued after the date of entry into force of the Code and for any modification, extension or change of use project the following table applies.

MINIMUM LEVELS OF ACCESSIBILITY FOR NEW BUILDINGS

		Entrance	Path	Stairs	Toilets	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile maps	Reserved seating spaces	Induction loops
Hotels												
Hotels & motels	≤ 50 beds	UA*	UA/P	UA	UA	UA		UA	UA			
	> 50 beds	UA*	UA	UA	UA	UA	UA	UA	UA			
Students residences in educational buildings	≤ 50 seats	UA*	UA/P	UA	UA	UA		UA	UA			
	> 50 seats	UA*	UA	UA	UA	UA	UA	UA	UA			
Labour camps	All	UA*	UA	UA	UA							
Prisons	All	UA*	UA	UA	UA	UA			UA			
Commercial, restaurants and cafeterias												
Markets	All	UA*	UA	UA	UA	UA	UA	UA				
Shops, bank offices, beauty salons and similar	≤ 500 m2	UA*	UA/P	UA	UA	UA		UA				
	> 500 m2	UA*	UA	UA	UA	UA	UA	UA				
Commercial centres >10.000 m2	All	UA*	UA	UA	FT/F	UA	UA	UA		TA/FT		

MINIMUM LEVELS OF ACCESSIBILITY FOR NEW BUILDINGS

		Entrance	Path	Stairs	Toilets	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile maps	Reserved seating spaces	Induction loops
Cafes and Restaurants	≤ 50 seats	UA*	UA/P	UA	UA/P			UA				
	> 50 seats	UA*	UA	UA	UA		UA	UA				
Healthcare facilities												
Hospitals & Clinics	All	UA*	UA	UA	UA	UA	UA	UA	UA			
Ambulatory health centres	All	UA*	UA	UA	UA	UA	UA	UA				
Doctors' private offices and dental clinics	≤100 m2	UA*	UA/P	UA	UA/P	UA	UA	UA				
	> 100 m2	UA*	UA	UA	UA	UA	UA	UA				
Health services: optics, orthopaedics...	≤ 1000 m2	UA*	UA/P	UA	UA/P	UA	UA	UA				
	> 1000 m2	UA*	UA/P	UA	FT/F	UA	UA	UA				
Pharmacy	All	UA*	UA/P	UA	UA/P		UA	UA				
Social-health centres	All	UA*	UA	UA	UA	UA	UA	UA	UA			
Social												
Residential and day centres for the elderly and people with disability	≤ 25 seats	UA*	UA/P	UA	UA	UA	UA	UA	UA			
	> 25 seats	UA*	UA	UA	UA	UA	UA	UA	UA			

MINIMUM LEVELS OF ACCESSIBILITY FOR NEW BUILDINGS

		Entrance	Path	Stairs	Toilets	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile maps	Reserved seating spaces	Induction loops
Other residential and day centres, therapeutic communities, assisted homes	≤ 25 seats	UA*	UA/P	UA	UA	UA	UA	UA	UA			
	> 25 seats	UA*	UA	UA	UA	UA	UA	UA	UA			
Recreation												
Function halls	≤ 50 seats	UA*	UA/P	UA	UA/P			UA				
	> 50 seats	UA*	UA	UA	UA		UA	UA				
Amusement parks and theme parks	All	UA*	UA	UA	FT/F	UA	UA	UA				
Leisure centres	All	UA*	UA	UA	FT/F	UA	UA	UA				
Sport facilities												
Sport centers	All	UA*	UA	UA	UA	UA	UA	UA			UA	UA
	For international competitions	UA/ PC	UA/ PC	UA/ PC	UA/ PC	UA/ PC	UA/ PC	UA/ PC		UA/ PC	UA/ PC	UA/ PC

MINIMUM LEVELS OF ACCESSIBILITY FOR NEW BUILDINGS

		Entrance	Path	Stairs	Toilets	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile maps	Reserved seating spaces	Induction loops
Cultural												
Libraries, civic centers and exhibition rooms	≤ 100 m2	UA*	UA/P	UA	UA/P	UA		UA			UA	UA
	> 100 m2	UA*	UA	UA	UA	UA	UA	UA			UA	UA
Museums	≤ 1000 m2	UA*	UA/P	UA	UA/P			UA			UA	UA
	> 1000 m2	UA*	UA	UA	FT/F		UA	UA			UA	UA
Theatres, cinemas, conference rooms and auditoriums	≤ 50 seats	UA*	UA/P	UA	UA/P		UA	UA			UA	UA
	> 50 seats	UA*	UA	UA	UA	UA	UA	UA			UA	UA
Public Administration												
Public administration buildings	All	UA*	UA	UA	UA	UA	UA	UA				UA
Public utilities companies offices	≤ 100 m2	UA*	UA/P	UA	UA/P			UA				UA
	> 100 m2	UA*	UA	UA	UA		UA	UA				UA
Public offices and professional offices	≤ 500 m2	UA*	UA/P	UA	UA/P			UA				UA
	> 500 m2	UA*	UA	UA	UA		UA	UA				UA
Education												
Educational buildings	All	UA*	UA	UA	UA	UA	UA	UA	UA		UA	UA

