



# THE UNIVERSAL STANDARDS GUIDE FOR PERSONS WITH DISABILITIES

universal standards for persons with disabilities

WDU ACCREDITATION CENTER  
İSTANBUL



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## INTENT

The United Nations Convention on the Rights of Persons with Disabilities was issued to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity.

The World Disability Union (WDU) was formed to fulfill the purpose of the Convention. Toward this end the WDU has purposed that guidelines for the design, planning and implementation of accessibility would be required to enable persons with disabilities to live independently and participate fully in all aspects of life.

The Accessibility Guidelines for the Built Environment was written to provide guidelines for the design for accessibility in the built environment – including transportation - to ensure persons with disabilities access on an equal basis with others. This document was originally intended to be a regulation but it was recognised that this would make it difficult for jurisdictions – urban or rural – to implement due to existing regulations, limited resources or attitudinal barriers. However, as a guideline, it would allow jurisdictions the flexibility to adopt the Accessibility Guideline in its entirety as a regulation or to adopt a portion of it or use it as a reference document.

The technical requirements within this document are referenced from regulations and guidelines from jurisdictions who design and implement accessibility as minimum best practices for buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces.



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# THE UNIVERSAL STANDARDS GUIDE FOR PERSONS WITH DISABILITIES

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## SECTION ONE







## ■ INTRODUCTION

### ■ The Universal Standards Guide for Persons with Disabilities

Universal Standards has been planned for basic principles, procedures and basis under the leadership of the World Disability Foundation WDF and regulated by 120 World Disability Union WDU member authority and institutions from 65 countries of 6 continents following a three year effort.

Introduced on September 9, 2011 and September 13, 2012 in New York, within side events to the 4. and 5. sessions of the Conference of the State Parties to the Convention of the Rights of Persons with Disabilities and requested to be applied all over the world.

## ■ GENERAL TERMS

### ■ Article 1 – Purpose

Acts, regulations, guides, instructions, development plans as well as scientific, healthy, sanitar and environmental executions of such within the inhabited areas, open, semi – open and closed public places within the boundaries of metropolitan, urban, county or town municipalities and public foundations shall all be based upon Universal Standards Guide for Persons with Disabilities that intends to serve, to base, to promote, to project and to ensure the full and equal enjoyment and contribution to the society for the persons with disabilities and the elderly.

### ■ Article 2 – Content

Universal Standards Guide for Persons with Disabilities are to be applied within the boundaries of metropolitan municipalities, urban, town or county municipalities and public foundations;

Universal Standards Guide for Persons with Disabilities covers areas and locations which are regulated by the Construction Rules in accordance with Construction Law and under jurisdiction of municipalities and public offices.

### ■ Article 3 – Legal Basis

Universal Standards Guide for Persons with Disabilities, recognizes and regards the standards which are based on needs possibilities and local legal principals of various areas and territories such as ADA (American Disability Alliance), PACIFIC, EUROPE, CANADA and TSE (Turkish Standards Institute) ;

This regulation is drafted on the basis of the UN Convention on the Rights of Persons with Disabilities (Law No. 5825, clause 9) enacted in 2008 and the European Urban Charter-1 and the European Urban Charter-2 decisions adopted by the Council of Europe in 1996 and 2008, and based on Metropolitan Municipalities' and other Municipalities' development regulations as well as the construction and service regulations of Public Offices.

### ■ Article 4 – General Principles

**4.1** All plannings under legal obligations, strategic plannings, constructional execution plannings and plan notes within boundaries of Metropolitan Municipalities and other Municipalities shall be aimed to match to “Universal Standards Guide for Persons with Disabilities”.

**4.2** All public or private open, semi-open and closed areas of urban and constructional scale shall be aimed to be planned, programmed, projected and implemented in accordance with Universal Standards Guide for Persons with Disabilities and their appendices.



## ■ Article 5 – Exceptions

**5.1** Hierarchical priority is expected to be given to provisions of the Universal Standards Guide for Persons with Disabilities in such cases where any conflict may occur with provisions of any other regulation, except cases of special laws and their regulations.

**5.2** For all constructions in accordance with the Constructional Bylaws of Metropolitan Municipalities and other Municipalities, related regulations, convictions, interpretations, decisions and circulars of Public offices;

it is mandatory to follow the plan, science, sanitar, safety structure, esthetic and environmental context, Official Standards Institute's published standards and other related laws, regulations, codes and the Universal Standards Guide for Persons with Disabilities in regard with the accepted legal rights and needs of the disabled people.

## ■ Article 6 – Actions to be Taken For Public Benefit

**6.1** All and any kind of construction for urban and architectural scale under the responsibility of Metropolitan Municipalities, other Municipalities and Public Offices (roads, sidewalks, pedestrian walks, substructure, infrastructure, open, closed, semi-open public areas and constructions etc) shall be structured and based on the related criteria of the Universal Standards Guide for Persons with Disabilities.

**6.2** In all kind of new construction within the boundaries of Metropolitan Municipalities, other Municipalities and Public Offices;

World Disability Union WDU will propose, demand, track and follow up in an insisting way for the favor of the disabled that, a 10 % of all the residential buildings and sites, the whole of the constructions for public offices, 10% of the buildings for special purpose greater than 1.000 sqm shall be planned, constructed and made convenient for the use of the disabled people

(Calculation for 10% will be based on whole numbers.)

## ■ Article 7 – Matters Not Provided for Constructional Plan and Accessible Urban Standards

**7.1** For all matters that are not covered within constructional plans or explained within the Universal Standards Guide for Persons with Disabilities the institutions in charge should ask World Disability Union's opinion or advice for techniques to be implemented.

In addition no decision or principle decision conflicting to Universal Standards Guide for Persons with Disabilities should be taken or implemented.

**7.2** Municipalities are obliged to obey and implement all provisions and decisions related to the disabled.

In addition Municipalities and Related Public Offices shall regard local and environmental circumstances and shall take measurements for the disabled in accordance with UN Convention on the Rights of Persons w/ Disabilities' written documents and World Disability Union's advice for matters that are not included in Universal Standards Guide for Persons with Disabilities

## ■ Article 8 – Hierarchical Order of the Plans

According to law in act plans follow the hierarchical order of constructional plan, territory plan, environmental plan, urban environmental plan, regulatory and implementory constructional plan and each lower scale plan follows its upper scale whereas every superior directs its inferior.

Minor scale plans are bound to follow the main principles, strategies and decisions of the major scale plans. Matters which are not specified or limited in superior plans shall be in accordance with inferior plans. In all hierarchical plans the compatibility to the Universal Standards Guide for Persons with Disabilities should be clearly visible.





### ■ Article 9 – Plan Notes

Constructional Plans are completed as a whole with Plan Notes that are explanatory to the provisions for implementation. Studies intended for the disabled people should be added to these plan notes.

Plan Notes are an inseparable integral part of the Construction Plan. Provisions brought by Constructional Plan Notes are mandatory processes as Development Plan itself. 5

### ■ Article 10 – Social Relevancy Visa (Licence)

On the basis of UN Convention on the Rights of Persons with Disabilities, World Disability Union is kindly asking all municipalities to put this licence into place.

Any licence application for any project shall only then be approved by the relevant authority when it gets compatible to the terms and provisions of the Universal Standards Guide for Persons with Disabilities.

In contrary situation, no licence shall be granted unless the licence and its appendices are made compatible to the terms and provisions of the Universal Standards Guide for Persons with Disabilities.

In addition, residency permit, alteration, maintenance, repair and renovation applications should also be compatible to the terms and provisions of the Universal Standards Guide for Persons with Disabilities.

Any construction in the open, semi-open and closed areas shall not be continued unless the non-compatibilities to the terms and provisions of the Universal Standards Guide for Persons with Disabilities in the plan and/or project, licence and appendices are eliminated.

In case of modification of a single independent unit in an established condominium is required to provide compatibility to the Universal Standards Guide for Persons with Disabilities, such modification shall be implemented in compliance with only technical provisions in case such modification is non-compatible with the plan, licence and its appendices.

### ■ Article 11 – Inspection, Certification and Penal Provisions

**11.1** Implementation of criteria and provisions of the Universal Standards Guide for Persons with Disabilities is monitored and audited by the relevant Municipalities.

**11.2** Municipalities in charge of controlling the implementation of the Universal Standards Guide for Persons with Disabilities shall set up a special inspection administration office / unit, also an employment ground for people with / without disabilities and shall claim technical consultancy from World Disability Union WDU.

**11.3** World Disability Union WDU is authorized to issue the Universal Standards Certification USTAD once compliance is determined upon engagement of the World Disability Union WDU Accreditation System.

#### 11.4 Penal Provisions

State Parties who undersigned and approved the United Nations Convention on the Rights of Persons w/ Disabilities- Law No 5825 are liable through their internal law with respect to international law principles. World Disability Union WDU as a global and comprising institution will warn those states, who fail to fulfill this liability on time with respect to universal standards, in favor for the disabled, demand and follow their rights, in cases of negligence, abuse or infringement of their rights, will notify the related units of United Nations about those states and proclaim necessary transactions and follow.

### ■ Article 12 – Validity and Construction Standards and Forms to Follow

**12.1** World Disability Union WDU Accreditation system; criteria and provisions of the Universal Standards Guide for Persons with Disabilities; Universal Standards for Persons with Disabilities Certification USTAD; has been introduced on 13 September 2012 in a parallel event at the 5. convention of the State Parties who



undersigned and approved the United Nations Convention on the Rights of Persons w/ Disabilities Law and internalised by United Nations with the demand to be enforced in the whole world and took effect following the approval of the common declaration by all the members of WDU on 7 April 2013.

**12.2** Standards and forms included in the Universal Standards Guide for Persons with Disabilities;

are prepared based on Technical Handbook of Accessibility Basics for Local Governments by TC Ministry of Family and Social Politics, updated standards (2011) for accessibility for persons with disabilities from Alberta (Canada) and TSE and is an appendix to Universal Standards Guide for Persons with Disabilities.

**12.3** These related institutions are authorised for completing, correcting and updating the articles Universal Standards Guide for Persons with Disabilities.



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# THE UNIVERSAL STANDARDS GUIDE FOR PERSONS WITH DISABILITIES

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## 13.1 WALKWAYS AND PAVEMENTS

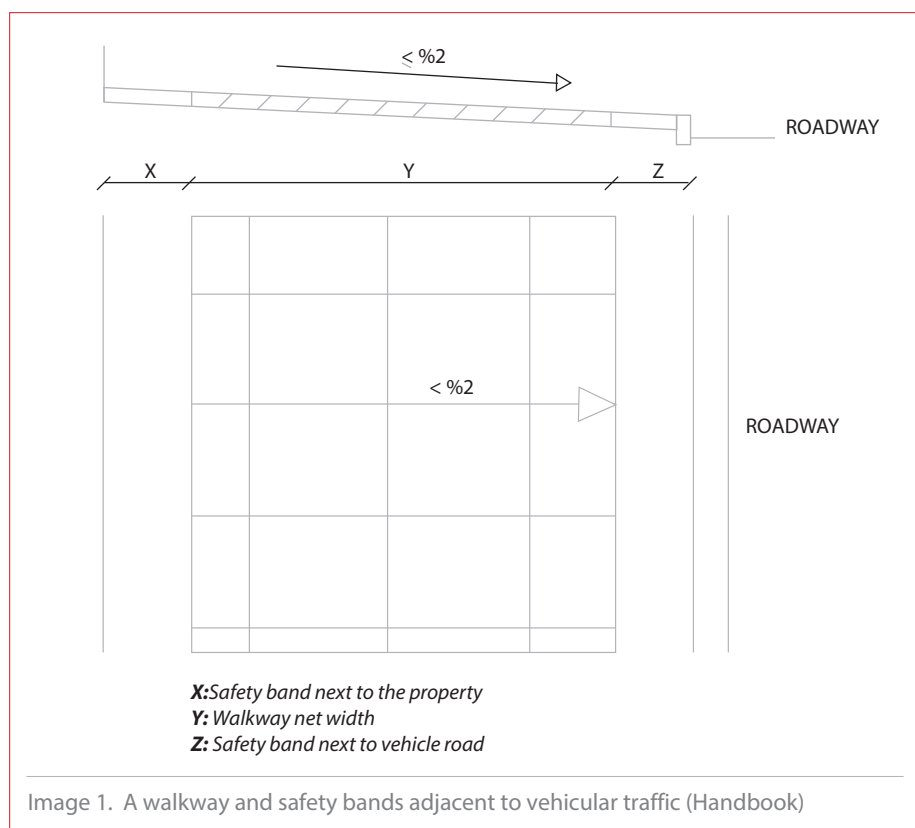
The main purpose of walkways and crosswalks is to provide a connection to different structures, activities and spaces in the built environment. The thoughtful design and planning of walkways and crosswalks provide for unimpeded movement that will allow ease of access and safety for all people including people with disabilities.

This includes all pedestrian paths, walkways, ramps, squares and crosswalks in open areas such as parks and recreation areas and sporting fields.

### 13.1.1 Width of a Walkways

A walkway should be a 1.5 meter to 2.0 meters in width. Walkway width should be minimum 3.0 meter at bus stops and 3.5 meter at storefronts (OZIDA, 2008).

All pedestrians may move freely and safely where the width of the walkway shall be 1.5 m and unobstructed. The width of the pedestrian walkway shall also include a safety band of 25 – 50 cm adjacent to traffic areas (if real estate permits) and bordering both sides of pathways in open areas, such as a bicycle path, to warn of potential danger. (TS 12576)(Image 1) The safety band or border shall be of a different texture and be contrasting in colour to the main walkway to ensure that people who are visually impaired or blind will be able to move safely in pedestrian traffic. (See 13.1.3 Surface of Walkways.)



*Note:* Width of walkways may be resized according to usage frequency, road class and group.<sup>1</sup> (See Table 1 for calculation of pedestrian usage.) However, a wheelchair or another mobility device will still require a minimum of 1.5 m of turning ability so if the width of a walkway must be reduced than the safety band may be included as a part of the 1.5 m.

<sup>1</sup> Width of the walkways should be constructed appropriate with TS 7937.



D(Pedestrian/ m2)	X	Y	Z
0.3	25	150	50
0.6	25	200	50
1.0	50	250	50
1.5	50	300	120

Table 1. Pedestrian intensity – walkway width table (cm)

### 13.1.2 Slope of the Walkways

On the walkways, especially for preventing any problems for wheel chair users, the slope of the walkway cutaway shall be no greater than 6%. Directional elements shall be located on the cutaway to orient visually disabled people across a roadway safely.

### 13.1.3 Surface / Cover of the Walkways

The surface of the Walkway must be non-slippery and the path surface should not be uneven such as a protruding manhole cover or have sudden changes in level such as a step so as to remain level and continuous. (TS 12576)

The route of the path should be easy to follow for visually impaired or blind individuals who use a cane to find and detect natural or constructed guide lines and feel and/or hear the different surfaces.

The guidelines should eliminate the uncertainty of the path or the direction of a path for people with visual disabilities when there are gaps, such as at an intersection (BM, 2004).

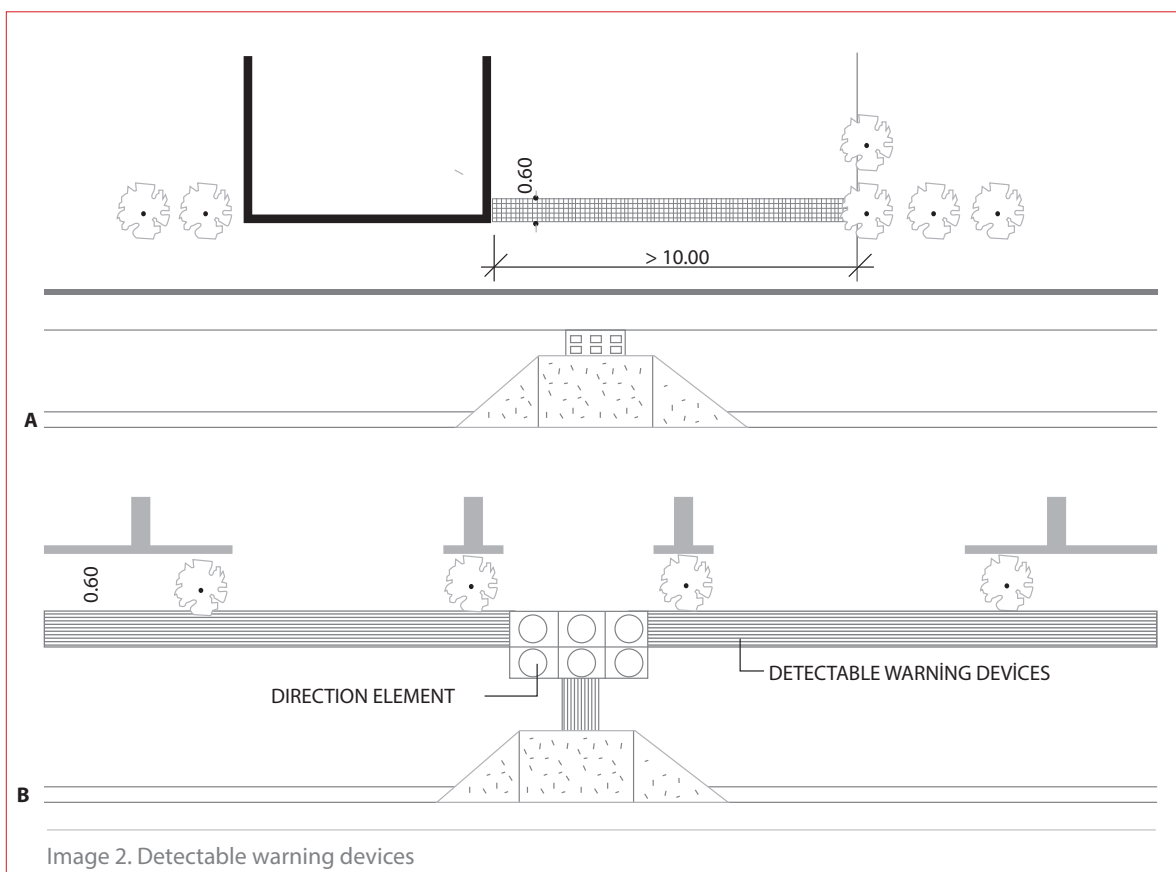


Image 2. Detectable warning devices



Main principles that will be taken into consideration in the design of guide lines that are used for walkways are as follows;

- Guide signs should be simple
- They should be parallel to the main pedestrian movement or flow,
- Guide signs should be 0.60 width
- They should be far away from manholes or drainage canals to prevent any danger or confusion for sight disabled individuals.

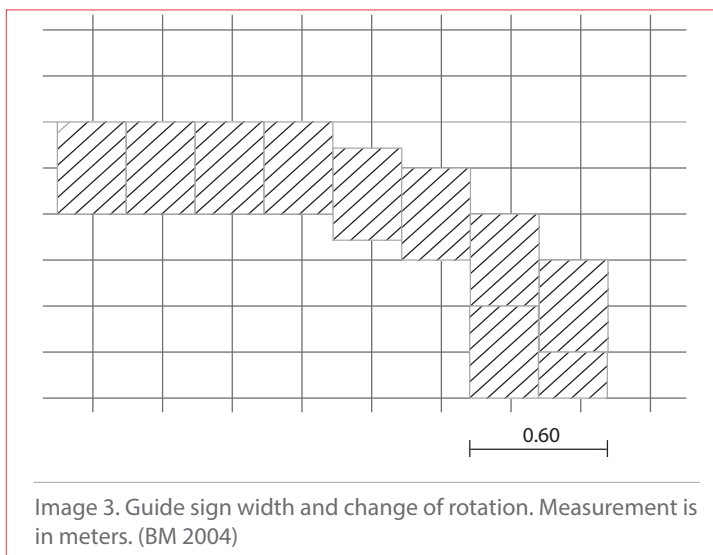


Image 3. Guide sign width and change of rotation. Measurement is in meters. (BM 2004)

Colours should be chosen so that they contrast with the surface of their environment. The height of the material used in the guide sign should not cause any obstacles for the wheelchair users.<sup>2</sup>

Standards for border stones on walkway sides are explained in TS 12576 as follows:

On a crosswalk, border stone heights should be “+0” or “+3 cm” and the slope of the ramp shall be no greater than 8% and be 90 cm in width for the wheelchair user when built at both ends of a crosswalk.

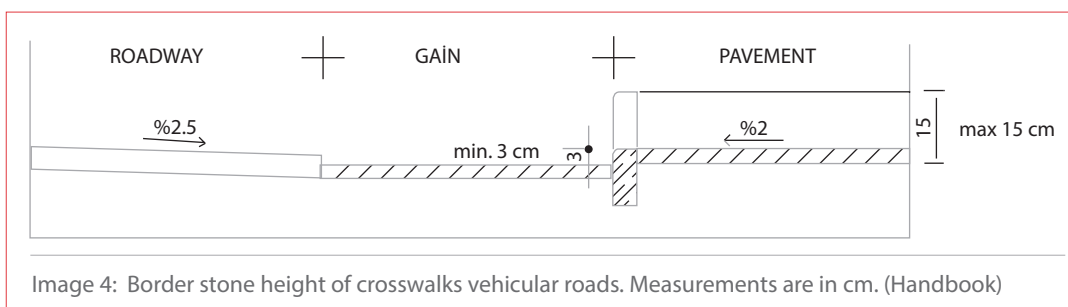
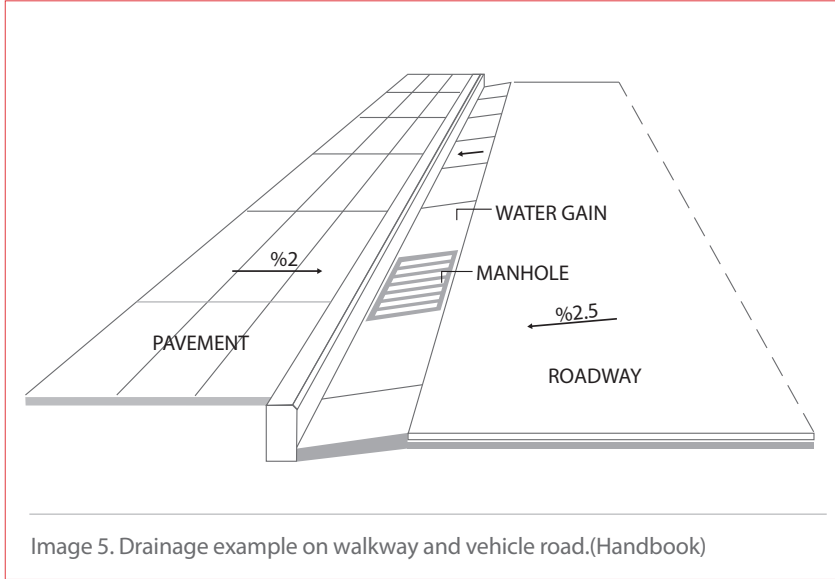


Image 4: Border stone height of crosswalks vehicular roads. Measurements are in cm. (Handbook)

#### 13.1.4 Drainage on the Walkways

Rain or any other moisture should be drained immediately to prevent discomfort and provide safety for all pedestrians. Where the border stone on a walkway meets with the vehicle road, a necessary slope should be given on the longitudinal and transverse lines so that the surface water is provided with the necessary drainage at the manholes. (TS 12576)

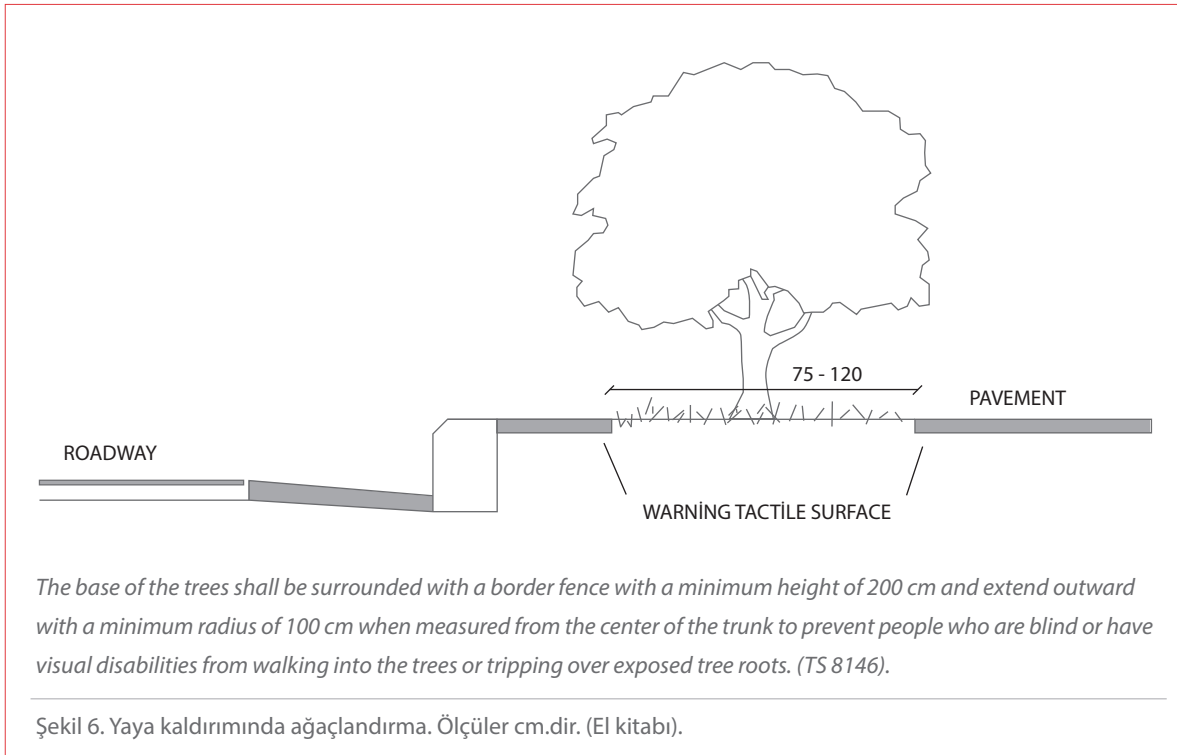
<sup>2</sup> Details of surface design can be found in 3.4.2 of the Hand Book.



At crossroads and crosswalks, water grooves should be designed safely so as not to become an obstacle for all pedestrians including disabled individuals. (TS 12576).

### 13.1.5 Trees and Urban Furniture on Walkways

Walkways shall be unobstructed by trees electrical standards, traffic signal standards, planters, furniture, sign boards, pedestrian railings and so on. And, therefore, shall be placed as one continuous line at a minimum of 75 cm and a maximum of 120 cm width that includes the border stone<sup>3</sup> (Image 7).



<sup>3</sup> Depending on the width of the walkway, trees that will be put next to the vehicle road and walkways should be appropriate to the TS 8146.

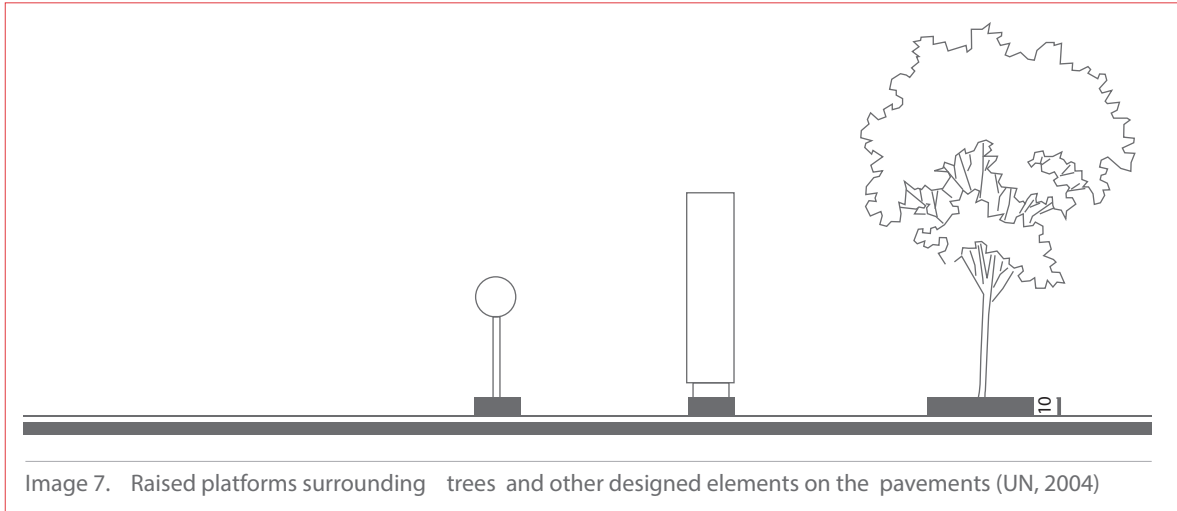


Image 7. Raised platforms surrounding trees and other designed elements on the pavements (UN, 2004)

A tactile surface of 60 cm should also be added from the outer edge around all the tree surrounds and other design elements like planters and street furniture to act as a warning against walking into or tripping over these larger objects. ((BM 2004)

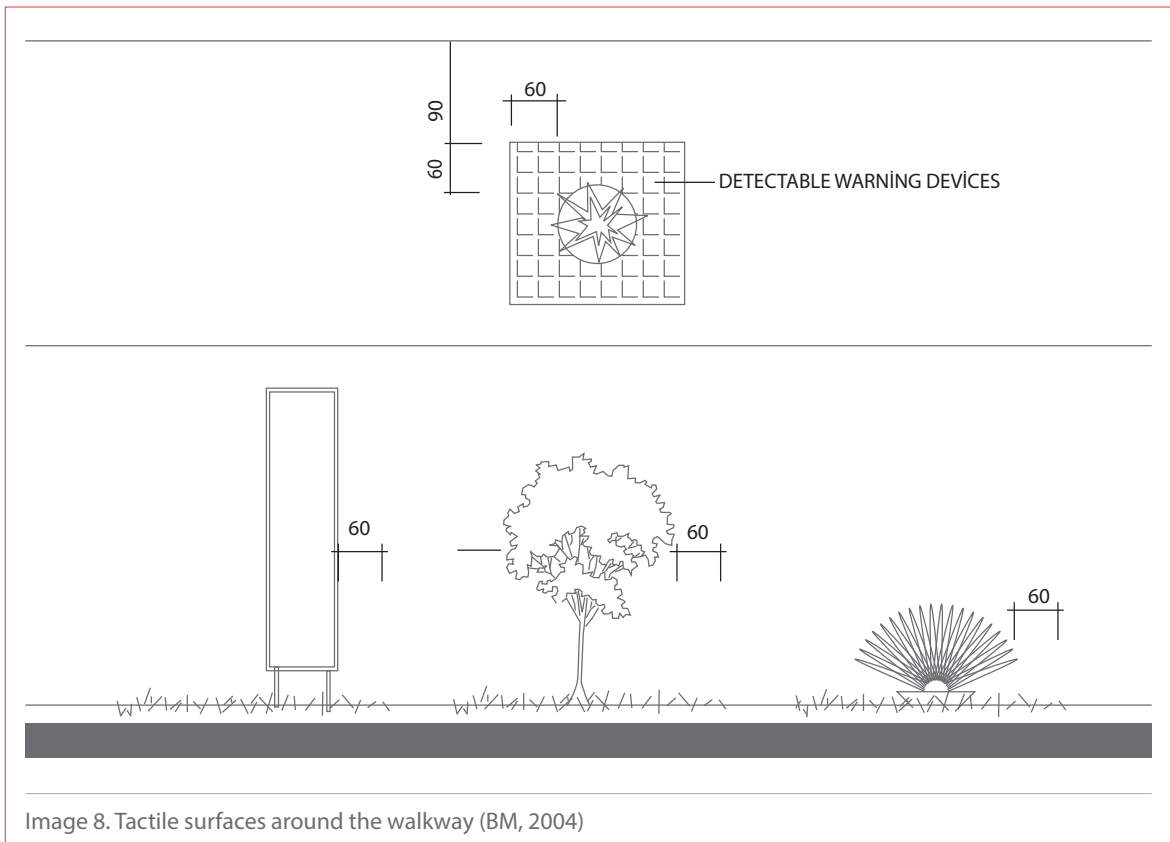


Image 8. Tactile surfaces around the walkway (BM, 2004)



### 13.1.6 Safety on the Walkways

The walkway surface should be even and free of obstacles like grates, floor mushrooms and parking lot chains to ensure that all pedestrians can travel safely. (TS 12576).

