

Inclusive Street Guidelines

Towards Improving Pedestrian Paths and Cycle Lanes for All

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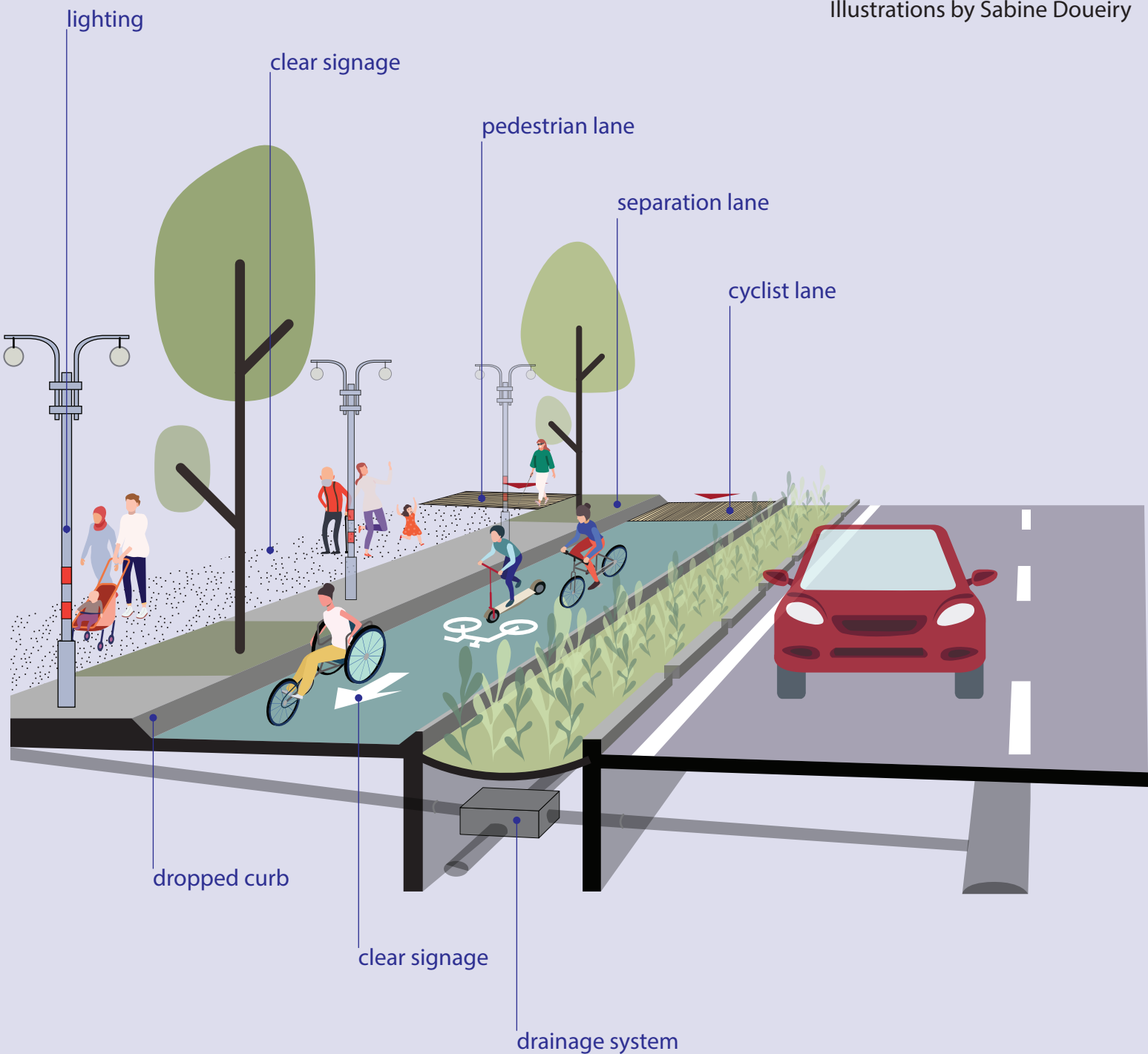


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Inclusive Design Principles for Inclusive Street Design

Most cities in Lebanon, including its capital Beirut, need to be redesigned to overcome extreme challenges posed by traffic and car congestion that have public health impacts on its population. Making streets more inclusive entails embracing the 5 Principles of Inclusive Design during the design and the implementation phases for healthy, environmentally, and socially friendly streets.

Principle 1: Places people at the heart of the design process

Making streets more inclusive requires involving people living in a designated neighborhood during the design phase. Engaging people with different age groups, gender, and disabilities will enable the designer to identify their activities and interactions with the facilities provided in a designated street neighborhood. Brainstorming design ideas during the consultation phase enables the designer and planner team to come up with design proposals that fit the community's lifestyle and culture and improves overall mobility and accessibility for women, families with children, the elderly, people with disabilities, and people with diverse cultural and ethnic backgrounds.

Principle 2: Responds to human diversity and difference

Inclusive streets and public spaces are planned for all people regardless of their age group, physical or cognitive abilities, or different body shapes and forms. An inclusive street allows people to navigate and move around independently and safely by providing ramps instead of stairs, tactile surfaces at dropped curbs, direct street-level access to transit stations, and traffic control systems with audible and visual alarms to improve mobility and access for all urban residents.

Principle 3: Offers dignity, autonomy, and choice

An inclusive street design entails creating a network of streets for cars, buses, and lanes for cycling, walking, and room for bus stops, accessible off-street parking bays, and pedestrian crossings that are safe and accessible for everyone.

Principle 4: Provides for flexibility in use

An inclusive street design gives its users the flexibility to navigate spaces according to their different needs. A wide sidewalk with adjustable street furniture, with and without backrests gives families with young children and babies, and the elderly the flexibility to use street furniture according to their preferences. Moreover, street design with signage and pictograms, in different languages, 3d maps with Braille language, and embossed characters and remarkable landmarks help with orientation and wayfinding for first visitors, people with visual impairments, people with learning difficulties, and cognitive impairments, families with young children, and people who do not have English as a first language to navigate and find their route around independently.

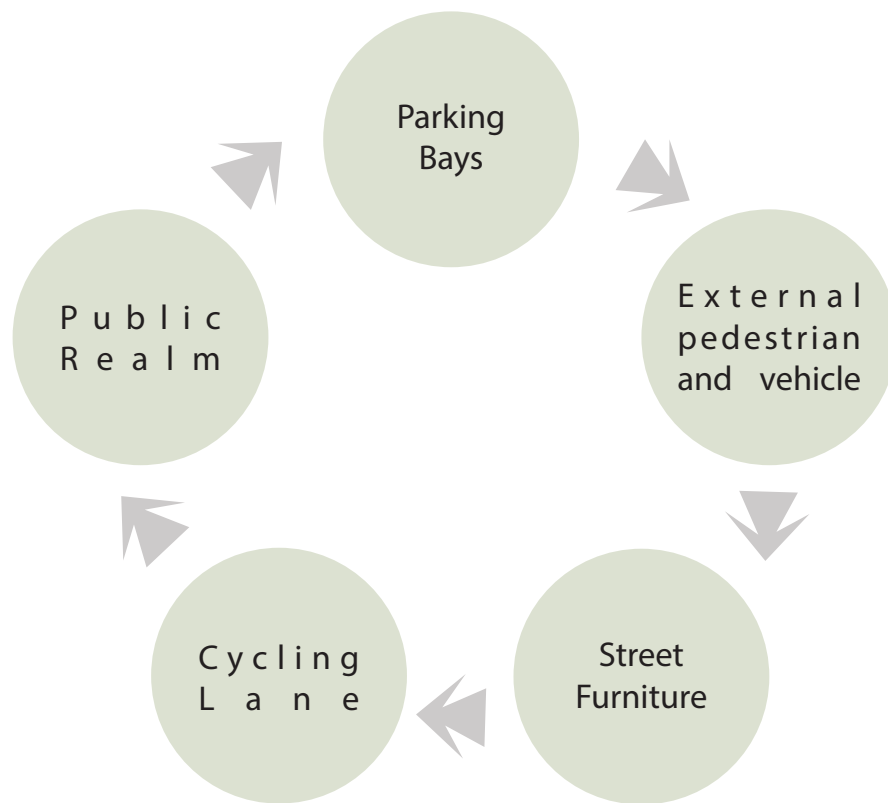
Principle 5: Creates environments and spaces that are convenient and enjoyable to use for everyone

Inclusive street design that efficiently connects people to transit and designated destination such as markets, leisure, and seating areas with trees, furniture, and lighting provide comfort, safety, and are more attractive to street users, regardless of gender, age, income, or physical or cognitive ability.

Guidelines for Inclusive Streets

Inclusive Street guidelines aim at reducing congestion and improving mobility for all pedestrians with different age groups, gender, and disabilities. Redesigning city streets by including pedestrian sidewalks, paths, and cycle lanes and installing bike parking and cycle share systems, and recreating public open space designs can reduce car dependence, promote active transport and improve mobility and access for all pedestrians. To make streets more inclusive, a holistic approach must be adopted to improve the whole journey people take from one destination to another and enhance the overall access and the means of transportation people use to get to their work, schools, medical health centers, shopping, and cultural and entertainment destinations.

Guidelines for inclusive street design is based on the street user's journey cycle that includes:



Inclusive street guidelines present the design provisions starting from the designated means of transportation used to reach the street, to the external pedestrian and vehicle routes, in addition to the shared spaces and public realm. Each provision is labeled and numbered based on the journey cycle that the street user takes from parking the car until reaching the shared spaces.

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Designated Off-Street Car Parking Bays

Cars are the most common means of transportation used in Lebanon with the absence of accessible public transportation in the Country. Cars are also the main practical means of transportation used by many people with disabilities, their families, and caregivers. This means that accessible parking bays are to be provided once enhancing street designs to become more accessible and inclusive.

Parking bays with additional transfer space are essential to allow people with reduced mobility to get into and out of their cars with the minimum of difficulty. Where on-site parking is not available, good practice would suggest providing accessible bays close to main services provided in a street neighborhood. Moreover, municipalities can designate an approach for the provision of on-street parking bays.

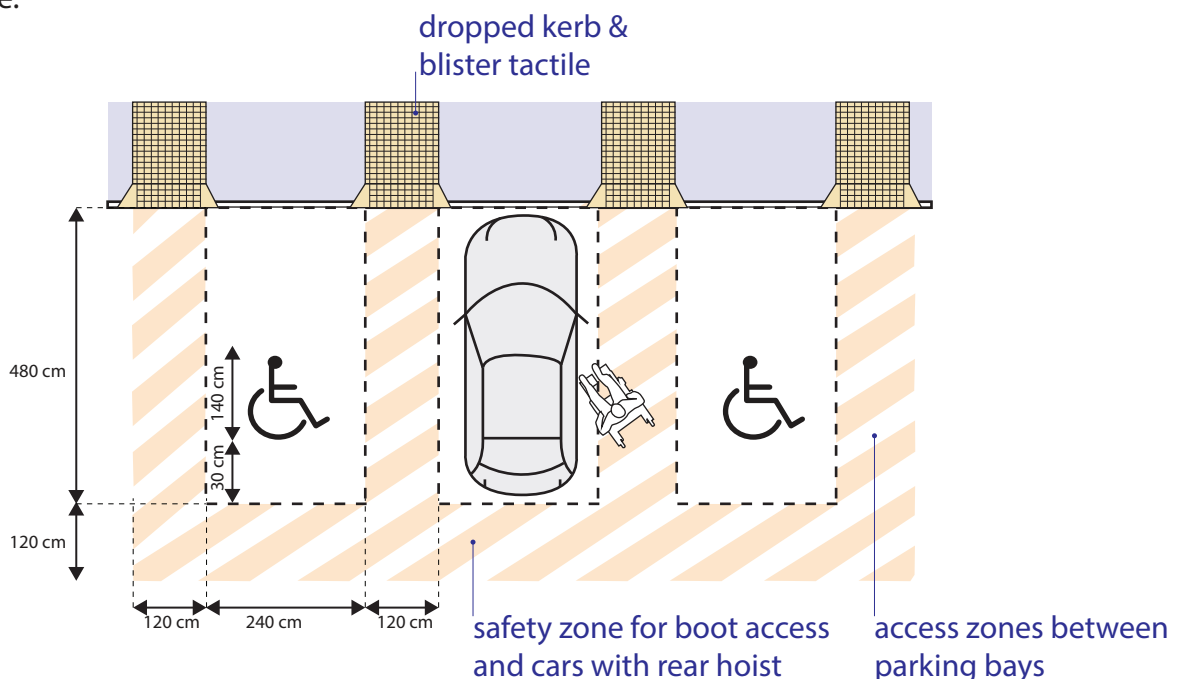
Accessible Car Parking Bays

Where parking is provided, at least one bay designated for people with disabilities should be provided as close as possible to the principal entrance of a street neighborhood. If space allows for only one car parking bay, it is recommended that an accessible parking bay provision is provided to allow people with disabilities, and the elderly to park.

The designated off-street parking bay should be signposted. Bays should be identified as provisions for drivers with disabilities or passengers only. The accessible parking bay should have information signage about whether or not the parking bay is free and available to be used by drivers with disabilities. Accessible bays should be as close as possible to the street neighborhood and no more than 50 meters far from the main entrance to a public service area.

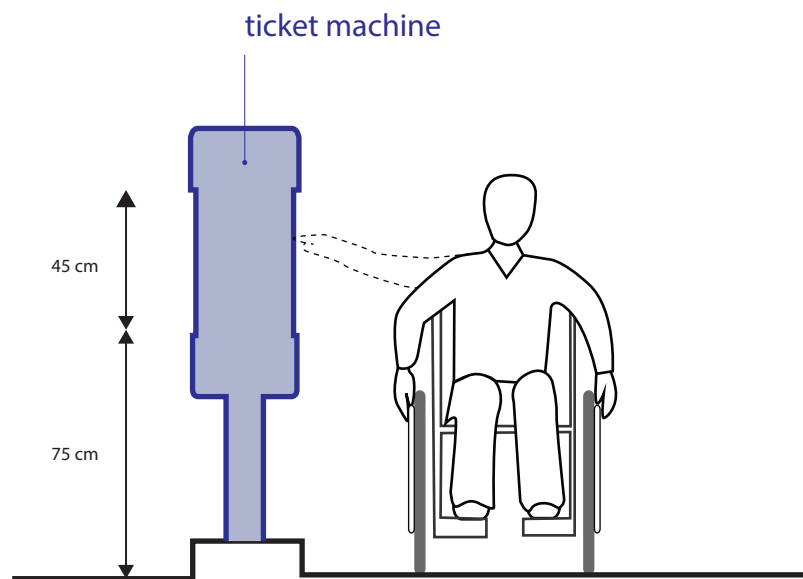
Accessible bays should be level with a maximum gradient along the direction of travel of 1:60 wide enough for car doors to be fully opened to allow drivers with disabilities and passengers to transfer their wheelchair or any tail loading. All pedestrian routes within the car park should be level or with shallow gradients.

Curbs between the parking area and routes to sidewalks or buildings should be dropped to give access to wheelchair users, with blister tactile warnings where appropriate. The car park surface should be smooth and even and free from loose stones, with undulations not exceeding 3mm under a 1m straight edge for materials such as tarmac or concrete.