MINIMUM LEVELS OF ACCESSIBILITY FOR NEW BUILDINGS

		Entrance	Path	Stairs	Toilets	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile maps	Reserved seating spaces	Induction loops
Religious facilities												
Mosques and other religious buildings	≤ 50 seats	UA*	UA/P	UA	UA/P	UA		UA	UA			UA
	> 50 seats	UA*	UA	UA	UA	UA	UA	UA	UA			UA
Parking												
Garage and parking	≤ 50 spots	UA*	UA/P	UA	UA/P			UA				
	> 50 spots	UA*	UA	UA	UA		UA	UA				
Transportation												
Rail transport station	All	UA*	UA	UA	UA	UA	UA	UA				UA
Airports	All	UA*	UA	UA	FT/F	UA	UA	UA		TA/FT		UA
Service areas and petrol stations	All	UA*	UA/P	UA	UA/P	UA	UA	UA				
Other uses												
Industrial	All*	UA*	UA	UA	UA/P	UA	UA	UA				
Laboratories	All*	UA*	UA	UA	UA/P	UA	UA	UA				

MINIMUM LEVELS OF ACCESSIBILITY FOR NEW BUILDINGS

		Entrance	Path	Stairs	Toilets	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile maps	Reserved seating spaces	Induction loops
Undefined use buildings												
Undefined use buildings	All	UA*	UA	UA	UA	UA	UA	UA				
Residential												
Common circulation areas	Without universally accessible housing	UA*	UA/P		UA/P							
	With universally accessible housing	UA*	UA	UA	UA	UA	UA	UA				
Inside housing	Non universally accessible	UA*	C		C							
	Universally accessible	UA*	UA	UA	UA		UA	UA				
Other common areas	500 to 1000 m2	UA*	UA/P		UA/P	UA		UA				
	> 1000 m2	UA*	UA	UA	UA	UA	UA	UA				

14.21. Required accessibility provisions for existing buildings

For buildings and facilities built with a permit to build issued before the date of entry into force of the Code the following table applies.

MINIMUM LEVELS OF ACCESSIBILITY FOR EXISTING BUILDINGS

		Main entrance	Paths	Stairs	Sanitary provisions	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile map	Reserved seating spaces	Induction loops
Residential												
Hotels & motels	≤ 50 beds	UA/P	UA/P		UA/P				UA			
	> 50 beds	UA*	UA/P	UA/P	UA	UA/P	UA	UA	UA			
Students residences in educational buildings	≤ 50 seats	UA/P	UA/P		UA/P				UA			
	> 50 seats	UA*	UA/P	UA/P	UA/P	UA/P	UA/P	UA	UA			
Labour camps	All	UA*	UA/P	UA/P	UA/P	UA/P	UA/P	UA	UA/P			
Prisons	All	UA*	UA	UA	UA	UA			UA			
Commercial												
Markets	All	UA/P	UA/P	UA/P	UA/P	UA/P	UA/P	UA				
Shops, bank offices, beauty salons and similar	≤ 100 m2	UA/P	UA/P		UA/P							
	100 to 500 m2	UA/P	UA/P		UA/P	UA/P						
	> 500 m2	UA*	UA	UA/P	UA	UA	UA	UA				

MINIMUM LEVELS OF ACCESSIBILITY FOR EXISTING BUILDINGS

		Main entrance	Paths	Stairs	Sanitary provisions	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile map	Reserved seating spaces	Induction loops
Commercial centres > 10.000 m2	All	UA*	UA	UA/P	FT/F	UA	UA	UA		TA/FT		
Cafes and Restaurants	≤ 100 seats	UA/P	UA/P		UA/P							
	> 100 seats	UA/P	UA	UA/P	UA		UA	UA				
Healthcare facilities												
Hospitals & Clinics	All	UA/P	UA	UA/P	UA	UA	UA	UA	UA			
Ambulatory health centres	All	UA/P	UA	UA/P	UA	UA	UA	UA				
Doctors' private offices and dental clinics	≤ 100 m2	UA/P	UA/P		UA/P							
	100 to 500 m2	UA/P	UA/P		UA/P	UA						
Health services: optics, orthopaedics...	> 500 m2	UA/P	UA	UA/P	UA	UA	UA/P	UA				
Health services: optics, orthopaedics...	≤ 100 m2	UA/P	UA/P		UA/P							
	100 to 500 m2	UA/P	UA/P		UA/P	UA						
Pharmacy	> 500 m2	UA/P	UA	UA/P	UA	UA	UA/P	UA				
Hospitals & Clinics	All	UA/P	UA/P		UA/P							

MINIMUM LEVELS OF ACCESSIBILITY FOR EXISTING BUILDINGS

		Main entrance	Paths	Stairs	Sanitary provisions	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile map	Reserved seating spaces	Induction loops
Ambulatory health centres	All	UA/P	UA	UA/P	UA	UA	UA	UA	UA			
Social												
Residential and day centres for the elderly and people with disability	≤ 25 seats	UA/P	UA/P		UA/P			UA				
	> 25 seats	UA*	UA	UA/P	UA	UA	UA	UA	UA			
Other residential and day centres, therapeutic communities, assisted homes	25 to 50 seats	UA/P	UA/P		UA/P							
	> 50 seats	UA/P	UA/P	UA/P	UA	UA	UA	UA	UA			
Recreation												
Function Halls	> 50 seats	UA/P	UA	UA	UA		UA	UA				
Amusement parks and theme parks	All	UA/P	UA	UA/P	FT/F	UA	UA	UA				
Leisure centres	≤ 500 m2	UA/P	UA/P		UA/P	UA						
	> 500 m2	UA/P	UA	UA/P	FT/F	UA	UA	UA				