If grates must be located on pedestrian walkways, the bars on grates shall be perpendicular to the flow of pedestrian traffic and the opening between the bars shall be no more than 13 mm in width to prevent the wheels from wheelchairs or the tip of canes and crutches from sliding through. The open grillwork is hazardous to people wearing heels so foot plates should be placed across the surface to act as a solid surface to facilitate safe pedestrian movement along the walkway.

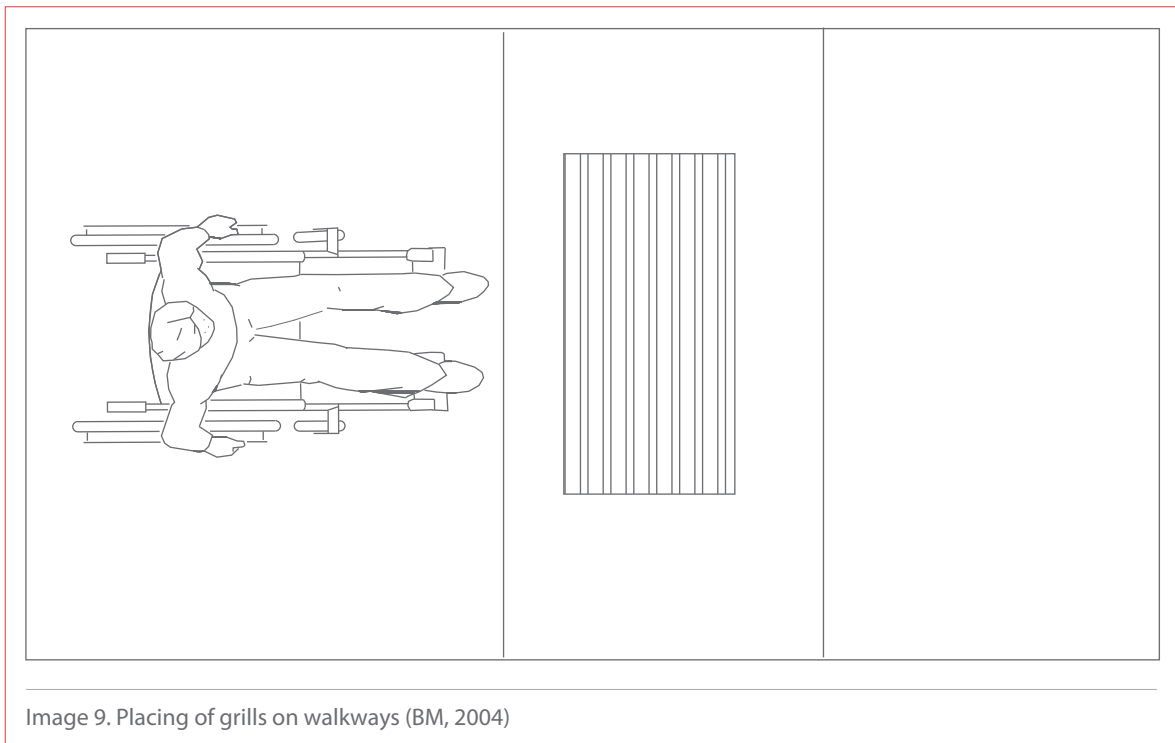


Image 9. Placing of grills on walkways (BM, 2004)

Walkway renewal or repairs, repair sites can be problematic for people with visual disabilities. These work sites should be circled with barricades that are at least 1 meter above the floor of the original pavement. The barricades shall also have barrier sticks or other cane detectable barrier with a maximum height of 250 mm. Audible and visual warning signals should be installed when it is necessary. A sufficient width should be allowed for wheelchairs to pass by the site and when temporary walkways that are required due to repairs or construction should not be less than 1.5 meters. (OZIDA, 2008).

Scaffolds or other temporary structures should have signs that are surrounded by a band of contrasting colour at least 15 mm in width and warning signals to alert sight disabled individuals when they are placed on or adjacent to a walkway. A scaffold that is placed on or adjacent to the walkway should be at least 1.5 meters in width to allow for all people to pass through easily and safely. Protective coverings should surround the corners of the scaffolds. Signage should be secured from 1.5 to 1.7 meter above the surface (OZIDA, 2008).

*Note: Vehicles should not occupy walkways. If a bicycle path is organized next to a walkway, trees and/or structural design features should block the passage of bicycles from accessing the walkway.*

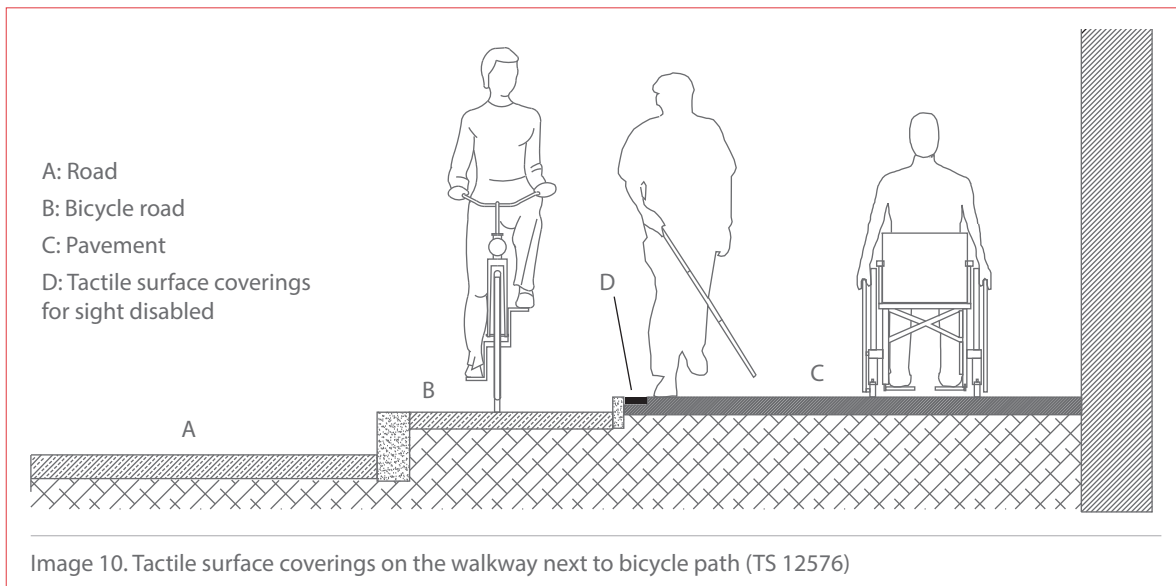


Image 10. Tactile surface coverings on the walkway next to bicycle path (TS 12576)

## 13.2 RAMPS

Ramps are incorporated into walkways, crosswalks, building entrance to create an easier travel experience for all pedestrians, including people with disabilities, specifically by eliminating differences in height. Ramps should be ergonomic (gentle slopes) in design for the comfortable and safe passage of people with visual disabilities along with wheelchairs, strollers, handcars and other devices used for movement on walkways to compensate for differences in height. (TS 12576).

### 13.2.1. Ramp Size

Ramp size will vary depending on frequency of use and the maximum height difference that needs to be eliminated. In high pedestrian traffic areas, like a transportation station, ramps should be designed with a minimum 180 cm width to allow the passage of two wheelchairs traveling in opposite directions.(TS 12576)

- Ramps that are longer than 10 m and higher than 50 cm or if there is a connecting ramp, a landing area of 250 cm in length to act as a rest area shall be incorporated into the design and construction of the ramp (Image 10).
- Where there is less pedestrian traffic, ramps may be designed with a minimum width of 90 cm on ramps with a straight run. Ramps with a 90 degree turn shall be 140 cm in width and ramps with a 180 degree turn may have a minimum width of 90 cm (as defined by the UN 2004).

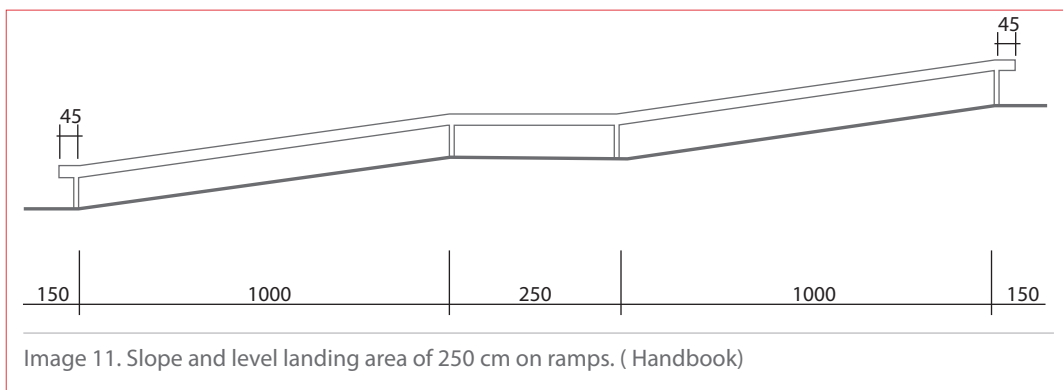


Image 11. Slope and level landing area of 250 cm on ramps. ( Handbook)

- If the ramp is 10 m or more, a level platform is required to act as a rest area.

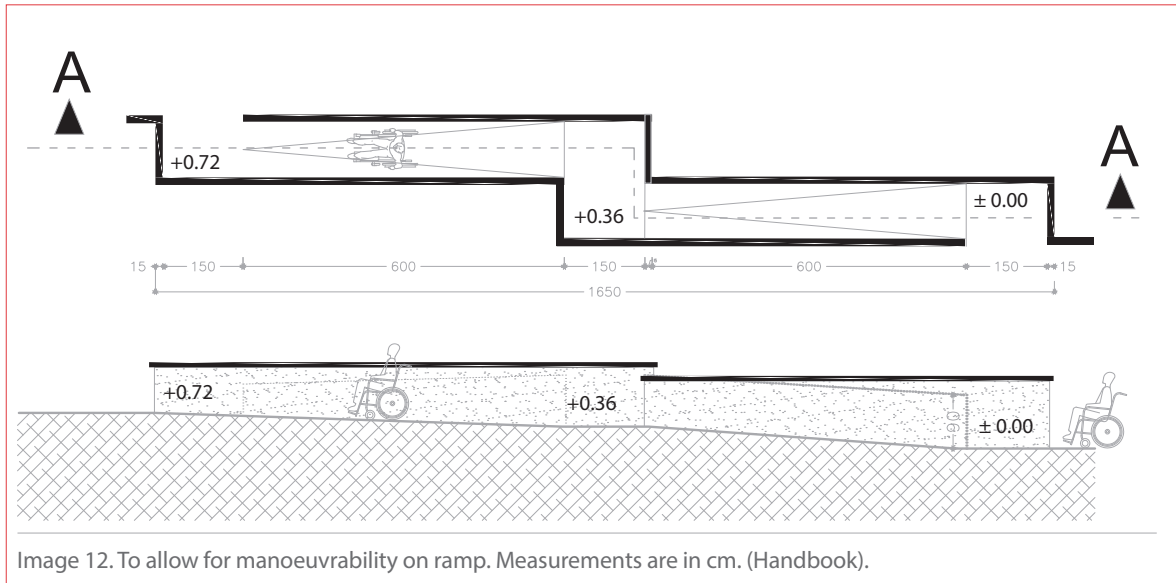


Image 12. To allow for manoeuvrability on ramp. Measurements are in cm. (Handbook).

### 13.2.2. Slope of the Ramps

Slope of the ramp will define the safety of pedestrians with disabilities. Ideally, a vertical obstacle of 20 mm or more, measured from the finished floor, shall have a slope no greater than 8% or 1:12 with landing platforms, if appropriate. However, if an 8% slope is not possible due to lack of appropriate area, then see Table 2 for the appropriate slope as defined by the UN.

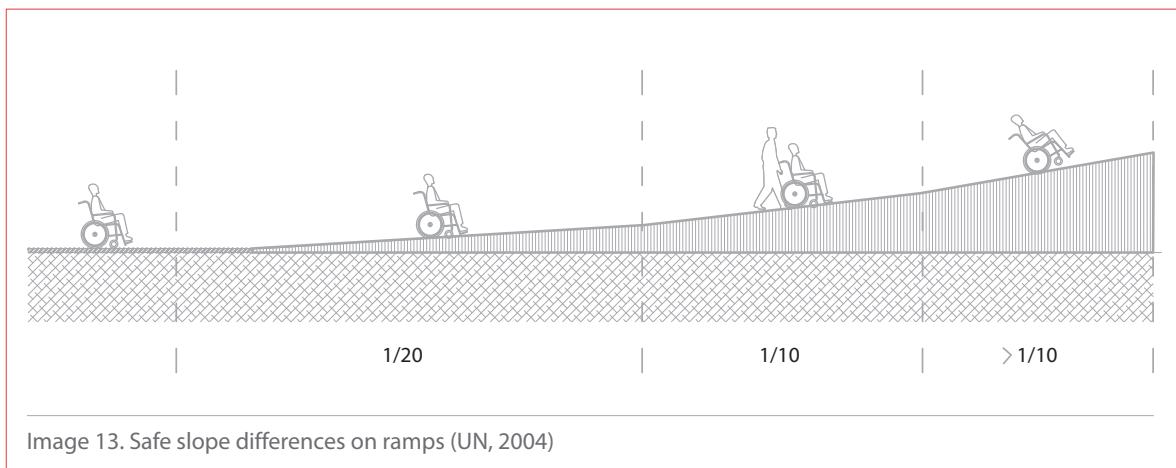


Image 13. Safe slope differences on ramps (UN, 2004)

Maximum Slope	Maximum Length	Maximum Height
1:20 (% 5)	-	-
1:16 (%6)	8.00 m	0.50 m
1:14 (%7)	5.00 m	0.35 m
1:12 (%8)	2.00 m	0.15 m
1:10 (%10)	1.2 m	0.12 m
1:8 (%12)	0.50 m	0.06 m

Table 2. Ramp Slope, Length and Height Rate (UN 2004)

### 13.2.3. Surface of the Ramps

Characteristics of ramp surfaces and materials should be as follows;

- Ramp surfaces should be covered with hard, stable, non-slip material or the surface may be lightly roughened. (TS 12576).
- Ramps shall use a different material at the top of the ramp to signal a change of elevation for sight disabled individuals. The material shall be set 15 cm back from the edge and have a 150 cm surface area (TS 12576).





### 13.2.4. Safety and Comfort of the Ramps

Ramps shall be designed with railings and borders or guard on the unprotected side(s) of the ramp. The railing should extend 45 cm at the top and bottom of the ramp to signal one's approach to a change in elevation. The railing should continue toward the ground or curve into wall to prevent articles of clothing and bags from catching. The railing should be designed with horizontal or vertical slats to prevent people from accidentally falling through. Guard or border on the side of the ramp will prevent wheels of wheelchairs, strollers and other mobility devices from slipping off the ramp.

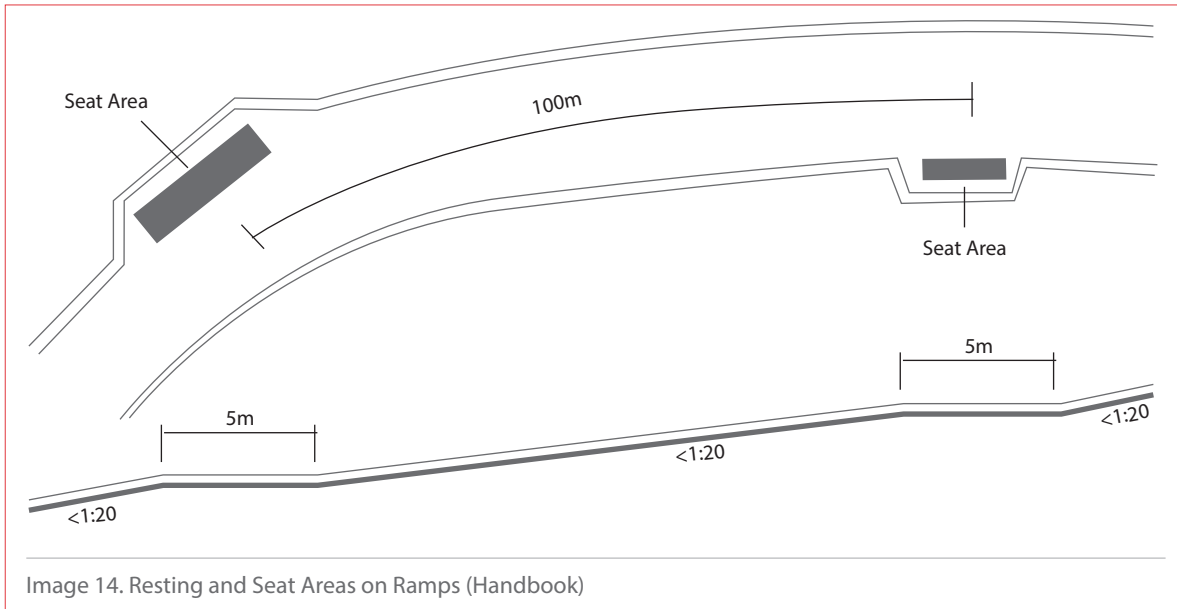


Image 14. Resting and Seat Areas on Ramps (Handbook)

### 13.2.5. Types of the ramps

There are three-way sloped rampon an walking route ; straight run , 90 degree turn, 180 degree turn.

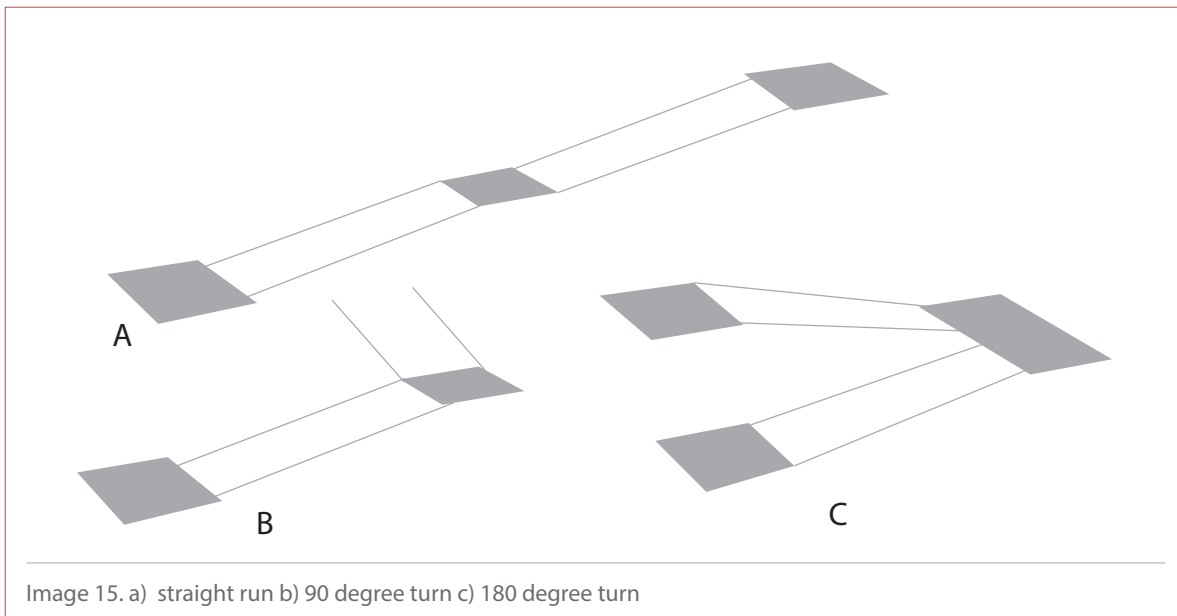


Image 15. a) straight run b) 90 degree turn c) 180 degree turn

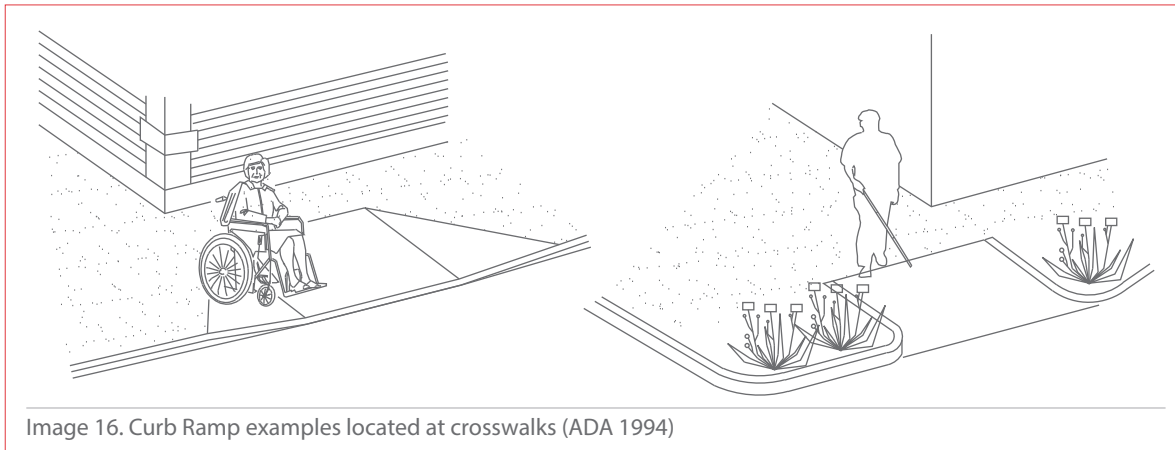


Image 16. Curb Ramp examples located at crosswalks (ADA 1994)

### 13.3 STAIRS

Since the stairs can disturb disabled people's mobility, it is important for achieving the accessibility. However, if stair-building is inevitable, then railing should be implemented on both sides

#### 13.3.1 Size of the Stairs

With the condition of max. riser height to be 15 cm, the formula of  $2 \times \text{riser height} + 1 \times \text{stair width} = 63 \text{ cm}$  must be used and it should be in accordance with TS 9111 (TS 12576).

#### 13.3.2. Surface of the Stairs

On the walking surfaces of the stairs, ragged and non-slippery coating should be used. If necessary, the surface of the stair should be covered to be protected from weather effects (TS 12576).

#### 13.3.3. Treads of the Stairs and Color Selection

Treads and risers should be in different colors. Non-slippery border should be put on the end of the tread into 2.5 cm width, coating material must be plane with the surface of tread in order to prevent from tripping on. (TS 12576) (Image 17).

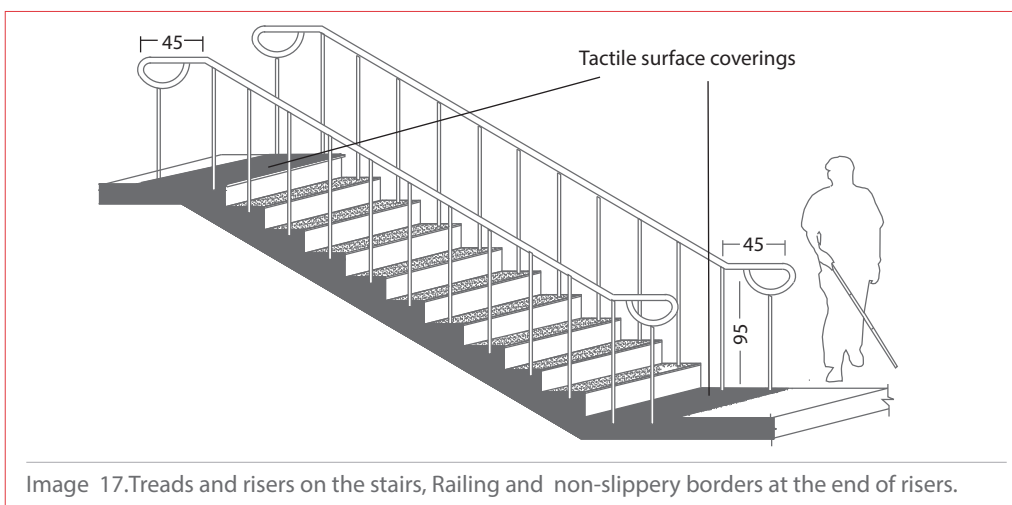


Image 17. Treads and risers on the stairs, Railing and non-slippery borders at the end of risers.

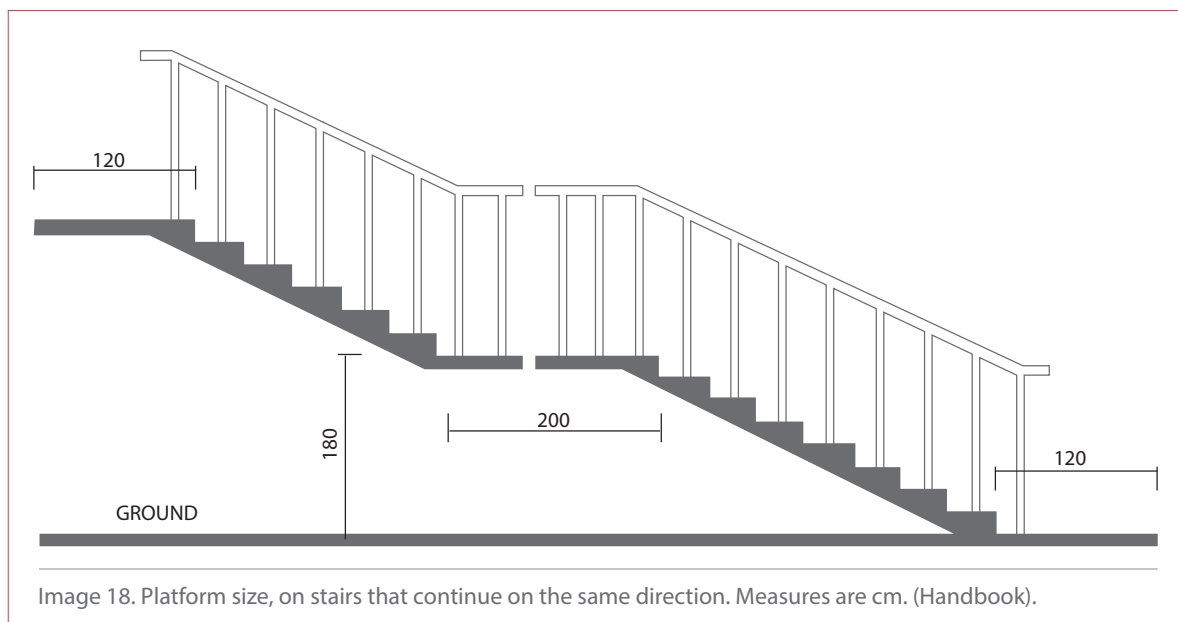
DIN 18024, all stairs with three risers must be covered with non-slippery borders. On the stairs with more than 3 risers; the non-slippery borders can be placed on to the first and last risers.



#### 13.3.4. Landing on Path with Stairs

A stair system that travels in the same direction should have a 120 cm platform between every set of stairs 180 cm in height. At the top of the stairs system, there should be a 60 cm tactile and contrasting material to indicate that a person, including people with visual disabilities, is approaching a change in level.

If the stair system changes direction, the platform area should be at least 180 cm x 180 cm. Clear width at the stairs from the railing to railing should be at least 180 cm. Water drainage gutters should be placed on the sides of the stairs (TS 12576).

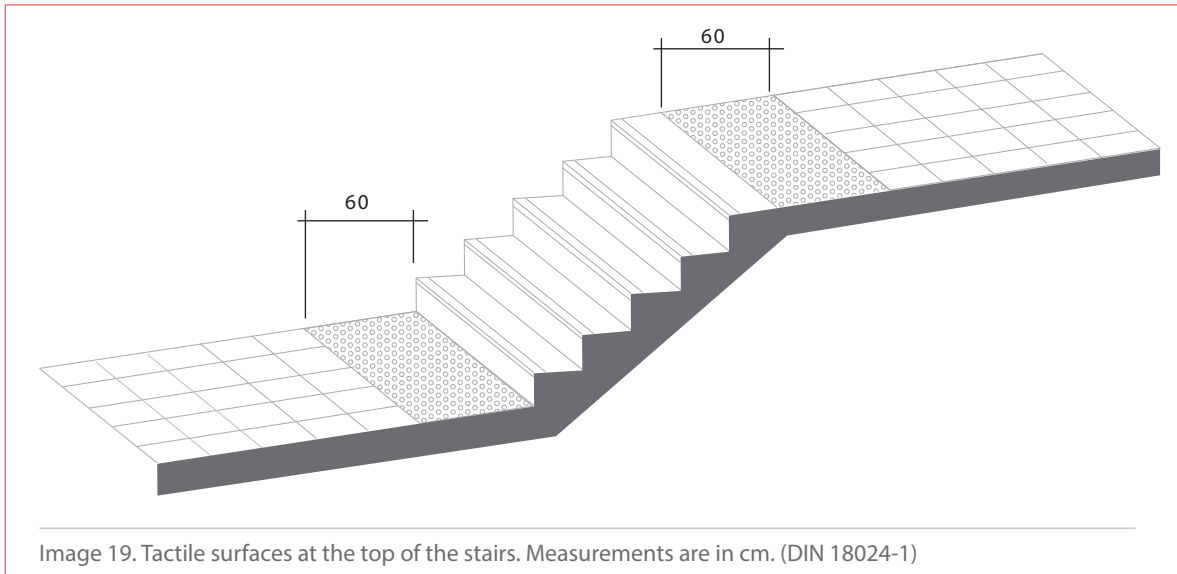


#### 13.3.5. Railings Safety and Warning

The railings on the two side of stairs and the tactile surfaces placed on the beginning to end of the stairs are critically important to all users. Also the sense of pattern differentiation and tactile surfaces on stairs should be provided to the users.

#### 13.3.6. Tactile Surfaces on Stairs

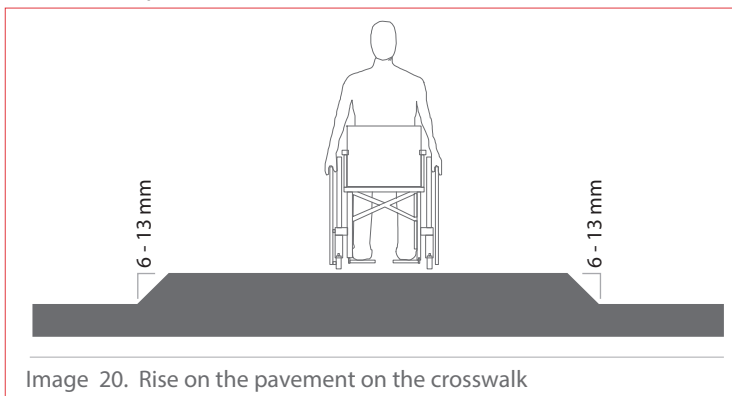
A stair system that travels in the same direction should have a 120 cm platform between every set of stairs 180 cm in height. At the top of the stairs system, there should be a 60 cm tactile and contrasting material to indicate that a person, including people with visual disabilities, is approaching a change in level.