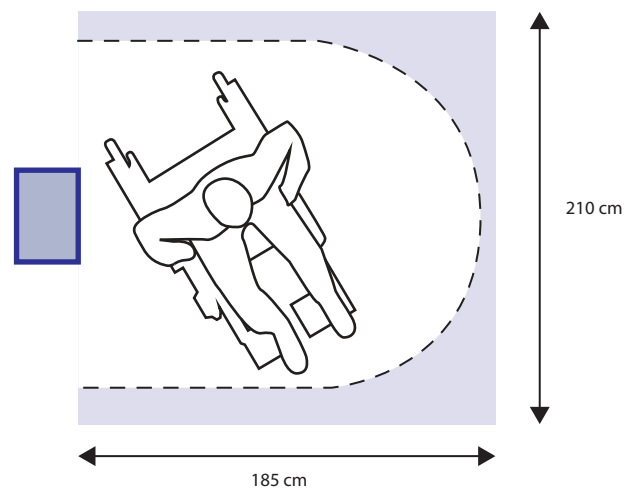


Ticket Machines Serving Car Parking Bays

Where ticket machines are provided to be used by people with disabilities, they should be located adjacent to designated parking bays and be accessible and convenient to use by a person in a wheelchair and someone of short stature. The ticket machine should be at a height of 75 cm from the floor level. It should have an empty maneuvering space of 185 cm x 210 cm.



section: wheelchair user on sidewalk using ticket machine



plan: wheelchair user on sidewalk using ticket machine

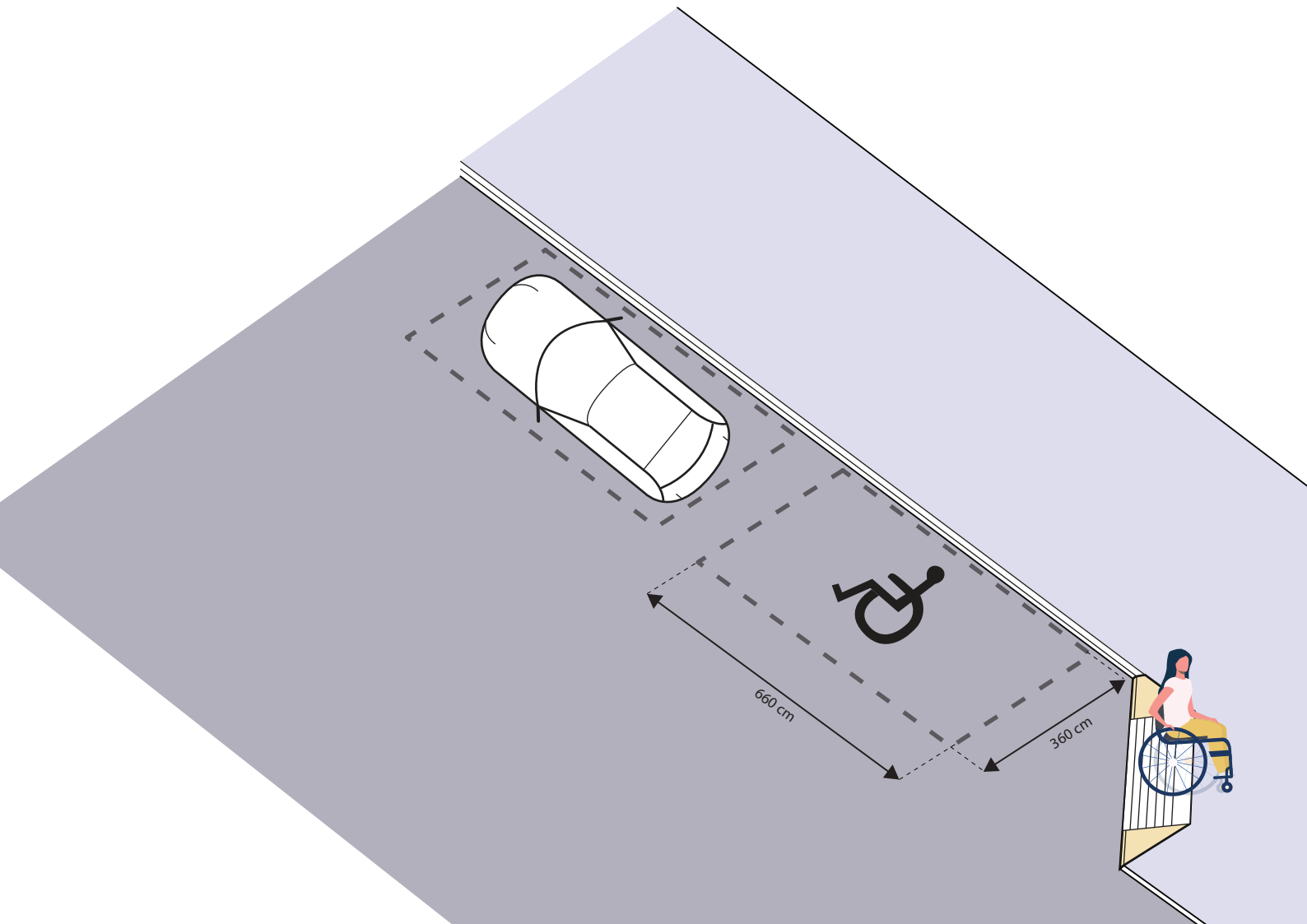
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On-Street Dropped-Off Parking Bays

People with mobility or visual impairments who are passengers may need to be dropped off or picked up at an accessible dropped-off parking bay.

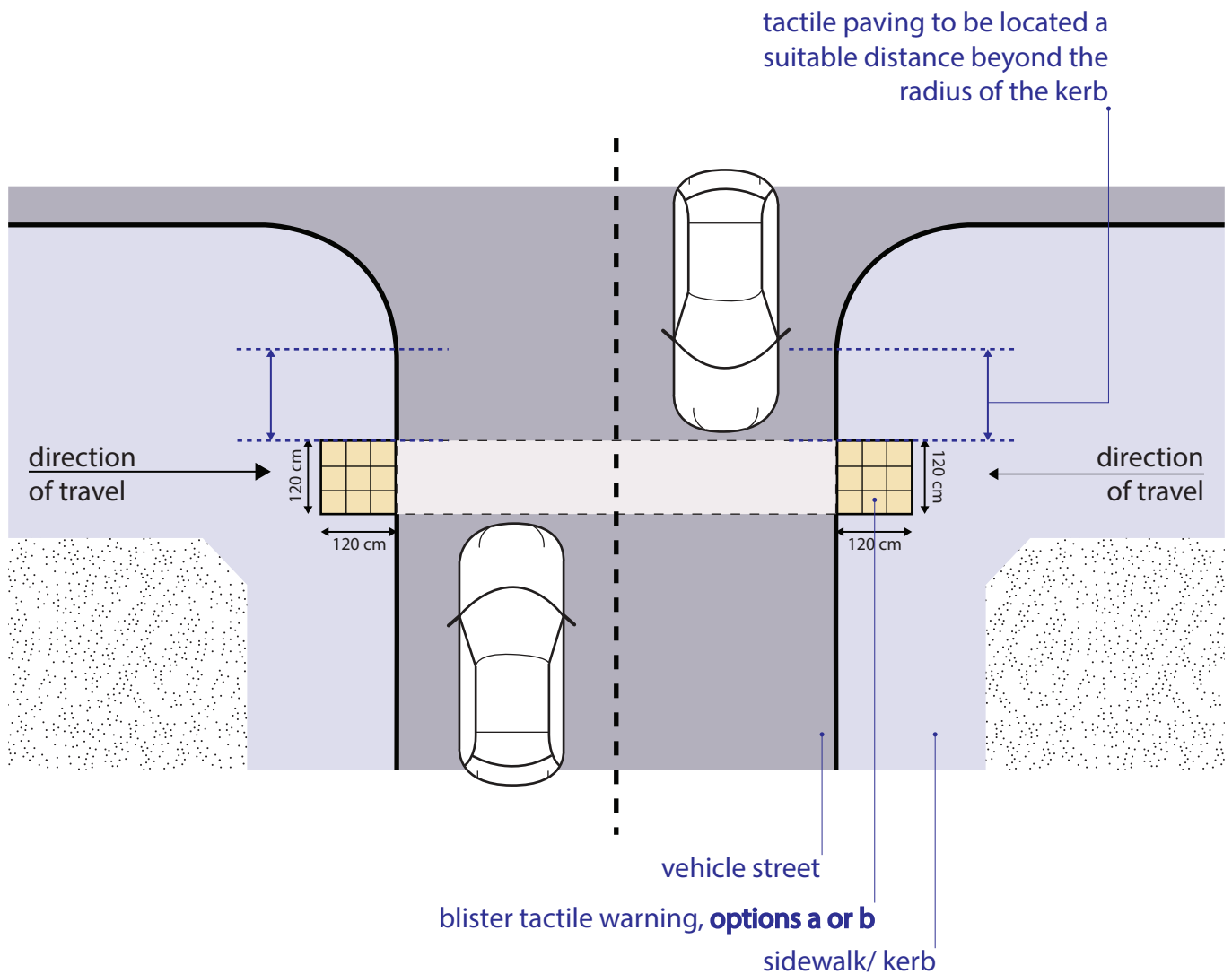
The dropped-off parking bay should be signposted and located on ground level and near the principal entrance to a service area or street neighborhood. The dropped-off parking bay should be wide enough to serve a car or a lift-equipped van and should be at least 2,40 m wide x 7 meters long, adjacent, and parallel to the vehicle pull-up space. The dropped-off bay should have a safety hatched zone of 120cm and should have at least one dropped curb ramp to provide access to the sidewalk and has a blister tactile warning to guide people with visual impairments. The accessible/ dropped parking bay should be clearly signposted and well lit with 60lx.

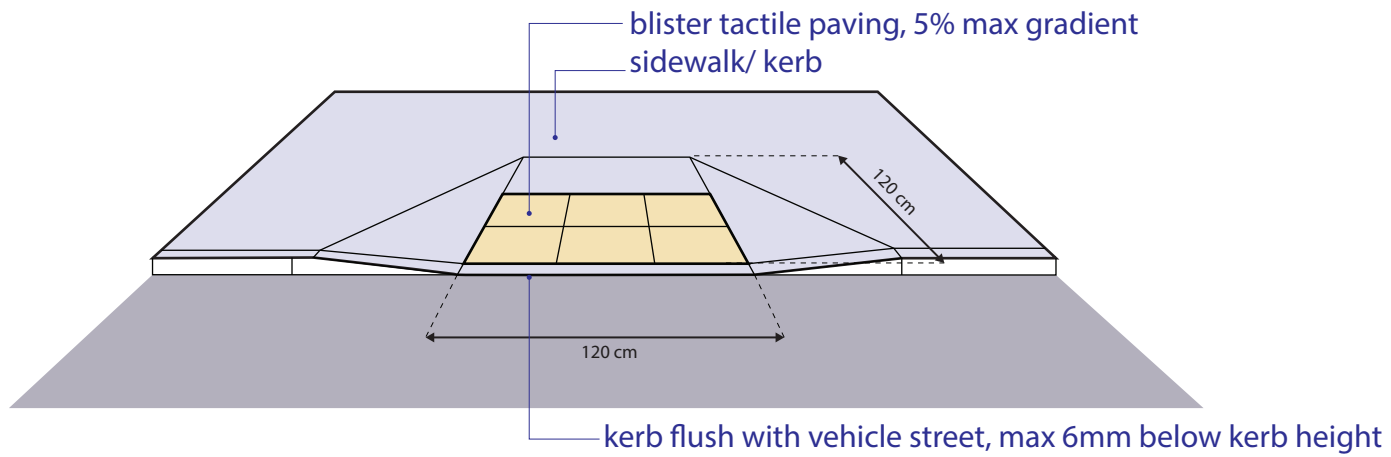
An allocated accessible parking bay or a dropped off parking bay should be provided along the traffic street serving the street neighborhood. The accessible parking bay should be wide enough to accommodate wheelchair users transferring out of the car into their wheelchairs. Avoid raising the sidewalks adjacent to the accessible or dropped-off parking bay as it can be steep for wheelchair users to transfer and it might cause a trip hazard for people with visual impairment.



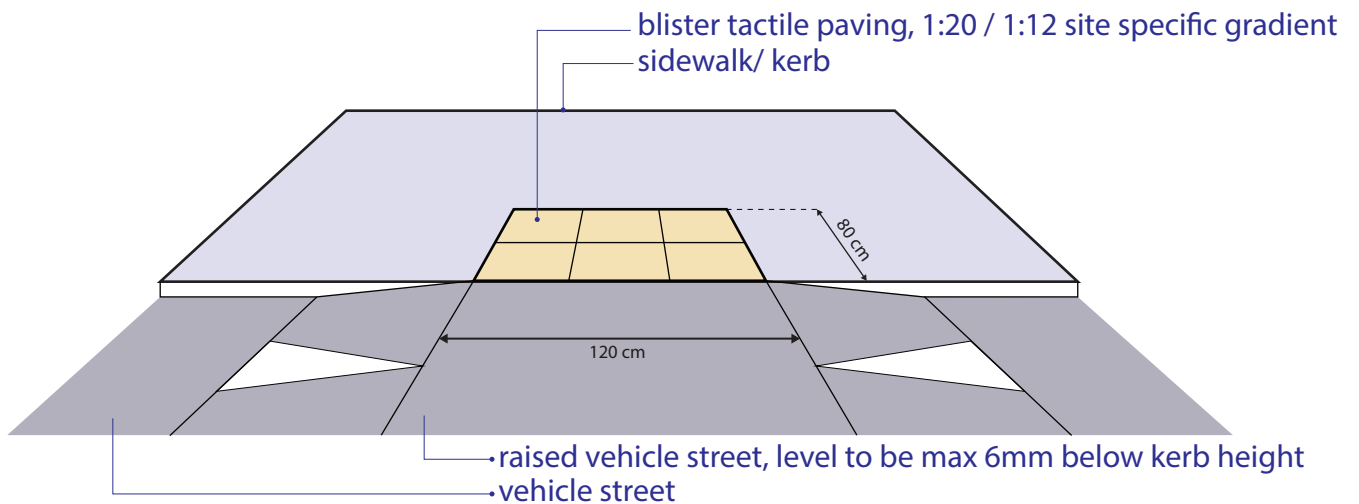
Blister tactile warning surface

Slip-resistant blister surface or blister tactile warning should be used to identify crossings with vehicular routes. Blister tactile warning surfaces are used as suitable protection by a curb or other solid barrier to allow a person with visual impairment or a blind person using a white cane to detect a pedestrian crossing and guarded between 80 cm and 120 cm from ground level. Blister tactile paving should be applied at both controlled and uncontrolled crossings where the footway has been dropped flush to the traffic/vehicle street or the traffic/vehicle street has been raised to the level of the footway. The blister tactile warning should be slip-resistant when wet or worn to avoid tripping hazards. Blister tactile is recommended to be installed to run in the direction of travel.





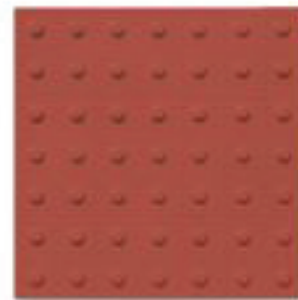
option a: dropped kerb



option b: raised vehicle street



Buff colored blister tactile paving:
must only be installed at an un-controlled



Red colored blister tactile paving:
must only be installed at a controlled

types of blister tactile paving

3

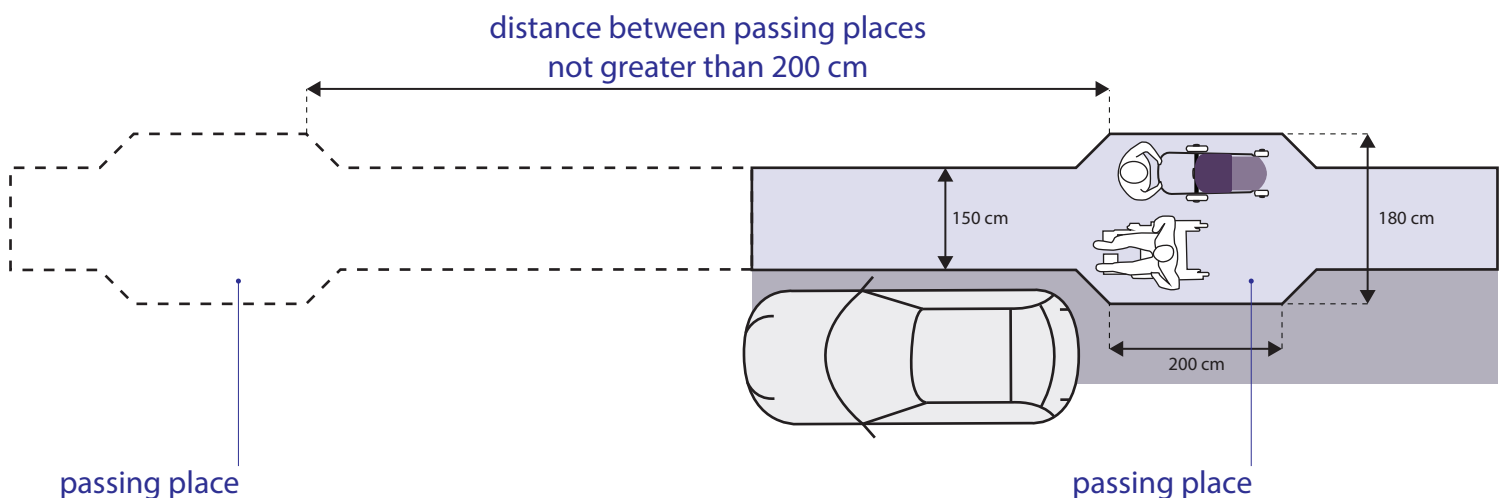
External Pedestrian and Vehicle Routes

Pedestrian routes should be designed to be easily used. Pedestrian routes are recommended to be level or near level access from the edge of the street site or from designated accessible car parking bays to the main entrances used by people with disabilities and other main routes around and between buildings. Changes in level are difficult for many people to negotiate. Consideration should be given that people's mobility ranges vary between individuals by age and ability and contributing factors such as weather, topography (gradients), and obstacles. Consider providing the same quality of experience for all different options of overcoming levels (either by graded route or by steps). Where sections of the route have significant gradients (between 1:60 and 1:20), level landings should be provided for each 50 cm rise. Where sections of the route have a gradient of 1:20 or steeper, the route should be designed based on the same provisions of external ramps. The cross-fall gradient of a path should not exceed 1:40 (except at dropped curbs). There should be sufficient space for people, including wheelchair users, to approach the building and pass others traveling in the opposite direction. Avoid excessively long graded routes which can become tiring for people, providing more direct routes and stepped route alternatives where appropriate.

Pedestrian routes are recommended to have a minimum surface width of at least 1800mm for main access routes, which is the minimum space required for two wheelchair users to pass each other.