MINIMUM LEVELS OF ACCESSIBILITY FOR EXISTING BUILDINGS

		Main entrance	Paths	Stairs	Sanitary provisions	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile map	Reserved seating spaces	Induction loops
Sport facilities												
Sport centres	All	UA/P	UA	UA/P	FT/F	UA	UA	UA			UA	UA
	For international competitions	UA/ PC	UA/ PC	UA/ PC	UA/ PC	UA/ PC	UA/ PC	UA/ PC		UA/ PC	UA/ PC	UA/ PC
Cultural												
Libraries, civic centres and exhibition rooms	≤ 200 m2	UA/P	UA/P		UA/P	UA					UA	UA
	> 200 m2	UA/P	UA	UA/P	UA	UA	UA				UA	UA
Museums	≤ 200 m2	UA/P	UA/P		UA/P						UA	UA
	> 200 m2	UA/P	UA	UA/P	FT/F		UA	UA			UA	UA
Theatres, cinemas, conference rooms and auditoriums	≤ 50 seats	UA/P	UA/P		UA/P		UA				UA	UA
	> 50 seats	UA/P	UA	UA/P	UA		UA	UA			UA	UA
Public Administration												
Public administration buildings	All	UA/P	UA	UA/P	UA	UA	UA	UA				UA
Public utilities companies offices	≤ 200 m2	UA/P	UA/P		UA/P			UA				UA
	> 200 m2	UA/P	UA	UA/P	UA		UA	UA				UA

MINIMUM LEVELS OF ACCESSIBILITY FOR EXISTING BUILDINGS

		Main entrance	Paths	Stairs	Sanitary provisions	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile map	Reserved seating spaces	Induction loops
Public offices and professional offices	≤ 500 m2	UA/P	UA/P		UA/P			UA				UA
	> 500 m2	UA/P	UA	UA/P	UA		UA	UA				UA
Education												
Educational buildings	100 to 500 m2	UA/P	UA/P		UA/P						UA	UA
	> 500 m2	UA*	UA/P	UA/P	UA	UA	UA	UA	UA		UA	UA
Religious facilities												
Mosques & other Religious buildings	≤ 50 seats	UA/P	UA/P		UA/P	UA		UA				UA
	> 50 seats	UA/P	UA/P	UA/P	UA	UA	UA	UA	UA			UA
Parking												
Garage and parking	10 to 70 spots	UA/P	UA/P	UA/P	UA/P			UA				
	> 70 spots	UA/P	UA	UA/P	UA		UA	UA				
Transport												
Rail transport station	All	UA/P	UA	UA	UA	UA	UA	UA				UA
Airports	All	UA/P	UA	UA	FT/F	UA	UA	UA		TA/FT		UA

MINIMUM LEVELS OF ACCESSIBILITY FOR EXISTING BUILDINGS

		Main entrance	Paths	Stairs	Sanitary provisions	Changing room	Furniture	Parking & Drop-off point	Accessible rooms	Tactile map	Reserved seating spaces	Induction loops
Service areas and petrol stations	All	UA/P	UA	UA	UA	UA	UA	UA				
Other uses												
Industries	All*	UA/P	UA	UA/P	UA/P	UA	UA	UA				
Laboratories	All*	UA/P	UA	UA/P	UA/P	UA	UA	UA				
Residential private												
Common areas in residential buildings	Without universally accessible housing	UA/P	UA/P		UA/P							
	With universally accessible housing	UA/P	UA/P	UA/P	UA/P	UA/P	UA/P	UA/P				
Inside housing	Non universally accessible											
	Universally accessible	UA/P	UA/P	UA/P	UA/P	UA/P	UA/P	UA/P				
Others (except restricted use)	500 to 1000 m2	UA/P	UA/P		UA/P							
	> 1000 m2	UA/P	UA/P	UA/P	UA/P	UA/P	UA/P	UA/P				

Accessibility Checklist

15. Accessibility checklist

Accessibility Checklist Rating	
Do not accept the project if any of the tick box is empty	**To be filled by inspector**
1. YES answered to all applicable questions	
2. Accessible path drawing attached	
3. Wayfinding drawing attached	

Accessible path of travel				
Facility/Building …… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Enough width - more than 2000 mm and with no obstacle reducing it to less than 1200 mm.				
Linear and continued				
Intersections clearly visible with signs or lights				
Gradient ≤ 5%				
Clear headroom ≥ 2200 mm				
Absence of uneven surfaces - irregularities ≤ 5 mm				
Absence of protruding objects - No object protruding into the pedestrian path more than 100 mm and furniture comply detection cone rule.				
Illumination level ≥ 10 lux				
No drain grids on accessible path or accessible crossings				
Free of obstacles and located between the building's façade and the furniture zone				
Parking entrance do not modify the slope or width of the accessible path				
Curb height between 100 mm and 150 mm				
Cross slope gradient ≤ 2%				

Accessible path of travel				
Facility/Building…… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Pedestrian bridges with ramps or elevators				