### ■ 13.4 Crosswalks

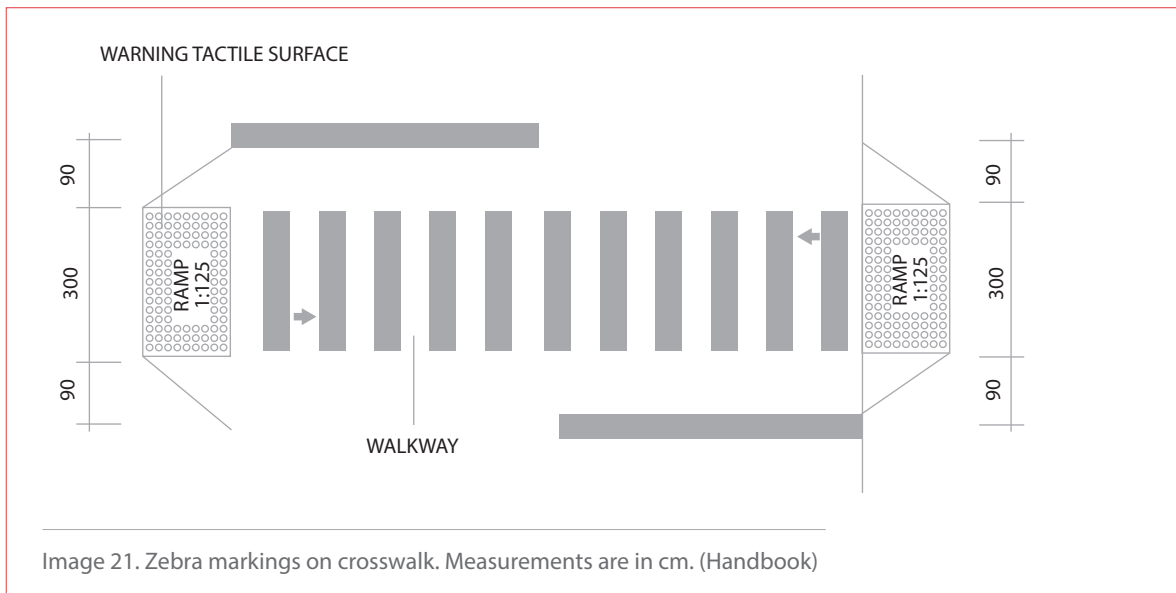
Crosswalks are designed to move pedestrian traffic safely across vehicular roadways. A level surface will eliminate obstacles and a tactile surface will assist all pedestrians, including people with visual disabilities, to cross the road safely. This design should provide to all of users the sense, that it is the crosswalk beginning. This user can be people with visual disabilities, wheelchairs, strollers and handcarts.

On the crosswalks if the surface of the road and pavement are same level, persons with wheelchair do not need to pass that elevation difference.

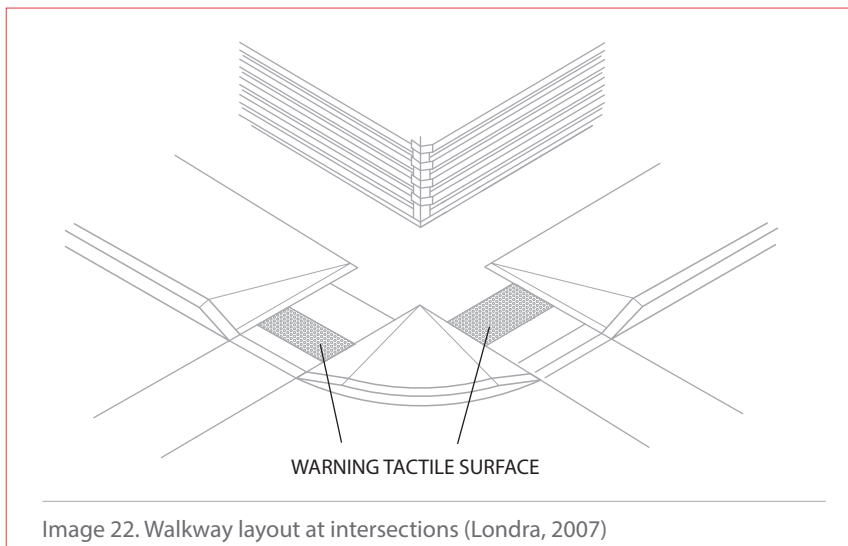


General principles about crosswalks ;

- Obstacles like flowerbeds and flowerpots, mushrooms, symbols, signposts, poles (electric, light, traffic etc.) should not be placed on the crosswalks. This may impede the movement of persons with disabilities.
- All posts or information boards on walkways and intersections should not be placed on the corner as they may be obscure the person from the driver's line of sight.
- Surface markings such as clearly defined zebra lines are required to further demarcate the crosswalk as the proper place to cross in front of traffic.



Walkways at intersections should be wide enough to accommodate the passage of pedestrians, including persons with disabilities, in both directions



### 13.4.1. Types of the Crosswalks

#### 1- Uncontrolled Crosswalks

Uncontrolled crosswalks are usually located in areas such as residential and in areas where traffic naturally slows or must yield such as a school zone. Uncontrolled means no signalling devices or flashing lights. Instead, signage is used to notify drivers of an existing crosswalk 20 m ahead and exercise caution when approaching. Additional signage is placed 1 m from the crosswalk so that it will not obscure the pedestrian from the drivers view, and it will also notify pedestrians of its location.

The signage should be phosphorescent or “glow in the dark” to increase its visibility for drivers when there is minimal to no street lighting.



## 2- Controlled Crosswalk

Controlled crosswalks are generally located in high traffic areas, including intersections, to control pedestrian and vehicular traffic. Controlled crosswalks mainly use electronic signalling devices such as traffic signals and flashing pedestrian crossing signals.

Traffic signals will display a brightly lit pedestrian “in motion” figure or symbol that will notify pedestrians when it is safe to cross the street. Audible signals should be synchronised with the lit figure to notify persons with visual disabilities when it is safe to cross. The signal should emit a continuous sound until the “Do Not Walk” symbol appears. There should be 2 distinct audible signals to indicate whether to cross North-South or East-West.

Controlled crosswalks should have the crossing signal linked to the traffic signal that will automatically activate so physical activation is not required. If this is not the norm then a button may be required to activate the crossing signal. This is also known as a pelican crossing where a button can be located on a standard set of traffic light standards or on free-standing poles walks with the button set at a maximum height of 120 cm. This would also allow pedestrians, including persons with disabilities to activate the crossing signal. (TS 12576)

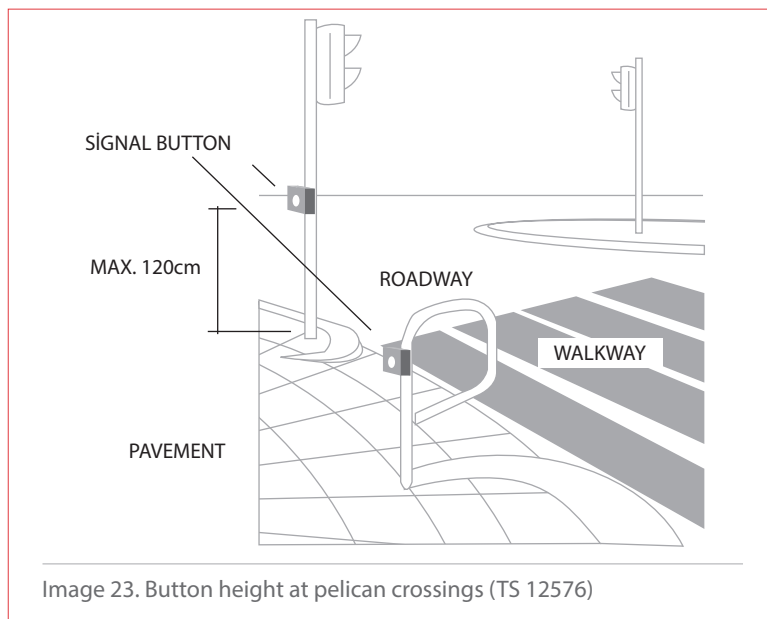


Image 23. Button height at pelican crossings (TS 12576)



Refuge or traffic island crosswalks are located where there are 3 or more lanes of traffic flow for each direction and are controlled with crossing signals. The crossing signal posts may be located on the protected traffic islands if the time required by a pedestrian to ensure that the symbols are easily seen and heard, with or without a disability, to cross 6 lanes or more of traffic is too great to achieve safely. Therefore, there are guidelines for designing these protective refuge areas.

- The refuge area within the crosswalk is protected by traffic islands that should be 160 – 250 cm in width and situated on the outer edge of the crosswalk which is 300 – 400 cm in width. The protected refuge area should have a different material or texture from the road surface as an indicator for persons with visual disabilities of the safe standing area when the audible signal ends. To further aide with the safety of all pedestrians, protective islands should be equipped with visual and audible traffic signals or warning plates.
- The refuge area should be level with the road surface. If not, there should be a ramp of 90 cm in width with an 8% slope on both sides of the traffic island to allow for the safe passage of persons who use wheelchairs or other mobility devices.
- Protective islands or traffic islands should be 3 cm in height. (TS 12576)

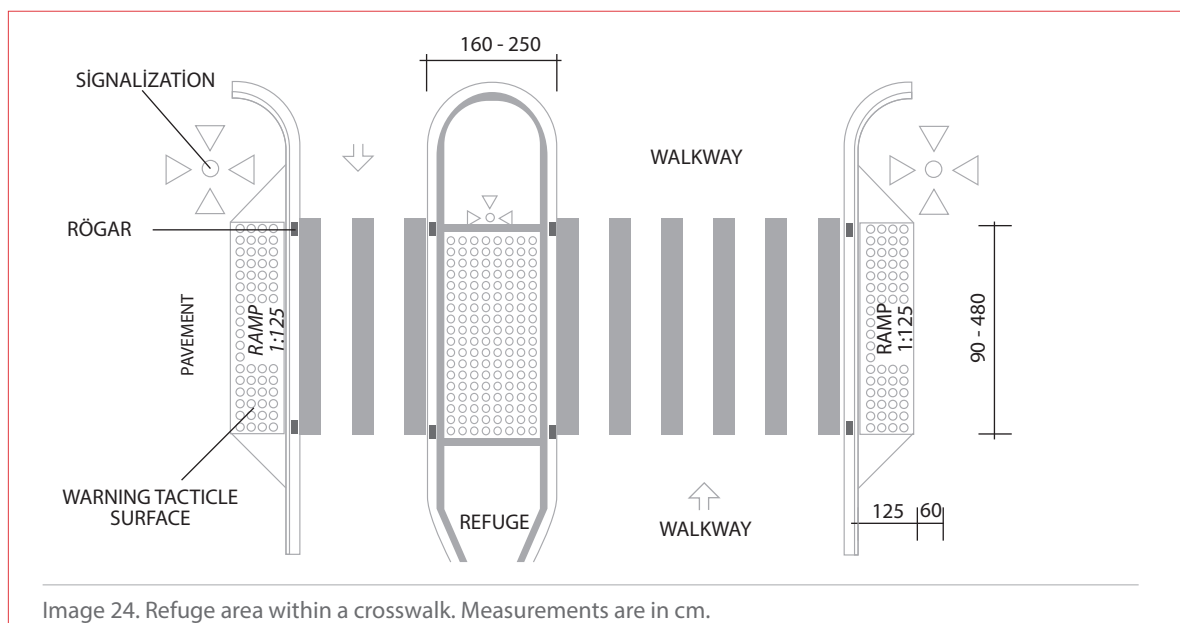


Image 24. Refuge area within a crosswalk. Measurements are in cm.



### 3-Under and Over Crossings for Pedestrians

Under and over crossings are a necessary solution where the vehicular traffic is too intense for a safe crossing at street level for pedestrians. Principles for designing under and over crossings for pedestrians, including persons who require the use of mobility devices are as follows (TS 12576):

- If there is sufficient real estate to install a ramp from ground-level to ground-level, the ramp shall be designed with a 5 – 8% grade (should not cause fatigue) with a non-slip surface that could replace stairs or an escalator. If a ramp is not feasible then it may become necessary to install an elevator cab or a platform lift that should operate safely on an incline parallel with the stairs. The elevator cab should have the capacity to carry 2 wheelchairs simultaneously. (Image 26)
- Or an elevator (capacity to carry 2 wheelchairs) with a vertical incline to and from street level may be installed.
- The international symbol for disability should be visible at entrances and on the ramps or other transportation devices to indicate accessibility for all persons with disabilities and seniors.
- Under crossings and under crossing entrances should be well-lit and visible from one side of the crossing to the other side (if possible) in an attempt to provide safety from criminal activity and other activities for all pedestrians.
- If escalators are required, escalators should have the sides and back of each step demarcated to make them visible to all pedestrians, including people with visual disabilities.
- Stairs should not have a steep incline or be curved to eliminate the possibility of fatigue or disorientation of pedestrians with visual disabilities and lit.
- (TS 9111), resting platforms should be placed.
- Stairs should have railings on both sides, the treads should be non-slip, the nosing of each tread should be demarcated to create easy identification of each step and the stairs should be well-lit.

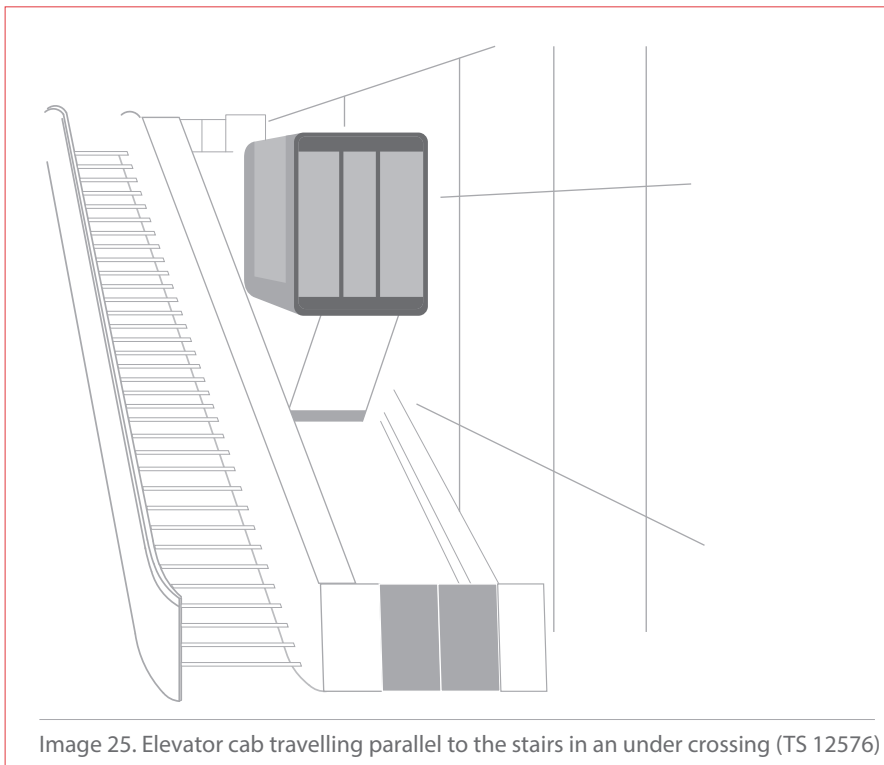


Image 25. Elevator cab travelling parallel to the stairs in an under crossing (TS 12576)





Please note: Pedestrians prefer to use under crossings as opposed to over crossings because they feel less fatigued and safer crossing beneath traffic.

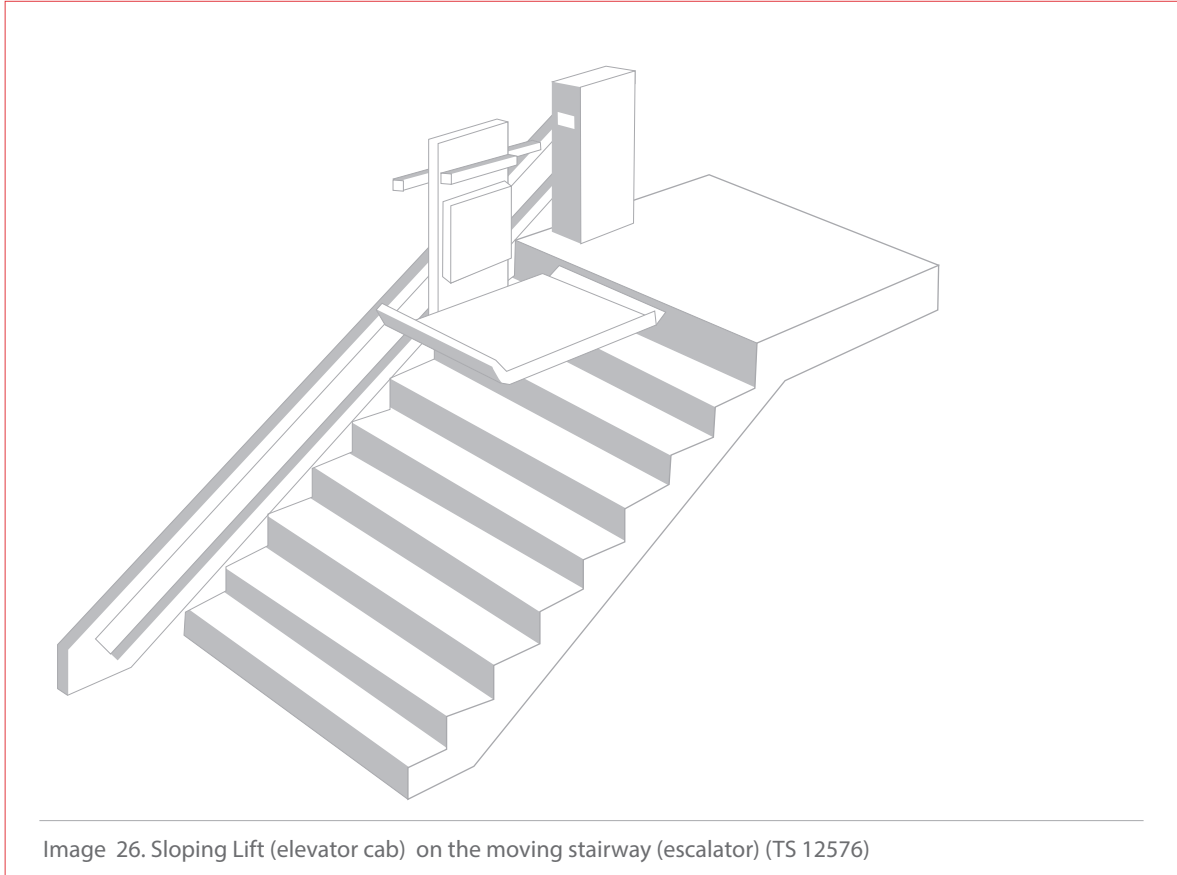


Image 26. Sloping Lift (elevator cab) on the moving stairway (escalator) (TS 12576)

### 13.4.2. Slope of the Crosswalks

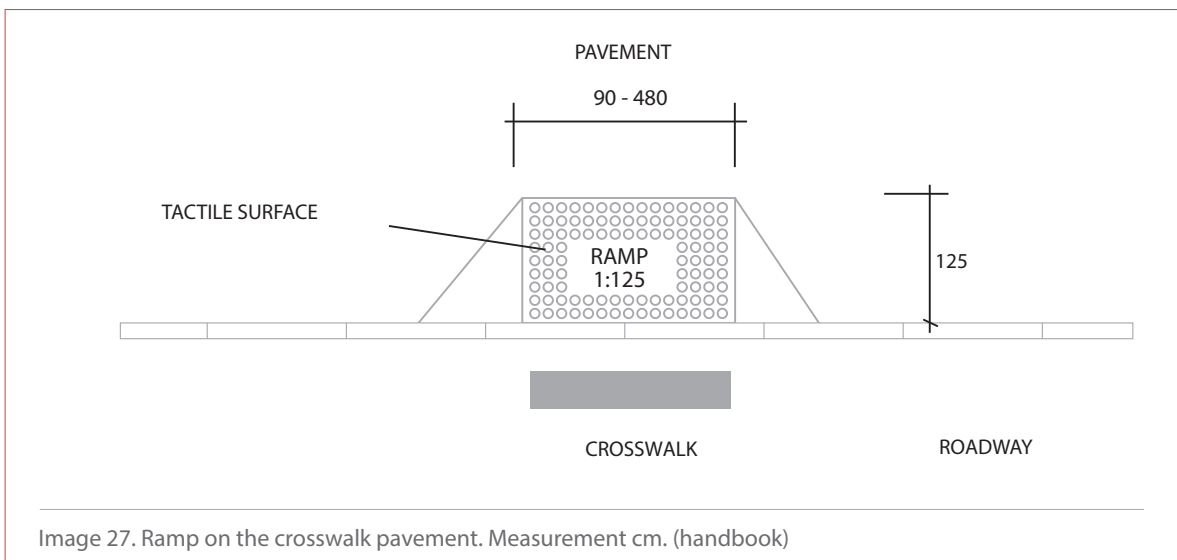


Image 27. Ramp on the crosswalk pavement. Measurement cm. (handbook)



### 13.4.3. Surface of the Crosswalks

The surface coverings materials which are being used on the crosswalks should necessarily be non-slipping, and high strength to fire, damage etc.

### 13.4.4. Stripe Sand Floor Marks on the Crosswalks

Accordingly to the traffic level, the crosswalks and walkways on the roads should include the stripes on the crossings. It is needed to put horizontal and vertical signage on crosswalks. The stripes are better to be stable and have high strength to damage

### 13.4.5. Safety of the Crosswalks

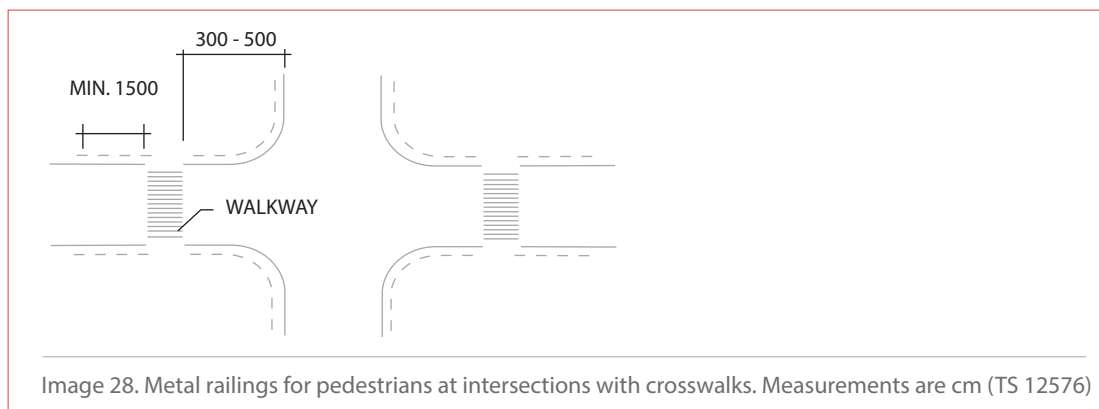
The principle element of crosswalk design is to ensure that all pedestrians, including persons with disabilities, are visible to the approaching vehicular traffic. The common design elements when it comes to providing safety within crosswalk use are:

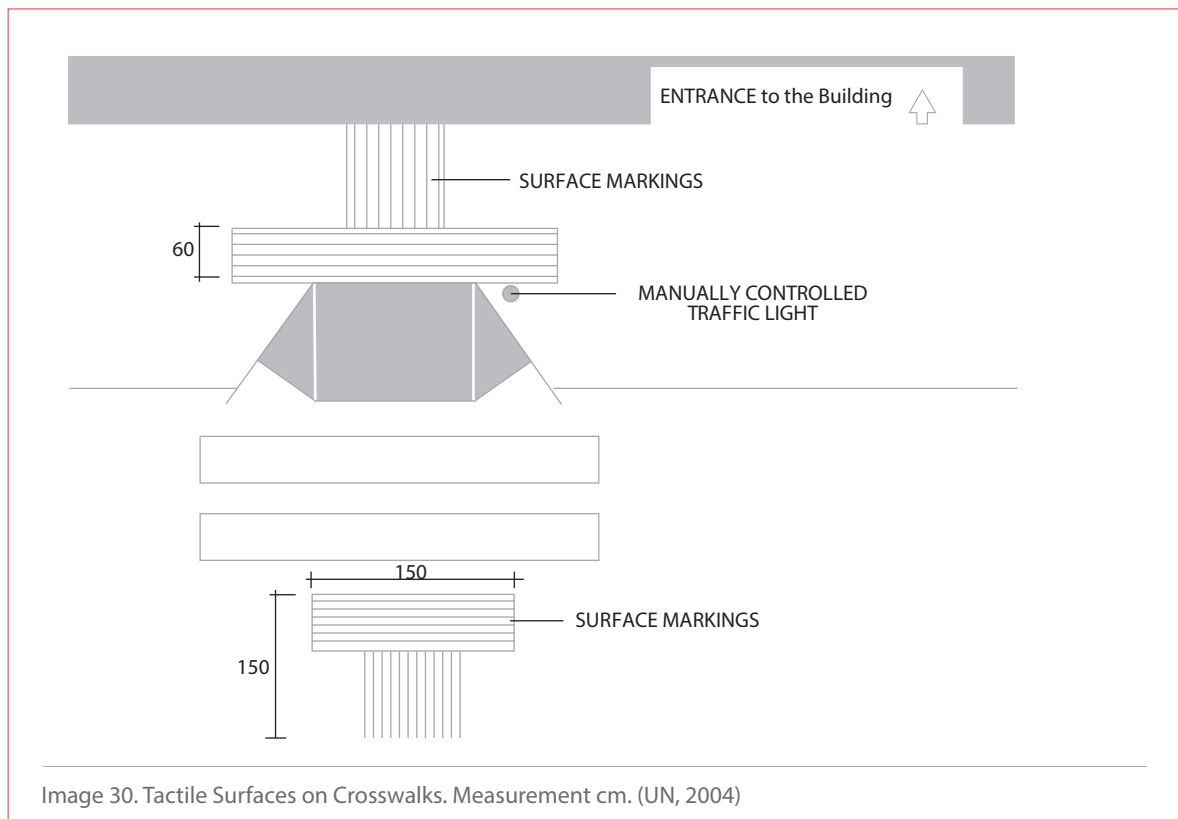
- Crosswalks, with the exception of intersections, should be located where the driver can see it from a safe distance.
- Crosswalks should be highlighted from above by an amber or other coloured light that will flash upon activation to warn approaching drivers to use caution.
- Crosswalks that use traffic lights to notify pedestrians when it is safe to proceed, should also be accompanied by distinctive auditory notification.
- Crosswalks with surface markings such as zebra lines should be well defined.

In addition to the safety provided by cane detectable and other sensory surfaces, the use of metal railings can notify the person with a visual disability that an intersection or crosswalk is nearby.

The metal railings should always be placed parallel to the road, and be at least 1500 mm in length and ending at the edge of the crosswalk to indicate the location of the crosswalk to a person with a visual disability. (TS 12576) (Image 29).

The metal railings are cane detectable and would safely aide persons with visual disabilities to locate uncontrolled crosswalks.





### ■ 13.5 PARKING STALLS FOR PERSONS WITH DISABILITIES

Persons with disabilities require more space to park their vehicles for 2 reasons: 1) people who use wheelchairs require the necessary space to transfer into or from the vehicle to or from their wheelchair or other mobility device; or 2) the vehicle may be fitted with a ramp or lift and will require the extra space to enter into or exit the vehicle to/from their wheelchair or other mobility device. Designated parking spaces for persons with disabilities should be provided in parking lots and on the streets. (TS 12576).

The Parking Lot Code states that 5% of the total number of parking spaces should be designated for use by persons with disabilities as being not less than one parking stall at public buildings, district parking lots and general parking lots. Designated accessible parking stalls should be located on roads, exterior parking lots and within enclosed or covered parking structures at each barrier-free level. Each designated stall shall be marked with an international symbol for disability on the ground surface and mounted vertically on a post or the wall at a maximum height of 2.0 m.

In UN 2004, it is stated that if the total number of parking stalls is less than 50 vehicles, 1 parking space should be reserved as parking for persons with disabilities. The total number of parking stalls from 50 – 400, 1 stall shall be reserved as accessible for every 50 or part thereof. If the total number of parking stalls are 401 – 800, at least 8 parking stalls shall be reserved and for each additional 100 parking stalls or part thereof after 800 shall designate 1 accessible parking stall for persons with disabilities.



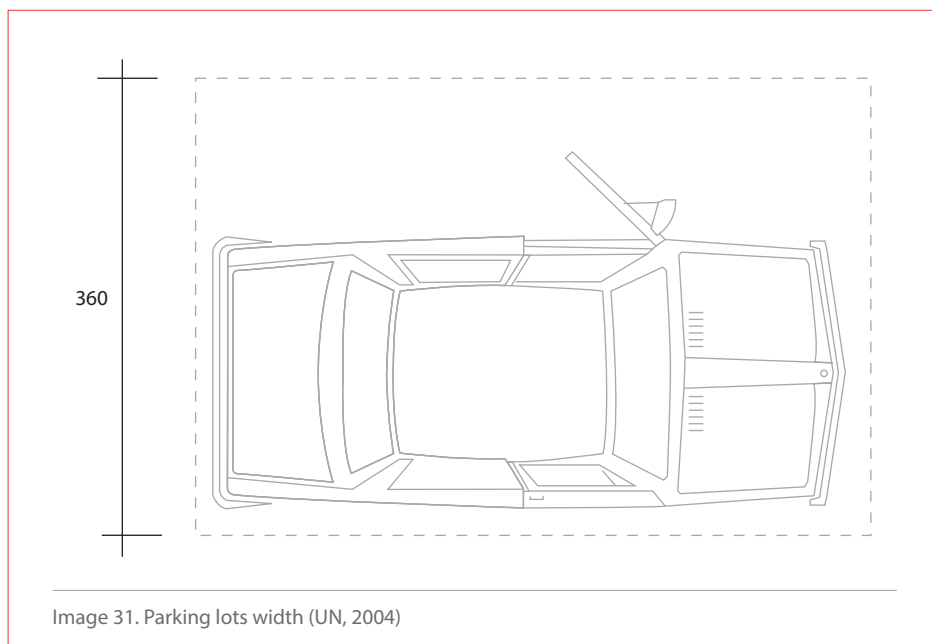
### 13.5.1. Parking place locations for persons with disabilities

- Designated parking stalls should be located near the closest entrance/exit of public buildings, such as, hospitals, malls, train stations etc., as well, open and closed parking facilities should designate stalls for the disabled near elevators and the building entry/egress.
- Distances should be 10 m - 25 m maximum from the parking stalls to the entry. This would minimise the number of potential encounters with vehicles or other obstacles that may impede the safe progress of persons with disabilities to the intended destination.
- If there are walkways, these should be lowered to have “0” or “+3” cm with an acceptable slope or curb ramp no greater than 8° to create safe access to the intended destination.

### 13.5.2. Sizes of Parking Stalls

The design of an accessible parking stall is important to a person who uses a wheelchair. If the space is too small or in a poor location, then the parking stall is not functional. The following 3 configurations are the most acceptable designs for accessible parking.