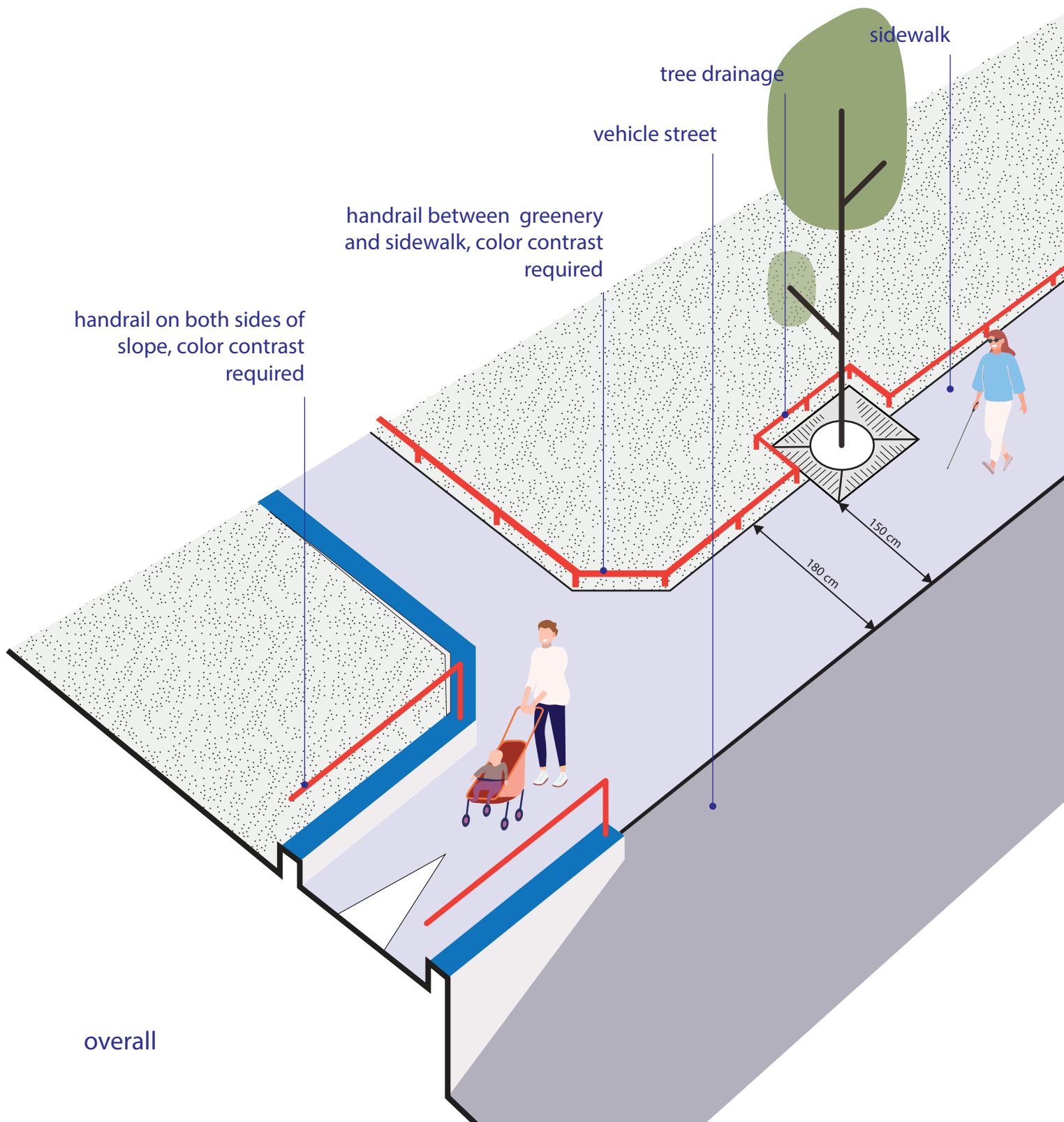
The minimum allowable width to cater for unavoidable obstructions along access routes is 150 cm, but this reduction in width cannot be for more than 200 cm in length. Pedestrian routes should be clearly signed and may include landmarks for orientation. As well as providing visual clues they can also incorporate audible and olfactory clues such as fountains and fragrant planting.

Pedestrian and vehicle routes should be clearly distinguished using texture and color. Path edges should be defined.

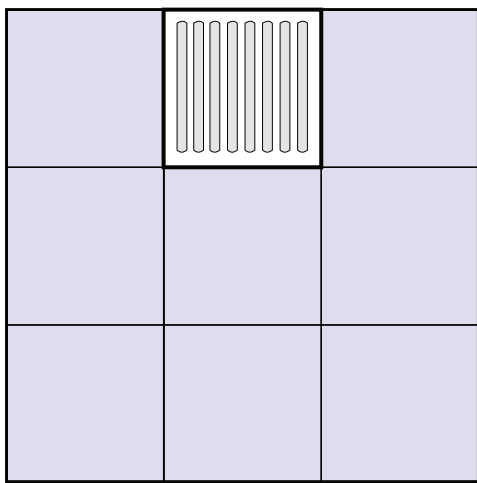
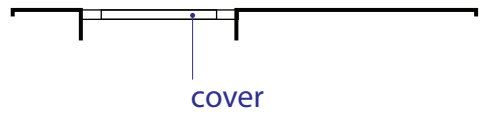
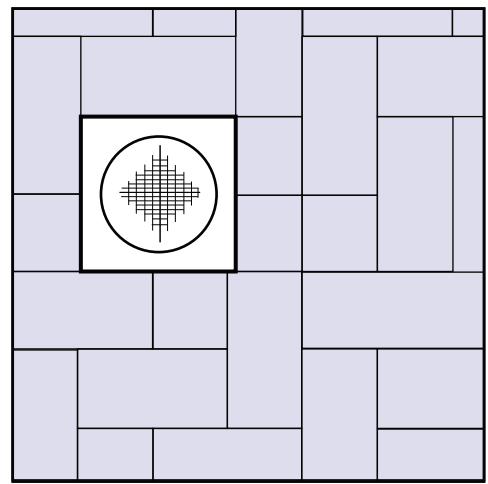
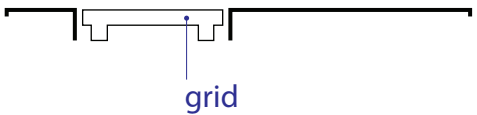
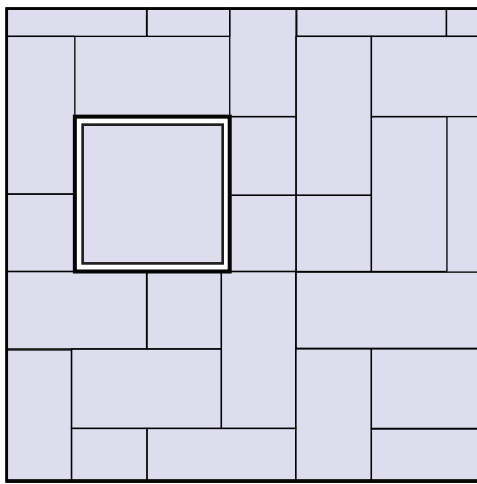


sidewalk dimensions

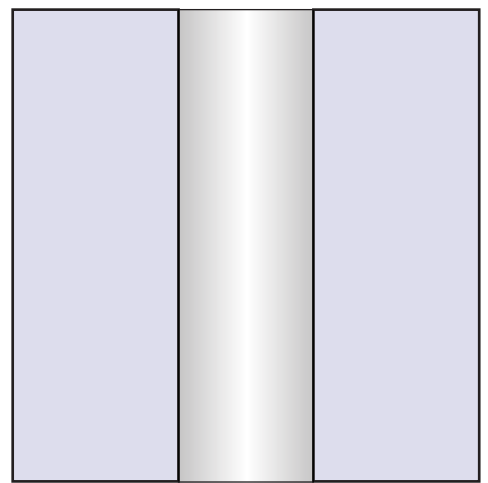
Drainage channels should be flush with paving and designed to avoid trapping walking aids and wheels. Drainage covers and gratings within walking areas have slots in drainage gratings no greater than 13mm wide, with the diameter of circular holes in covers/ gratings to be no more than 18mm. Drainage channels should be located off main pedestrian areas where possible. They should not be provided within tactile surfaces at controlled crossing points. They should not be open top and dished channels.



Surface materials should be firm, durable, and slip-resistant in all weather (such as tarmac or tiled paving), with undulations not exceeding 3mm under a 1m straight edge for formless materials (such as tarmac or concrete), well laid and maintained. Surfaces such as sand, loose gravel, cobbles, and terrazzo should be avoided. Surface materials can offer different sound qualities and textures as well as color as an aid to locating the route within the environment. Where a variety of surface materials are used along access routes, materials should have similar frictional characteristics. Joints between paving units should be detailed as follows: - filled joints, the max difference in level 5mm - recessed joints, no deeper than 5mm and no wider than 10mm - unfilled joints, no wider than 5mm.



gratings: slots in gratings should not exceed 1.3cm



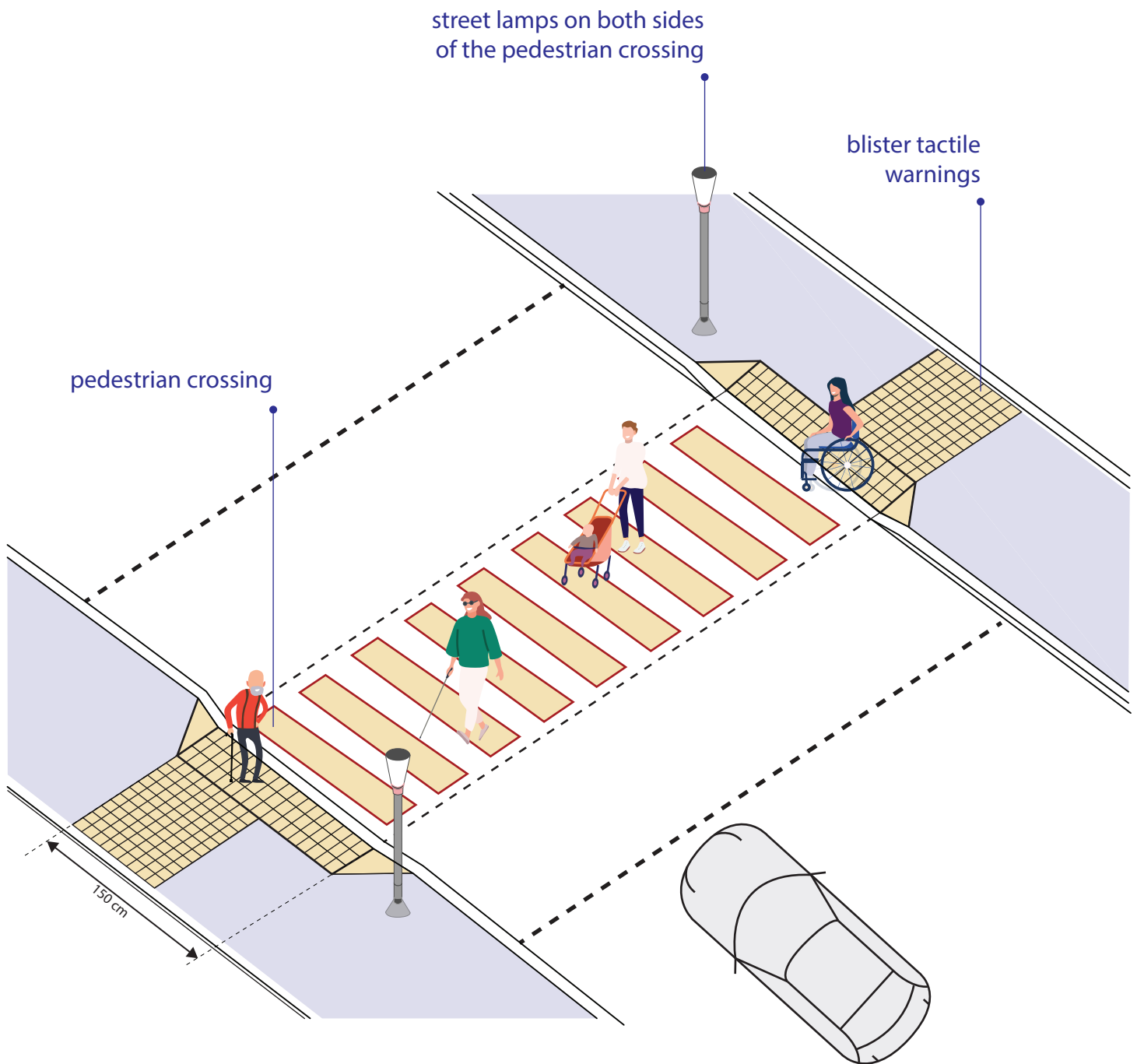
shallow drainage channel: avoid trapping of footrests

drainage channels

4

Pedestrian Crossings

Pedestrian crossings leading to main buildings in a street neighborhood should be wide enough to accommodate a wide range of users such as a family with children, pedestrians crossing from two directions, wheelchair users, family with strollers, a person with a guide dog, and the elderly pedestrians. Hence the pedestrian sidewalk should be between 150-180 cm wide. If the pedestrian sidewalk has a gradient, it is recommended that the route is smooth to provide easy access for people using mobility devices, with a gradient of max 5% or 1:20.

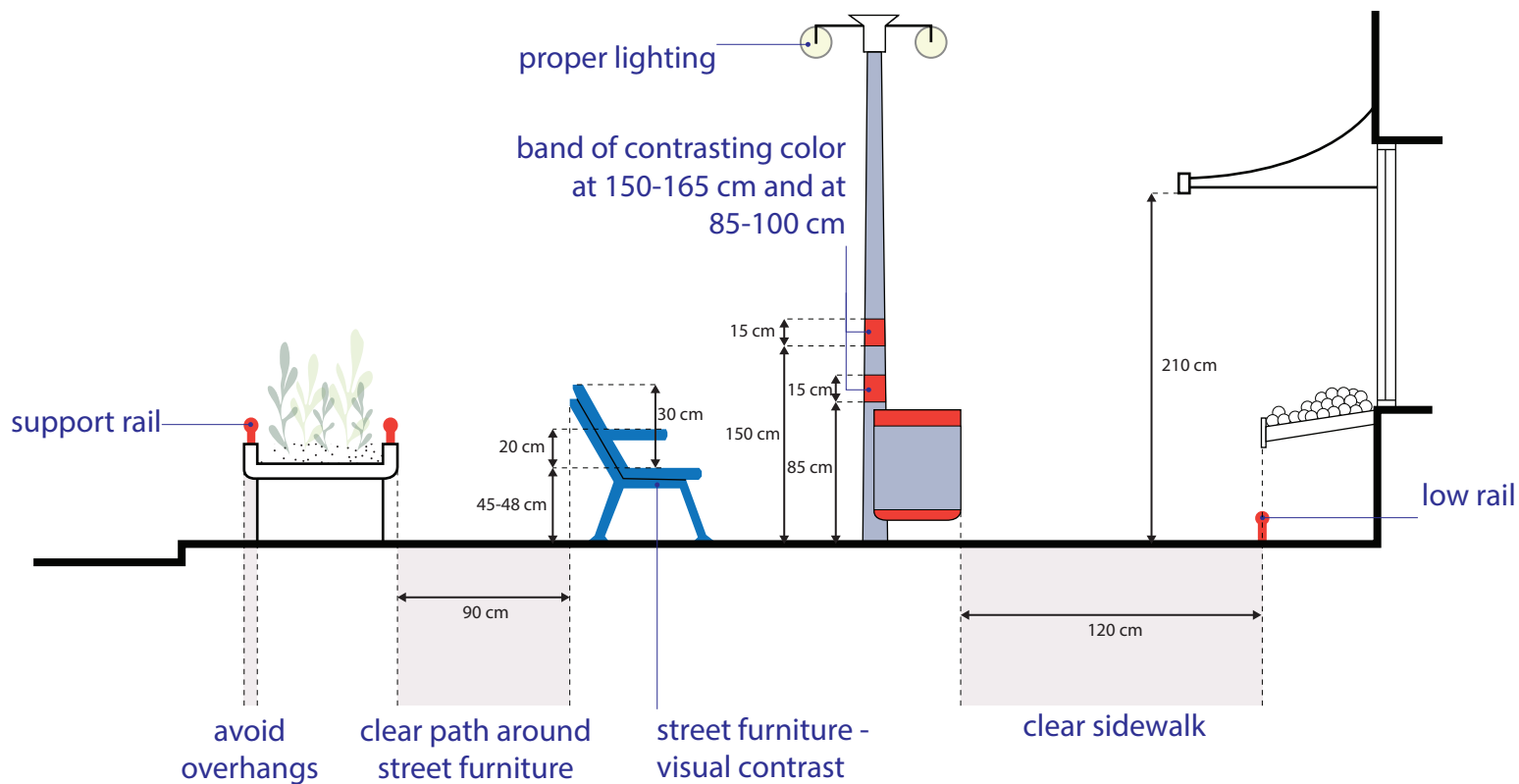


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External Furniture and Lighting

Permanent street furniture should be placed in areas that will not obstruct or create a hazard for people – in particular people with a visual impairment – and ideally located outside of primary circulation routes.