Floor surfaces

Facility/Building ……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Slip resistance (PTV) comply: - Level and inclined with ≤ 5% dry areas indoor - Between 15 and 35 ☐ - Inclined < 5% dry areas indoor ≥ 35 ☐ - Level and inclined with ≤ 5% wet areas and outdoor - Between 35 and 45 ☐ - Inclined < 5% wet areas and outdoor ≥ 45 ☐ - Street pavement, swimming pools and showers ≥ 45 ☐				
Ground pavement without loose elements				
Rugs and carpets are firmly fixed and do not increase the strength required to roll over a ceramic pavement by ≥ 25%				
Without rounded edges and excessive joints				
Not producing glare				
With reflectance contrast of at least 30 points LRV				
Lighting in floor not produces glare and excessive heat				

Floor surfaces				
Facility/Building…… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Absence of utility covers on the path or with height less of 5 mm				
Absence of drain grids on the path or with holes smaller than 15 mm				
Change in level ≤ 5 mm with ≤ 25% gradient slope				
Longitudinal grate openings with perpendicular orientation to the pedestrians' direction of travel				
For distance between lower edge of a tree and the façade ≤ 2000 mm, tree grate with walkable surface				

Level changes

Facility/Building ……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Guardrails				
Absence of unprotected level changes - guardrails for heights ≥ 500 mm				
Height ≥ 1100 mm				
With sufficient strength and stiffness to withstand a force of 3 kN/m				
No climbable				
Openings ≤ 100 mm				
With a continuous base ≥ 100 mm				
Ramps				
Only when a change in level with gradients ≤ 5% are not possible				
Gradients slope ≤ 8%				
Cross fall gradient ≥ 2%				
Run length ≤ 10 meters				
Run width 1000 mm between handrails				
No curved ramps				
Landings at the beginning and end of every run - surface 1500 mm x 1500 mm				
Level landings or ≤ 2%				

Level changes				
Facility/Building…… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Ramps				
Corridors in landings with no less than 1200 mm width				
Doors at ≥ 1500 mm from start of each ramp run				
Stairs				
With an alternative elevator				
Steps rises between 150 - 176 mm				
Steps stair treads between 300 - 340 mm				
Steps rise (R) and Treat (T) fulfil: 650 mm < 2R + T < 700 mm				
No open risers or discontinued treads				
Steps with nosing ≤ 25 mm				
30 mm from the step edge shall present a reflectance contrast of 30 LRV				
Steps with same height with a ± 4 mm tolerance				
Stair flights steps number between 3 and 12				
Usable width ≥ 1200 mm				
Illumination at top and bottom ≥ 200lux				

Level changes				
Facility/Building…… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Stairs				
Landing with same width of stair and a length ≥ 1200 mm				
Empty space with height < 2200 mm under the stair is protected				
Handrails				
300 mm horizontal extension at its ends				
Presence of intermediate handrail for stairs larger than 2400 mm				
Height of 900 mm				
Additional handrail at a height between 650 - 750 mm				
Circular section of 30 - 40 mm separated from the wall ≥ 40 mm				
Contrast of 30 LRV against its background				
Elevators				
Present in buildings with more than one floor				
Dimensions shall comply: One door - 1200 x 1500 mm Two opposing doors - 1200 x 1500 mm Two doors in 90° - 1500 x 1500 mm				
Automatic doors with a width of 900 mm and colour contrast against walls				

Level changes				
Facility/Building…… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Elevators				
Manoeuvring space of 1500 x 1500 mm in front the elevator access				
Elevator calling buttons height between 900 - 1200 mm				
A mirror inside the cabin on the wall opposite to the door				
Inside the cabin, two handrails at a height of 900 mm ± 100 mm				
Inside the cabin, buttons height between 900 - 1200 mm with Braille				
The ground floor button raised ≥ 3 mm with a green line				
Buttons provide two-channel feedback				
Phone number of the alarm centre indicated				
CCTV orIintercom				
Light on the ceiling with 100 lux				
In panoramic elevators, an opaque wall or corner is provided				
Automatic reopening of doors				
If various options of vertical communication, elevator is signalised				

Level changes				
Facility/Building…… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Lift Platforms				
Dimensions of the cabin on min. 900 x 1500 mm				
Manoeuvring space of 1500 x 1500 mm in front the lift access				
Calling button height between 700 - 1200 mm				
Doors width of 900 mm				
Cabin with side protections				
Inside the cabin, two handrails at a height of 900 mm ± 100 mm				
Inside the cabin, continuous pressure buttons				
If open cabin - travel height of 2000 mm in public buildings and 3000 mm in private housing **If full cabin - travel height of 4000 mm**				

Doors, Windows, Switches and Glass Surfaces

Facility/Building ……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Lift Platforms				
Have a free passage width ≥ 900 mm				
Opening mechanism height between 900 – 1200 mm				
Lever systems separated from the door ≥ 40 mm				
Sliding doors with vertical fixed bars				
Force to open the door ≤ 25 N				
Swinging door open 90°				
If revolving door with alternative				
Dimensions of manoeuvring spaces comply: On pull side – 600 mm space adjacent to the leading edge and 1500 x 1500 mm space ☐ On push side – 300 mm space adjacent to the leading edge and 1200 x 1200 mm space ☐ Sliding doors – 300 mm space adjacent to the leading edge and 1200 x 1200 mm space ☐				
Clear spaces without obstructions of other doors				