First design, is the parking area should be no less than 3.60 m width, recommended width is 3.90 m (UN, 2004)





Second design, is to create or add an access corridor no less than 1.20 m in width between two standard size parking stalls. This would easily accommodate a person who use a wheelchair to transfer in/out of the vehicle.

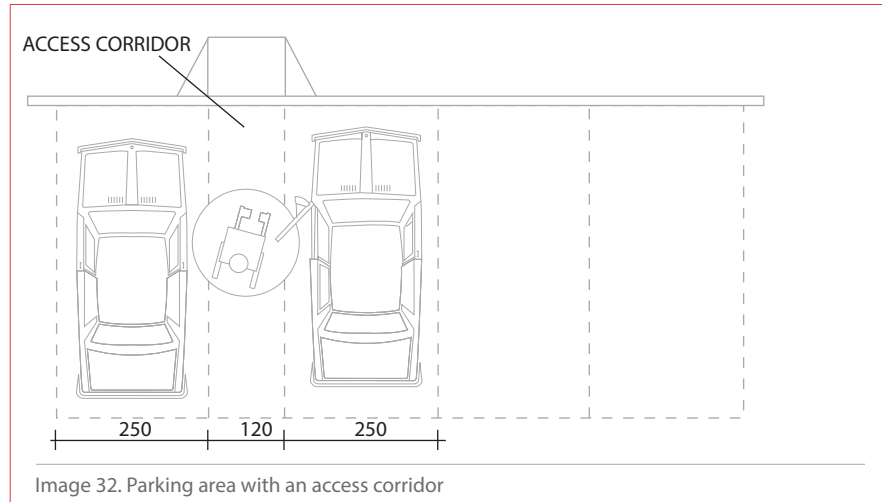


Image 32. Parking area with an access corridor

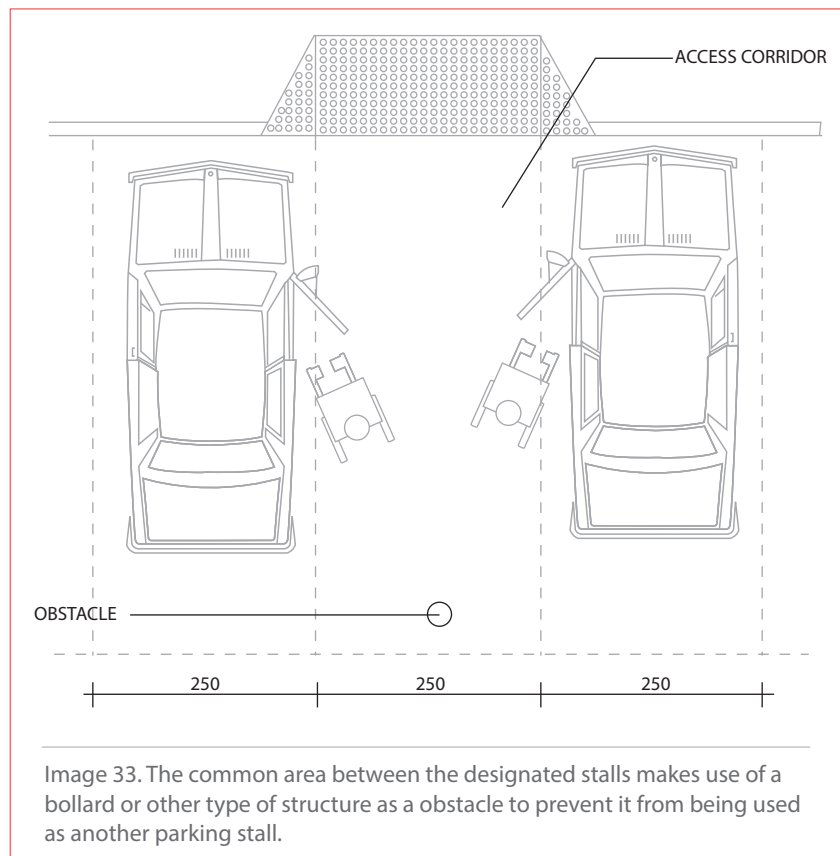


Image 33. The common area between the designated stalls makes use of a bollard or other type of structure as a obstacle to prevent it from being used as another parking stall.

Other countries, have chosen to make the access corridor the same width as a standard parkingstall size to accommodate much larger vehicles that may have a lift or ramp on the side of that vehicle and it allows that person to turn onto or off of the lift or ramp with ease

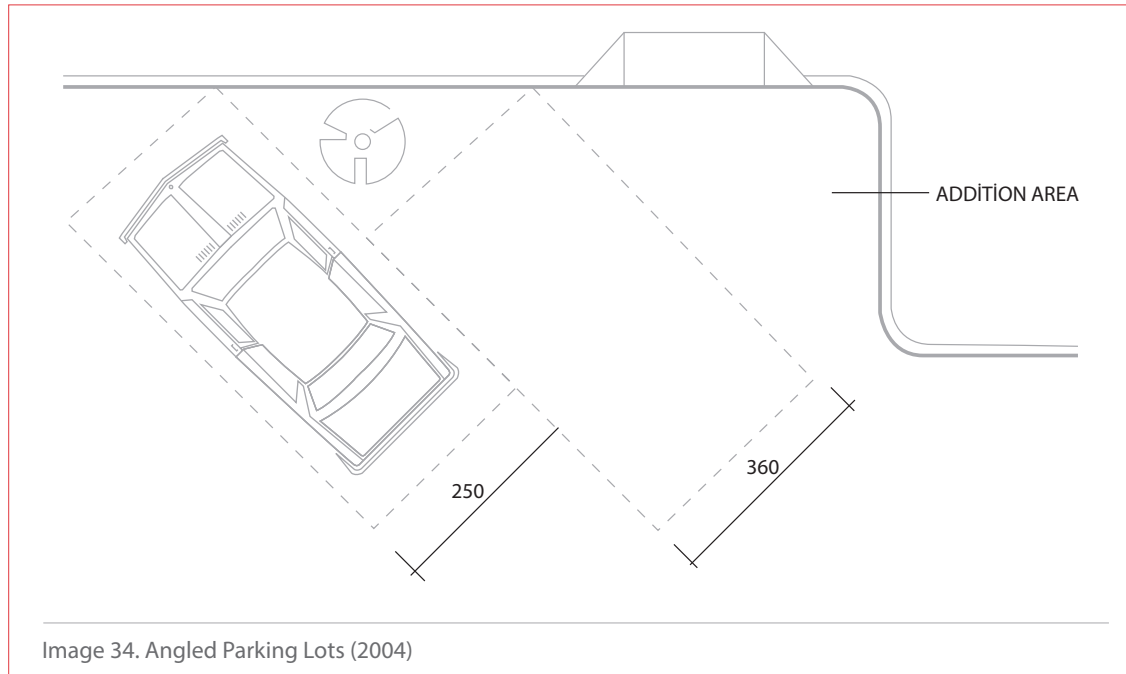


Image 34. Angled Parking Lots (2004)

Third design is for angled parking. In a parking structure or on the street, the end of a row is the ideal location for an accessible parking stall in an angled parking configuration. The accessible parking stall should be at least 3.6 m with an additional 2.5 m adjacent to the stall to act as an access aisle. (UN 2004) (Image 33).

### 13.5.3. Signage and Notifications

International symbol for disability should be displayed so that it will be visible from a distance, easy to read and illuminated.

Furthermore, directional signage can be used to guide persons with disabilities to the locations of the designated parking for both indoor and outdoor parking lots.

The signs should be mounted vertically on a post or the wall at a maximum height of 2.0 m and the International symbol should be phosphorescent for visibility and, therefore, the recognition of where the designated parking is located from a distance.

### 13.5.4. Types of Parking Lots

There are two group of parking area ; alongside the road and open and closed parking lots .

#### A- Parking Lots Nearby the Vehicular Road

- a. If parking is allowed on the vehicular road, near the pavement, then, it is necessary to keep enough space for disabled people to park, to get on and off to the car.
- b. Parking place should be signed with the international symbol
- c. Symbol for parking should be easily seen, read and lightened
- d. Parking place should be covered with non-slippery surface
- e. Ramps to pavements and border stone with 3cm height should exist
- f. Ticket machines at parking lots/structures and parkingmeters on streets should be between the 100-120 cm in height



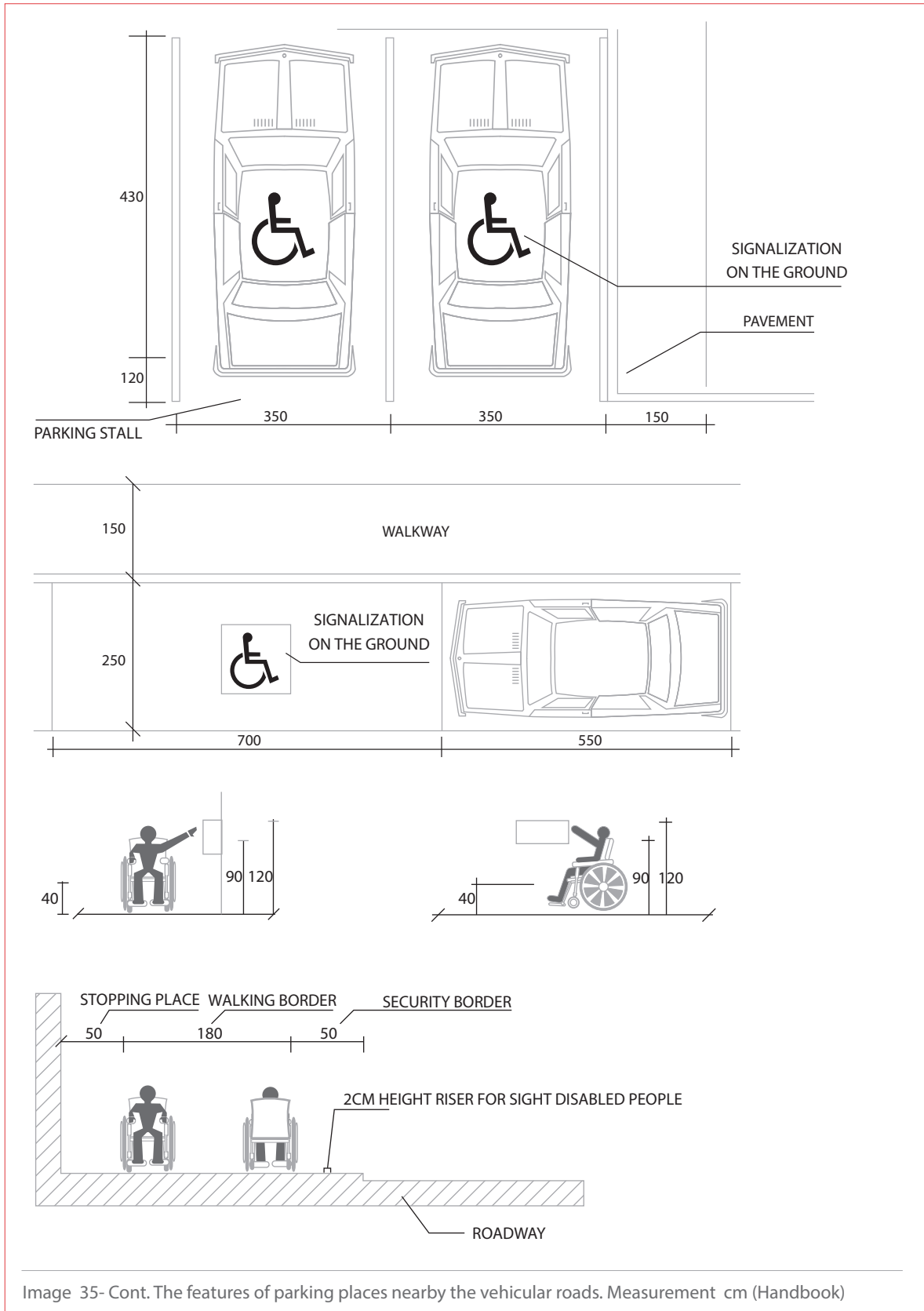
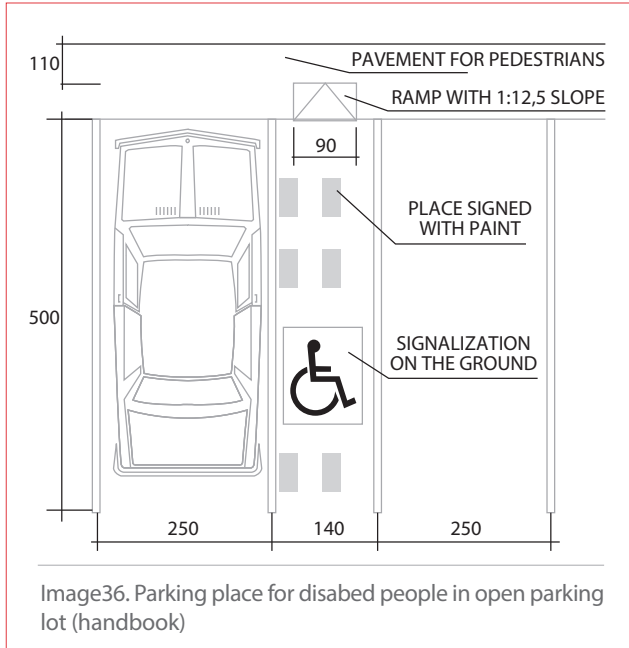


Image 35- Cont. The features of parking places nearby the vehicular roads. Measurement cm (Handbook)





## B- Open and Closed Parking Lots

### Open Parking Lots

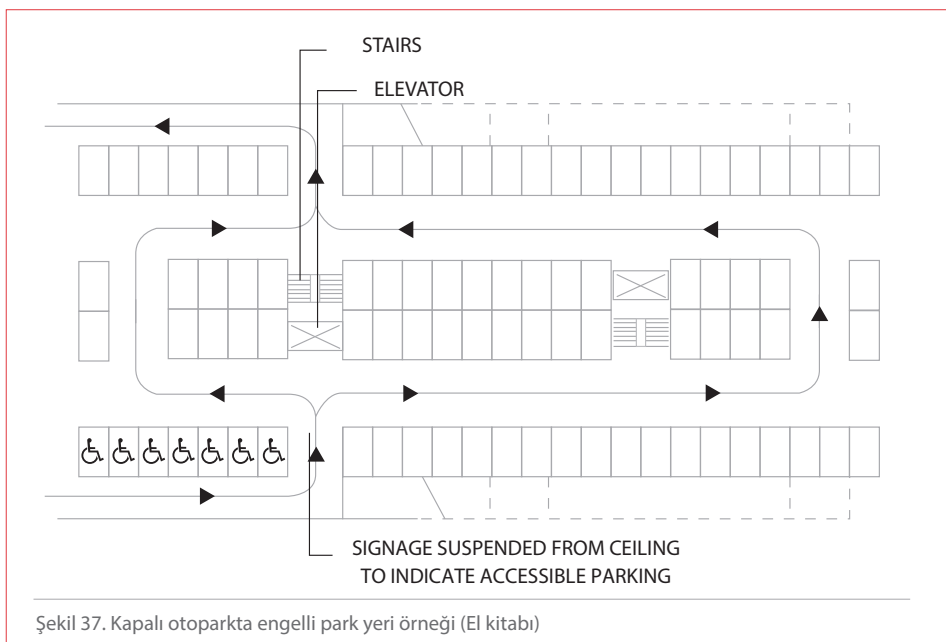
- Traffic signals and symbols to prevent misuse
- Coverings with non-slippery material in the road level, well organized on/off space
- Markings on ground and girders
- Ramps and parking symbol for disabled should exist in the parking places for disabled people

### CLOSED PARKING LOTS

Indoor or covered parking structures should be designed to accommodate all vehicles that may be used to transport people who use wheelchairs or other mobility devices.

The minimum clearance height should be 2.40 m to allow for larger vehicles equipped with a hydraulic lift (UN, 2004) to access the parking structure. Parking places reserved for persons with disabilities should be close to the exit/entrance and/or the elevator, for all parking stall configurations.

Directional signage should be visible. It may be mounted on the ceiling, if it does not interfere with a person's ability to move their vehicle through the structure. Direction boards secured to columns should display a map/plan of the parking floor and note any designated parking.



When restoring a parking place, putting an obstacle helps to change the parking stall for disabled people parking place



City information boards and/or maps should also note the locations of the designated parking, in particular street parking or parking of outdoor venues. The parking lot shall also indicate if it has designated parking stalls available by displaying the international symbol.

### ■ 13.6 OPEN AND GREEN AREAS

Open and green areas should be enjoyed by everyone. Green areas include city parks, neighborhood parks, childrens' playgrounds and recreation areas like sporting fields and swimming pools. Open areas like city squares and pedestrian sections and the surrounding environment should be accessible and available for everyone. The hard-surface should be slip-resistant and durable but the materials used should not cause discomfort (jarring) for the person who uses a wheelchair.

Pedestrian pathways from the entrance onward should be designed with a hard, slip-resistant surface and borders to define the edge of a walkway, especially when there is a downward slope, perhaps a contrasting colour of a textured surface differing from the surrounding areas. Seating, planters, trash containers and other urban furniture could be placed along the pathway or other rest areas along with good lighting would increase the enjoyment of the outdoors with family and friends. All activity areas should be accessible and tactile, if possible.

#### **Design principles:**

##### **13.6.1. Main and pathways in open and green areas**

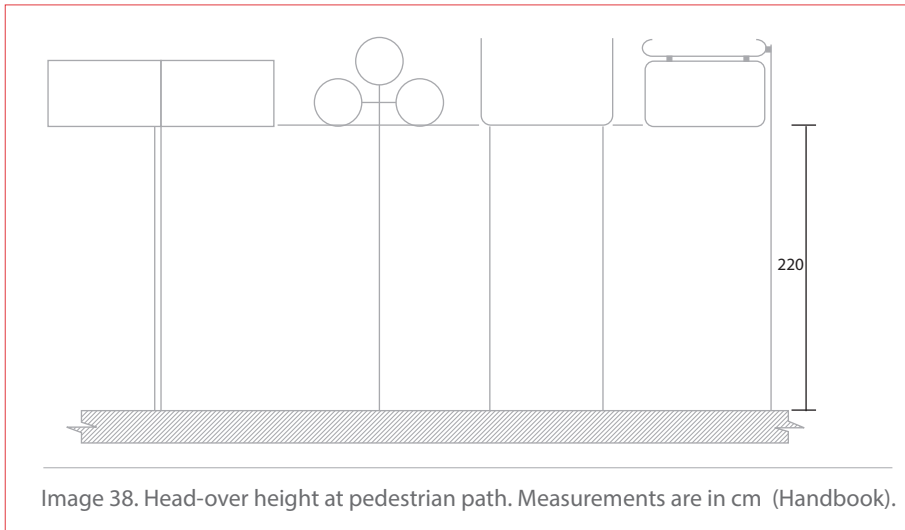
- The main paths should be stable, slip-resistant and well-lit with a light profile of 150 cm circumference and 230 cm in height for the safety of all people, including people with disabilities and; along side paths, the light profile of the lit area should have a minimum 90 cm circumference and 230 cm height.
- Path should have a minimum of 120 cm and a maximum of 200 cm to allow 1 wheelchair to easily pass an ambulatory person.
- Longitudinal slope of the main paths inside a park area should be at most 4%, transverse slope should be 2% and, should a landing be required it should be placed at maximum of 18 m distant from the start of the incline; however, if the longitudinal slope of the path is planned between in 4% - 6%, landings/resting areas should be placed at a maximum of 10 m.
- Seating or resting benches should be placed every 100 m all along the main path.

##### **13.6.2. Urban Furniture**

Urban furniture can act as a natural barrier to canalize the movement of pedestrians and as an obstacle to prevent vehicular and other unwanted traffic from the walkways. Urban furniture like phone booths, kiosks/vendors, newspaper boxes, planters, flower carts, fire hydrants, trash containers, mailboxes, seating benches, light and traffic standards, bus shelters, signs and information boards and so on.

The placement of the urban furniture should be to the sides of the pedestrian pathways so that it does not impede the flow of pedestrian traffic. In addition to urban furniture, sidewalk cafés and seating areas should be surrounded by fencing that can be detected with a cane or by a contrasting colour to prevent people with a visual disability from tripping over the furniture and/or patrons. Sidewalk eating areas may also have overhead hazards such as umbrellas for people with visual disabilities. The umbrellas need to be within the barrier and be contrasting in colour.

Other overhead hazards may be storefront awnings, overhead signs, lighting and tree branches. All of the possible overhead hazards should be a minimum of 220 cm measured from finished surface to the underside of the object. If the object such as exterior staircases cannot be higher than 220 cm, they shall have a barrier beneath to prevent people, including people with visual disabilities from walking into the staircase.

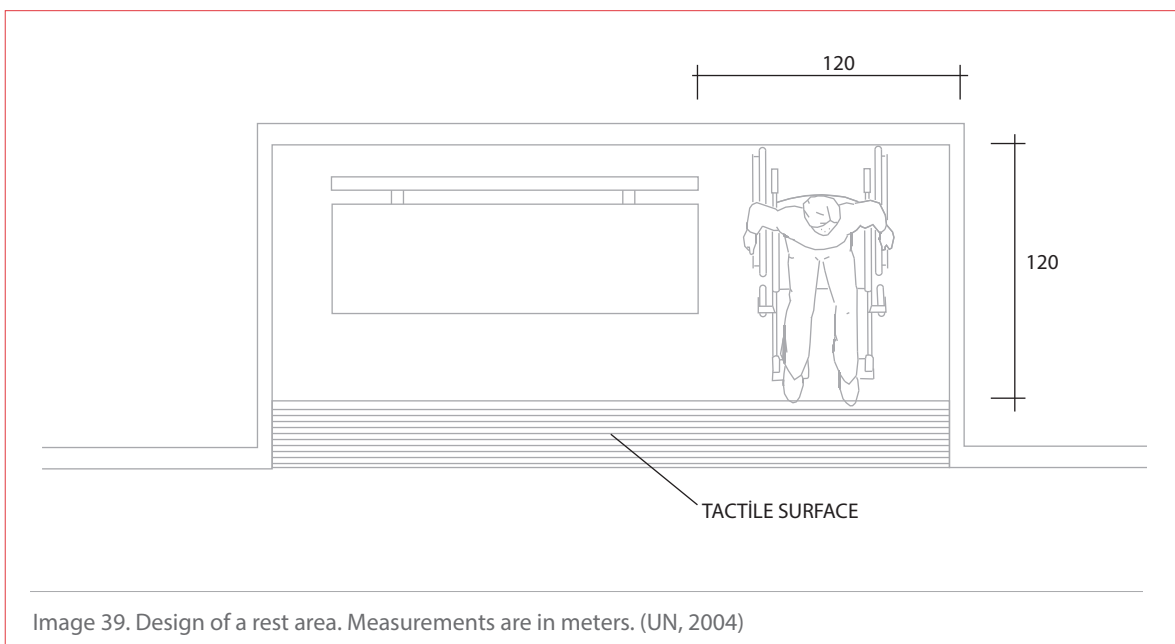


Whenever possible the urban furniture should be in colour contrast to the surrounding environment to communicate the placement of objects and the path of travel to persons with visual disabilities. A different texture may be used on the ground to surround the object as another method of detection. There is nothing with applying redundancy to ensure the independence and safety of people, including people with disabilities.

Urban furniture, if possible, should have rounded or chamfered edges and corners to prevent injury.

### A- Resting Areas

Rest areas should be located alongside the pedestrian path and the area should be designed with a stable, hard and slip-resistant surface. The area should accommodate the entire bench with a minimum of 1.20 m adjacent the bench to allow for a wheelchair or other mobility device to rest and enjoy the green or open spaces.



The rest areas should be placed 100 – 200 m apart. (UN, 2004)

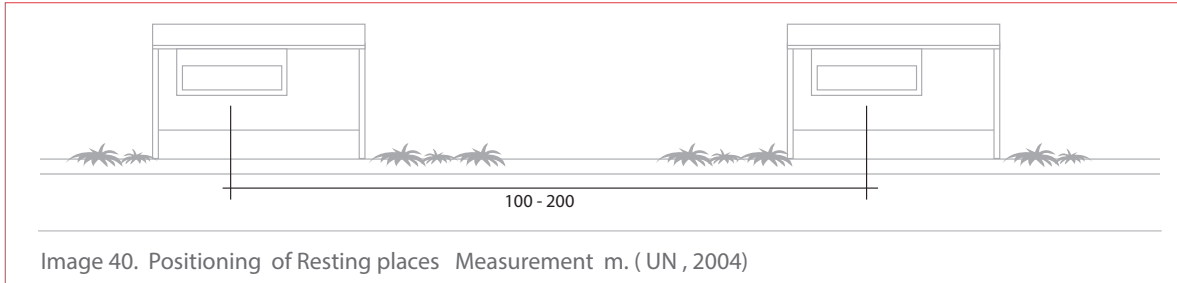


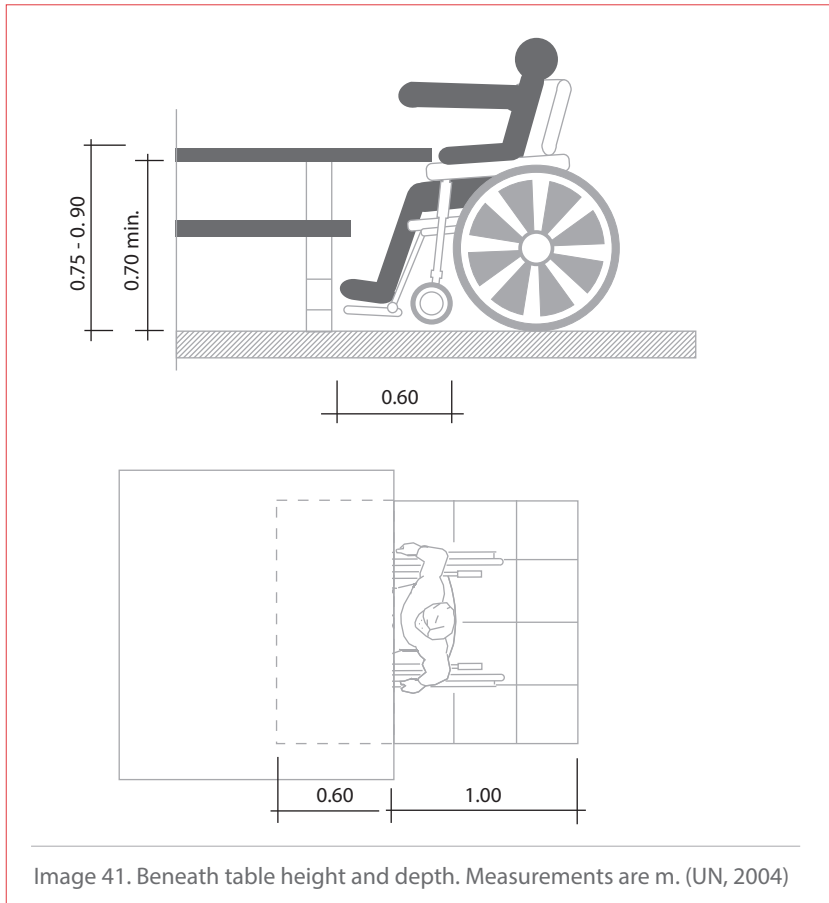
Image 40. Positioning of Resting places Measurement m. ( UN , 2004)

The bench should be with 45 cm height from to ground with, 70 cm height at the backrest



Image 41. Resting bench height. Measurement cm . (UN, 2004)

Height of the tables at rest areas should be between 0.75 m and 0.90 m, with a minimum depth of .60 m beneath the table to allow a person who uses a wheelchair the opportunity to access the table for their comfort and enjoyment.



## B- Public Telephones

Public telephones are still necessary for people, including people with disabilities, to contact family, friends and emergency services because not everyone can afford a mobile phone plan. Public telephones should be designed as open or enclosed and located in an area visible to pedestrians and drivers for reasons of safety as well as minimizing or eliminating criminal activity. Reflective or lit signage will indicate the location of the public telephones for persons with disabilities.

Open phone booths should be designed with an area of 120 cm x 85 cm to allow for either a frontal or parallel approach and usage in front of the telephone booth. The area should be a level and hard surface to provide ease of access and stability for a person who uses a wheelchair.

Enclosed phone booths should be designed with an area of 120 cm x 140 cm with a 90 cm door width to allow a wheelchair access to the telephone. A TTY telephone could be installed in the booth because it will be protected from the inclement weather. This booth should be well-lit from within and the interior shall be visible to a passer-by for reasons of safety. A sign announcing a TTY telephone shall be included with the signage.

The telephone booth shelf should have a minimum height of 75 cm when measured from the underside to the finished surface. The coin deposit slot and/or telephone card insert should be at an accessible height between 90 cm and 120 cm when measured from the mid-line to the finished surface. The dial pad on the telephone should have raised numbers and lettering, and the handset cord shall have a minimum length of 75 cm so that it will extend to a person seated in a wheelchair.

If there is a bank of public telephones, at least one of the open or enclosed booths shall be accessible to a person with a disability, including a person with an auditory disability.