Street furniture should not be less than 30 cm in height. Each free-standing post or column within a circulation area should incorporate a 15cm wide visually contrasting band whose bottom edge is 85 - 150 cm above ground level. Placement of A-frame advertisement boards and other moveable street furniture should be regulated as not to be located in a different position every day, reducing the risk of being a hazard for people who are blind and people with visual impairments.



Street furniture should be placed parallel to the path of travel so the layout is predictable and readable to prevent collisions or trip hazards. Street furniture, planters, trash bins, and signposts should have smooth rounded edges to reduce the possibility of injury in case of impact. Guarding the furniture or providing tactile warnings whenever there is a directional route change will allow people with visual impairments to use the white cane to detect such surfaces and reduces the risk of people with visual impairments from hitting or colliding with items located along access routes. Pedestrian crossings and warnings at ground level can be considered for public art or used as a way of guiding users to routes or services provided in a street neighborhood. Water features for people who are blind or have visual impairments including long cane users can be also used to guide users in wayfinding and orientation. Street furniture should contrast visually with the surroundings and be apparent in all weather conditions, including when wet, and should not have a highly reflective surface.

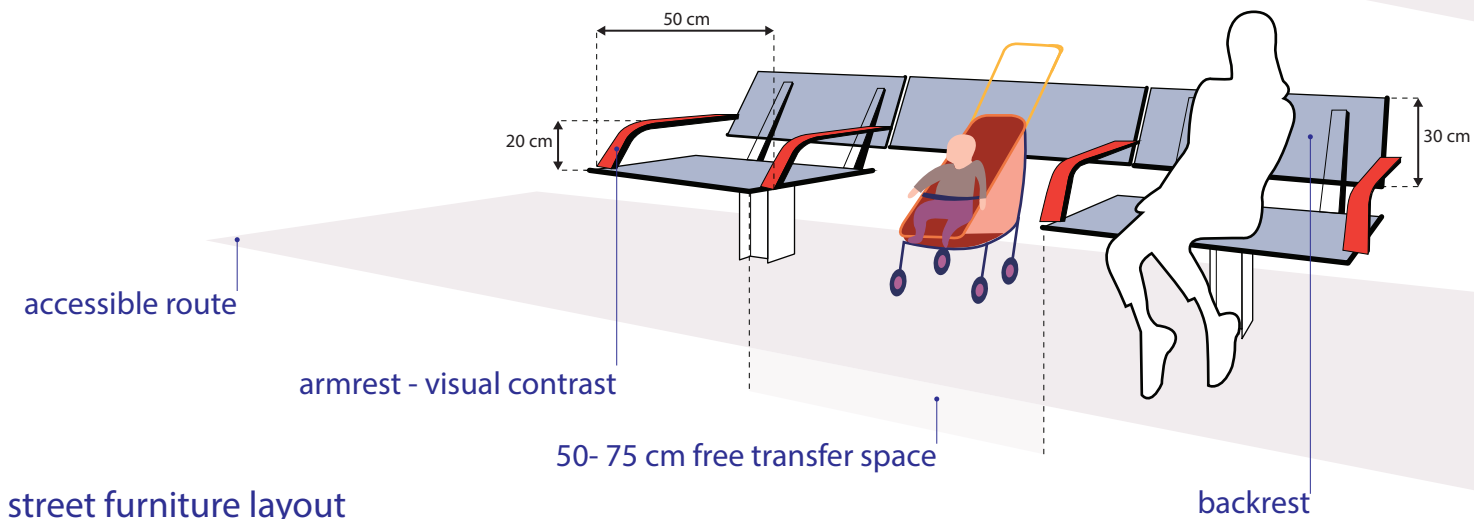
Street furniture should be located on an accessible surface. Seats may be provided on areas of soft landscaping whenever an accessible route to reach them is provided. Street furniture should have adequate clear space alongside it, or within seating rows, to allow wheelchair and scooter users to sit directly beside friends and family or in groups.

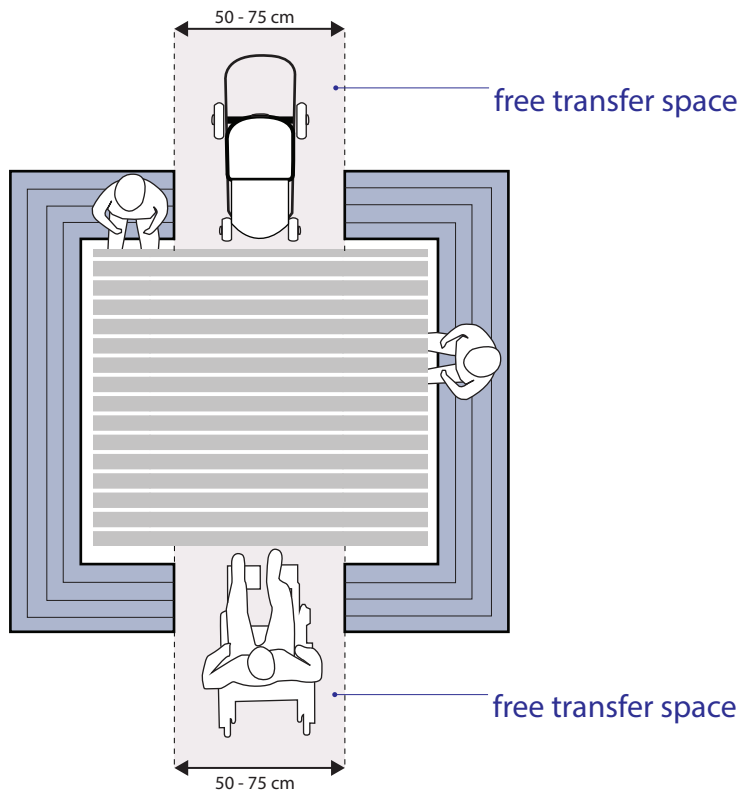
The street furniture should be identifiable against their surroundings. They should not have highly reflective finishes.

Seat heights should be between 45cm – 48cm for seats and benches except for where there are a significant number of benches and seating; in which case 50% should have varying seat heights with at least one at 38, 48, and 58cm high.

When providing a seating area in a pedestrian routeway, a free transfer space should be provided to allow a wheelchair user to transfer laterally onto a bench, with a level transfer space of 120cm located at one end and an armrest set in at 50cm to 75cm from the transfer space.

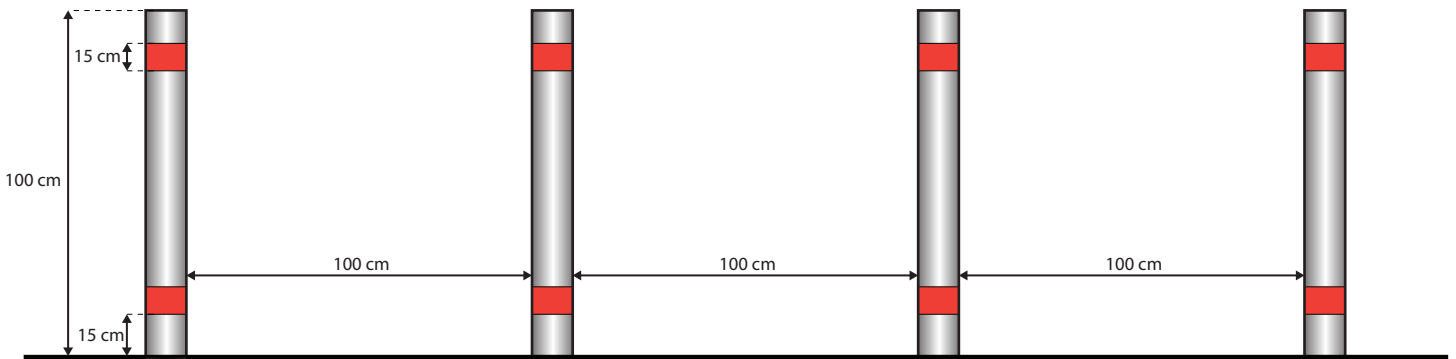
Most of the seating provided should have both back and armrests. When provided, these should incorporate armrests that are approximately 20cm above seat height level that contrast visually with the remainder of the seat to ensure that they are easily identifiable. A space between armrests of at least 50cm should be provided. Backrests that are at least 30cm high from seat level should be provided. When considering the design of seating, designers should be careful in selecting materials and avoid using materials that are cold to the touch for external use. For some people, metal can become too cold during winter time and too hot during the summer season. So if using metal seating, consideration should be given to provide it in a covered area to allow people to use it comfortably.





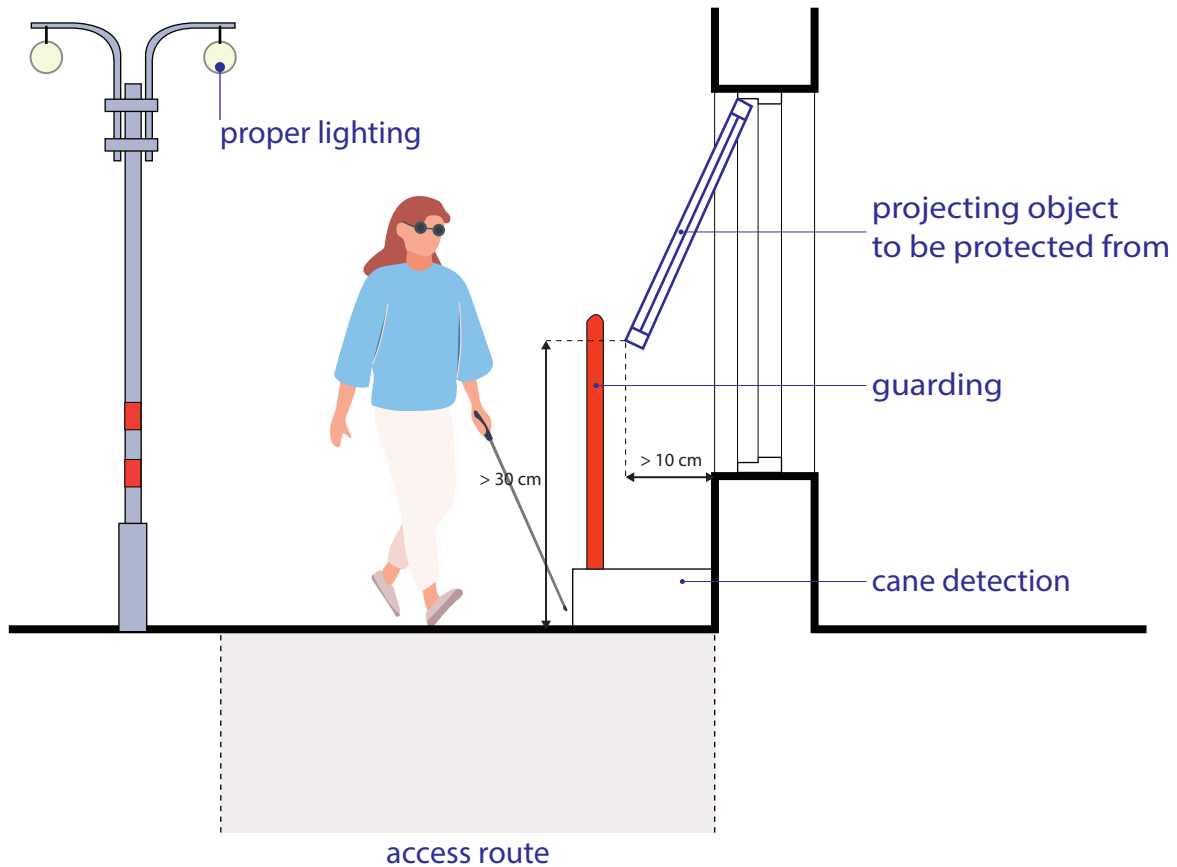
picnic area layout

Bollards should not be used unless necessary; a minimum width between bollards of 100 cm is required. Bollards should be a minimum of 100 cm high and contrast visually with their surroundings with a 15 cm deep contrasting strip at two levels: at 15 cm and 85 cm.



Lighting

Routes to main and/or alternative accessible entrances and potential hazards should be adequately lit. Low-level up-lighters are not recommended because they cause glare. Lighting should not create pools of light and dark or confusing shadows that can cause trip hazards for people with visual impairments. Any objects that project more than 10cm onto an access route and have a lower edge more than 30cm from ground level should be guarded and protected.



6

External ramps and external stairs

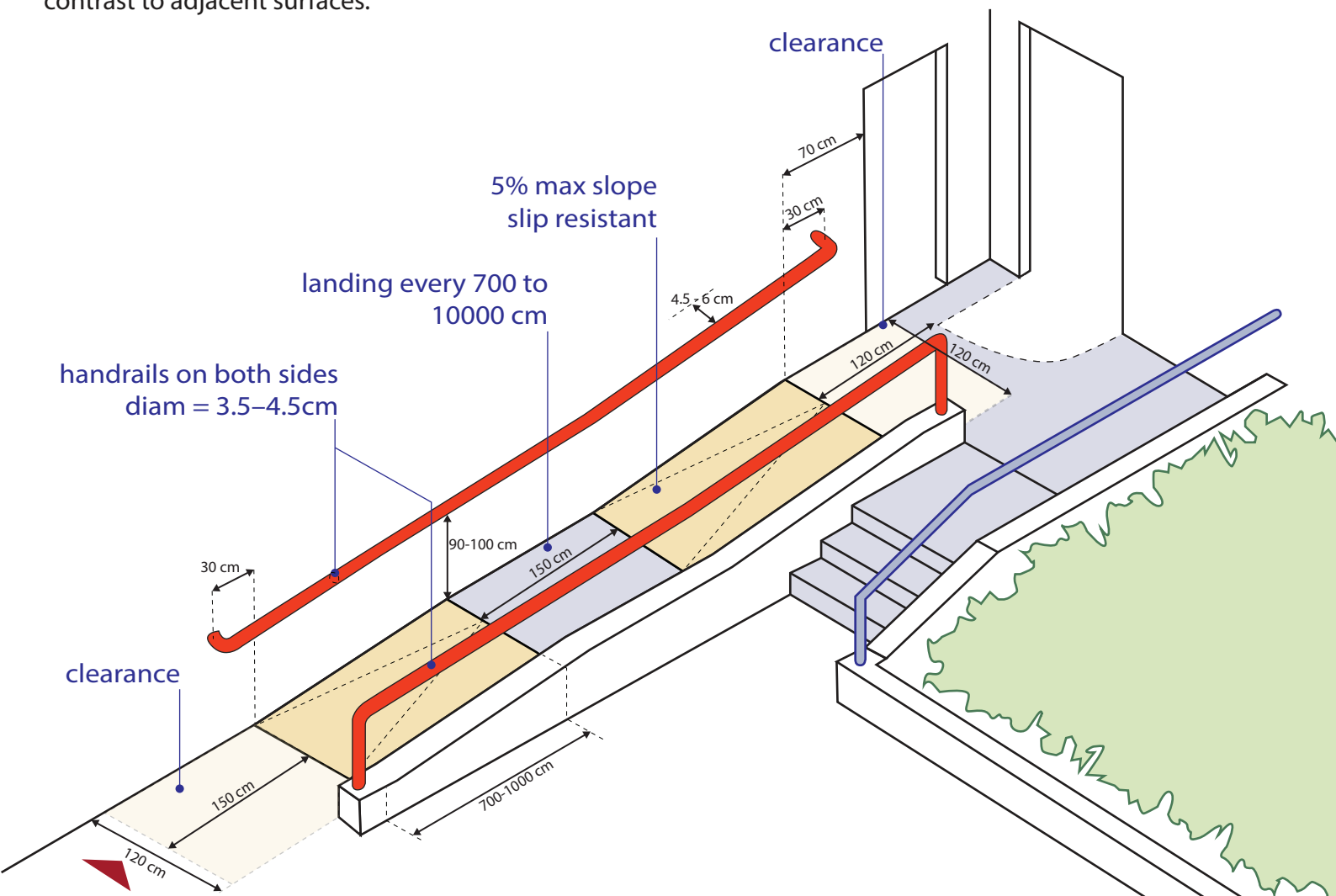
The main entrance to shops or buildings adjacent to sidewalks is recommended to have seamless access with zero-step level. However, if it is difficult to provide level access and there is a height difference, it is recommended to provide a ramp with an adequate gradient level to address the different vertical heights.

External ramp

A ramp provides access for wheelchair users, family with strollers, and moving heavy items. The ramp is recommended to have a slope gradient of a maximum gradient of 5% or 1:20 and is preferable to have a gradient of 2% or 1/50 with a minimum width of 150cm.