Doors, Windows, Switches and Glass Surfaces				
Facility/Building…… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Windows				
Without projections ≤ 2200 mm into the pedestrian area				
Opening mechanisms not require wrist turning				
Glazing at minimum of 900 mm height				
With guardrails if window opening < 1200 mm				
Switches				
Located between 900 – 1200 mm height and located ≥ 600 mm from any corner				
Switch plates with contrast of 30 LRV against its background				
Switches can be activated with the elbow				
Glass surfaces				
Presence of two horizontal bands of 100 mm high with contrast of 50 LRV				
First horizontal band height between 1400 – 1600 mm **Second horizontal band height between 850 – 1000 mm**				

Toilets and Ablution Areas

Facility/Building ……

Space/Floor ……

Sheet Number ……

Glass surfaces

	YES	N/A	NON	Observations
Furniture have a reflectance contrast of at least 30 points LRV				
Toilet appliances height between 900 - 1200 mm				
Toilet appliances automatically activated or operable with the elbow				
Latch operable with the elbow installed between 900 - 1200 mm				
Coat hanger between 1100 - 1400 mm				
If 2 or more urinals, 1 with usable height at 400 mm and with grab bars				
In each toilet block a baby changing board is provided				
Pendulum Test Value (PTV) ≥ 45				
With sinks in a row, 1 is accessible				
Sink clearance space ≥ 700 mm high ≥ 250 mm deep.				
Usable sink surface height between 800 - 850 mm				

Toilets and Ablution Areas

Facility/Building……

Space/Floor……

Sheet Number ……

	YES	N/A	NON	Observations
Flushing systems are operated by pressure or with a flush handle				
Faucets shall be operated by pressure with a lever handle or with a sensor				
Distance to the faucet shall be less than 600 mm and vertical between 700 mm and 1200 mm.				
Lower edge of mirror 900 mm height				
Accessible toilets				
1 accessible toilet for each gender in every floor or 1 independent accessible toilet for both genders				
1 accessible toilet within a 150 m distance from any part of the building				
Corridors width in toilets, showers, lockers spaces of 1200 m				
Manoeuvring turning space diameter of 1500 mm in circulations				
Manoeuvring space diameter of 1500 mm inside the toilet				
Lateral interaction space on both sides of the toilet or on one side if symmetrical units				
Door open outwards or is sliding				

Toilets and Ablution Areas

Facility/Building……

Space/Floor……

Sheet Number ……

	YES	N/A	NON	Observations
Accessible toilets				
Door with horizontal 300 mm grab bar placed between 900 - 1000 mm at 300 mm from the hinge side				
Latch operable with the elbow installed between 900 - 1200 mm				
Coat hanger between 1100 - 1400 mm				
Grab bars in accessible toilets				
Separation from the wall ≥ 45 mm				
Withstand a force of 1 kN in any direction				
Circular diameter between 30 - 40 mm				
Horizontal bars height between 700 - 750 mm. Support length of 700 mm				
Bars mounted in the transfer space must be foldable				
With two transfer areas, distance between both grab bars 670 mm and 700 mm				
With one transfer area, horizontal bars mounted in wall 300 mm from the sanitary edge				
With vertical bar				
Toilet height between 450 - 500 mm				

Toilets and Ablution Areas

Facility/Building……

Space/Floor……

Sheet Number ……

	YES	N/A	NON	Observations
Showers				
Shower floor surface flush				
Water evacuation slope ≤ 4%				
Dimensions at least 865 x 1200 mm and a seat of at least 400 x 400 mm				
Seat located at a height between 450 - 500 mm and separated from the wall between 150 - 200 mm				
Horizontal bar length 800 mm and height of 700 - 750 mm				
Vertical bar length of 800 mm in the lateral wall of the shower seat at a height of 800 mm				
Distance between seat bars between 670 - 700 mm				
Family toilets				
1 family toilet within 300 m distance from any part of the building				
Full family toilets				
With a folding adult changing board				
Second sink at a height of 500 mm				
Manoeuvring turning space of at least 2000 mm				
With a urinal with usable height of 400 mm				

Toilets and Ablution Areas

Facility/Building……

Space/Floor……

Sheet Number ……

	YES	N/A	NON	Observations
Feeding rooms				
1 feeding rooms within 300 m distance from any part of the building				
Surface: ≥ 7 sq. meters for individual ≥ 10 sq. meters for dual				
With ventilation system				
Furniture with reflectance contrast with the walls of ≥ 30 points LRV				

Ablution areas				
1 accessible ablution unit provided				
Electronic or sensor faucets				
1 accessible ablution unit linked to an accessible path. The closest from the entrance				
Two horizontal bars at a height between 700 - 800 mm				
Accessories at a height between 700 - 1200 mm				
Provides bidet shower system, soap and paper				
Approaching free space of 1200 mm				

Toilets and Ablution Areas				
Facility/Building…… Space/Floor……				Sheet Number ……
	YES	N/A	NON	Observations
Ablution areas				
The approaching free space with contrast ≥ 30 points LRV				