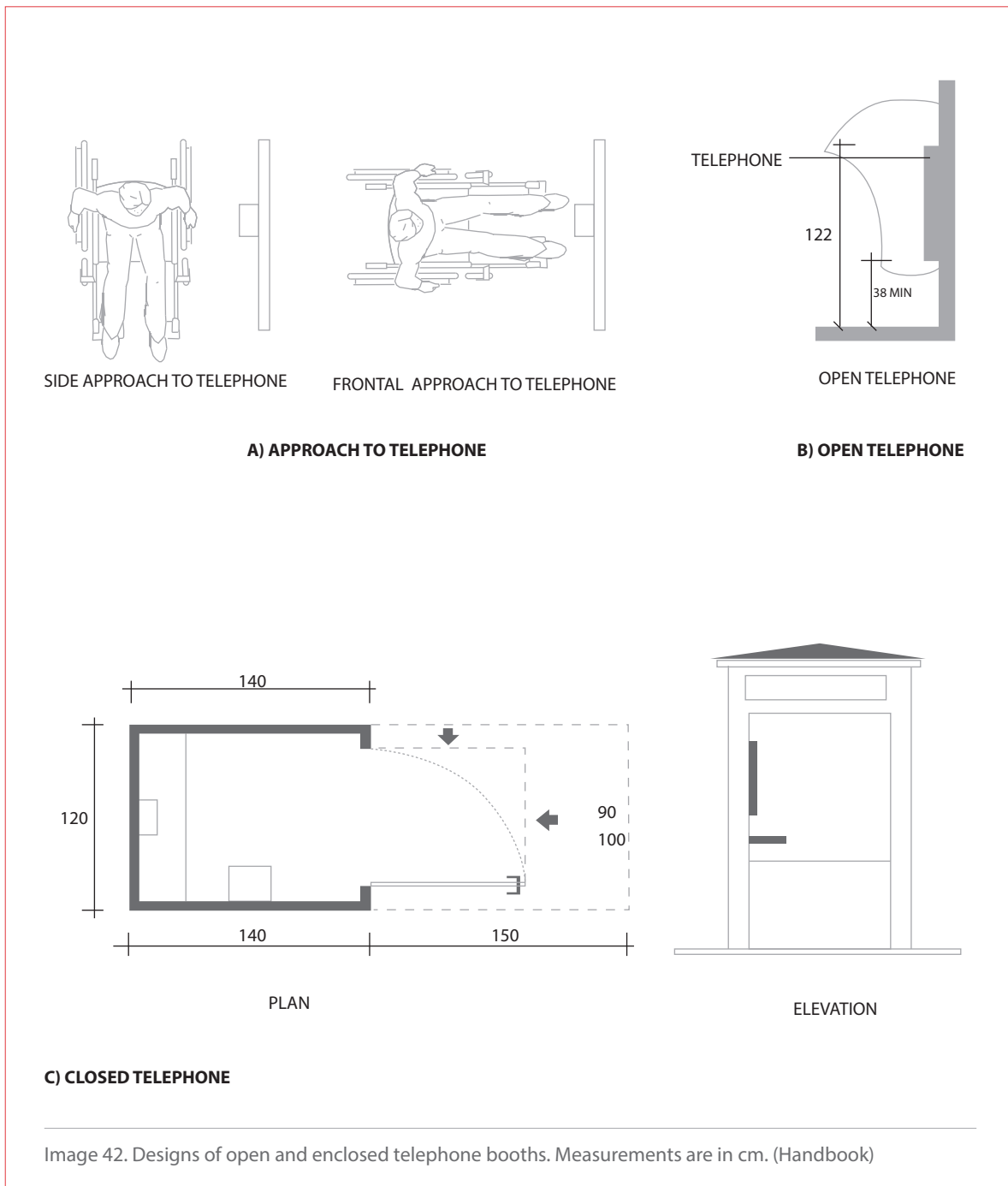


Image 42. Designs of open and enclosed telephone booths. Measurements are in cm. (Handbook)

### C- Trash Containers

Trash containers should be mounted at a minimum height of 90 cm and a maximum height 120 cm when measured from the finished surface to the opening. It should be located between 40 and 50 cm from the pathway when measured from the edge to the midline of the container. (TS 12576)

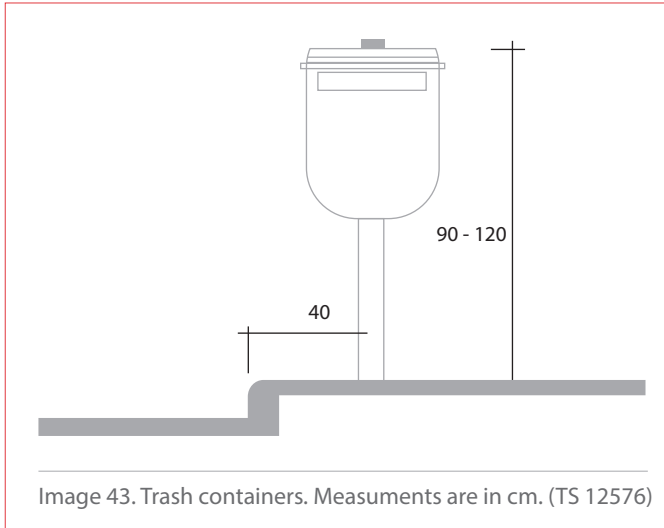


Image 43. Trash containers. Measurements are in cm. (TS 12576)

### D- Mail Boxes

Mail boxes should be mounted at a height between 0.90 m and 1.20 m when measured from the opening or handle of the mail slot to the finished surface. (UN, 2004)

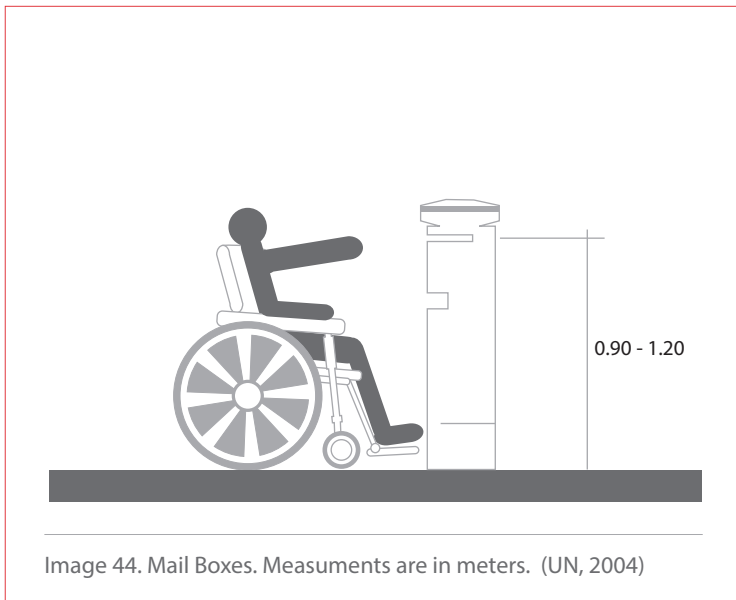


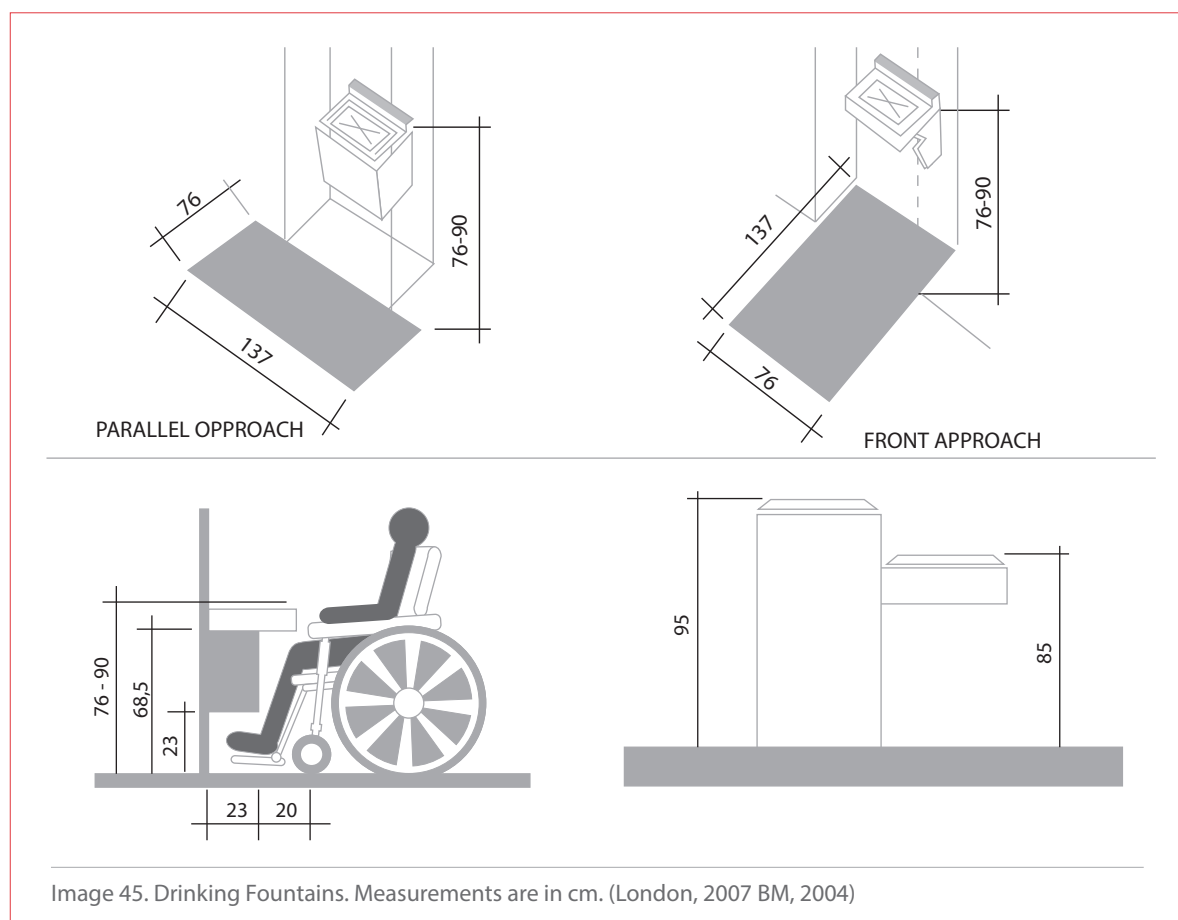
Image 44. Mail Boxes. Measurements are in meters. (UN, 2004)



## E- Drinking Fountains

Drinking fountains should be approachable by a user in wheelchair, therefore, the basin should extend over a lap with no obstacle for the knees and legs of the person seated. At the same time, the fountain would need to be cane-detectable - with a possible barrier - before a person with a visual disability walks into it. The basin should not be lower than 71.5 cm when measured from beneath the basin to the finished surface. The area or hard surface around the drinking fountain should be 137 cm in depth and 76 cm wide to provide the necessary access for persons who use a wheelchair.

Drinking fountains should be equipped with controls that are easily operable from a wheelchair using one hand with minimal force. Drinking fountains are available with two spouts at varying heights that make it well-suited for people who use wheelchairs and people who find it difficult to bend low. The lower spout should not be lower than 85 cm and 90 cm in height when measured from the midline of the spout to the finished surface. This will now be accessible to people who use wheelchairs. (UN, 2004)



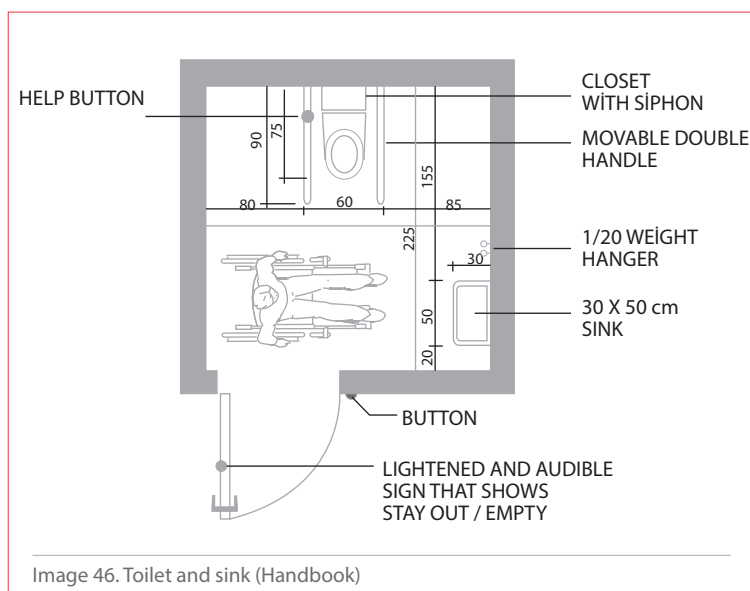
## F- Public Restrooms

Public restrooms should be designed to include accessible restrooms for the physically disabled. The universal restroom and accessible restroom stall should be no less than 230 cm X 230 cm to allow for ease of manoeuvrability. The space should be designed with a water closet and transfer areas on both sides of at least 85 cm to accommodate a left- or right-side wheelchair transfer. Any other fixtures like a lavatory or change table should be outside of this area so that access is not inhibited. The lavatory (even if it is wall-mounted) and other fixtures may not overlap the necessary turning diameter of 150 cm located in front of the toilet and lavatory.



**Other considerations for the restroom include a:**

- Slip-resistant flooring.
- Moveable grabbar or handle on both sides of the toilet, mounted at a height of 30 cm – 33 cm when measured from the seat of the water closet to the mid-line of the grabbar, extend at least 20 cm beyond the front surface of the water closet, and be capable of supporting a maximum weight of 160 kg.
- Wall-mounted lavatory at a height of 85 – 90 cm when measured from the surface of the lavatory to the floor.
- The plumbing should be offset to allow for maximum leg room beneath the lavatory and any exposed plumbing should be insulated or guarded to prevent leg burns, and the temperature of the water, in public restrooms, should be regulated to prevent scalding of persons with lessened sensation or slower to react to extreme temperatures.
- Single-lever faucets are preferable to separate hot and cold lever faucets, however, automatic water controls are best for health reasons.
- Dispensers, such as paper towel and feminine protection, should be located at a maximum height of 120 cm when measured from the mid-line of the handles/controls to the finished floor surface, and soap dispensers should be mounted near the front and to the side of the lavatory for ease of use.
- Light controls should be mounted at a height of 110 – 120 cm when measured from the mid-line of the switch to the finished floor.
- Power-assist doors may be provided with a locking mechanism on the door for privacy; and the button or plate required to activate the power-assist should be located at least 65 cm behind the swing of the door.
- A fold-down change table may be mounted at 90 – 100 cm when measured from the table surface when in the open position to the finished floor.
- A mirror may be mounted with a vertical tilt at 8% to be useable by a person in a wheelchair.
- The international disability symbol that is brailled and may be lit and should be mounted outside the restroom to identify accessibility within the facility.
- A “HELP” button should be installed to request assistance should the need arise to ask help from outside in case any help is needed inside.



According to TS 8357 and reconstruction regulations for disabled individuals, there should be at least two barrier-free restrooms for both women and men.



## ■ B-STANDARDS FOR ACCESSIBLE BUILDINGS

### ■ 13.7. DESIGN RULES FOR BUILDINGS

#### 13.7.1 Basic Accessibility Themes

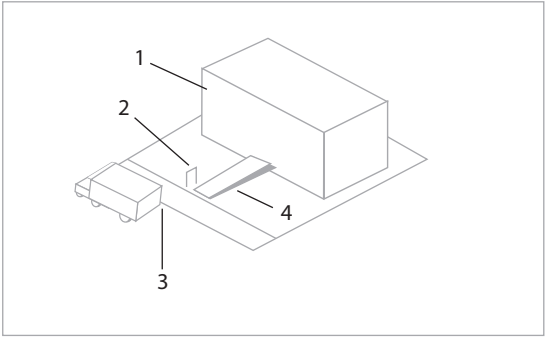
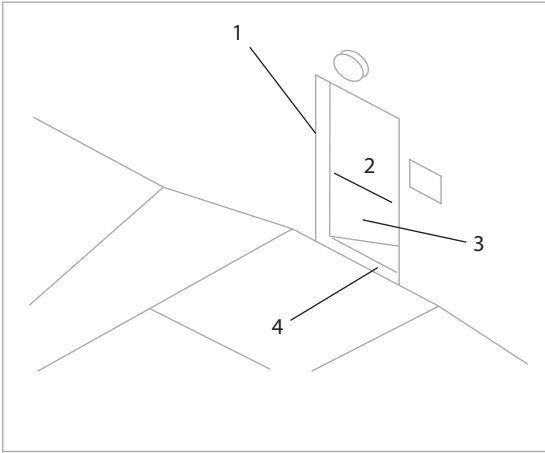
The main design features for creating necessary means of access to and within buildings described in TS 9111 are:

- Accessible parking stalls should be located near the main or primary entrance
- A barrier-free path of travel from the accessible parking to the building entrance
- Zero-level entry and egress
- Wider door openings, sufficient space for wheelchairs outside the arc swing of the door and automatic or power-assist doors
- Hard and slip-resistant surfaces
- Level paths of travel with no steps or other barriers to overcome on all floor areas
- Sufficient space for wheelchairs to manoeuvre
- Clearly marked barrier-free evacuation routes
- Ensure that the building is designed to accommodate 2 or more disabilities, i.e., physical, auditory
- Good visual contrast between floors, walls, and doors and doorways
- Easy access to information desk, elevators and restrooms for the disabled
- Good signage: visual and auditory (includes quality communication system)
- Good lighting and decreased acoustic sound and ambient noise
- Elevators that are large enough to accommodate a full-size stretcher and emergency personnel
- Control butts and keys within elevators and throughout the building should be located at a height easily reached from a seated position
- Safe stairs with a comfortable and safe usage during an emergency

It is necessary to ensure that all buildings have easy access and safe egress in an evacuation and that people, persons with disabilities and the elderly, may be able to use the space with dignity and comfort.



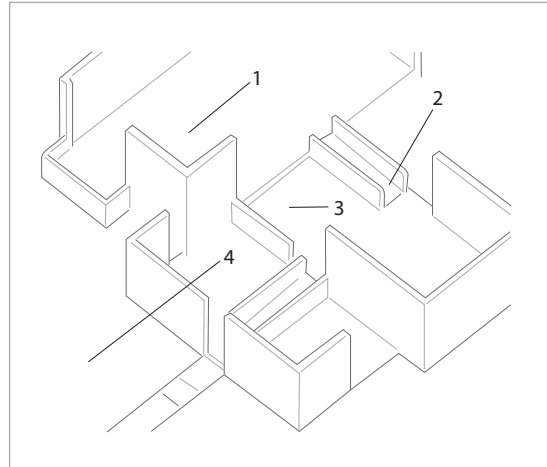
Basic accessibility subjects for buildings can be summarized as follows;

<p><b>Everyone should use same routes, entrances, appliances and so on of a building. This considers the principle of equality.</b></p> <p>Equal approach to the building includes all parking areas (public &amp; private), no stairs or other barriers, close to building entrances from parking areas, paths that are separated from vehicle and bike roads, and mass transit stops, as well as, providing good signage, proper lightning and contrasting textures and colour.</p>	 <p><b>EXPLANATION</b></p> <ul style="list-style-type: none"><li>1 - Lightning, contrast color</li><li>2 - Sign</li><li>3 - Short distance for mass transport and paking lots</li><li>4 - Accessible pass whithout step</li></ul>
<p><b>Entering the building equally with the same entrance.</b></p> <p>Well-defined main entrances, wider doorways, power-assist doors, good signage and lightning with good visual colour contrast and a barrier-free path of travel with no stairs or other barriers.</p>	 <p><b>EXPLANATION</b></p> <ul style="list-style-type: none"><li>1 - Lightning can be founded easy, sign, contrast</li><li>2 - Wide pass</li><li>3 - Doors can be used easy</li><li>4 - Enrance without step and treshold</li></ul>



**Using the same route for horizontal circulation.**

No stairs or other barriers, manoeuvring space, wider doorways, power-assist or lighter doors, rest areas, good signage, lightning and visual contrast.

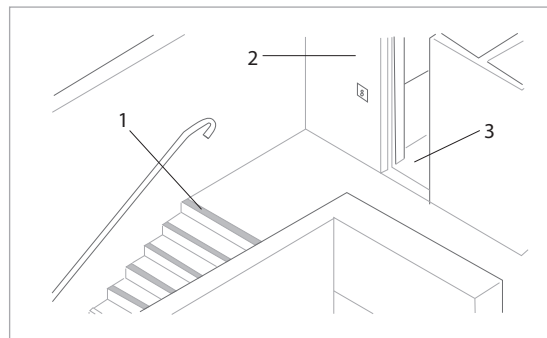


**EXPLANATION**

- 1 Enough manoeuvre area
- 2 Accessible pass without step
- 3 Clear residential arrangement
- 4 Quality sign, lightening and visual contrast

**Using the same route for vertical circulation.**

Wider landing areas in front of stairs to allow for manoeuvrability and safety, wider doorways and passages, power-assist doors or lighter doors for the ease of opening and closing, good signage, lightning and visual contrast.



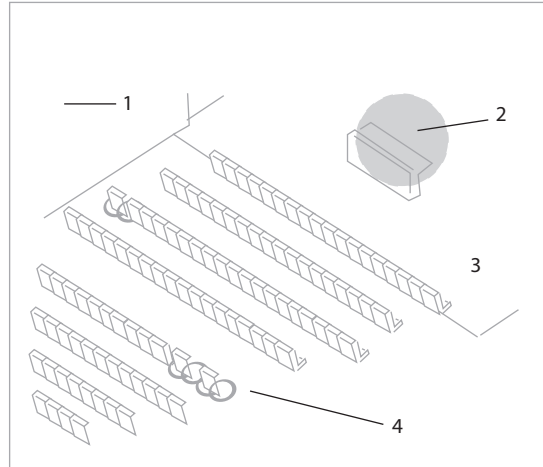
**EXPLANATION**

- 1 Safety stairs, quality lightening, visual contrast
- 2 Easy Usage
- 3 Wide elevator



**Equal usage of the same area by everyone.**

Seating choice, adequate aisle width, sufficient manoeuvring spaces, good acoustics and audio enhancement systems, good lightning and visual contrast.

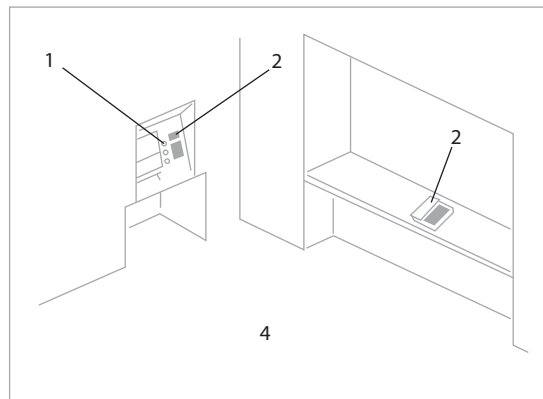


**EXPLANATION**

- 1 Quality audible, volume higher system
- 2 Quality lightening
- 3 Enough manoeuvre area
- 4 Alternative seating places

**Equal usage of same equipment and appliances.**

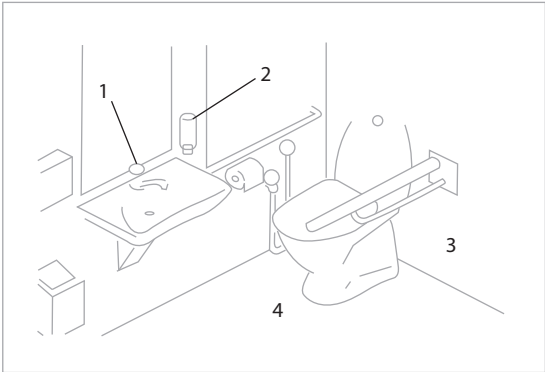
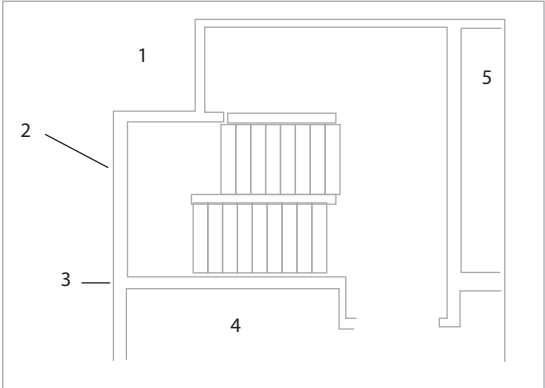
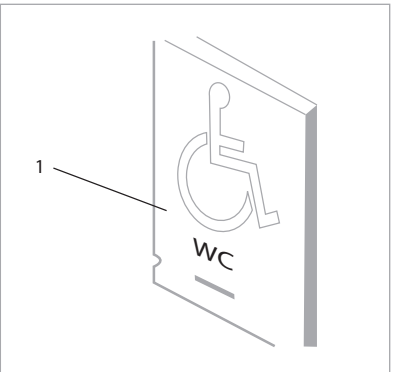
Ease of usage may require knee space below, ease of reach, information access by people with sensory disabilities and sufficient room to manoeuvre, for example, banking machines.



**EXPLANATION**

- 1 Easy usage
- 2 Information for two senses
- 3 Proper usage height
- 4 Enough manoeuvre area



<p><b>Equality in usage of restrooms and other hygienic fixtures.</b></p> <p>Designed for ease of use with grabbars, transfer space adjacent to waterclosets, manoeuvring space, dispensers within easy reach, knee space beneath lavatory, tilted mirrors, emergency call system, good lighting and proper signage indicating location.</p>	 <p><b>EXPLANATION</b></p> <ul style="list-style-type: none"><li>1 Easy usage</li><li>2 Well located equipment</li><li>3 Alternative transfer</li><li>4 Enough manoeuvre area</li></ul>
<p><b>Equal exiting and evacuation routes, designed to facilitate movement in emergencies.</b></p> <p>No stairs or other barriers, sprinklered, areas of refuge where elevators are unprotected against fire, good signage, lighting, visual contrast for safety of all people, including people with disabilities.</p>	 <p><b>EXPLANATION</b></p> <ul style="list-style-type: none"><li>1 Fire safety, protection and discharge</li><li>2 Safety stairs</li><li>3 Elevators for discharge</li><li>4 Accessible pass without step</li><li>5 Quality lightening and sign</li></ul>
<p><b>Accessible signage for two or more senses.</b></p> <p>Braille or raised lettering, lit signage, graphics or easy to read font.</p>	<p><b>EXPLANATION</b></p> <ul style="list-style-type: none"><li>1 Information for two or more than two senses</li></ul> 



### 13.7.2. Accessible Route in Residential Areas

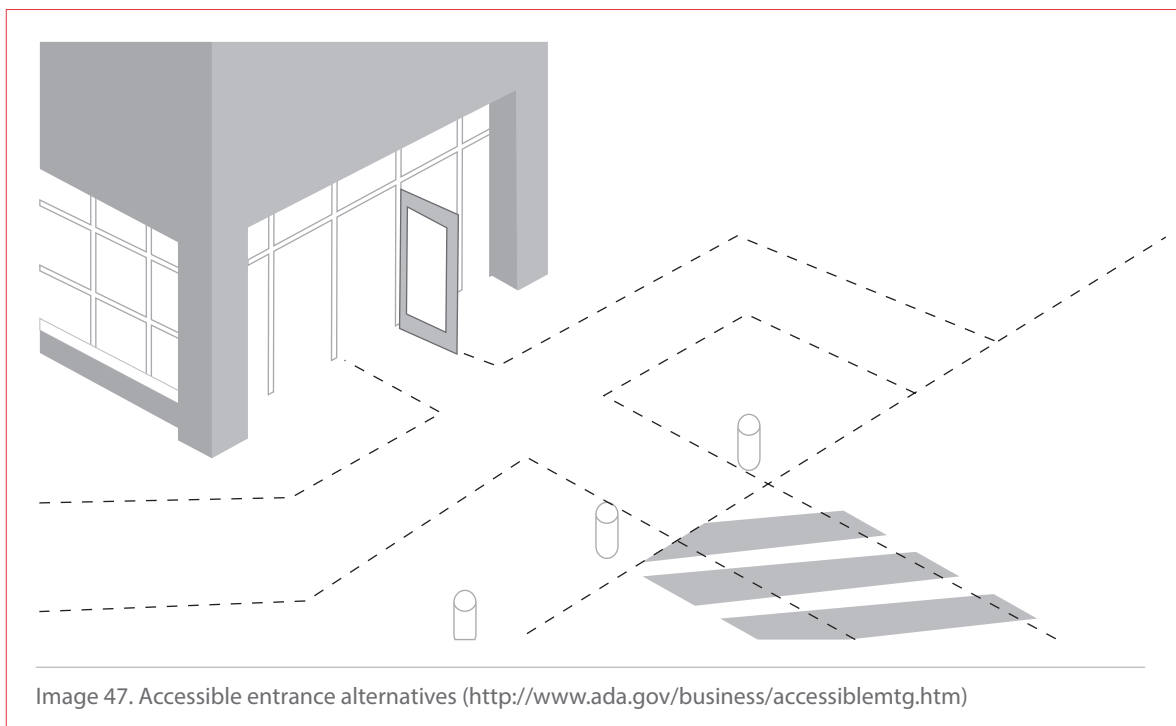
In a residential area, accessible routes should be provided to safely connect pedestrians, including pedestrians with disabilities, to the accessible building entrances from parking lots, passenger (un)loading areas or zones, mass transit stops, streets and walkways. The pedestrian path of travel is designed to be free of obstacles and is wide with a slip-resistant surface.

#### General principles

- At least one accessible route should be provided in residential areas leading from accessible mass transit stops, parking lots, passenger (un)loading areas or zones, streets or walkways to accessible building entrances.
- At least one accessible route should connect accessible buildings (schools, retail, etc), parks, facilities, and services in each residential area.
- An accessible route should connect inner and outer places and elements that serve an accessible residential unit to every other accessible residential unit.
- Accessible routes should overlap as much as possible with common routes. If an alternative accessible route is necessary, the difference to/from the common route should be at the most economical travel distance. Proper and sufficient signage should be strategically located along the path to indicate direction. (TS 9111)

### 13.7.3. Building Entrances

The primary building entrance and at least one other entrance should be accessible. The accessible route should be at least 92 cm wide and the slope of the ramp should not be greater than 1:12 (8%). Railings should be arranged on both sides of the ramps when the highest point of the ramp exceeds 15 cm. Railings should be 90 cm in height when measured from the surface. Edge protection at the side of the ramps should be considered be at least 5 cm in height (ADA,1994) (Image 48).

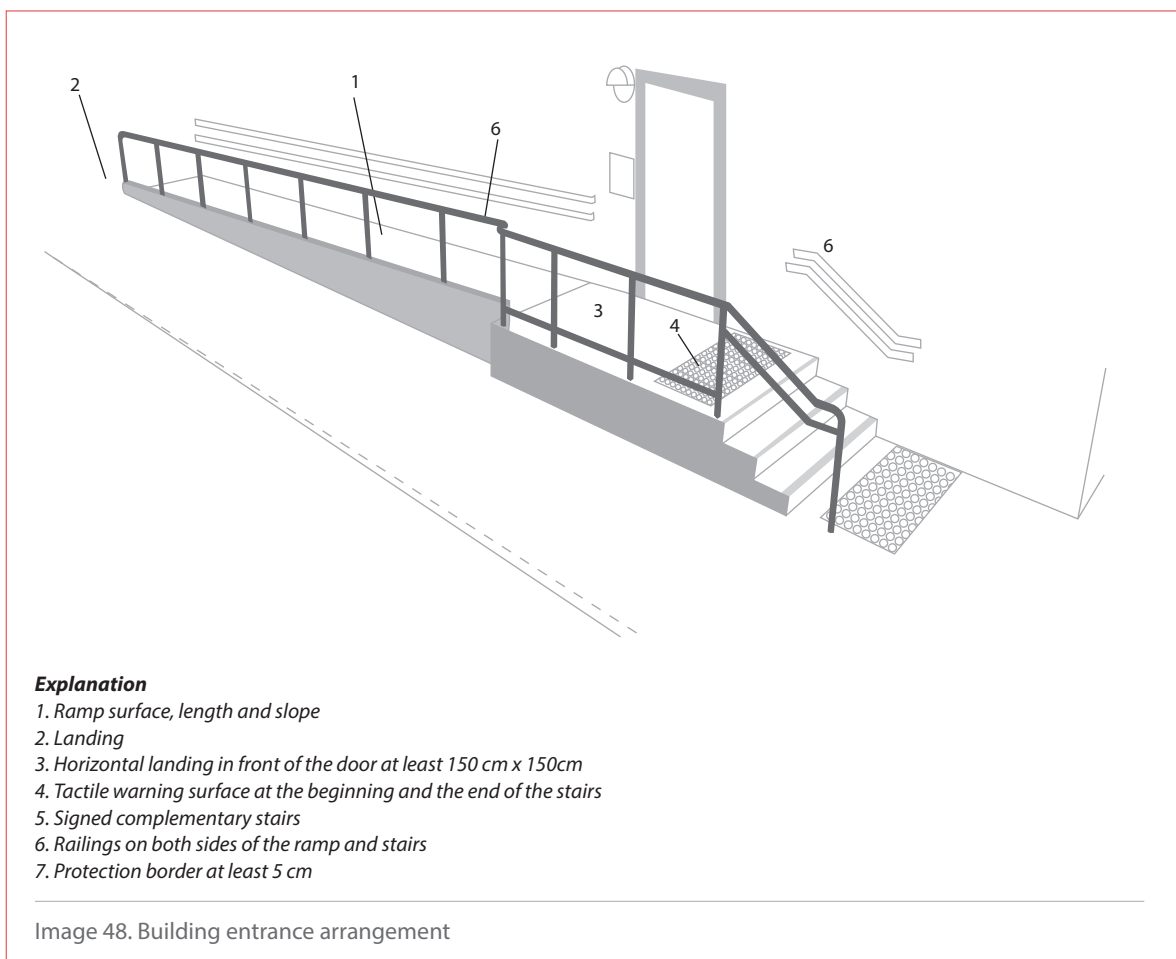




If the accessible entrance is not the primary entrance, these entrances should be marked with directional signage along the barrier-free route. There should be a sufficient area for safe manoeuvrability in front of the entry/exit and the door should be equipped with power-assist for ease of access. (ADA,1994)

Principles for building entrance design (TS12576):

- The primary entrance from the walkway to the buildings should be at grade, if the building borders (meets) the pedestrian path.
- The area immediately surrounding the entrance may have a textured surface of 125 cm X 125 cm that differs from the rest of the walkway to identify the entry for the visually disabled.
- The pathway should include borders that are cane detectable.
- At places where walkways meet with building garage entrances, the vehicle pathway should be slope at least 3 cm to identify the path, especially, for the safety of people with visual disabilities.