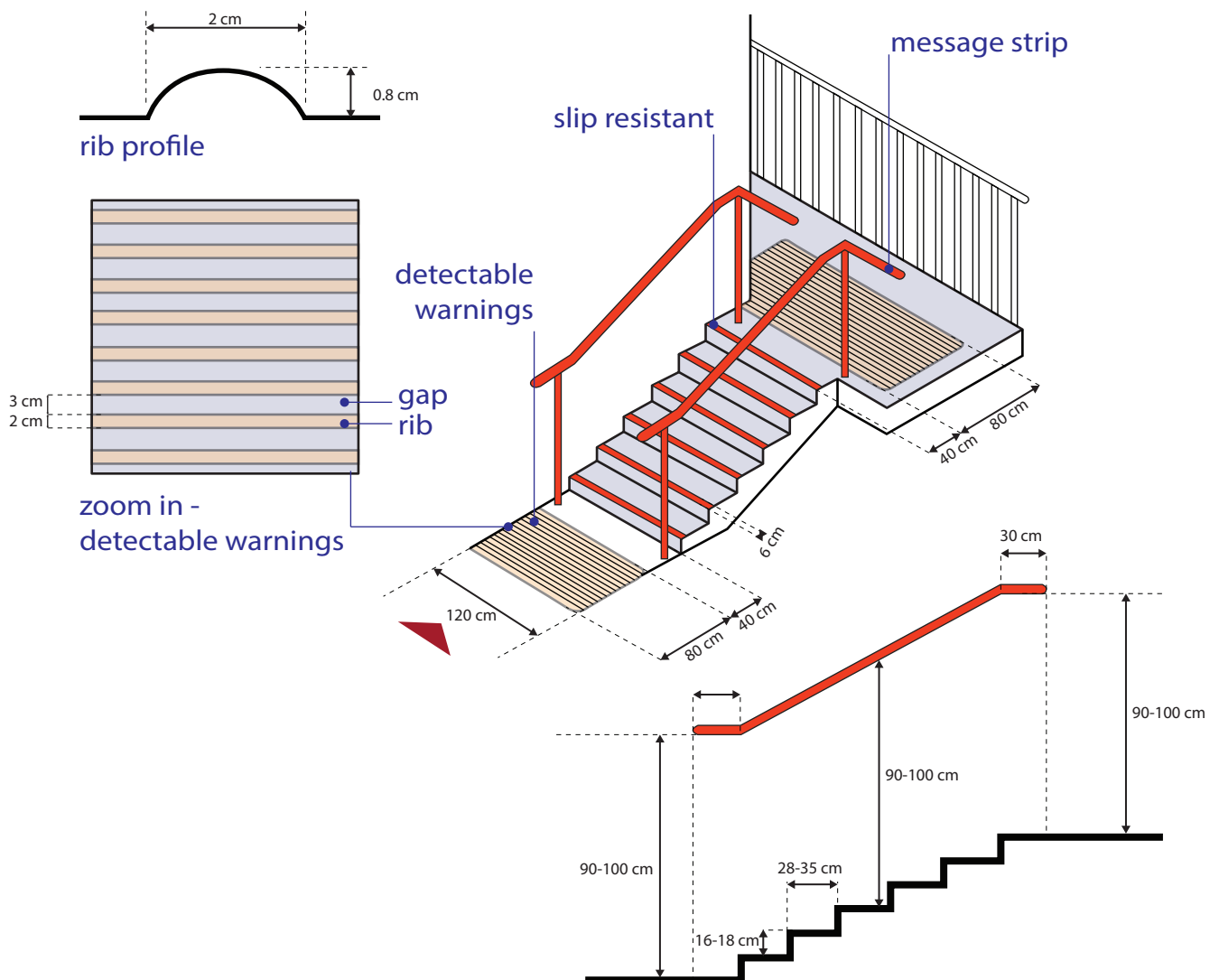
If a ramp is provided to cover a vertical height of 50 cm or more, a landing is required. A landing with an internal dimension of 150cm width x 120 cm length is recommended to be provided at the bottom and top of the ramp. The horizontal length between landings is dependent on a ramp's gradient. If a gradient is 1:14 a landing is required every 700 cm of horizontal length, however, if the gradient is 1:20 a landing is required every 1000 cm of horizontal length.

Handrails are required to be provided at both sides of a ramp and should extend 30 cm at the bottom and top of a landing and return to the wall and be provided along with landings. Handrails should be mounted with their tops 85-95cm from the ramp surface. Handrails should have a circular gripping surface of 3.5–4.5cm in diameter, have a continuous gripping surface (not interrupted by construction elements), and have a clear space of 4.5 - 6.0cm from wall surfaces. All handrails should be designed so that they do not form a hazard. Ramp floor surfaces should be slip-resistant and have a detectable warning surface that is color and texture contrast to adjacent surfaces.



External staircase

If the sidewalk leads to external stairs that provide access for the building or service along with the street neighborhood, it is recommended that the staircase be designed safely so that it can provide access for people of short stature, children, and elderly people. Stairs need to provide uniform riser heights between 16-18 cm and tread depths between 28-35. All risers should be closed and open risers are not permitted as they may cause trip hazards. All steps should include nosings of 3.5-3.8 cm and have high contrast to the tread and are made of a slip-resistant material. It is recommended that steps are illuminated to a minimum level light level of 100lux and have no abrupt undersides. When projecting, nosings must be sloped to the riser less at less than 60 degrees angle to the horizontal. Detectable warnings must be provided at the top of each set of stairs; they should extend to the full width of the stairs for a depth of 6 cm and commence at one tread depth back from the top stair. The warnings must be of a contrasting color to the surrounding floor surfaces and be detectable by a cane. Handrails must be installed on both sides of the stairway and are made of a soft surface for the touch with a diameter of 3.5-4.5 cm easy for grasping. The handrail should have a contrasting color to their adjoining structure and extend on the landing and project 4.5-6 cm from the wall, placed between 90-100cm above the stair nosing. It should extend 30 cm at the bottom and top of the stair and return to the wall surface, so it does not catch clothes. The handrail should have a message strip on the exit levels of each handrail.



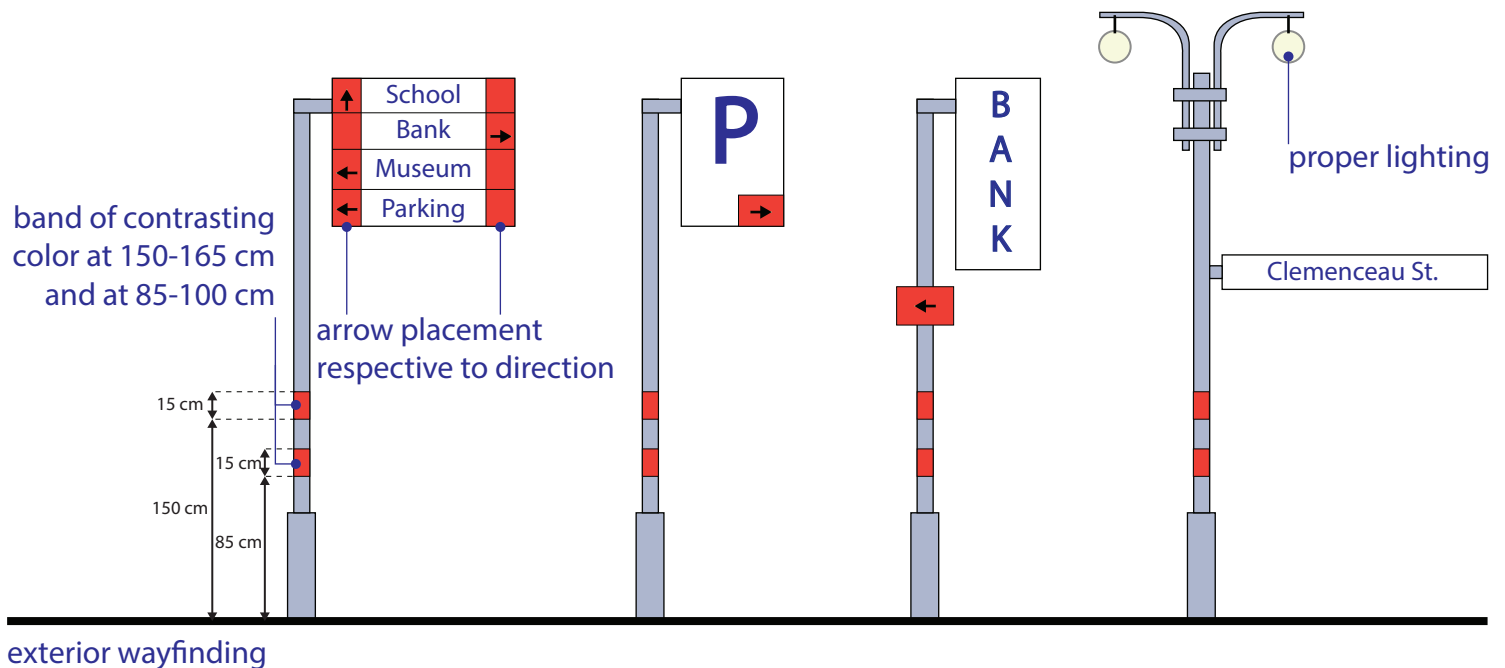
7

External Signage

Good signage is important, and it is important to provide signage systems that are accessible to as wide a range of visitors as possible. A range of factors needs to be considered to address people's differing access requirements. People who are blind or have visual impairments may need access to tactile or audible information. People who do not have English as their first language may need pictograms. So an inclusive street design provides different signage options and mediums to communicate the information required to all people to understand the built environment. The use of visual and tactile information can benefit from being reinforced by audible information and vice versa. The system of signage should be complementary to the surrounding environment, including the pedestrian routes, services provided at a street neighborhood, and locations of vehicle parking bays. The signage system should be consistent from the approaches to and throughout the development to allow people to easily find their way around.

Strategies for an inclusive wayfinding system

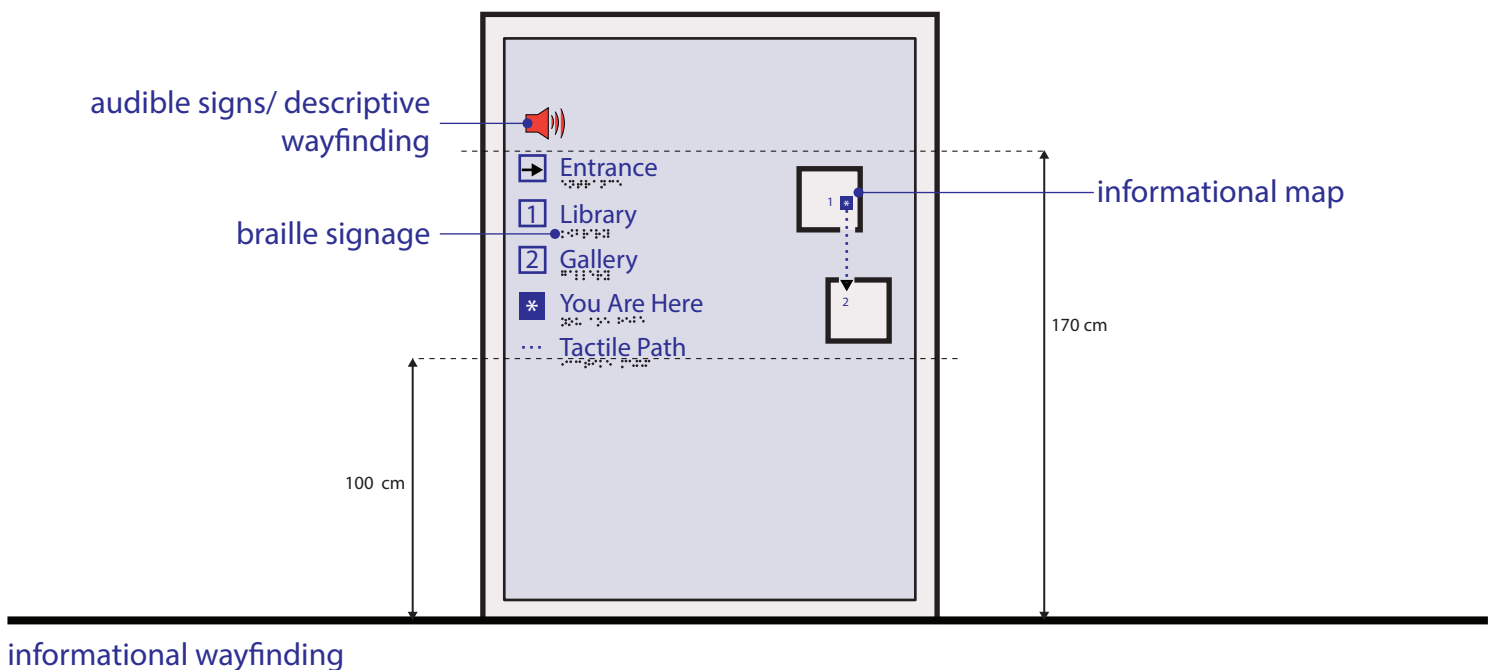
An inclusive wayfinding system provides information signs with street names that are visible and accessible, where the names have a clear visual contrast against their background surface. The wayfinding system should anticipate people's movement that can lead them towards amenities and services in a street neighborhood by providing logical and accessible routes that are detectable.



The wayfinding system should provide orientation through the use of existing or new landmarks which may include; trees, building facades, or public art or art murals. It should have clearly defined and appropriately indicated pedestrian crossing points. Make appropriate use of tactile paving where ever needed including the use of guidance paving such as blister tactile warnings. It is recommended to provide appropriate lighting for wayfinding at night, by having directional lighting and the color-coding of external areas and key pedestrian routes. It is recommended to use smartphone apps and other new wayfinding technologies as they become available at key locations.

Directional signs should be situated so that they do not cause obstruction and are well lit. They should be positioned at a high level in areas of buildings or streets that are likely to be crowded. Informational signs should be read at close range and should be located at a suitable height. The recommended range for a wheelchair user is 100 –110cm and for somebody standing 140 –170cm.

Another inclusive wayfinding system is providing audible communication methods such as audible signs and descriptive wayfinding information. It also includes providing water features when in operation. The changes in walking surface materials and texture are part of the audible communication methods used. In addition, tactile communication methods are another way of providing inclusive wayfinding such as providing tactile and braille signage, changes in level and curb upstands, in addition to changes in walking surface materials and texture and tactile paving.



8

Cycling Lane

Cycle or bicycle lanes are mostly designed for two-wheeled bicycles and are not designed inclusively since they do not allow people using different cycling devices to use the same lane because they are usually designed around the two-wheeled bicycle and do not support inclusive cycling. An inclusive cycle lane should be designed so it can accommodate larger types of cycles and various models used by people with disabilities. Although many cyclists with disabilities use a standard two-wheeled bicycle to get around, it is important to acknowledge that many use a variety of non-standard cycles depending on their needs.



standard two-wheeled bicycle



one type of non-standard bicycles

It is important to consult with people in a street neighborhood when designing cycle lanes in an off-street road environment to identify the needs of the other users and the users prefer to have cycle lanes separated or joint pedestrian routes.

Cycle lanes should not reduce the accessibility of pedestrian routes. Considering accessibility is vital in addressing diverse users' including people with disabilities cyclists. If space permits, it is recommended that cyclists and pedestrians use different lanes to minimize unnecessary conflict and obstructions for pedestrians.

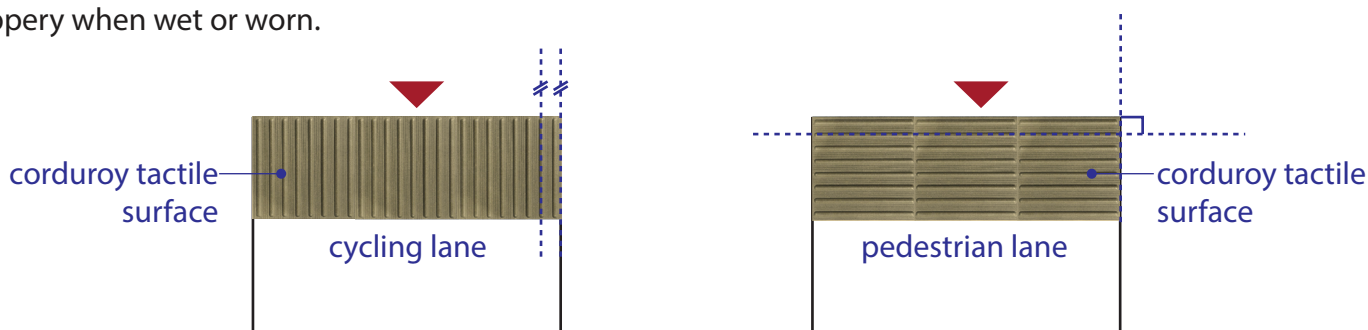
Moreover, cyclists and pedestrians should not share the same space at crossings. Main circulation routes that are specifically intended for high levels of usage by both pedestrians and cyclists will be clearly defined and signposted.

Marked and defined lanes help pedestrians including people with visual impairments and the elderly to use the circulation route safely and comfortably. Cycle lanes are recommended to be wide enough to accommodate all types of cycles. They should have the soft slope possible to facilitate comfortable and safe cycling, whilst allowing for drainage. A maximum cross-fall of 1:40 is recommended for paths used for cycles.

Corduroy tactile surface

The cycle lane should incorporate approaches to crossings that are perpendicular for visibility. They should have a corduroy tactile surface to indicate to people with a visual impairment that they are approaching a side or different route.