Furniture				
Facility/Building …… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations
Without sharp edges, protruding objects, burning surfaces. With contrasting colour. Made with non-toxic material				
Tables				
Height of 800 mm				
Clear room of 680 mm high and 480 mm deep				
Tables without integrated seats				
Chairs and Benches				
Seat height of 430 mm with a ± 30 mm tolerance				
Seat depth between 400 - 450 mm				
With backrest. Backrest height between 400 - 460 mm				
It has armrests				
At least in one side has lateral interaction space				
Urban spaces and parks - benches every 100 meters **In big buildings - benches or other seat types every 50 meters**				

Furniture

Facility/Building……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Drinking fountains				
Two fountains with different heights				
Frontal and lateral approach				
If manual button height between 700 - 1200 mm				
Water between 600 mm and 850 mm ± 50 mm				
With bottle filler				
Trash bins				
Located outside the accessible path				
With a lateral space of interaction				
Trash bin opening height ≤ 900 mm				
Trash bins every 50 meters				
When fixed to the walls protrude ≤ 250 mm				
Vending machines and ATM’s				
One frontal or lateral interaction				
Floor surface is smooth, non-slippery with a gradient ≤ 2%				
Screen and keyboard are visible from a point located 1000 mm above the floor				
Control buttons between 400 - 1200 mm and ≥ 600 mm from any corner				

Furniture

Facility/Building……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Vending machines and ATM's				
Control buttons with high embossed text and Braille				
Card slot height between 800 - 1200 mm				
Visual and acoustic system				
Audio information				
CCTV Intercom				
Slots are wide and have a funnel effect				
Bollards, planters, telephone booths and other furniture elements				
Outside the accessible path				
Punctual obstacles do not reduce accessible path ≤ 1200mm				

Provisions for Public Spaces

Facility/Building ……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Furniture and signals are aligned and don't invade the accessible path				
If there is a cycling paths it's between urban furniture and curb				
Pedestrian crossings are preceded by tactile warnings				
For pedestrian streets, areas between buildings are level				
Shaded zones are provided at least every 50 m				
Street names are displayed at any crossing				
There are information signs about the nearest public transport, public toilets and interest points				
There information panels every two crossings				
There are toilets at least every 400 m				
Traffic signals have sound signals				
When required, pick-up and drop-off areas are provided				

Curb Ramps and Prohibition of accessible path alteration

Facility/Building ……

Space/Floor ……

Sheet Number ……

	YES	N/A	NON	Observations
Running gradient ≤ 8%				
Width = pedestrian crossing width ≥ 2000 mm				
Present a warning tactile pavement at 300 mm from the edge				
Curb ramp edge level of the road				
Colour and texture = accessible path				
Pendulum Test Value (PTV) ≥ 45				
Cross steep gradient ≤ 2%				
Not invading accessible path				
If there is a step in its lateral edge, it is protected by urban furniture				
Curb ramps are aligned				

Prohibition of accessible path alteration

No modification of accessible path for parking entrances				
Parking doors don't obstruct an accessible path				

Intersections

Facility/Building ……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Intersections with raised pedestrian crossing				
Width ≥ 2000 mm				
Longitudinal gradient of road ≤ 15%				
Marked in all its width				
With tactile warning surface				
Level roadway				
With aligned curb ramps				
Intermediate islands				
Length ≥ 1500 mm				
Pavement same as accessible path and with warning pavement surfaces				
Guardrails, dwarf walls or protections in offset islands				

Accessible parking places, access to parking lots and bicycle parking				
Facility/Building …… Space/Floor ……				Sheet Number ……
	YES	N/A	NON	Observations
Number of accessible parking lots: <u>Residential</u> - 1 every 33 spots <u>Public Parking</u> ≤ 200 spots - 1 every 33 spots 201 to 1000 spots - 1 more every 100 spots > 1000 spots - 1 more every 200 spots <u>Others</u> 10 to 200 spots - 1 every 50 spots 201 to 1000 spots - 1 more every 100 spots > 1000 spots - 1 more every 200 spots 1 every 2 reserved seating spot for wheelchair user When required, 2 spots in the public areas				
Accessible spaces as close as possible to the entrance of the building and no more than 50 m				
Dimensions of accessible parking spaces: 2500 x 5500 mm for angled parking 3600 x 6000 mm for parking along the sidewalk				

Accessible parking places, access to parking lots and bicycle parking				
Facility/Building…… Space/Floor……				Sheet Number ……
	YES	N/A	NON	Observations
With lateral access aisle ≥ 1200 mm				
With signs at 2200 mm				

Bicycle Parking				
Located close to entrance				
Without obstacles like stairs or steep slopes				
In the furnishing zone				

Mailboxes, parking meters, garbage and recycling containers and restaurant terraces

Facility/Building ……

Space/Floor ……

Sheet Number ……

	YES	N/A	NON	Observations
With frontal or lateral interaction space				
Interaction mechanisms height between 700 - 1200 mm				
At least 1 container can be opened with 1 hand and force ≤ 25 N				

Restaurant terraces

No invading accessible path and headroom				
No interruption of guidance elements				
In the restaurant terraces, accessible path ≥ 2000 mm				
Bollards between terraces and road every 1200 mm				

Scaffolding, trenches and other construction works

Facility/Building ……

Space/Floor ……

Sheet Number ……

	YES	N/A	NON	Observations
Protected with stable and solid fencing				
With warning lights				
With alternative path of width ≥ 900 mm and headroom ≥ 2200 mm. 1500 x 1500 mm in changes in direction				
Accessible path not obstructed				
If metal plates, minimum width of 900 mm, stable and with guardrails				