The path leading to/from the entrance should be kept clear of overhead hazards to prevent people, including people with visual disabilities, from making contact. Therefore lighting, signage, flora planters, other fixtures and overhanging tree branches and foliage should not be less than 203 cm when measured from the finished surface to the bottom of the fixture and/or tree. Railings should be part of stair and ramp systems. The ramp should have a width no less than 91.5 cm (ADA,1994) (Image 50).



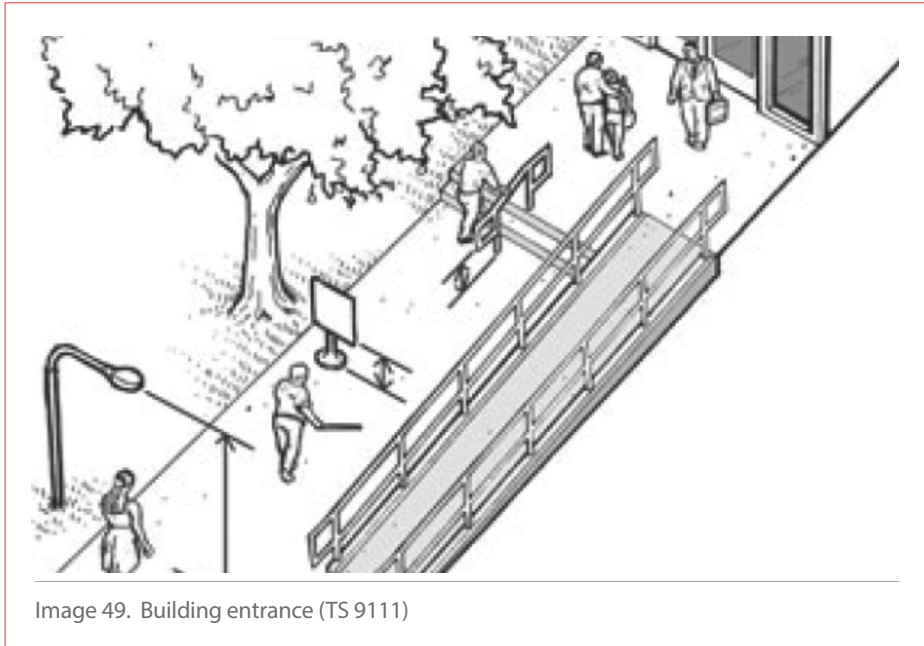


Image 49. Building entrance (TS 9111)

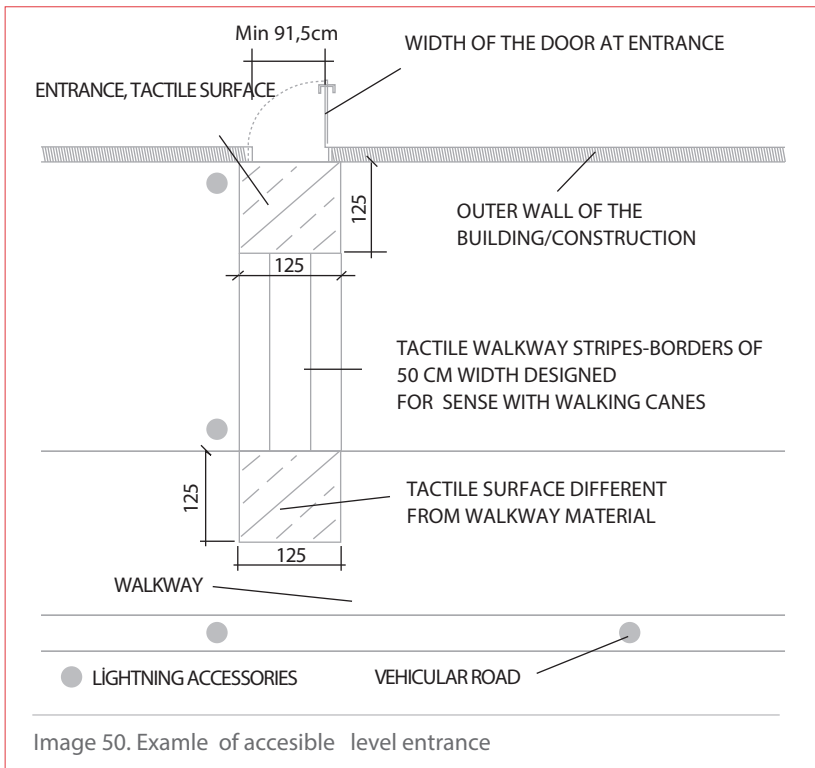
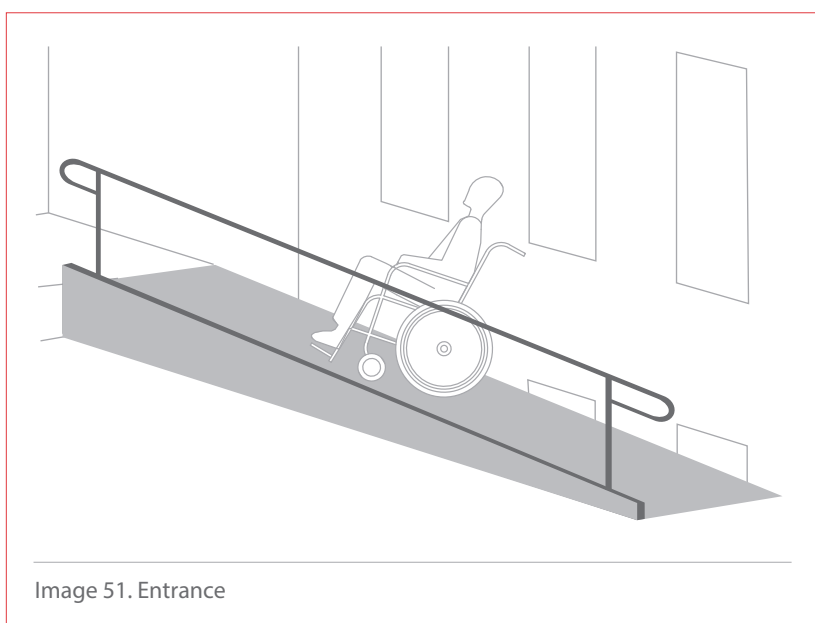


Image 50. Example of accessible level entrance



#### 13.7.4. Main Entrance for Commercial Buildings, Residential Buildings and Administrative Public Buildings

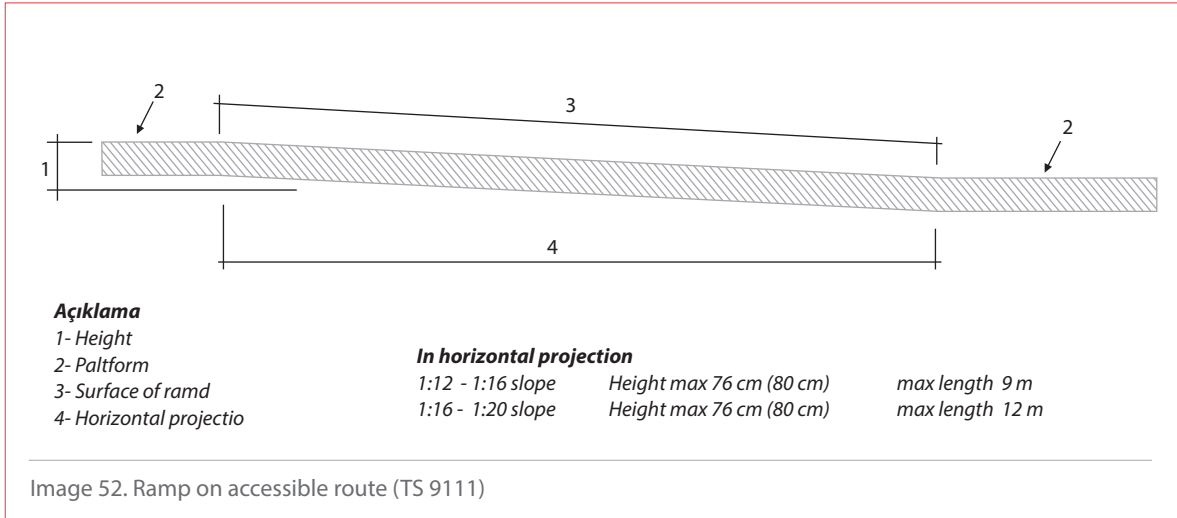
All main entrances at commercial, administrative public buildings and residence buildings should be barrier-free starting from the walkways. A wide entrance landing should be presented in front of the building entrance. Building entrance should be made by non-slippery hard material and it should be well lit. At least one entrance should be usable by persons with disabilities. In case of the entrances of public and commercial building entrance being with stairs, a ramp with the proper slope should be done for usage of persons with disabilities. A landing with different texture should be present at the beginnings and the ends of the ramps. Entrance and exits that will be used by persons with disabilities should be defined with proper signs and symbols at the entrances of public and commercial buildings (TS 12576 ) (Image 53).



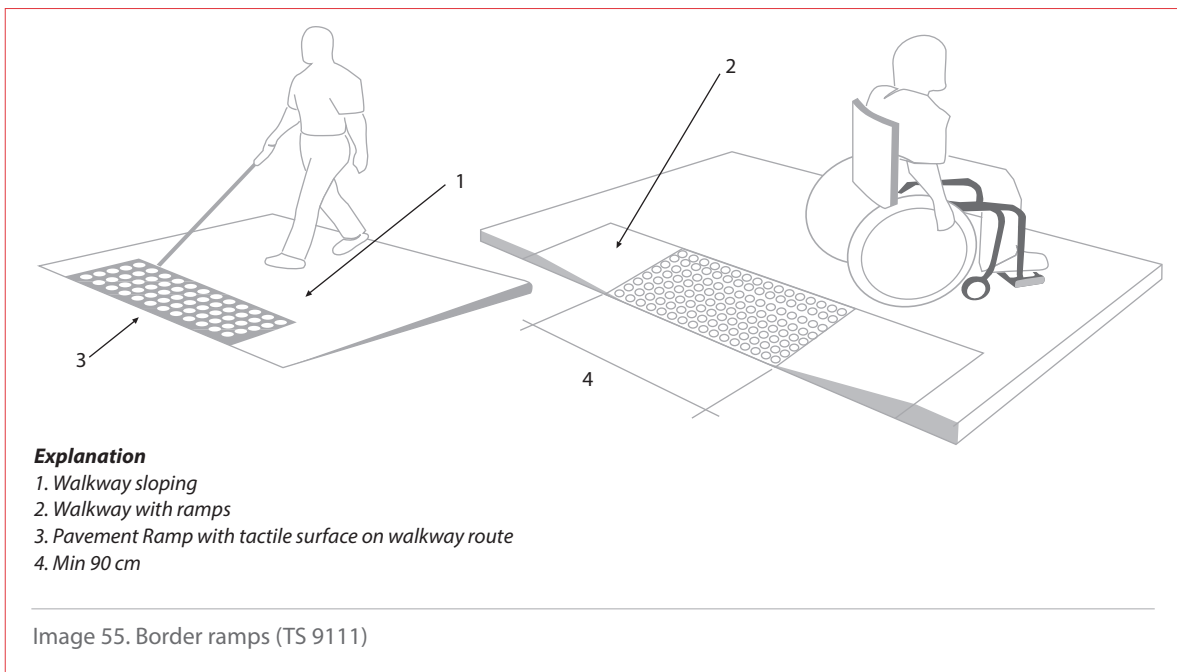
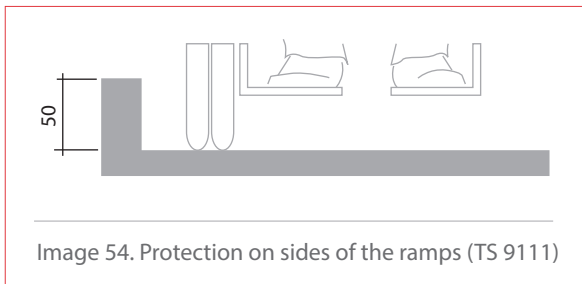
#### 13.7.5. Ramps at entrance

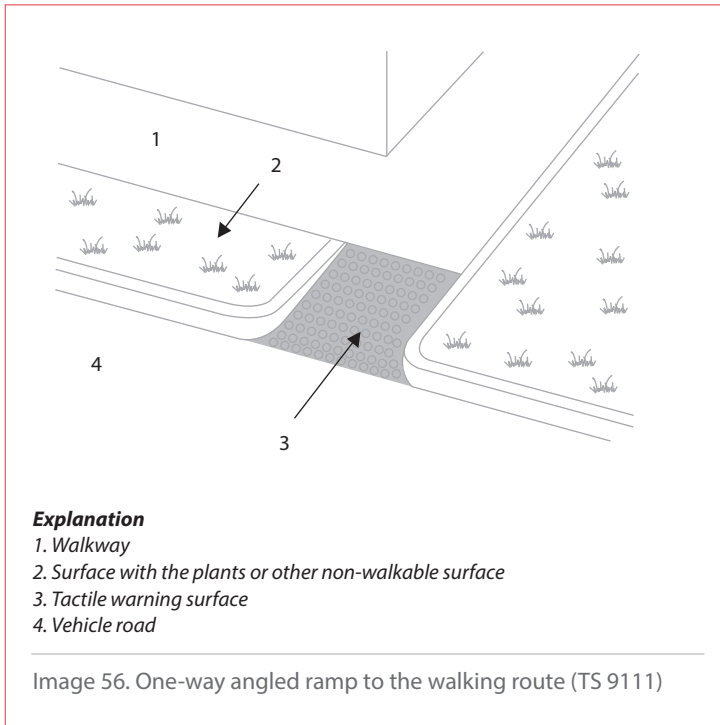
Ramps at building entrance should include the following design features (TS 9111):

- Building entrances with different levels on the same property should be connected to each other with ramps.
- Ramp surfaces should be hard and slip-resistant. The ramp should be designed to prevent the accumulation of water and/or snow.
- Ramps should not be steeper than 1/12 (5°) or 1/15 (4°) with a preferred length of 6 m – 10 m.
- A minimum height of 50 mm height protection border should be laid down on the unprotected side of the ramps for persons with wheel chair user (Image 55).
- There should be sufficient landing areas at the top of the ramps and designed as the same width of the ramp.
- If the ramp changes direction at the landing, the landing should be at least 1525 mm x 1525 mm.



- Platforms may be in a contrast colour to accommodate individuals with impaired sight.
- Border ramps should be at least 90 cm width and its slope should be no greater than 8%.
- One way sloped ramps are only applied to walkways with green areas. (Image 57)



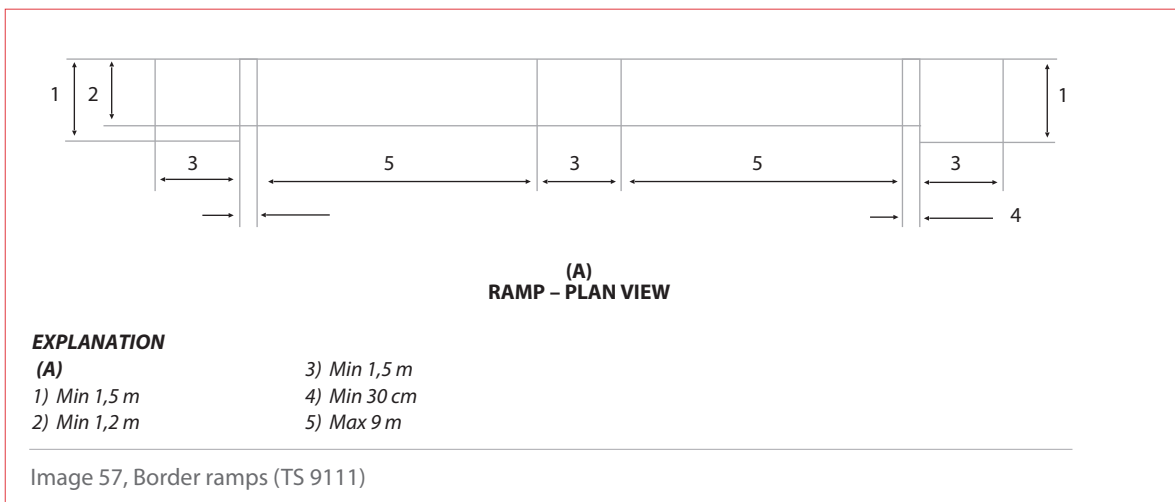


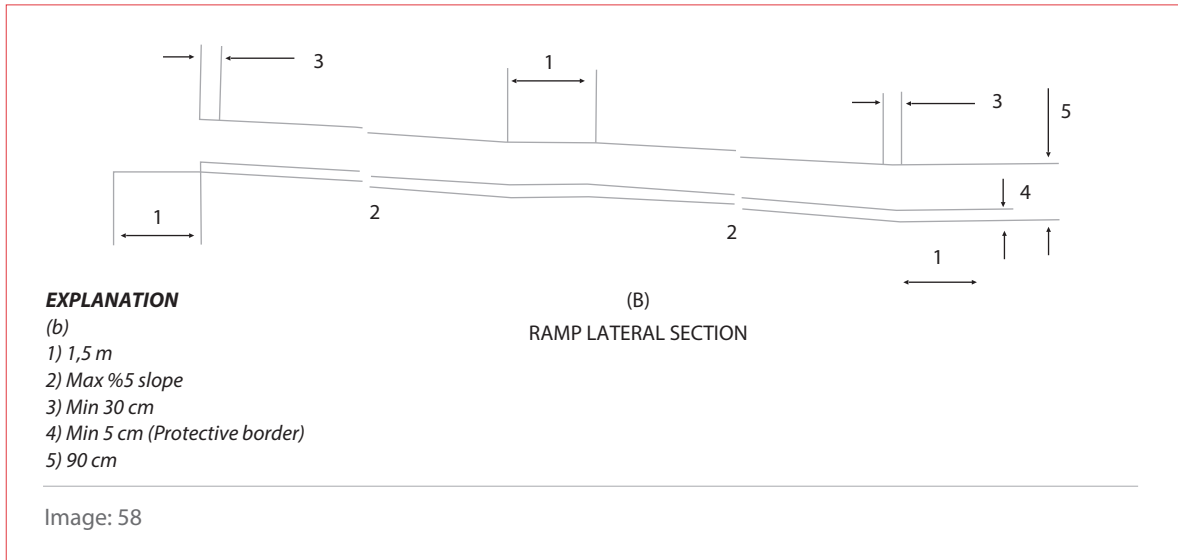
### 13.7.6. Ramps on Walkway Route

Ramps are used to overcome the difference between levels on a walkway if the difference is greater than 2 cm. Otherwise, if the height difference between levels is less than 2 cm then the difference can be overcome by beveling the edge to provide smoother transition for mobility devices with wheels.

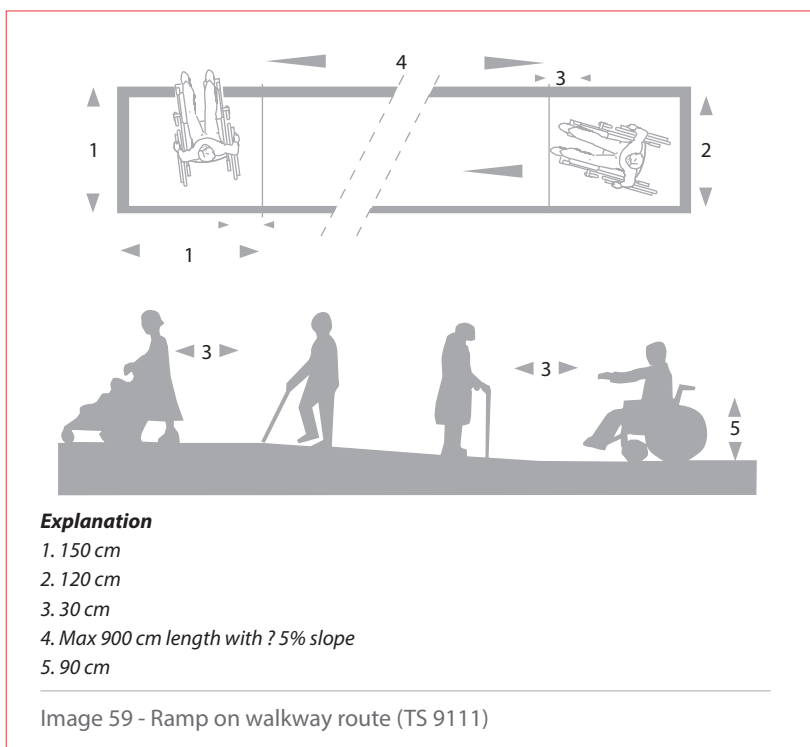
Ramps should be designed as hard, stable and slip-resistant surface, and free of drainage or sewer grates. The length of the ramp should be no greater than 900 cm with a slope no greater than 5%.

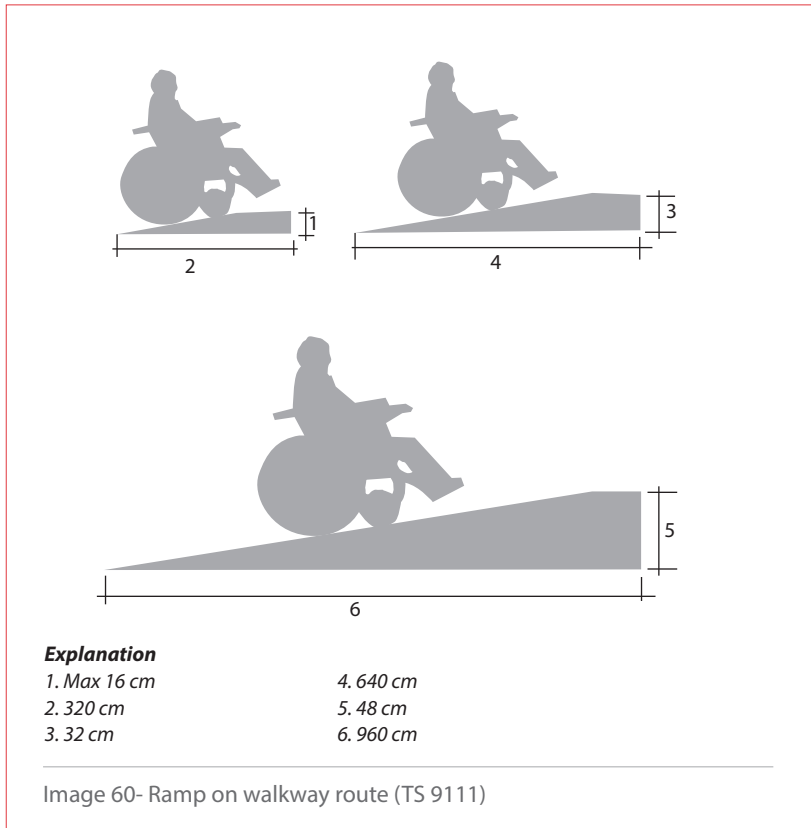
Railings should be installed on both sides of the ramp if it is greater than 200 cm in length or the top of the ramp has a height greater than 15 cm when measured from ground level to the surface of the ramp.





Measures and measurements about ramps should be made as shown in Images 60 and 61.





### 13.7.7. Slope of the entrance ramps

Slope of the building entrance ramps should be as follows:

Table 3. Slope of the building entrance ramps (TS 9111)

Max height	Max slope
15 cm and less	1:12 or 8%
Between 16 - 50cm	1:14 or 7%
Between 51 - 100cm	1:16 or 6%
More than 100 cm	1:20 or 5%

Clear width of the building entrance ramps should be at least 90 cm and preferably 100 cm. At the buildings that are open for public use this width should be at least 100 cm.

The ramp should have railings on both sides, if the horizontal length of the ramp is greater than 200 cm or the height of the ramp is greater than 15 cm.

Ramps should have a stable and slip-resistant surface with no embedded obstacles like a drainage grate.

There should be tactile surfaces in colour contrast to the ramp at the beginning and end of it to act as a warning in change of level, especially, to people with visual disabilities

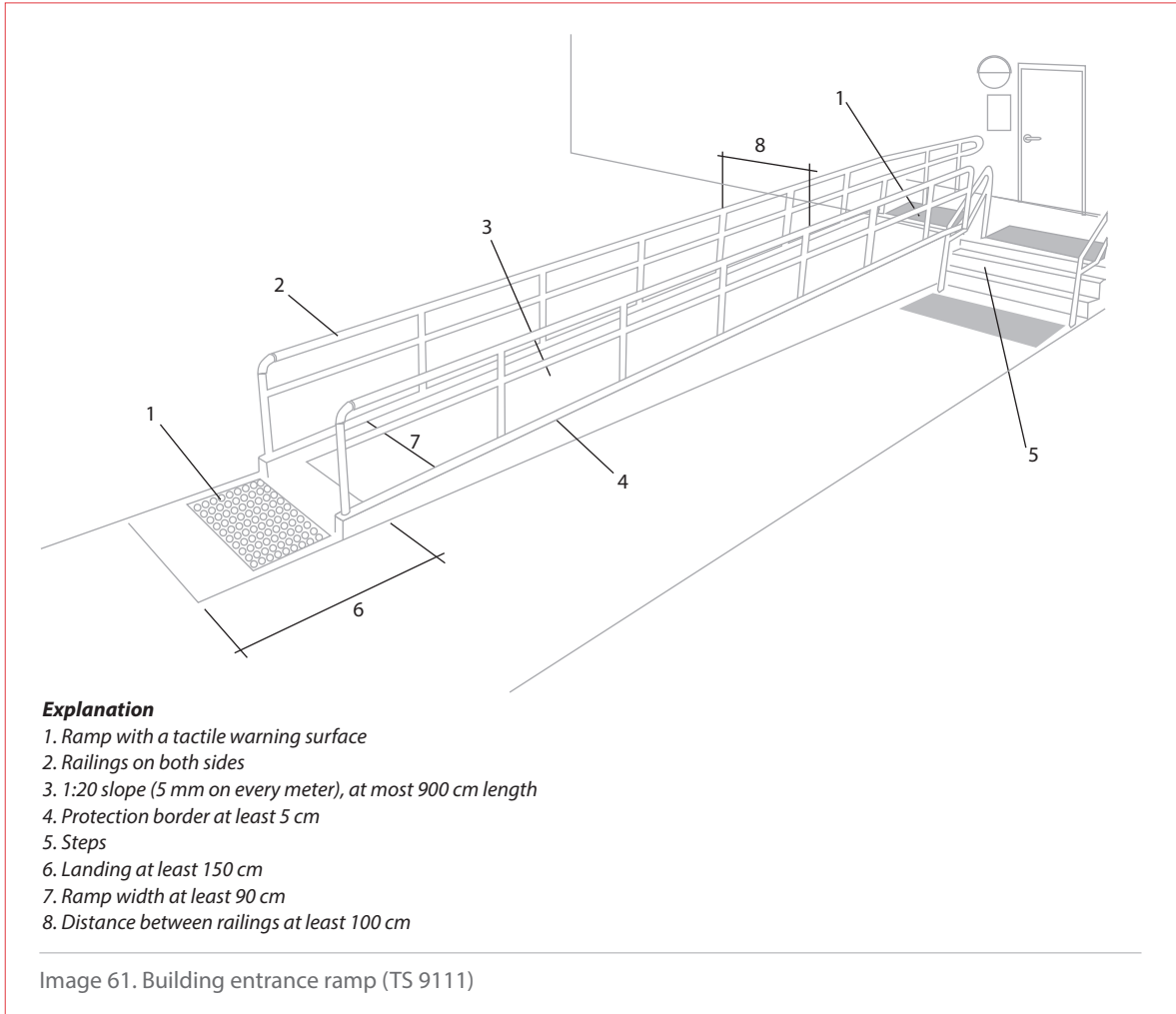


Image 61. Building entrance ramp (TS 9111)

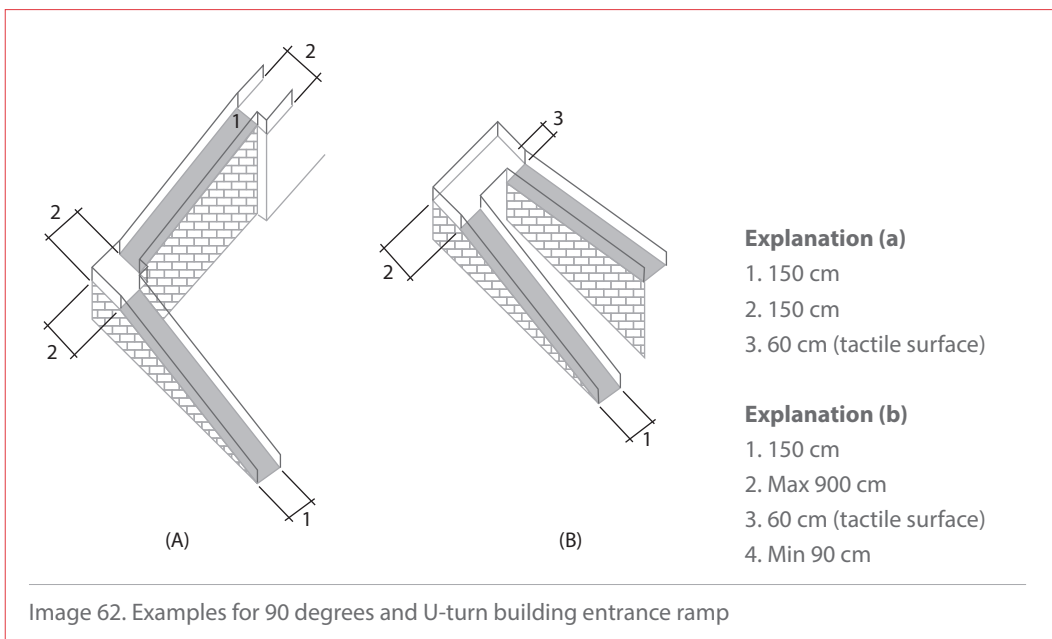
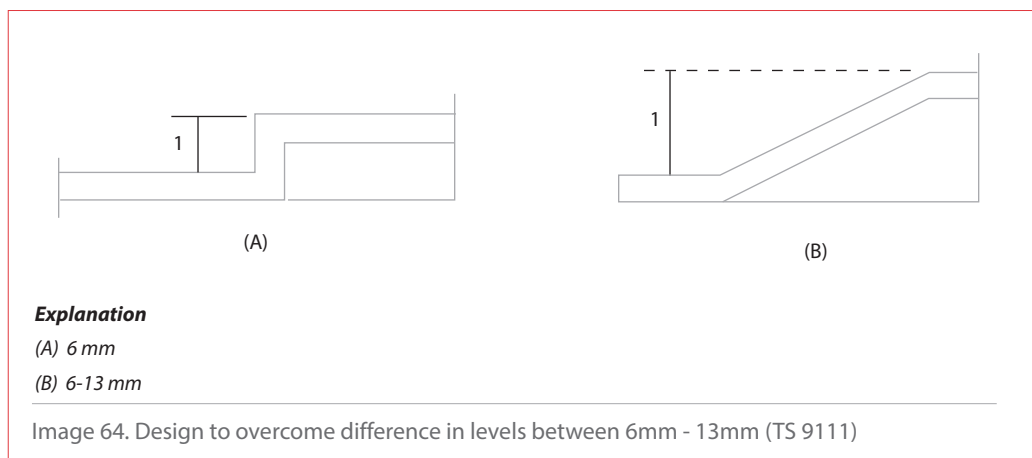


Image 62. Examples for 90 degrees and U-turn building entrance ramp



### 13.7.8. Level Differences (TS 9111)

A special border design is not needed for level differences till 6mm. Level differences between 6mm- 13mm can be arranged with a slope not more than 1:2. For the level differences more than 13 mm, a proper ramp should be placed (Image 64).