The corduroy tactile paving is laid perpendicular to the direction of travel on the pedestrian side and parallel with the direction of travel on the cyclist's side of the corduroy tactile paving to extend for 240cm at the entry/exit and junctions on both the pedestrian and cyclist's sides. The cycle lane should incorporate a raised, central delineator strip, to help people with visual impairments keep to the pedestrian side. The corduroy paving conveys the message 'hazard, proceed with caution and can be used to alert people with visual impairments about a level change. Corduroy paving should comprise rounded bars running perpendicular to the direction of pedestrian travel. They should contrast visually with the surrounding ground surface, but not be red which is reserved for tactile blister paving at controlled crossing points. Corduroy paving should be maintained and not become slippery when wet or worn.

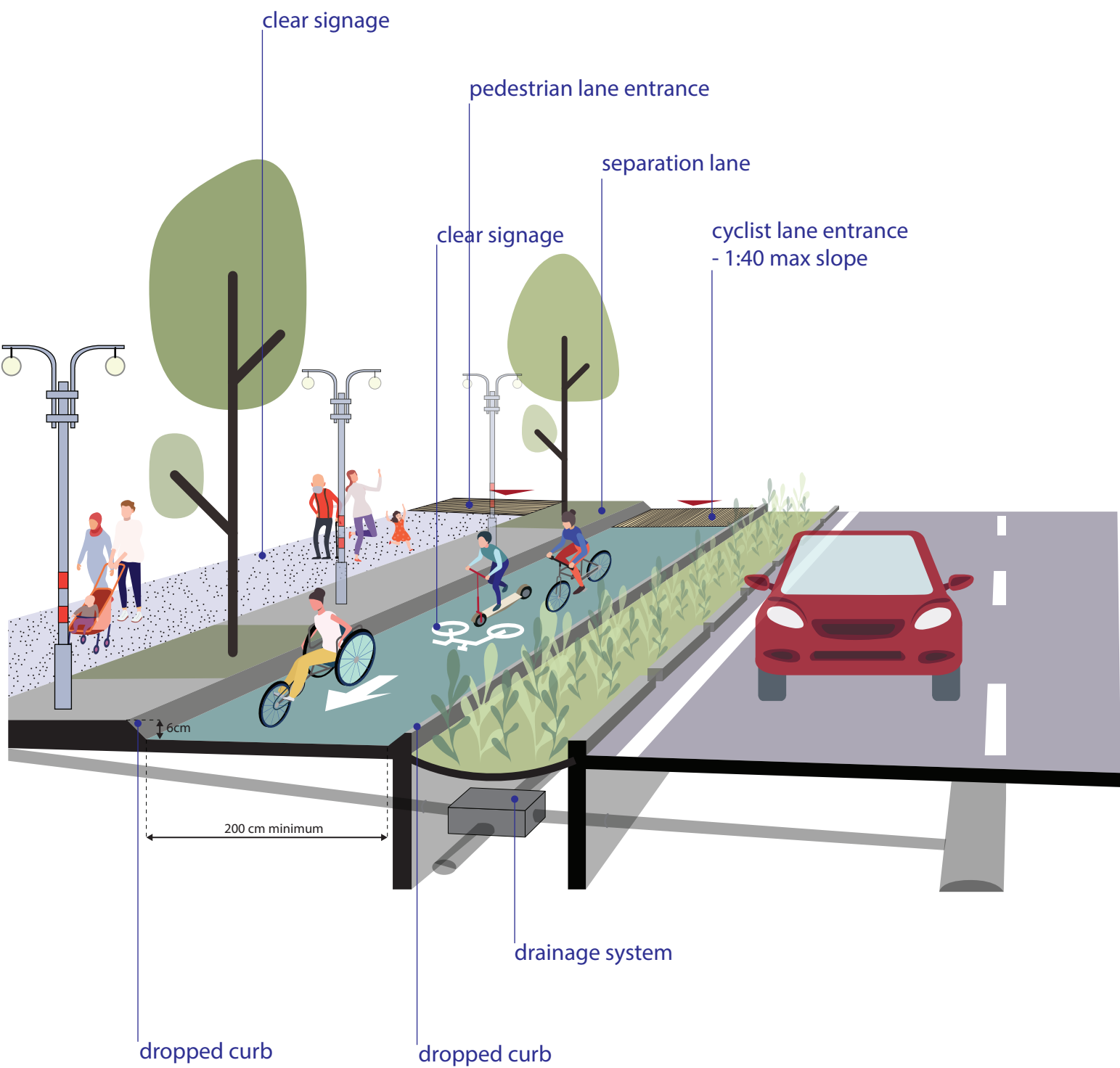


Cycle lane symbol

The cycle lane should have a cycle symbol marking provided on the appropriate side at all entry/exit points and any junctions with footways or other shared routes. It is recommended to use different colored surfaces and materials such as bitumen and concrete on the different sides of the route to provide a useful additional cue. The cycle lane should be wide enough with a minimum width of 2 meters to allow wheelchair users and families with push-chairs to pass shared paths. The cycle lane should have bollards or gaps between curbed upstands at no less than 15cm apart when used across a cycle pathway to prevent access to motor vehicles. The cycle lane should have dropped curbs, whenever there is a change in route (car or pedestrian route) which is at least 150cm wide, and wider when the approach creates an oblique angle. Dropped curbs should be specified with zero upstands within 0.6cm tolerance; any upstand of more than 0.10cm could destabilize the rider when approached at an angle.

Pedestrian safety

When providing a cycle lane, pedestrian safety should be considered to ensure that the cycle lanes are convenient for the intended destination and that they do not become a hazard for pedestrians. Footpaths and cycle tracks should be appropriately separated, preferably with a change in level with curbs should be at least 6cm high with beveled edges being considered. Crossings with blister tactile paving must be provided for pedestrians; the crossing should preferably contrast visually with the cycle track.



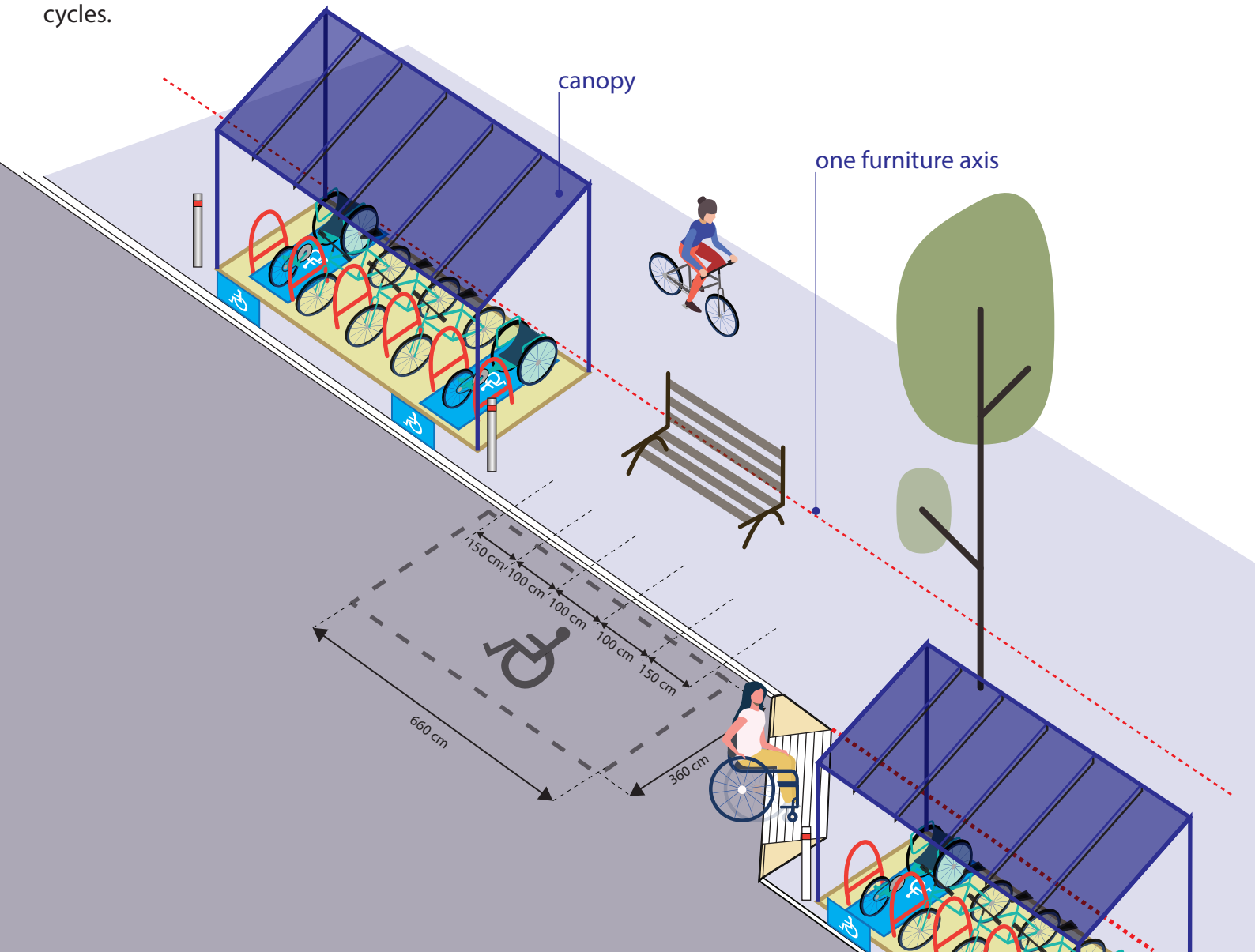
cycling-pedestrian layout

Cycle parking bays

Cycle parking should be provided in locations that are easy to find and use and be close to intended destination facilities whilst ensuring they do not create any areas of conflict between pedestrians and cyclists.

If a new cycle parking facility is provided, 5% of all spaces should be allocated for use by non-standard cycles (people with disabilities cycles). Parking facilities for non-standard cycles within buildings should either be located on ground level or have step-free access or a shallow ramp.

Where accessible car parking spaces are provided, the co-location of inclusive cycle parking is to be considered. Non-standard cycle parking bays should have a shelter or canopy and not exposed to the elements and nearest to the entrance of any facility they serve. The minimum gap between cycle stands/bays should be 100cm. At least one bay for non-standard cycles should be allocated at the end of a row of standard cycle parking stands, with these bays a minimum of 150cm wide to allow for dismounting. Cycle stands should be identifiable when not in use and contrast visually with their surroundings in all weather conditions. Non-standard cycle parking bays should be signposted, with signage indicating that these bays have been allocated for non-standard cycles.



9

Public Realm

The external areas between buildings, public space, open space, and facility areas are just as important as the streets themselves. An inclusive public realm is a space that is designed to make sure that the street and traffic network, pedestrian and cycle routes, and services are safe and accessible for all users regardless of their age group, gender, and physical and cognitive abilities. Passageways, roadways, and streets should be designed to provide a strong, legible framework.

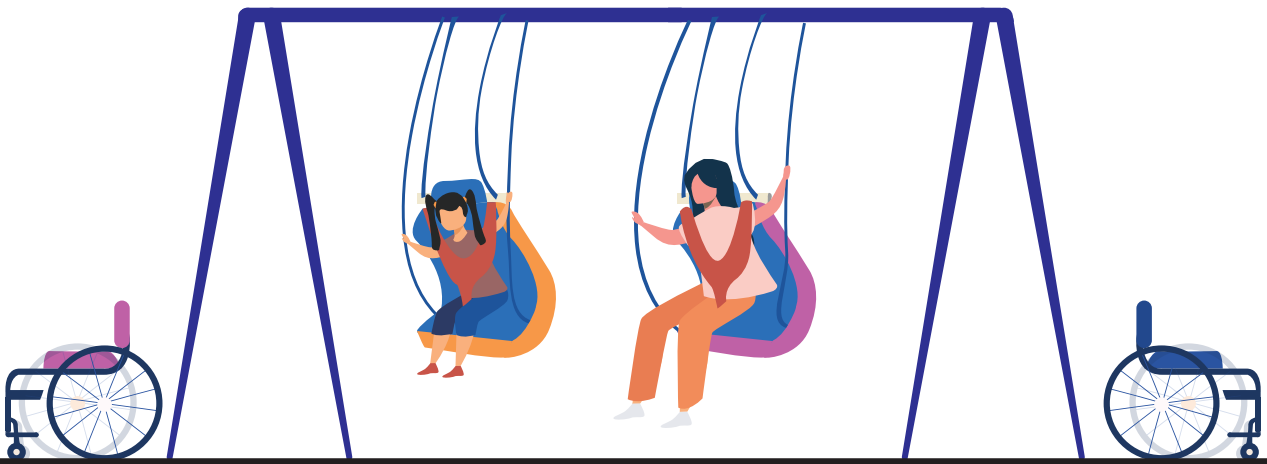
An inclusive street design provides ease of orientation and wayfinding through its public areas and is supported by information systems and signage. The public realm in a street neighborhood should include spaces where people choose to and want to spend time. The public spaces should have pedestrian routes that are designed to be easily identifiable, predictable, and direct; straight lines with right-angled turns are the easiest to follow and should be provided on at least one step-free and accessible route through an area. The public spaces should be carefully designed so they consider the safety and security of pedestrians and cyclists. It should have routes and facilities such as parking, play, and seating areas that are well-lit with natural surveillance, clear sightlines, no dead ends, and ideally a degree of overlooking from adjacent buildings. The public spaces should avoid unnecessary changes in level; and where a change in level is required, design solutions should be inclusive and provide a choice of routes, minimize visual confusion, for instance, through the careful location and integration of various elements.



10

Play Area

If providing a play area in a street neighborhood, it is recommended that it is designed to accommodate diverse people with and without disabilities. This includes a swing that can be used by wheelchair users, audible and music instruments, and embossed and tactile shapes that can be used by people with visual impairments, learning difficulties, etc. The playground floor is recommended to be covered with rubber tiling to provide safety from falls. The public play area should be within a close neighborhood of public toilets, including accessible public toilets and changing places facilities in the area. It should have observation points, where parents or caregivers can observe their children without being involved in play activities. The play area should provide space for parking pushchairs and mobility equipment and be also equipped with water fountains.



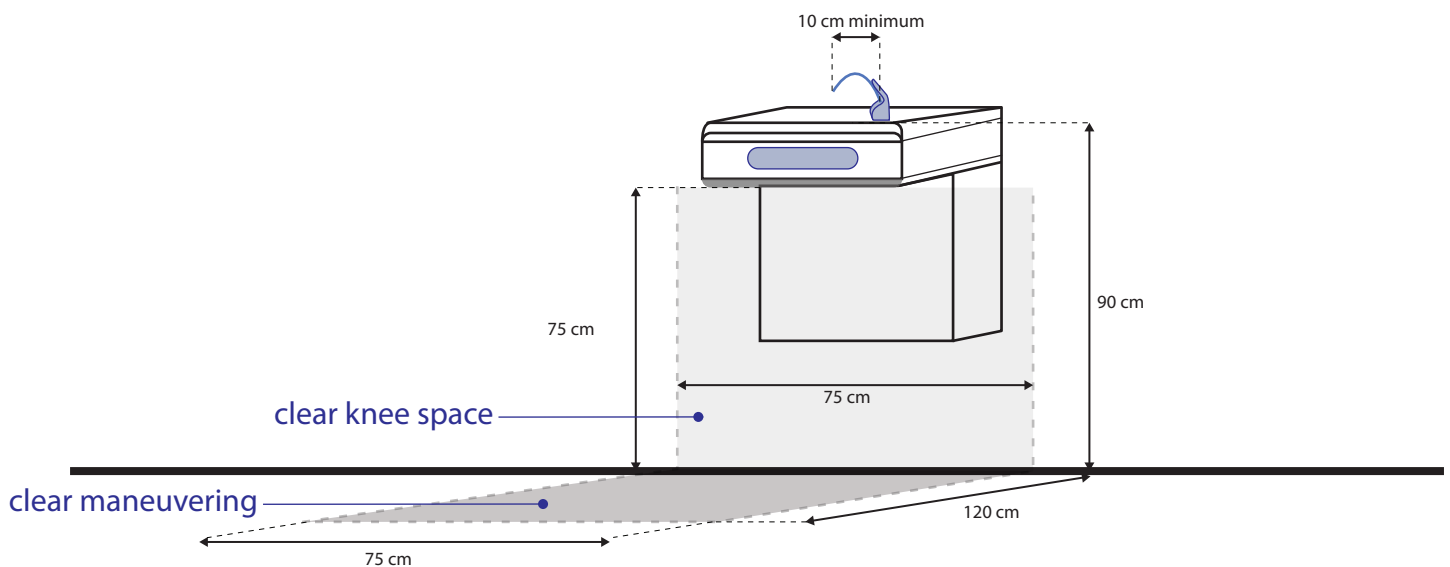
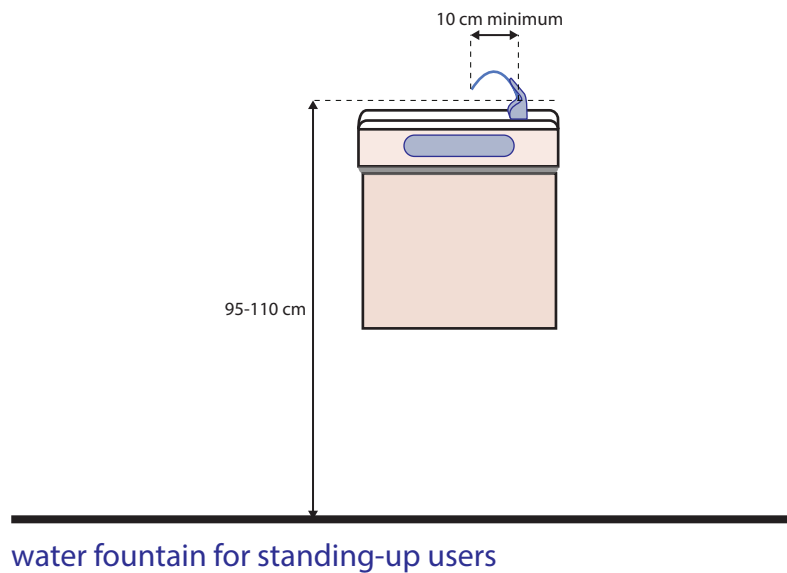
swing designed for wheel-chair users