Bus shelters and signpost

Facility/Building ……

Space/Floor ……

Sheet Number ……

	YES	N/A	NON	Observations
Not invading accessible path				
With a free of obstacles path in one of the sides ≥ 1200 mm				
Manoeuvring ≥ 1500 mm diameter inside the shelter				
Height ≥ 2200 mm				
No obstacles between shelter and access to bus				
Glazed walls with marks				
With fixed bench				
With standing support of height between 700 - 750 mm and separated 200 mm from wall				
Average illumination 20 lux and ≥ 50 lux at boarding time				
Boarding area with tactile warning surface				

Bus signpost

Above 2200 mm without protruding				
Bus information height between 1200 - 1600 mm				
Bus line identification number with letter height ≥ 140 mm				

Requirements for parks, beaches and natural spaces				
Facility/Building …… Space/Floor ……				Sheet Number ……
	YES	N/A	NON	Observations
Temporary path				
Width ≥ 1500 mm				
Running gradient ≤ 5% and cross gradient ≤ 2%				
Allows walking barefoot over them				
Public toilets near accessible path				
Close to the water edge				
One accessible unit in each utility				
Rope to help users to access into the water				
Outdoor showers				
With accessible showers in beaches and swimming pools				
Controls height between 700 - 1200 mm and activated with elbow				
Playgrounds				
Pavement on rubber or compacted sand				
Pavement on children play area smooth and soft				
All children can use ≥ 50% of expected activities				

Requirements for parks, beaches and natural spaces				
Facility/Building…… Space/Floor ……				Sheet Number ……
	YES	N/A	NON	Observations
Playgrounds				
Materials exposed to sun radiation do not reach high temperatures				
Materials do not produce electrostatic discharges				

Entrances, Counter and reception areas

Facility/Building ……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Gradients of entrances ≤ 5%				
When several paths, both accessible and inaccessible marked				
If accessible door not the main door, it is marked with directional sign				
Identification and exact address				
In public use buildings, reception desk near the entrance				
Dimensions doors ≥ 900 mm width x 2100 mm height				
Automatic door				
Doormats levelled with ± 2 mm				
Access controls barriers with at least one barrier with width ≥ 900 mm				

Counters and reception areas

Reception areas with seating places and interaction spaces				
Front desks with accessible interaction space				
Low counter height between 750 - 790 mm and high counter height between 950 - 1250 mm				
Under the desk a space of 680 mm height and 480 mm deep				

Internal corridors, alarms and means of egress, gender equality, storage facilities and lockers, accessible dressing and changing rooms, first aid facilities and balconies

Facility/Building …… Space/Floor ……				Sheet Number ……
	YES	N/A	NON	Observations
Internal corridor				
Width ≥ 1000 mm				
In direction changes a manoeuvring space of 1200 mm				
Tactile warning surface in any change of level				
Illumination ≥ 60 lux				
Alarms and means of egress				
Audio and visual emergency alarms				
Visual emergency alarm with 30 flashes per second				
Accessible means of egress marked with accessible signage				
Gender equality				
In case of segregated use by gender, same level of accessibility for both genders				
Storage facilities and lockers				
20% of shelves or lockers are in a reaching height distance between 600 - 1200 mm				

Internal corridors, alarms and means of egress, gender equality, storage facilities and lockers, accessible dressing and changing rooms, first aid facilities and balconies				
Facility/Building…… Space/Floor……				Sheet Number ……
	YES	N/A	NON	Observations
Accessible dressing or changing rooms				
Corridors width ≥ 1000 mm and direction changes with manoeuvring turning space of 1500 mm				
Approaching space for lockers, benches and furniture 1420 x 865 mm				
1 of 10 showers is accessible				
1 of 10 toilet is accessible				
First aid facilities				
With an accessible door and path to the treatment area				
With adult changing table				
Balconies				
Width ≥ 900 mm				
Balcony exterior and interior level are the same				
Balcony door flush or with threshold height ≤ 20 mm and bevelled to ≤ 10 mm				

Internal corridors, alarms and means of egress, gender equality, storage facilities and lockers, accessible dressing and changing rooms, first aid facilities and balconies				
Facility/Building…… Space/Floor……				Sheet Number ……
	YES	N/A	NON	Observations
Balconies				
Minimum dimension balcony 1500 x 1500 mm				

Hearing enhancement systems, auditorium seating spaces, stage and backstage and swimming pools

Facility/Building …… Space/Floor ……				Sheet Number ……
	YES	N/A	NON	Observations
When required, hearing enhancement systems using induction loop, infrared and radio frequency are provided				
With international symbol if access for hearing loss				

Auditorium seating spaces

Connected to accessible path				
Dimension wheelchair seating space 865 x 1400 mm if frontally or 865 x 1500 mm if lateral				
With international symbol of access				
Maximum longitudinal gradient 1%				
Wheelchair spaces are arranged into groups of 2 with equal numbers of fixed seats				
Number of reserved seats: 1 reserved wheelchair space for every 50 seats or fraction thereof and beyond 500 seats, 1 more every 100 seats or fraction thereof				
Designated accessible seats for people with hearing impairments in front of the sign language interpreter				