Carpet should not be used as a slip-resistant surface or to overcome levels  $\geq 6$  mm. However, if it must be used, the nap or pile will be no higher than 13 mm and the carpet must be secured to the surface with glue or nails to make it safe to travel over.

### 13.7.9. Handrails

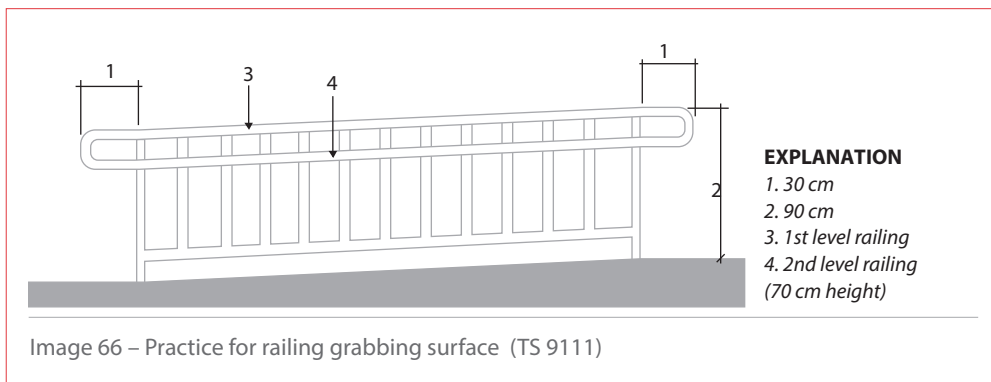
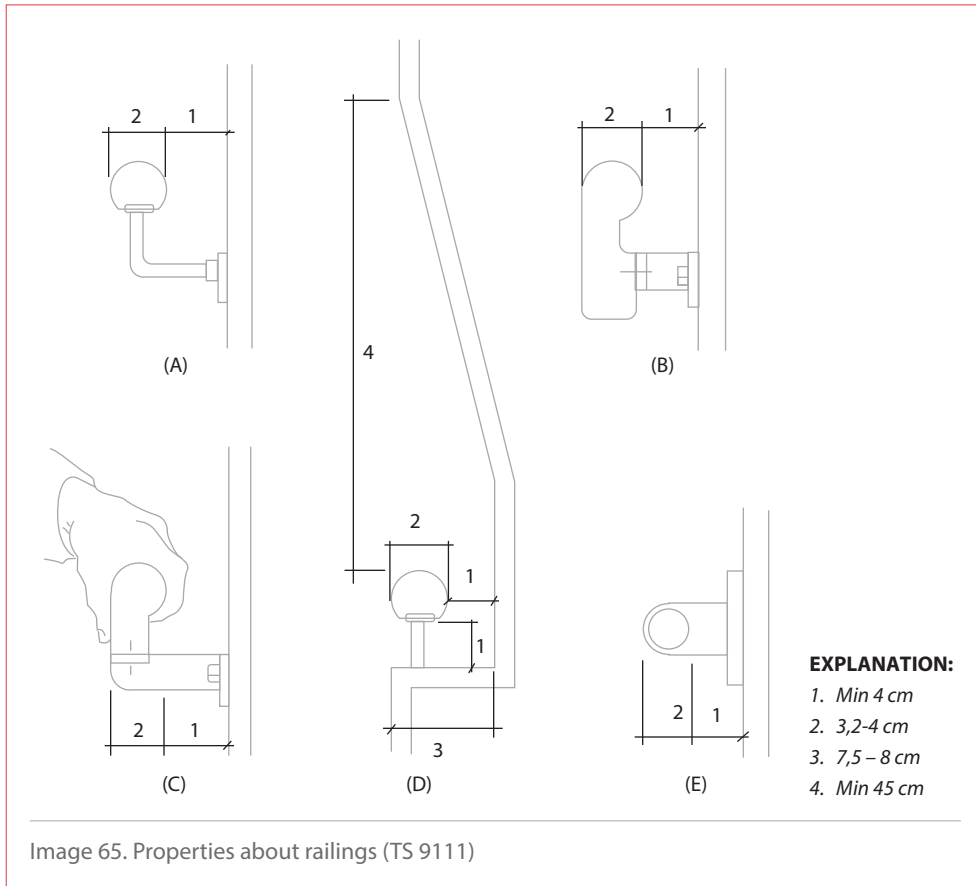
Each open side of a stair system shall have railings that extend 30 cm at the top and bottom of the stair and, either curve into the wall or extend to the surface of the landing or ground.

The railing should be of a contrasting colour and a tactile surface on the railing at the top of the stair would also act as another indicator of a change in level. are important for the safety of all users, including people with visual disabilities.

#### Railing features are described as follows (TS 9111):

- Railings should be on both sides of the ramp if the height is greater than 150 mm or the length is greater than 1830 mm.
- Railings should extend at least 300 cm at the top and bottom of the ramp.
- Distance between the wall and the railing should be 38 – 65 mm.
- If a railing must be located within an alcove, the alcove should be 75 mm in depth and be at least 455 mm above the top of the railing surface.
- The grabbing surface of the railing should be continuous to prevent injury to all people including people with visual disabilities.
- Radius or width of hand railing should be between 32 mm and 38 mm.
- The height of the railing should be between 760 mm and 865 mm when measured from the finished surface of the ramp to the top surface of the handrail.
- The colour of the railing should be in contrast with the wall to allow for differentiation by people with impaired visual acuity.
- Railings that are to be mounted on a wall should be securely anchored for the safety of individuals who may need to rely heavily upon it.
- On the sides of the ramp and landings without any protection a 5 cm high protection border should be added.

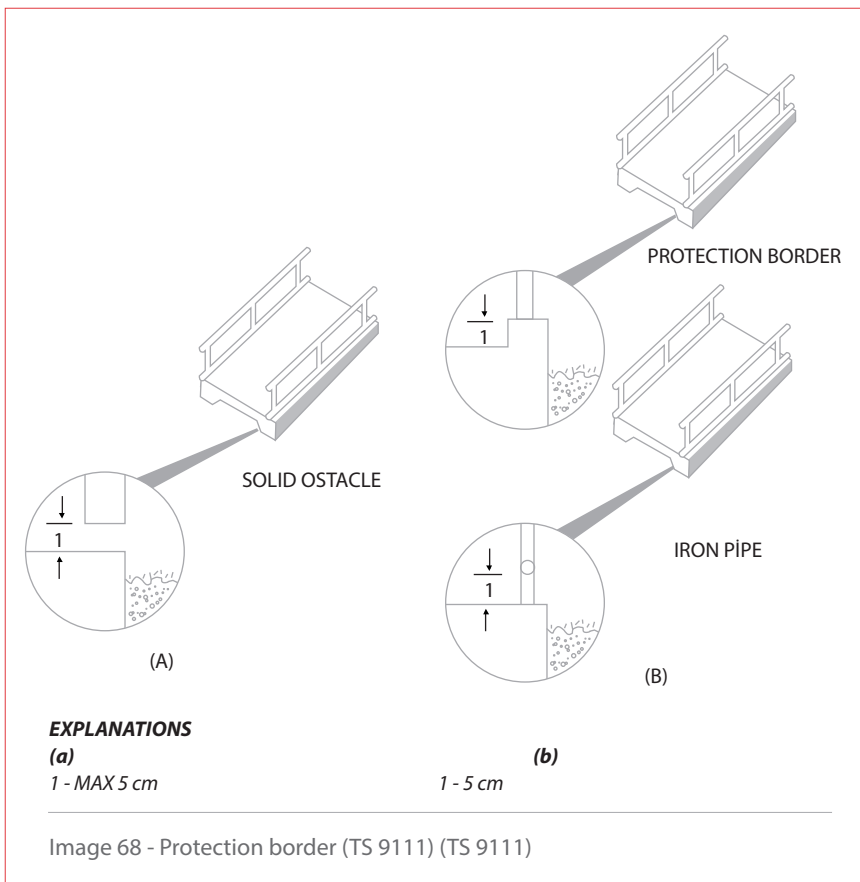
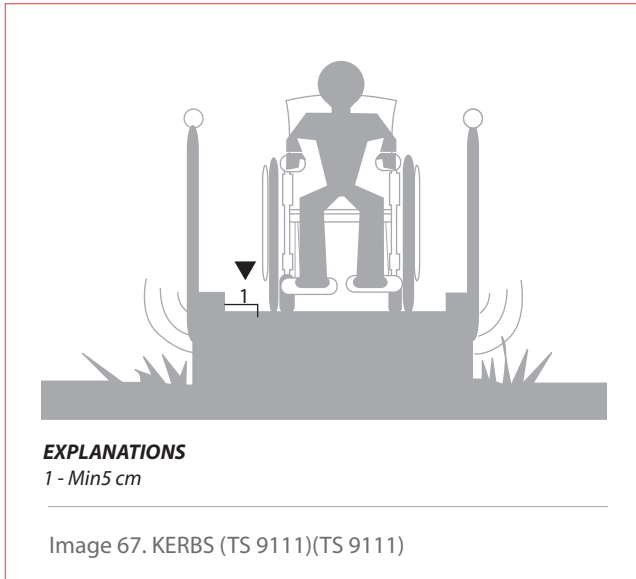






### 13.7.10. Kerbs

Kerbs min 5 cm should be placed where ramps and platforms do not have a protection.





### 13.7.11. Doormat

Doormat should be fairly rigid to withstand heavy traffic and absorb dirt and moisture. The doormat can be inserted into the floor so that it is level with the floor surface or have a rubber backed surface to minimise slipping and bunching. (TS 9111).

### 13.7.12. Mailbox

Mailbox (not the postal box) should be accessible from both the interior and exterior of the building. If the mailbox is located on the door then the receptacle should have a maximum height of 750 mm when measured from the underside of the door to the opening of the box where the mail is deposited. (TS 9111)

### 13.7.13. Entrance door

Entrances in buildings should meet certain requirements when designing for accessibility, safety and function because entrances that are accessible will benefit everyone, including persons with disabilities.

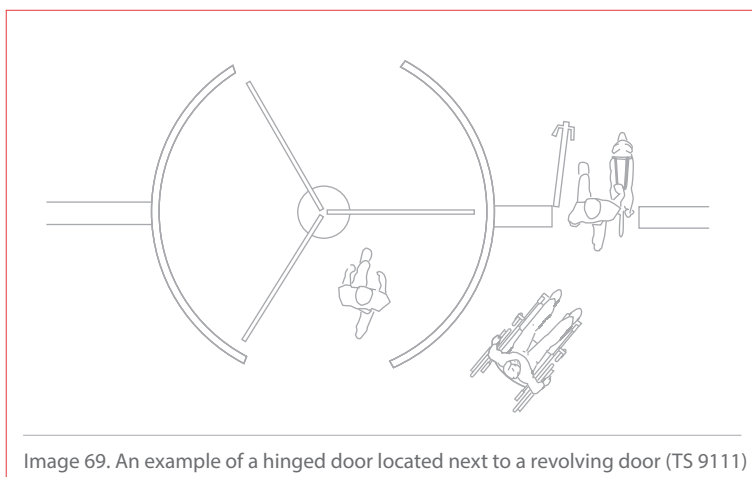
The primary or main entrance should be designed with an open door width of no less than 150 cm clear to allow for ease of access to the building. If there is a pair of doors (side-by-side), each of the doors should have a minimum width of 100 cm (in the event only 1 door is operated by a power-assist). There should be no threshold at the entrance; however, if it is necessary to have a threshold then the height of the threshold should be no higher than 13 mm to allow a person using a wheelchair or other mobility device to overcome the difference. The threshold should be beveled or a flexible threshold is an acceptable preference.

Ensure that there are no obstacles at the entrance or entranceway to interfere with the ease of movement for persons with disabilities.

Buildings may require intercom systems for security reasons should locate the intercom or call buttons for ease of access at a height between 90 and 140 cm – whether it is in the interior, exterior or both – when measured from the midline of the call button to the finished floor. If the call systems are on the exterior of the building then it should be protected from inclement weather conditions, including the element of wind.

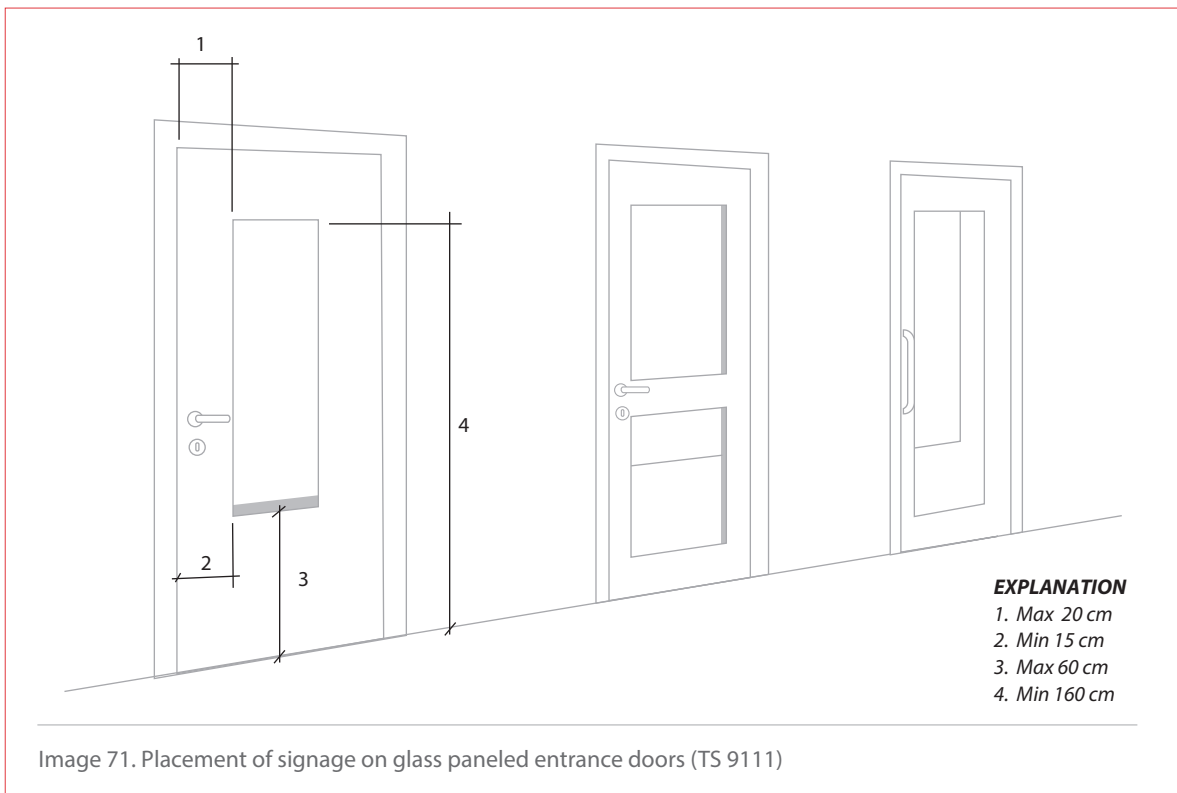
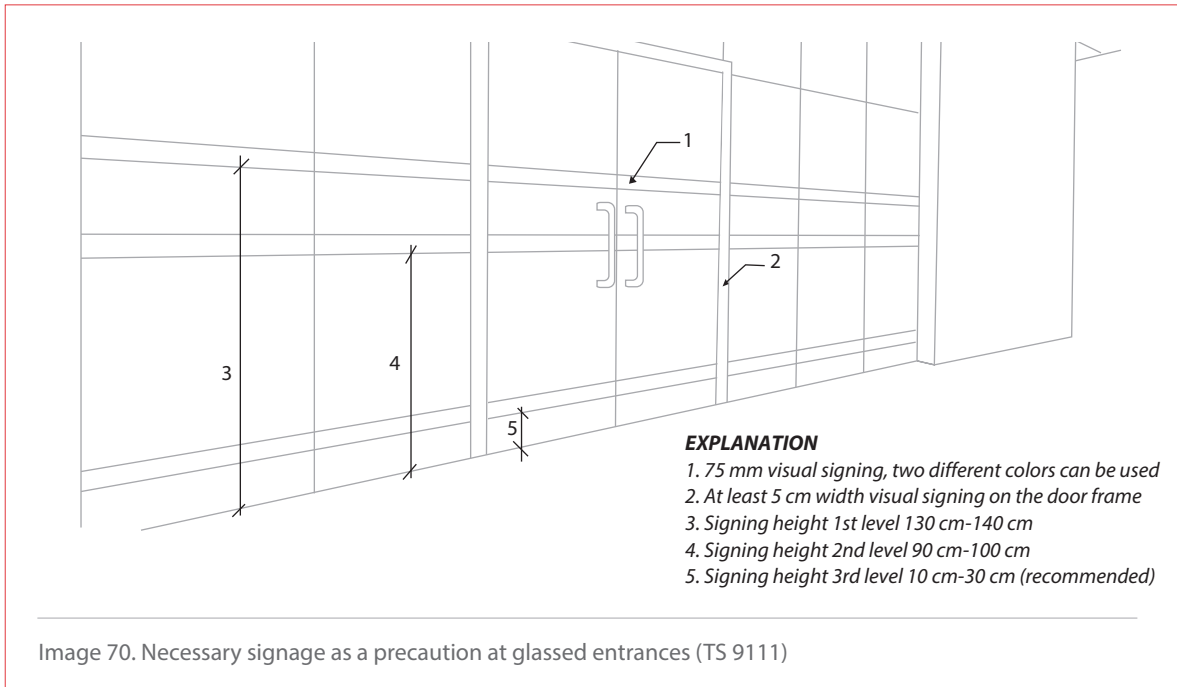
Exterior doors not aided by a power-assist to automatically open doors then the doors should not require more than 37.8 N (3.6 kg) of force to open a door. Power-assist doors should have a delay of 20 seconds before closing to allow people with disabilities and the elderly the time it may require to pass through the entrance.

Revolving doors should be avoided unless they are larger enough to accommodate a wheelchair and if there is a way to slow the speed at which it revolves. If there is a revolving door is not barrier-free then a hinged must be available to gain access to the building





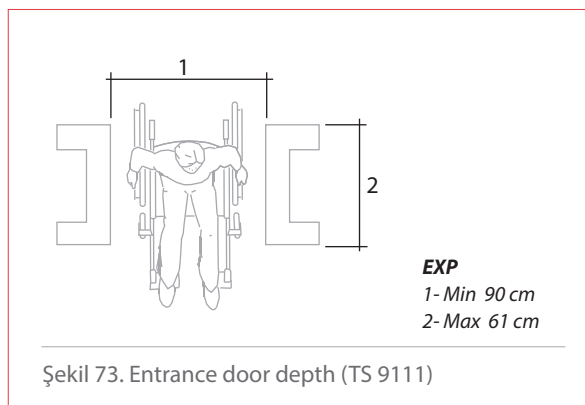
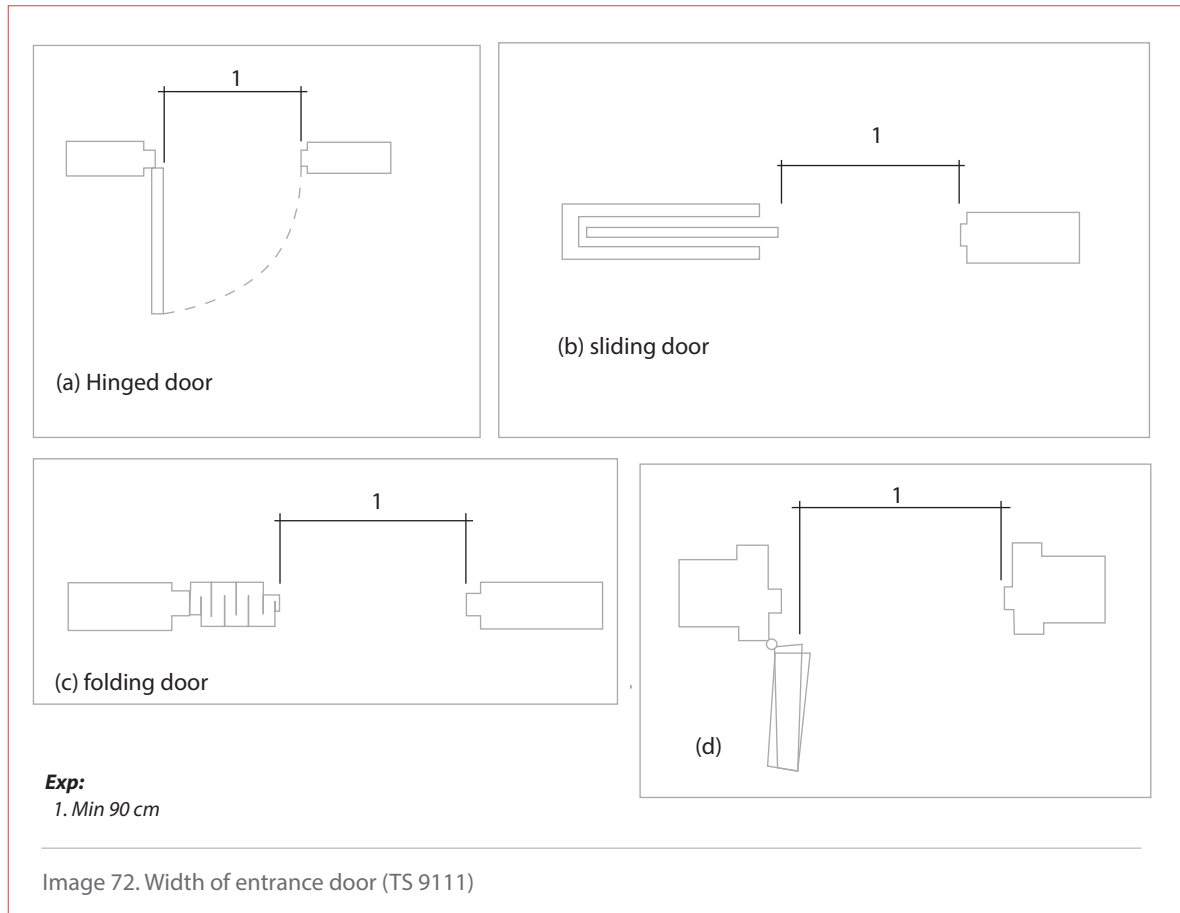
Precautions need to be taken if the entrance is located in a wall of glass or has a reflective surface in order to prevent individuals with lower vision or someone who may become disoriented from walking the wall for safety reasons the walls and doors should be partially frosted, have decals added or a barrier such as planters to prevent injury or embarrassment. Proper signage announcing the barrier-free path of travel to the entrance and the entrance itself is required for direction and safety for all people.

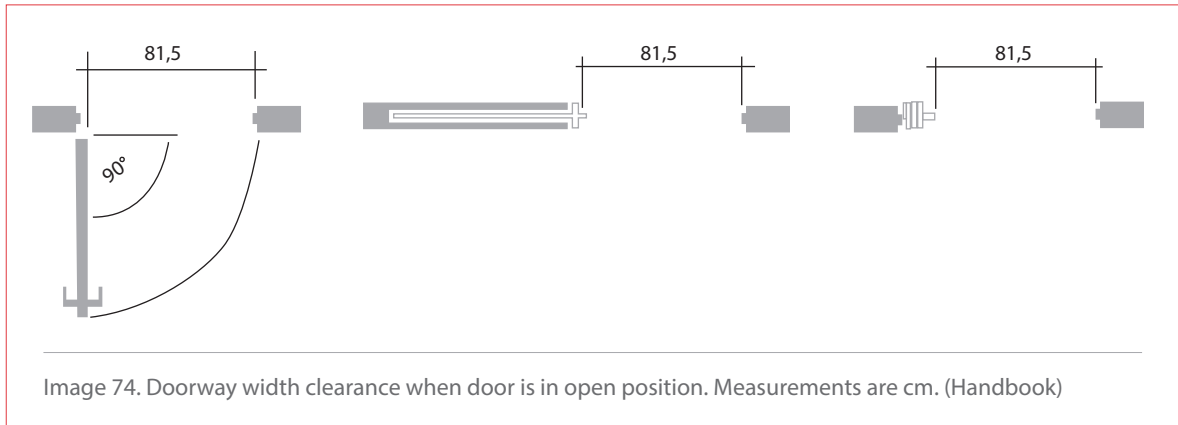




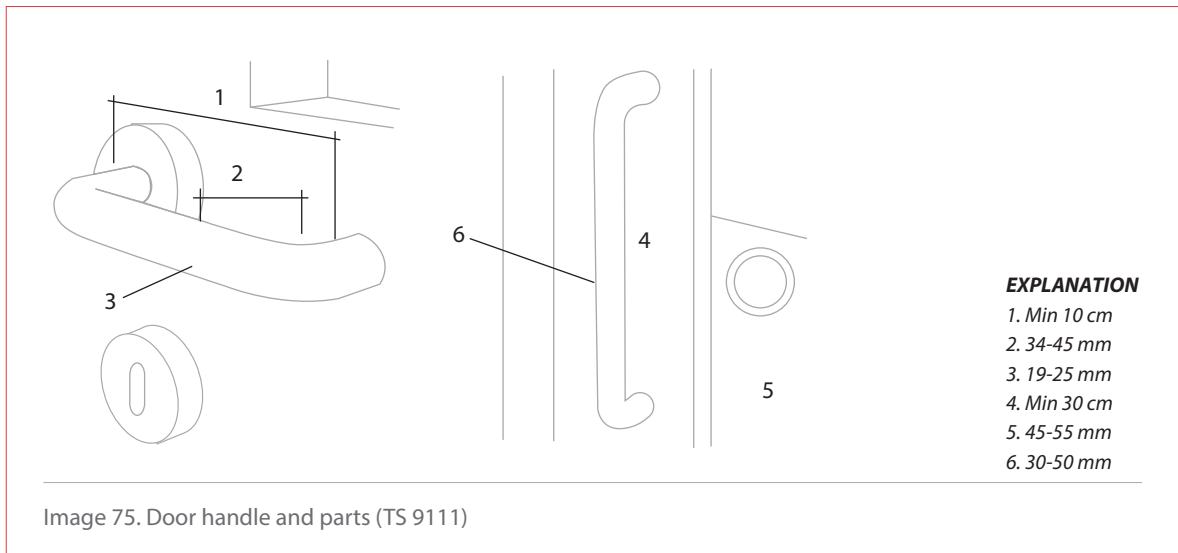
### 13.7.14. Interior Door and Features

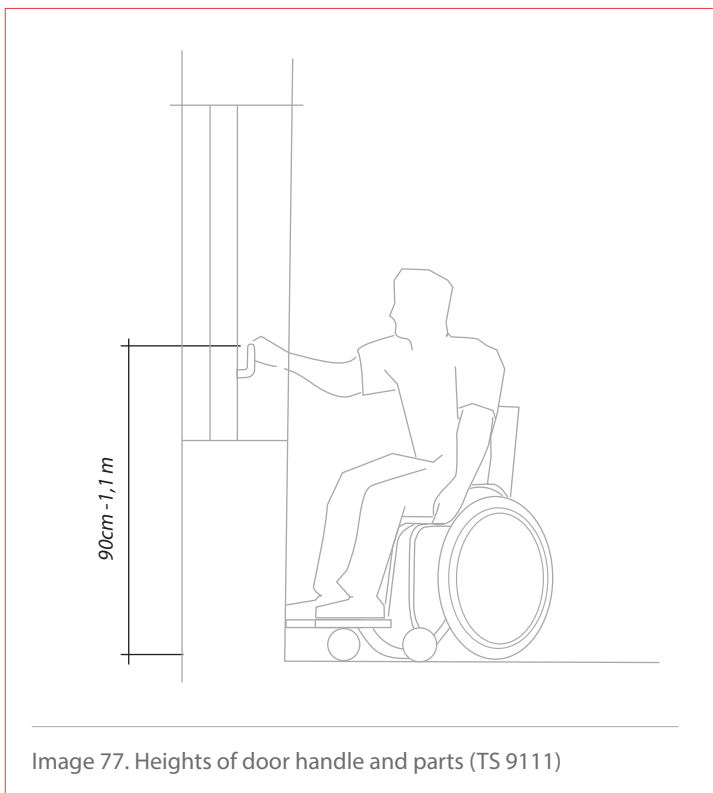
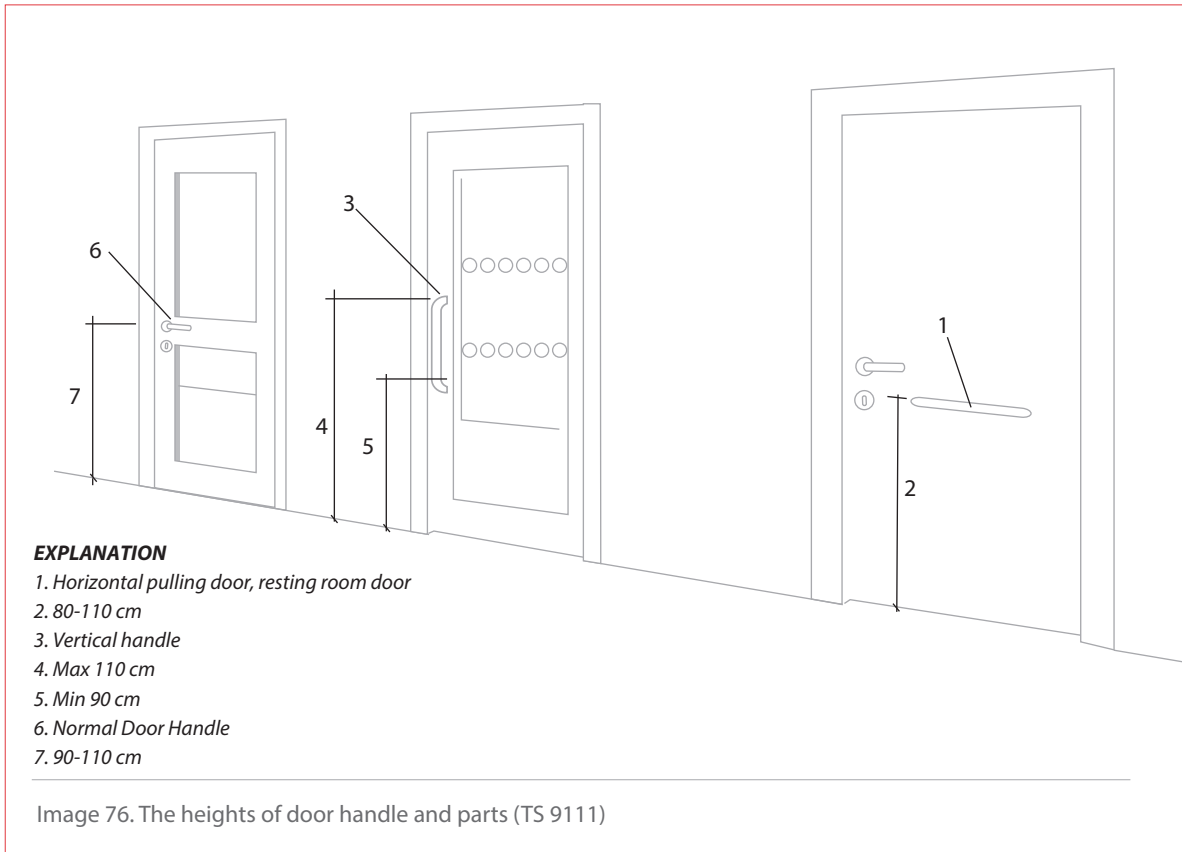
The door and door frame should be contrasting in colour to assist people with lower vision to identify the correct path of travel. Glass doors should be modified with decals, a coloured band situated at 1 m and repeated at 1.5 to identify the entrance. Each room or space should be identified with raised lettering/numbering or at least have the numbers painted on the door to identify the rooms for individuals with visual disabilities. Doorways should have a clear width of 815 mm or greater with the door in open position. (TS 9111)