multisensory play area

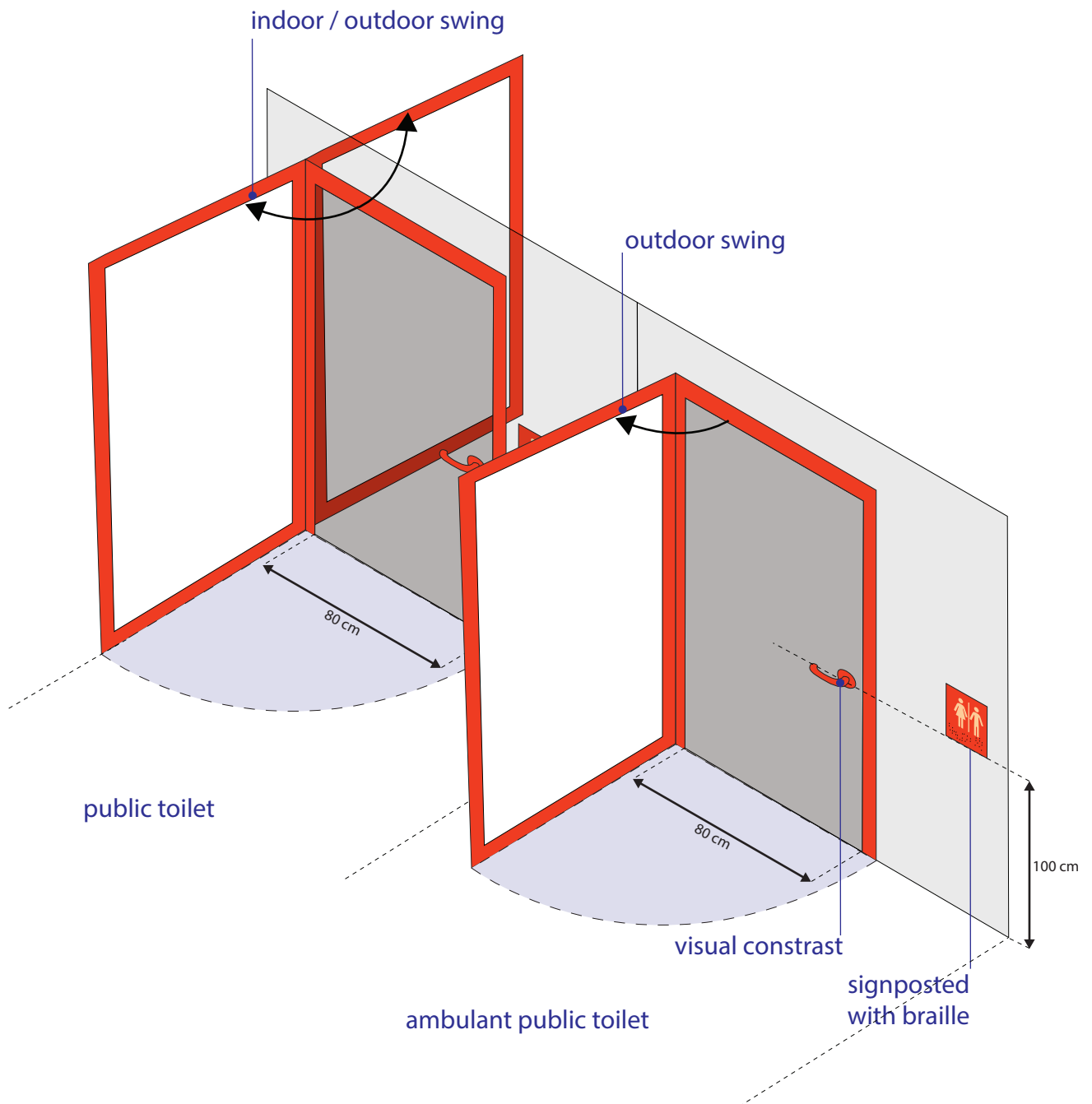
Water fountain

The water fountain in the public play area should be accessible to all. It is recommended to provide two water fountain levels to accommodate wheelchair users/ short stature and standing up users. The higher water fountain should be placed between 95-110 cm and the lower water fountain is placed at 90cm from floor level. A clear maneuvering space of 75cm x 120cm is recommended for wheelchair users to access it. A clear knee space of 75cm(h) x 75cm (w) x 50 cm (d) is to be provided.

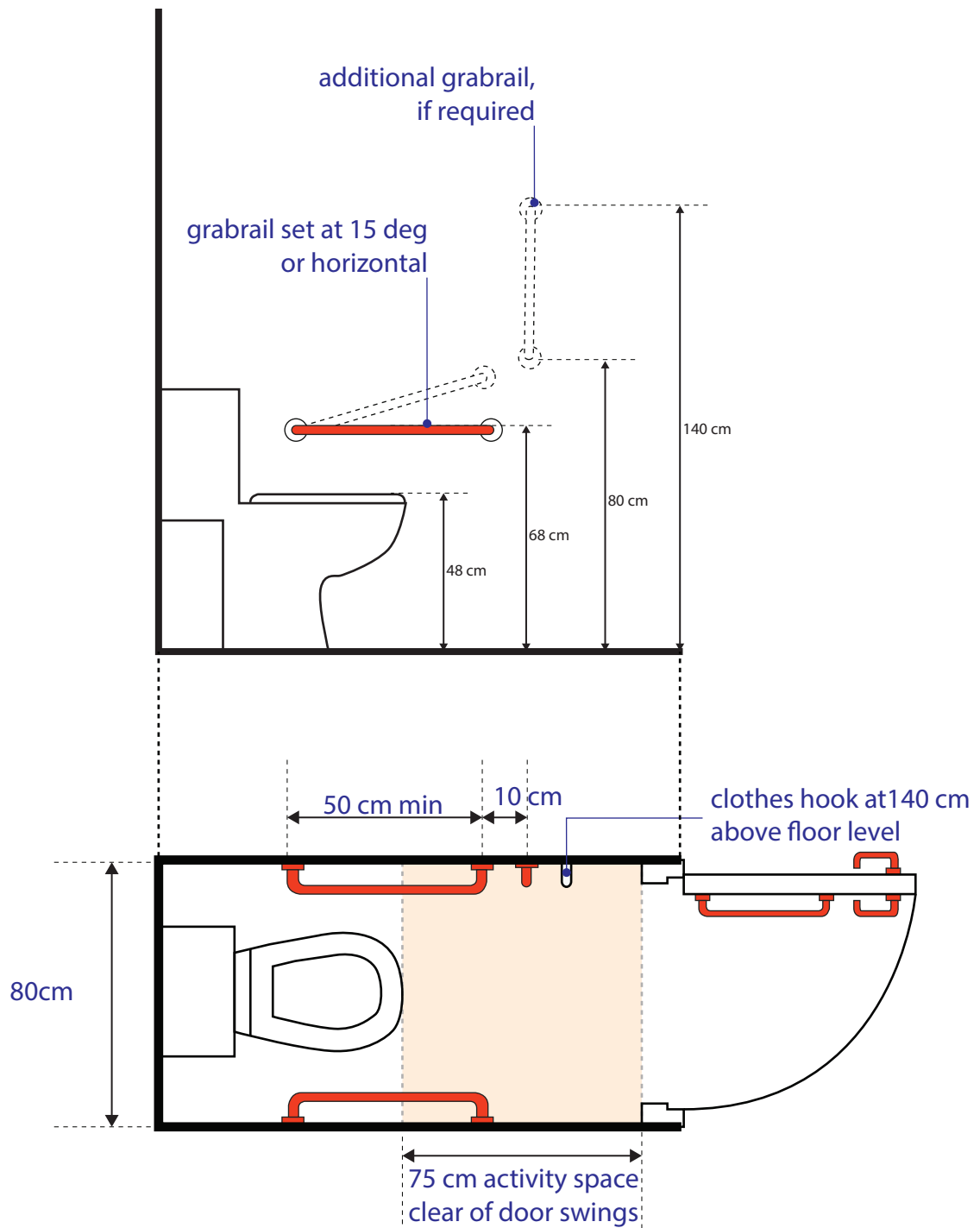


Public Toilet Compartments

Public toilet compartments must be signposted and have been signed with embossed and Braille characters on toilet doors placed at 100 cm from floor level. The toilet door frame and panel/leaf are visible in contrasting colors. Doors are easy to open and have lever handles distinguishable from surrounding finishes and placed at 100 cm from floor level. Cubicles are wider than 80 cm and have grabrails. Cubicle doors open outwards to provide more space. Sanitary units must be placed at reachable heights 60-80 cm from floor level. Where there are more than 3 cubicles, provide a wider cubicle for ambulant users. The cubicle for an ambulant user has a door that opens outwards. An enlarged cubicle is provided at female and male toilet compartments that have baby changing units.



The ambulant toilet should be designed based on the guideline as shown below and has grab rails on both sides that contrast with the sanitary units. All compartments should have basins that have recessed space for legs placed at 70 cm and 40cm to accommodate the different heights of users. Lever taps are to be provided as they are easy for gripping.

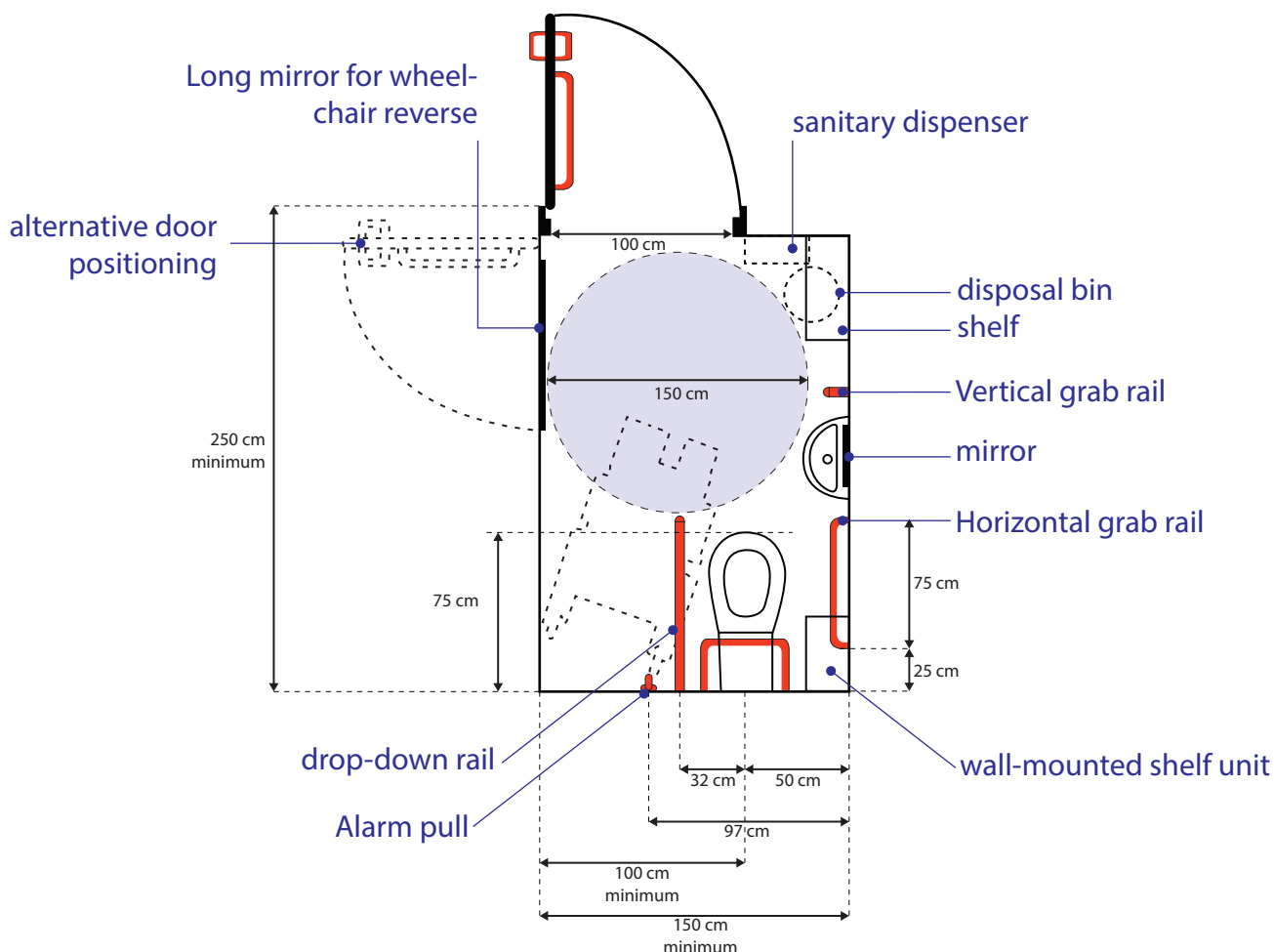


ambulant toilet unit

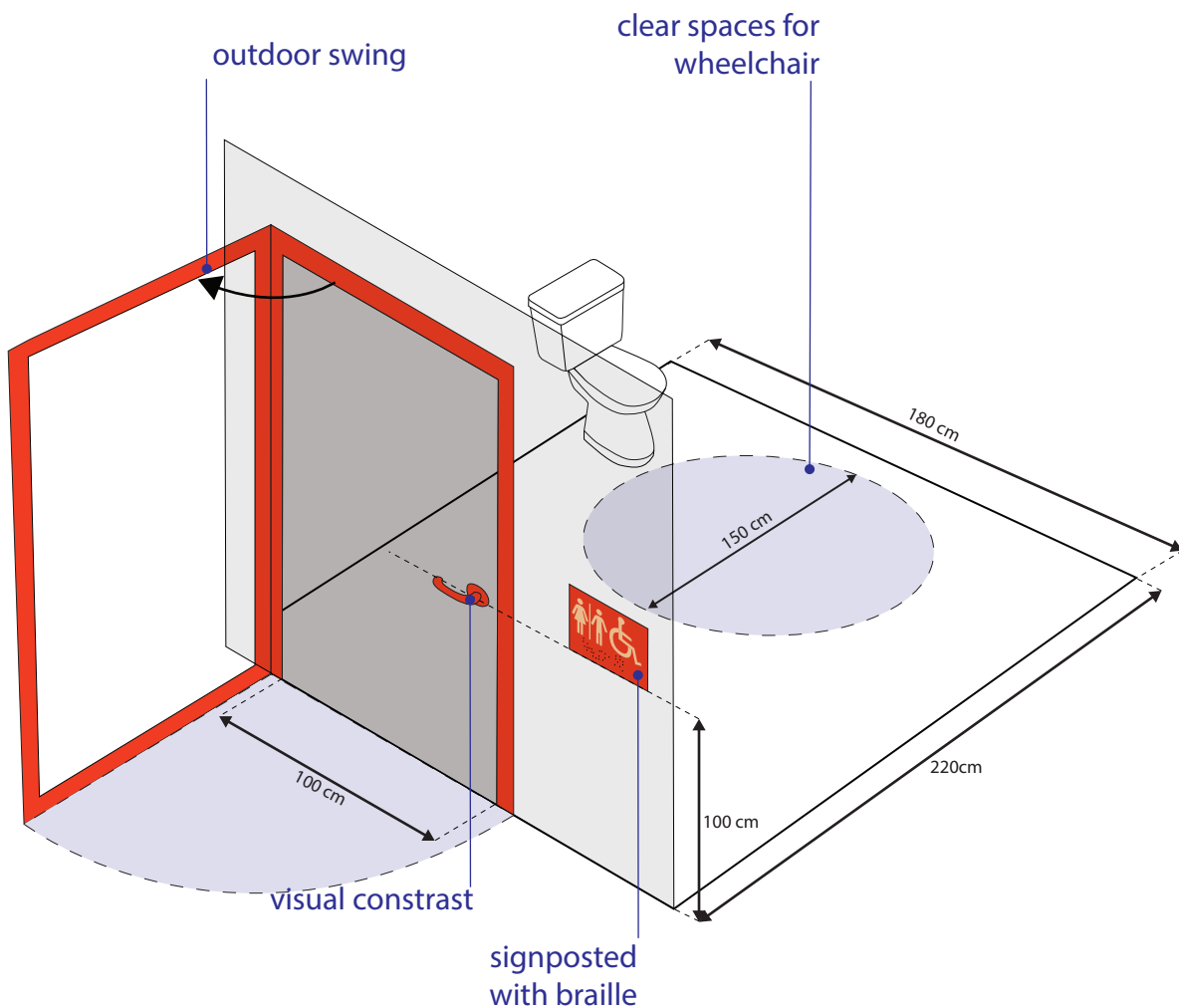
Accessible Public Toilet Compartments

Female and male toilet compartments should be signposted with signs that have visual contrast between the text and the background. Avoid using reflective signposts. It is recommended that the signs have embossed letters and embossed illustrations. The signs should be placed at 100 cm from floor level. The accessible toilet must be unisex and not only be within a gender-toilet area. This will allow assistance from a person of a different gender and caregiver as well as families and elderly people. If an individual accessible toilet is not visible from the common or public use toilet, suitable directional signage is required to exist.