Hearing enhancement systems, auditorium seating spaces, stage and backstage and swimming pools				
Facility/Building …… Space/Floor ……				Sheet Number ……
	YES	N/A	NON	Observations
Auditorium seating spaces				
Aisle seats and its adjacent have foldable armrests				
Stage and backstage				
Stage is accessible				
Accessible backstage for capacities ≥ 100 spectators				
Swimming Pools				
With length ≥ 25 meters with accessible entrance, elevation chair, ramp or hoist				
With Safety ladder				
With underwater illumination if night use is foreseen				
With deep scale				

Hotel rooms and dining rooms

Facility/Building ……

Space/Floor ……

Sheet Number ……

	YES	N/A	NON	Observations
10 % of accessible rooms				
Half of the accessible hotel rooms with roll-in showers and other half bathtubs with alarm string				
1500 x 1500 mm beside the bed				
Illumination ≥ 200 lux				

Dining rooms

Illumination ≥ 100 lux				
10% of the tables shall comply with the dimensional criteria for tables				
Width ≥ 900 mm to reach these tables and self-service areas				

Housing

Facility/Building ……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
Required accessibility in existing residential buildings				
Multi-family buildings have an accessible path for access to each of the residences and between each of the residences				
Level entrance to all residences				
Video doorbell				
Multi-story buildings have elevators				
Required accessibility in new housing buildings				
Entrance and internals doors width ≥ 900 mm				
Wall mounted switches shall be between 900 - 1200 mm and be located a ≥ 600 mm from any corner				
Corridor width shall be ≥ 1000 mm and ≥ 1200 mm in direction changes				
Maneuvering space inside all dry and wet rooms is ≥ 1200 mm and ≥ 1500 mm where turning is required				
The bathroom shall contain at least a bathtub or roll-in shower, sink and toilet				
At least kitchen, one bathroom and one living room or bedroom are accessible from the entrance door				
Interior stairs width ≥ 1100 mm wide				

Housing				
Facility/Building …… Space/Floor ……..				Sheet Number ……
	YES	N/A	NON	Observations

Other buildings

In garage and parking buildings floor painting contrasted 30 points LRV with the vehicles path				
Facilities for service animals not directly connected to spaces used by persons but adjacent to an accessible path. Dimensions ≥ 3000 x 4000 mm with 1200 mm high fence				

Wayfinding

Facility/Building ……

Space/Floor ……..

Sheet Number ……

	YES	N/A	NON	Observations
All parks entrances shall display a visual and tactile map of the main facilities				
All business and administration building have the name in façade and directory inside the lobby				
All door frames with information signs				
In buildings, orientation signs every 30 meters				
Letters, numbers, symbols and pictographs are glare-free and high reflectance contrast				
Street corner with name of the street				
Every second street corner with public transport information				
In community map: bus shelters, metro, tramway and ferry stations				
In parks, every 70 meters, a sign for nearest exit & nearest toilets				
Tactile maps in required buildings				
Directional signs according to Code: Good Shape With Hierarchy With reflectance contrast ≥ 50 LR				

Wayfinding					
Facility/Building ……. Space/Floor……..					Sheet Number ……
			YES	N/A	NON	Observations
Font size according to reading distance: Reading distance / Minimum size / Recommended size ≥50 meters / 170 mm / 200 mm 20 meters / 140 mm / 180 mm 5 meters / 70 mm / 140 mm 4 meters / 56 mm / 110 mm 3 meters / 42 mm / 84 mm 2 meters / 28 mm / 56 mm 1 meter / 14 mm / 28 mm 0.5 meters / 7 mm / 14 mm						
Signs out of the accessible path and clear headroom ≥ 2200 mm						
Two of the three channels of communication: acoustic, visual and tactile						
Guiding tactile pavements in: - Open squares without defined walking paths - Metro, tramway and ferry networks - From building entrance to information desk or reception in administration buildings						

15.1. Assessment methods for the parameters requested in the Code

15.1.1. Pavements

The product provider shall provide technical slipperiness parameters in PTV units. If the data are not provided the material should be tested in a laboratory before it is accepted.

15.1.2. Lighting

Can be measured with a Lux meter

15.1.3. Reflectance

Light Reflectance Value (LRV) also called Albedo is usually provided by paints and flooring materials. It can be also measured with an App called Albedo with a Balance Calibration Card with 18% of grey.

15.1.4. Carpet resistance

Rugs and carpets should be firmly fixed to the floor and shall not increase the strength required to roll over a ceramic pavement by more than 25%. This can be measured with a dynamometer comparing the effort required to more a person seating in a wheelchair in both surfaces.

15.1.5. Strength required

A dynamometer is the appropriate tool to be used.

15.1.6. Bars and handrails resistance

Apply a 102kg. of wait on top of the bar or handrail.

Tables and figures list

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Tables

Figures

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Abbreviations

ADA – Americans with Disability Act

AODA – Accessibility for Ontarians with Disabilities Act

CEN - Comité Européen de Normalisation (European Committee for Standardization)

CSA – Canadian Standards Association

CTA – Canadian Transportation Agency

DUAT – Dubai Universal Accessibility Transportation

DUABE – Dubai Universal Accessible Built Environment

EC – European Community

EN – European Norm

ISO – International Organization for Standardization

Parents/Guardians/Caregivers – P/G/C

PTA – Public Transport Agency

QR – Quick Response

RTA – Road & Transport Authority

WC3 – Web Accessibility Standards

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