Standardized symbols should be used and have raised lettering or symbols within the sign. The raised lettering should be 1mm in height. The sign should be mounted 100 cm from the floor, on the wall - on the latch side of the door where doors are present – not on the door itself. This is intended to reduce the collision hazard for people with a visual impairment using the signage. Where there is no entry door, signs should be located on the left as the user enters the toilet. To further facilitate easiness of use by people with a visual impairment, color-contrasting doorframes and door hardware may be used. The clear space of a unisex accessible toilet is 220cm x 150cm. Within that space is a toilet pan, washbasin, grab rail adjacent to the toilet pan, mirror, soap dispenser and paper towel dispenser, toilet paper dispenser. To add to the flexibility of use and appeal to families, a fold-down baby change table can also be provided in a unisex accessible toilet available for public use. For gender-specific accessible toilets, the clear space required to allow enough circulation space shall be 170cm x 180cm. The washroom should provide a transfer space of at least 150cm x 150cm next to the toilet. The best practice is 80cm or wider.

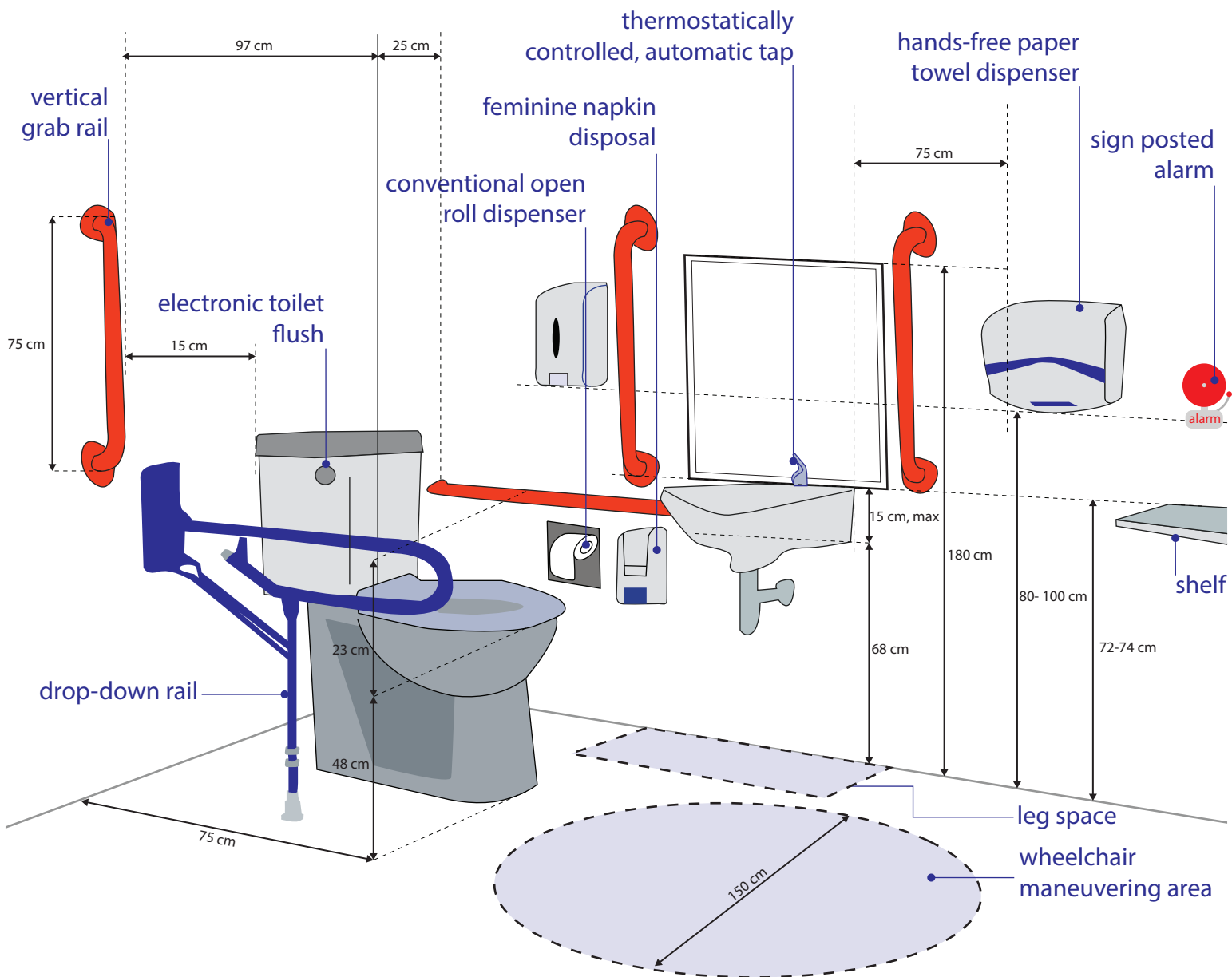


All doors to accessible toilets shall be 100 cm wide. Doors shall not swing into the clear floor space required for any fixture. In unisex facilities, a light operating door closer (20N) shall be provided for ease of use and self-closing. Doors must be fitted with light-action privacy bolts so that they can be operated by people with limited dexterity. All door-opening furniture must contrast visually with the surface of the door.



The toilet pan should be located 45cm from the sidewall. The height of the toilet seat should be 45cm +/- 10cm height above the finished floor. Toilet pans must be fitted, and be supported between 10° and 15° beyond vertical, to act as a backrest. Back support must exist where there is no seat lid or tank. The tank top is securely attached. Toilet flush controls are preferred to be electronically automatically controlled or be within easy reach from the transfer side of the toilet or else the side opposite to the wall. Toilets shall be equipped with grab bars that shall be l-shaped with 75 cm long horizontal and vertical components mounted with the horizontal component 23cm above the toilet seat and the vertical component 15cm away from the toilet seat. Toilet paper dispensers must be within easy reach from the sitting position not less than 60cm above the floor and contrasting in color to the wall. Further, conventional open roll dispensers are preferred since they require only minimal dexterity to operate. In the sink area accessories (such as soap dispenser, paper towel) must be located within an operating height of between 80–100cm above the finished floor and approximately 75cm from the center of the sink.

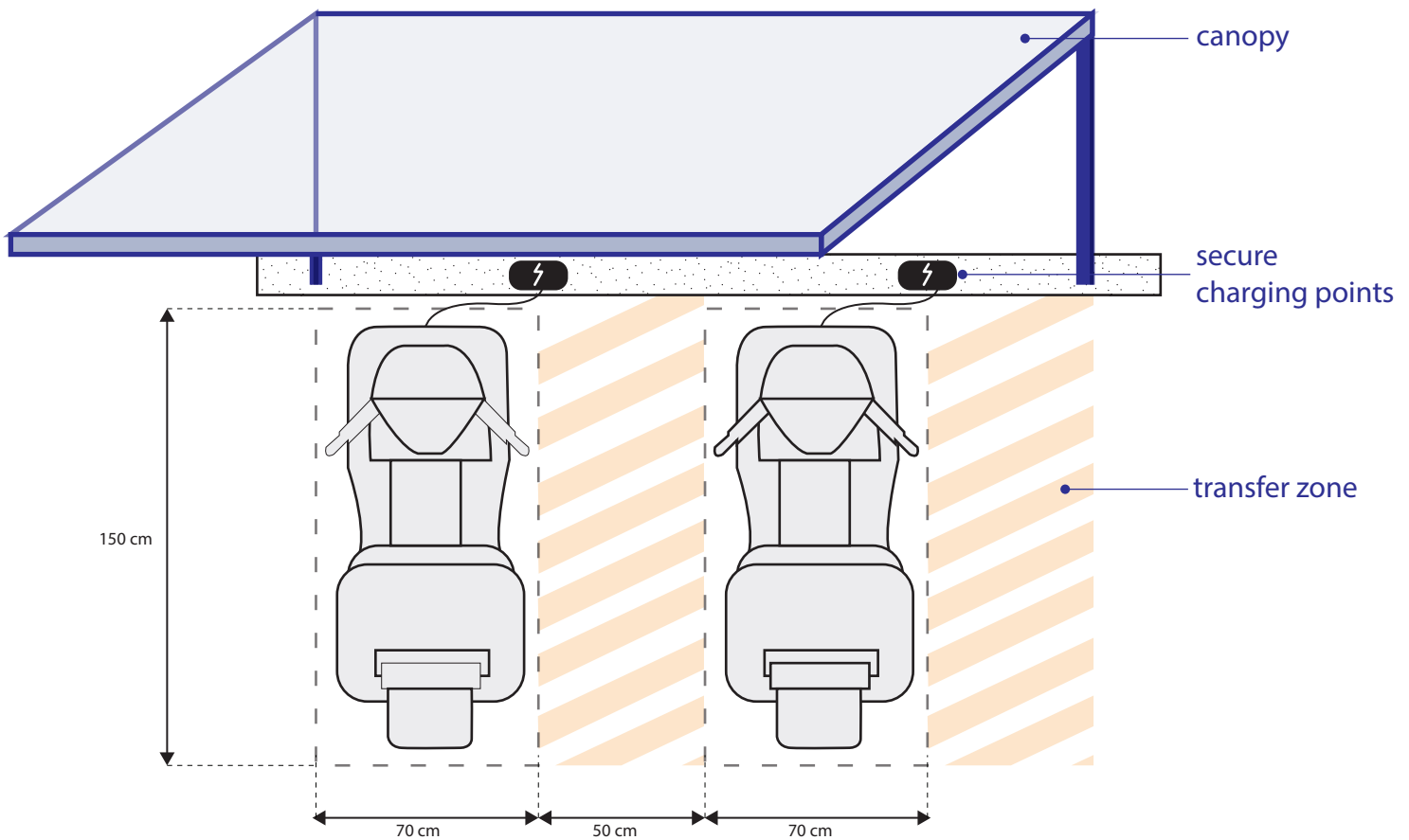
Garbage cans or other obstacles must not block access to the paper towel dispensers, or the required 50cm pull space beside the exit door. Toilet sinks must include a counter or adjacent shelf. The paper towel dispensers should be of a lever-operated type or be a hands-free design and be vertically mounted between 80-100cm above the finished floor and approximately 75cm horizontally from the sink, not on an opposite wall. Within unisex accessible toilets provide a mirror with its base immediately above the basin to a height of 180cm. A hands-free automatic tap is preferred – particularly in unisex facilities. The minimum requirement is for a single, thermostatically controlled, and lever-operated tap. Separate controls for hot water and cold water are not permitted. An AC outlet should be near the toilet to accommodate adaptive devices. Maximum basin depth should be 15cm basin height clearance of 68cm within a unisex accessible toilet. The minimum distance between basin and toilet pan is 100cm. Other requirements where baby change facilities are provided should be mounted at 85cm and provide a minimum of 75cm of clearance underneath and 50cm depth. All unisex toilets should have feminine napkin disposals located on the sidewall under the grab bar and near the front edge for the toilet. Each type of toilet accessory provided shall have operable controls mounted 80cm–100cm from the floor level. An alarm system is to be provided in a toilet and has an alarm rod or button placed between 90-110cm from floor level and is signposted and marked.



13

Mobility Scooter Parking

An inclusive street design should provide options for mobility scooters to park their mobility aids. Where provided, parking should be undercover and sheltered from bad weather. It should be provided with charging points (plug sockets). It should have minimum dimensions of 70cm wide x 150cm long with a transfer zone of at least 50cm to one side.



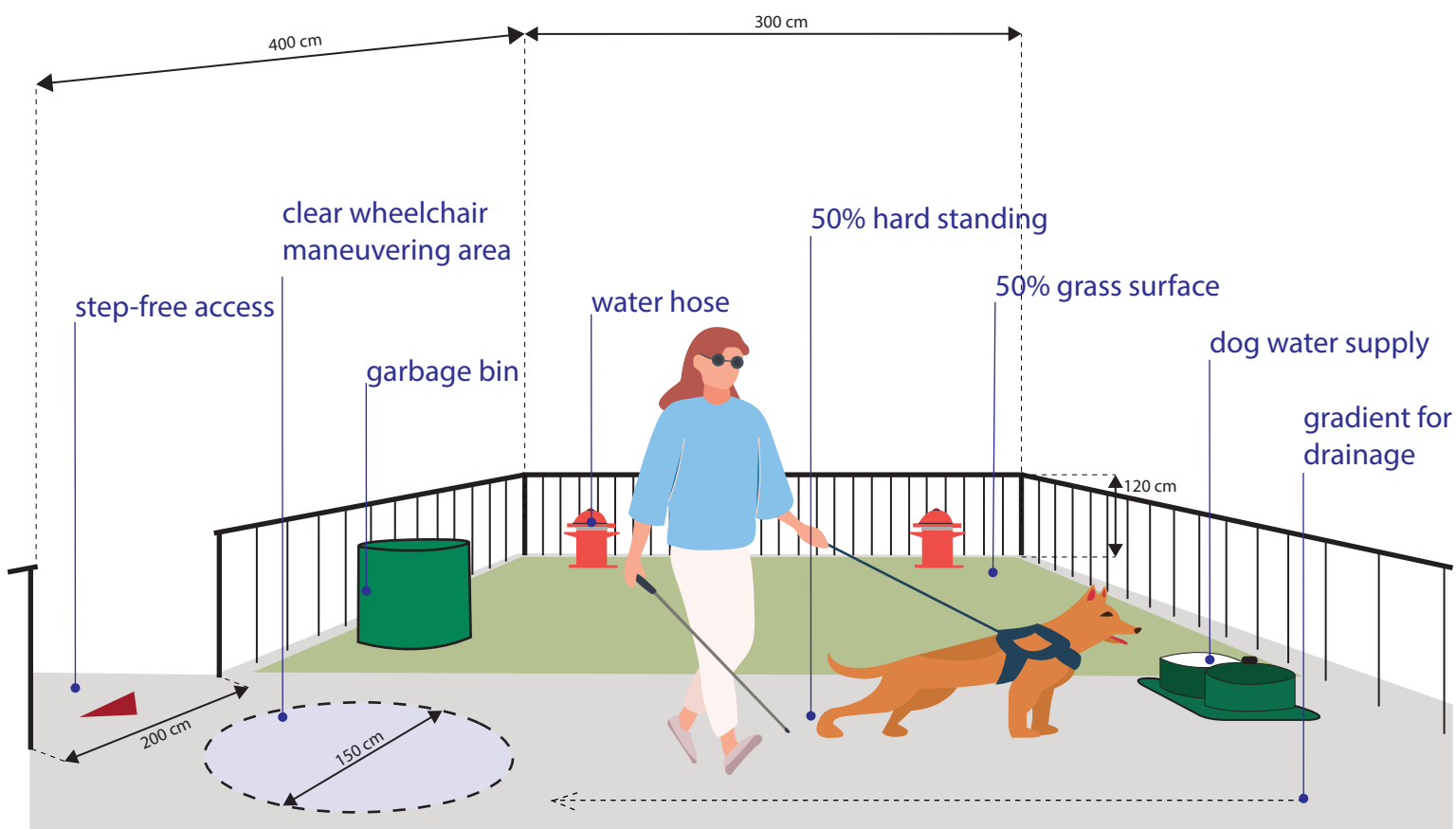
mobility scooter parking

Guide Dog Facilities

An inclusive street design should provide the provision of assistance dog facilities, which are typically located externally close to open public spaces or parks.

The guide dog facilities should be step-free and should be 2m wide to allow for one wheelchair user or two ambulant people and one dog. They should be a secure area of a minimum of 3m x 4m, with a boundary fence/wall at a minimum height of 120cm. The guide dog facility should have a 50% grass surface and 50% hard standing.

It should have a slight gradient in the direction away from the gate to assist drainage (a ditch/drainage running the edge of the area should be provided if a gradient is not possible to achieve). It should have an entrance gate or opening that is easy to operate and have a minimum clear maneuvering space 150cm x 150cm to allow wheelchair users to turn around. The guide dog facility should include a water supply and hose for ease of cleaning the area and to allow assistance dog users to provide a drink for their dogs.



guide dog facility