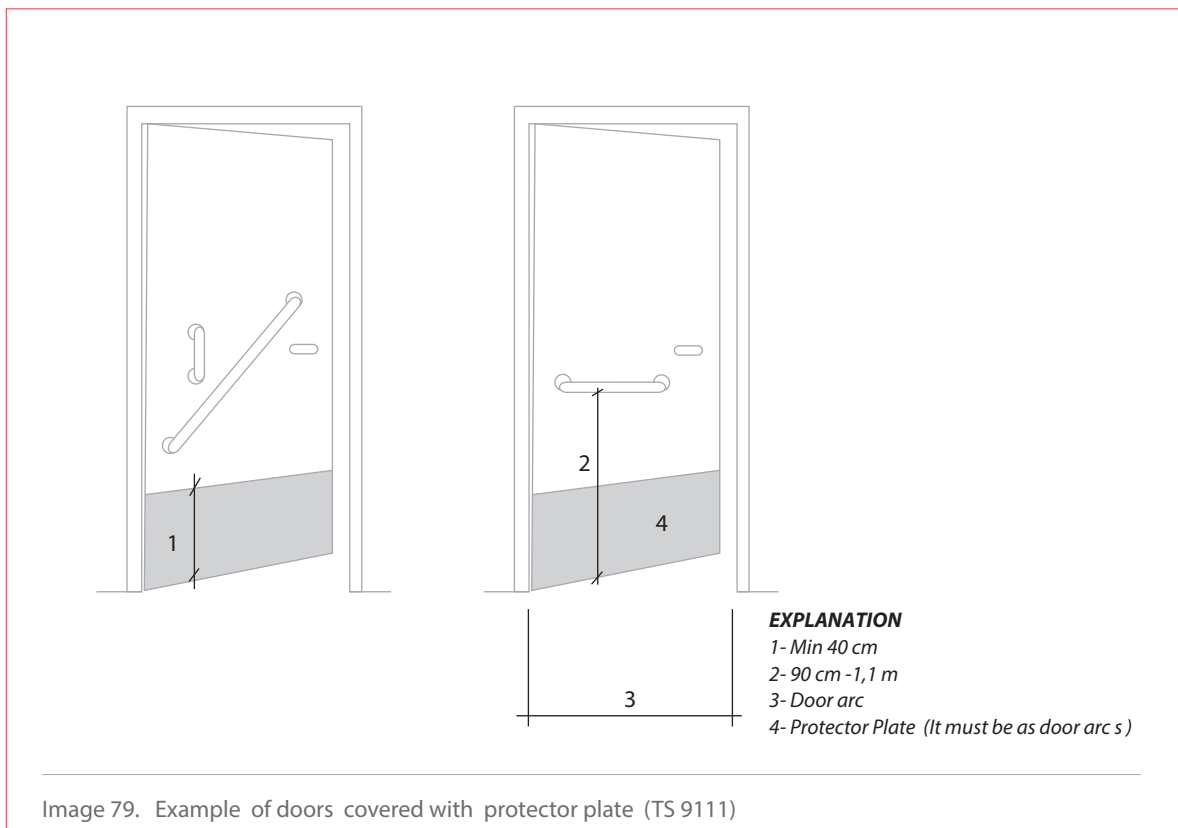
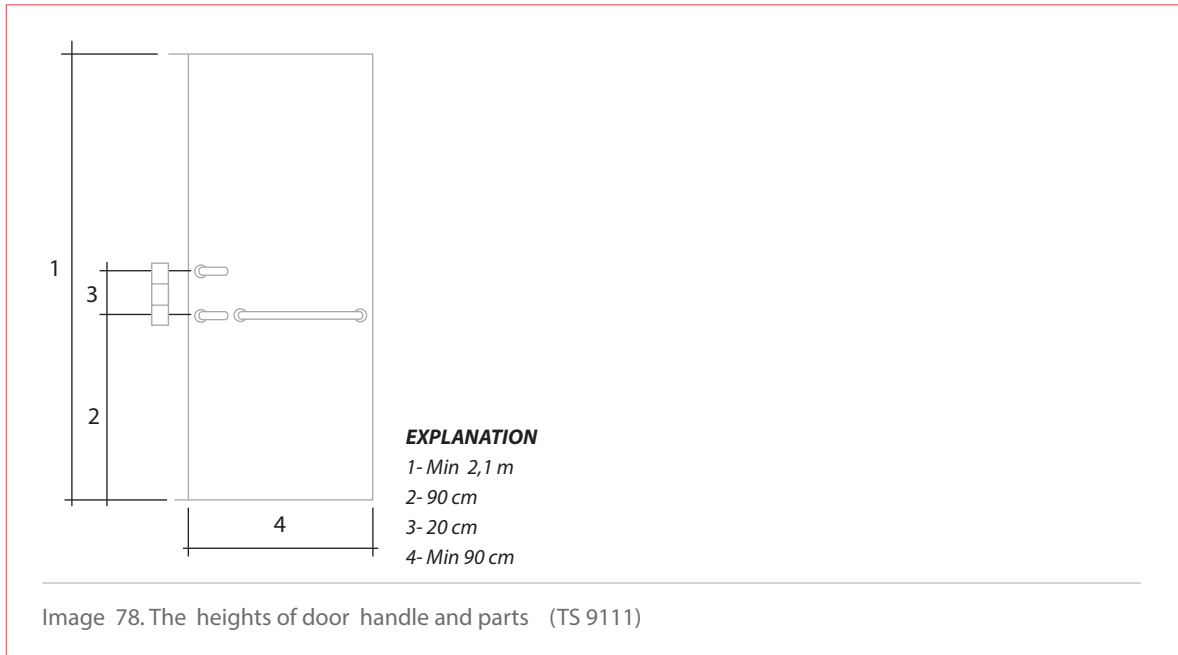




Door handles, locks and other door parts should be easy to use: without requiring grasping, excessive grip or twisting of the wrist or hand. Recommended door handle designs are D-shaped handles and lever-action and locking mechanisms such as bolts should have larger or exaggerated handles for grasping. The height of the door handle should be between 90 cm and 110 cm when measured from the mid-line of the handle to the finished floor.











**13.7.15. Entrance Configurations (Types of the doors )**

The design of entrances is crucial when the area is to be used with ease for persons who use wheelchairs and other mobility devices, especially, when the doors are to be operated manually.

Each entrance should provide sufficient area to manoeuvre a wheelchair. When the door opens toward the individual, an area with a minimum of 60 cm adjacent to the door shall be required to allow a person to approach with ease. If the door opens away from the individual, a minimum of 30 cm adjacent to the door is required. If the entrance requires a 180° turning area, the space should consider making the manoeuvrable space 150 cm X 200 cm.

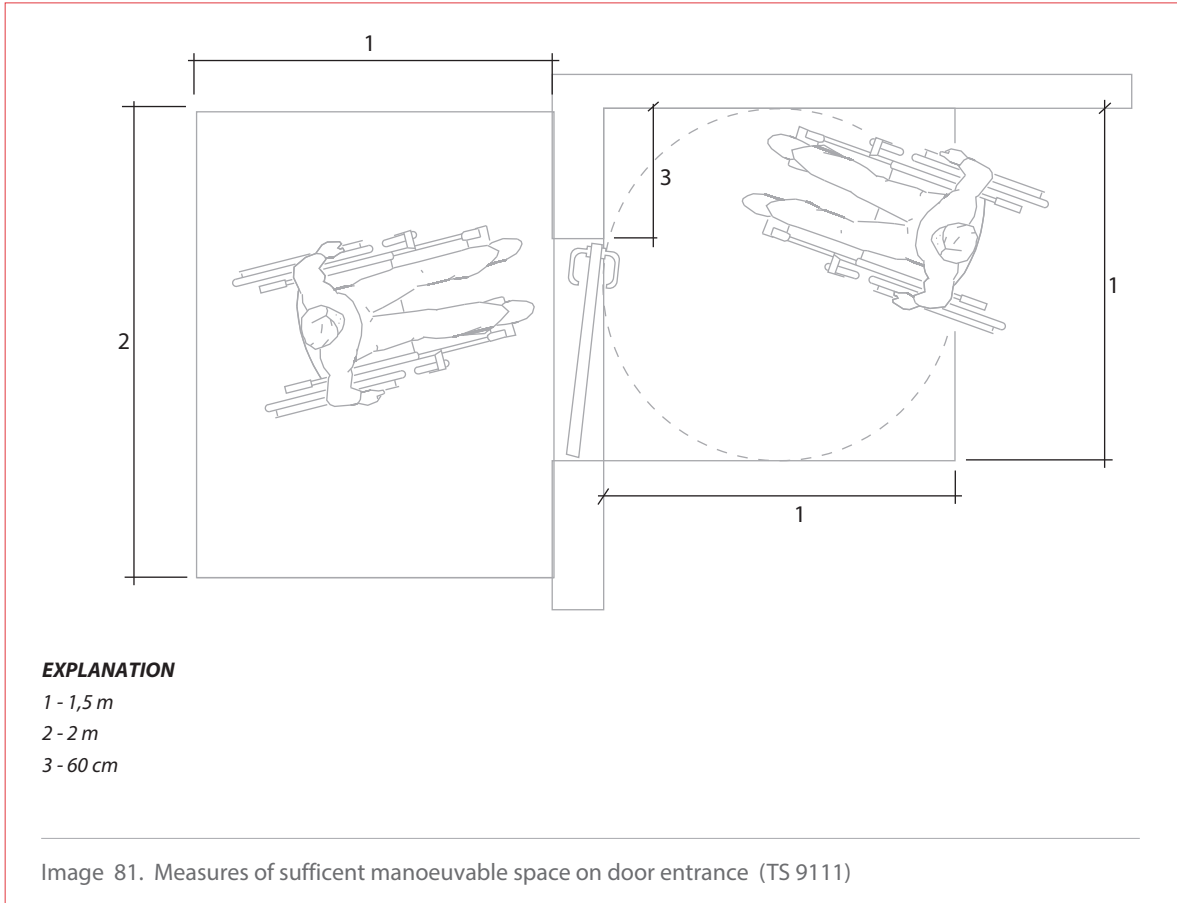
Each entrance configuration differs slightly. See the diagrams and their explanations below.

**a. Single door**

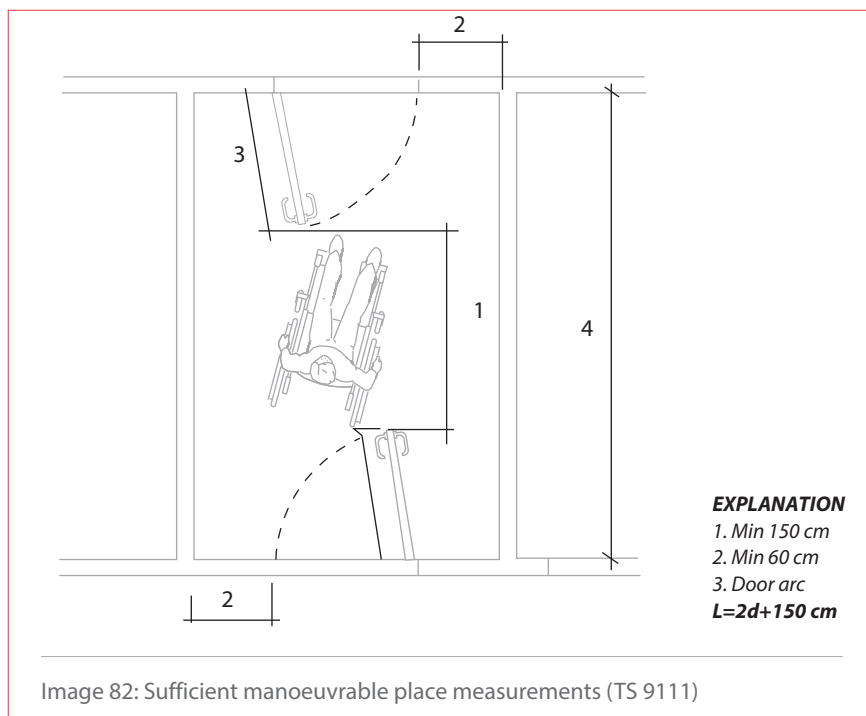
**X + Y = 2 m**

<b>1</b>	<b>2</b>
60 cm	60 cm
40cm	80cm
20cm	100cm
<20cm	120cm

Image 80. Measures of sufficient manoeuvrable space on door entrance (TS 9111)

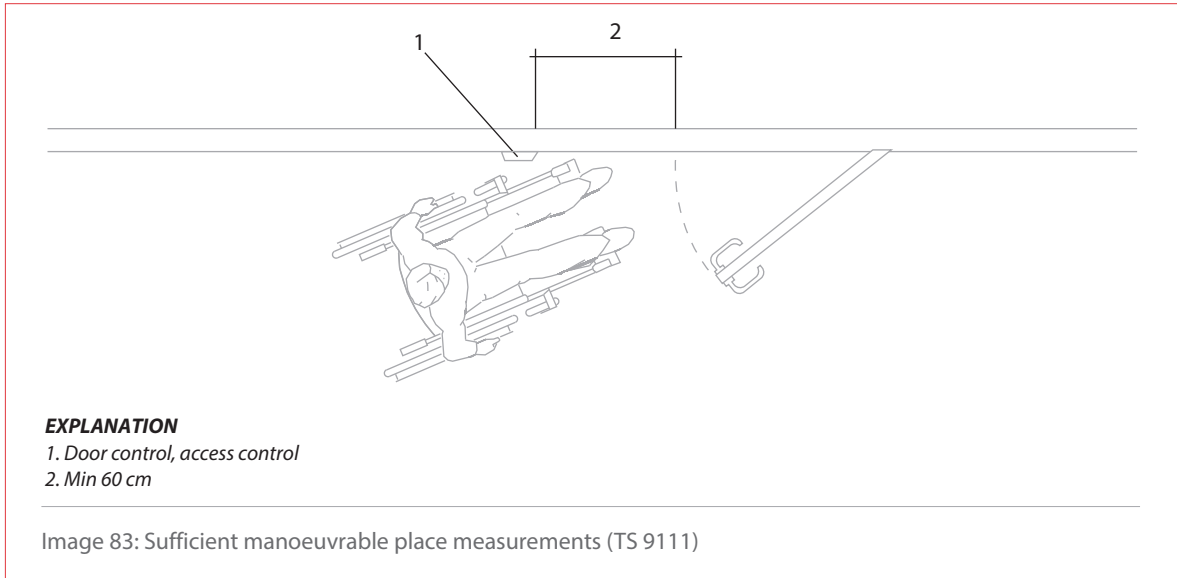


**b. Vestibule**



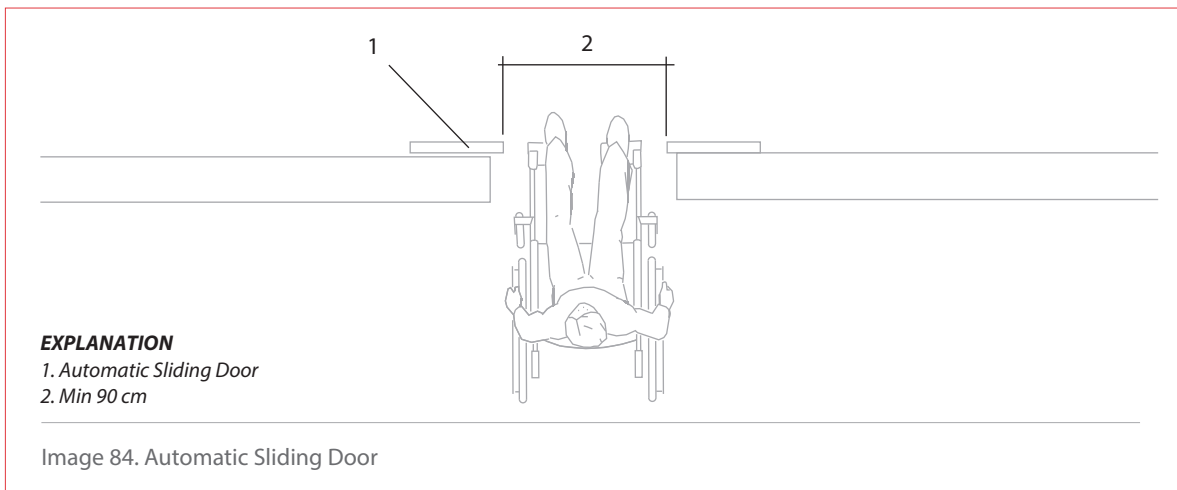


### c. Single door with secure access

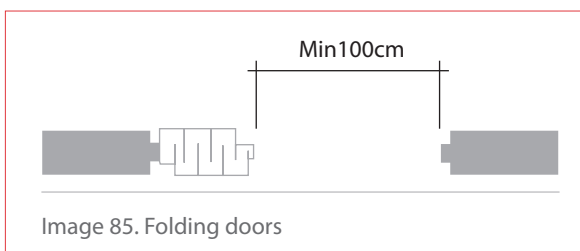


### A- Sliding Doors

Sliding doors are preferred in narrow places that are difficult to manoeuvre in like bathroom or toilet stalls.



### B- Folding Doors



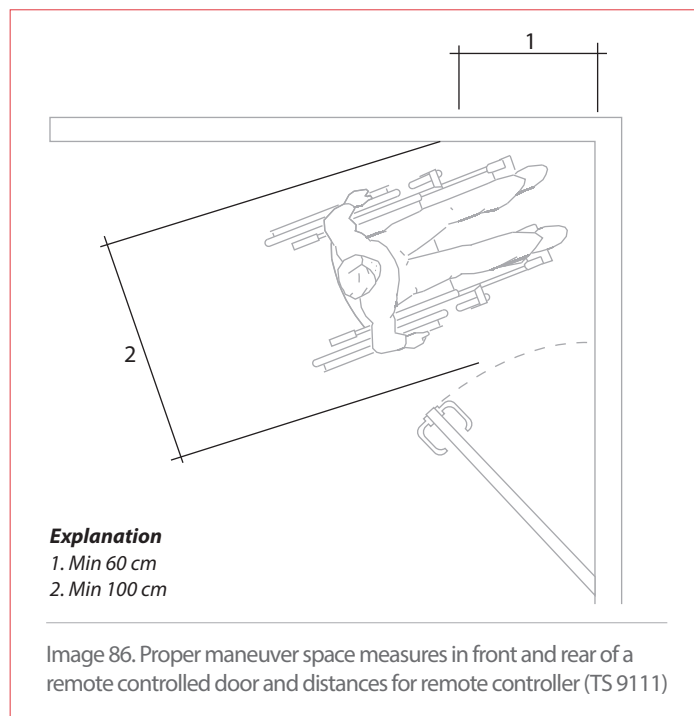


### Power-assist Doors

Automatic doors can be activated through sensors on the ground, motion-sensor signals triggered by proximity or with buttons that are depressed manually.

The ground sensors should be sensitive enough to be activated by the weight of a Guide dog.

Button-activated doors require the button or plate to be accessible and located back from the swing of the door. The graphic below shows the button is adjacent to the door and set back 60 cm. Ideally, the button or plate should be set 100 cm back from the swing of the door.

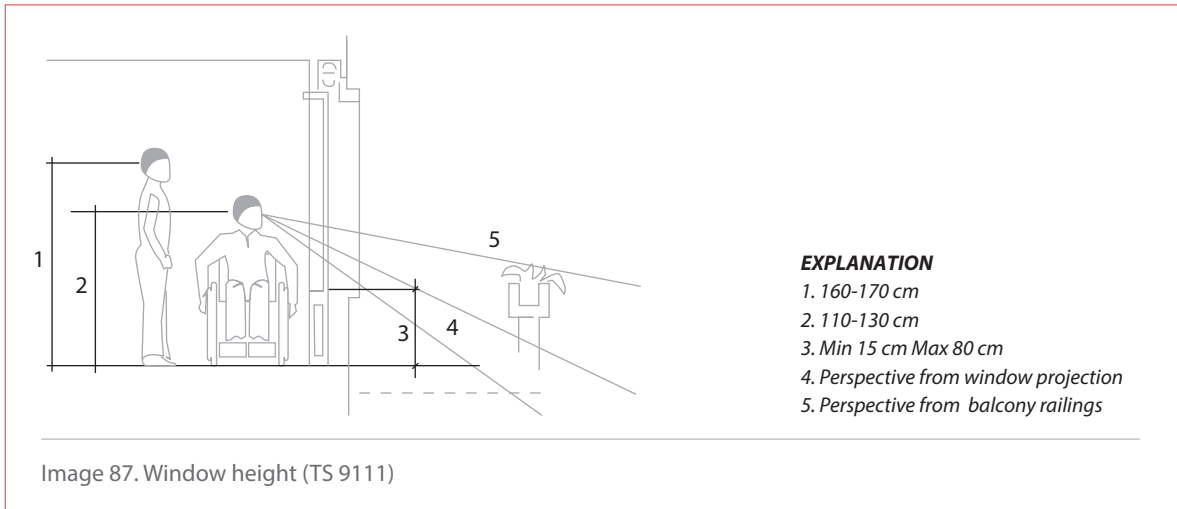


### 13.7.16.Windows

Windows are necessary to allow natural light into the space and it can also act as an effective means of safety for people, including persons with disabilities, by allowing the person to check the exterior for activity or the weather conditions before exiting the occupied space. People with impaired vision can be affected negatively by extreme light coming through the windows but this can be minimised with the correct use of window coverings or other solutions. These solutions could prevent individuals with minimal sight from injury and/or embarrassment.

A design that may accommodate all people with disabilities, including individuals with minimal sight, is to insert the window into a wall. The window should be installed no lower than 15cm and no higher than 80 cm in height when measured from the bottom of the window to the finished floor. If the windows have the ability to open, the locking device should be located at the bottom of the window or else it may be located between 90 cm – 120 cm. The window should require 22 N or less of force to open and close.

Windows below eye level are preferred by seated persons but transom windows are an acceptable alternative.



### 13.7.17. Surface Texture

Surface of An accessible route should be designed to allow for ease of travel and be safe to use for all people but, in particular, people who use wheelchairs and other mobility devices. The design would consider the surface texture as a necessary element of a barrier-free route of travel whether indoors or outdoors. The surface of floor should be hard, stable and slip-resistant.

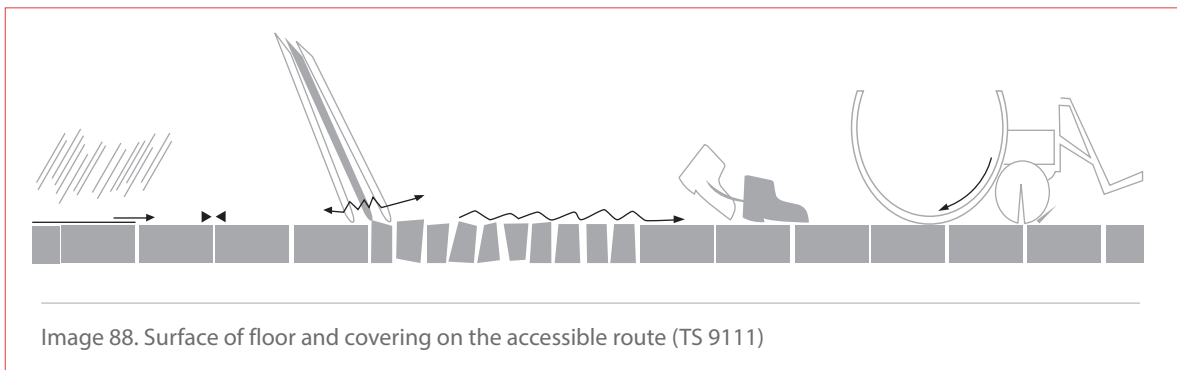
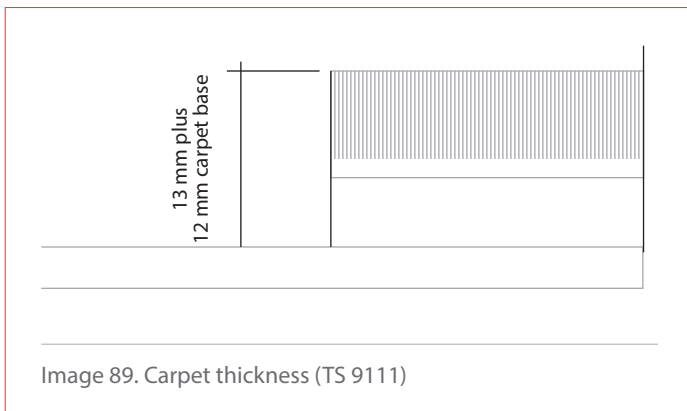


Image 88. Surface of floor and covering on the accessible route (TS 9111)

If a carpet must be used, it should have a nap as low as possible and then be securely fastened to the floor to prevent tripping, slipping and creating a difficult situation for the user of a wheelchair when the carpet bunches around the wheels. The pile of the carpet should not be deeper than 13 mm





Persons with visual disabilities use sound to navigate through the environment. Navigation through sound is particularly useful in buildings so it becomes important to use sound reflective surfaces on the floor area (as well as walls and ceilings). Buildings with poor acoustics can cause problems with concentration and navigation. If floor coverings such as carpet is used to absorb sound and vibration, then it is necessary to ensure reflective surfaces in the walls, ceilings and furniture to assist with the safely negotiate the environment

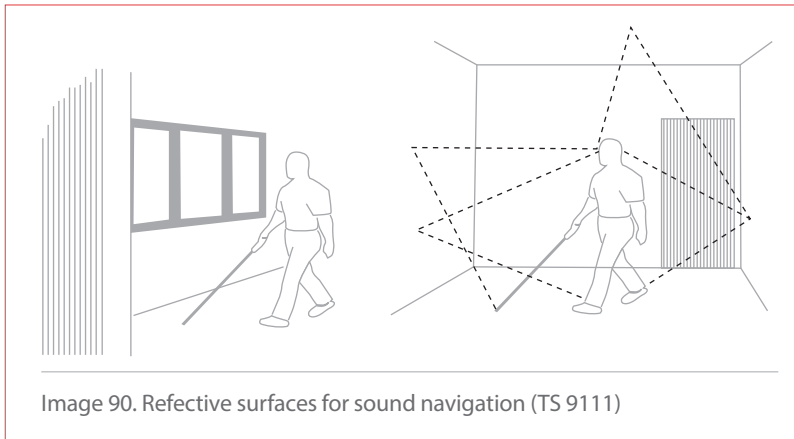


Image 90. Reflective surfaces for sound navigation (TS 9111)

### 13.7.18. Interior Building Horizontal Circulation

The interior of the building should be accessible for all users, including people with disabilities. Differences in levels within a corridors, hallways and occupied areas should not exist. Otherwise, they may be overcome with properly designed ramps. Areas at entrances, in front of telephones, ATMs, drinking fountains and all other public fixtures and kiosks that provide services such as ticket sales, pay wickets and currency exchange booths should be taken in consideration access and manoeuvrability (ADA,1994)

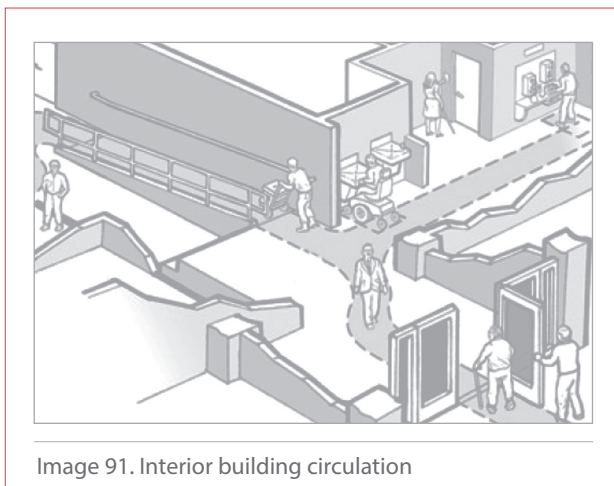
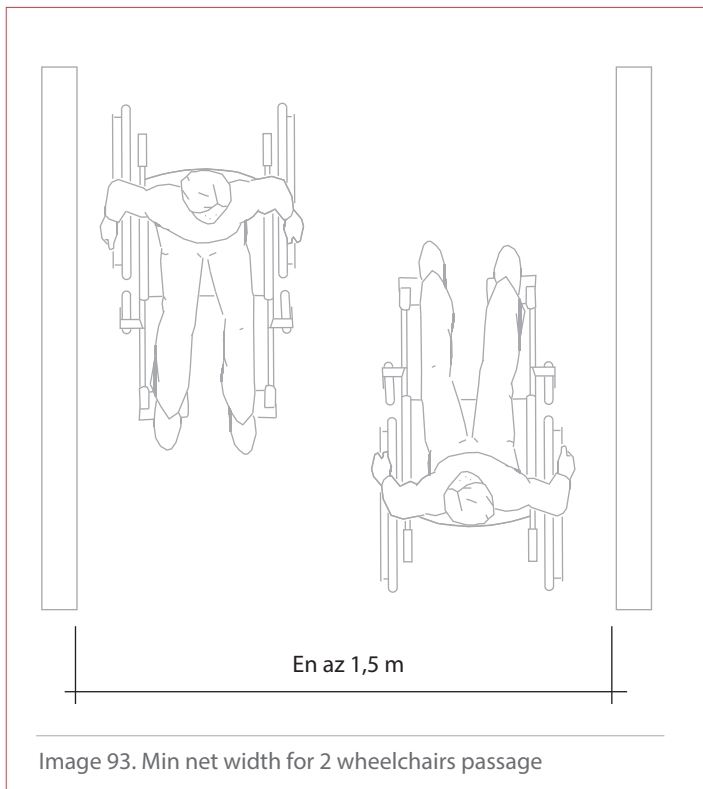
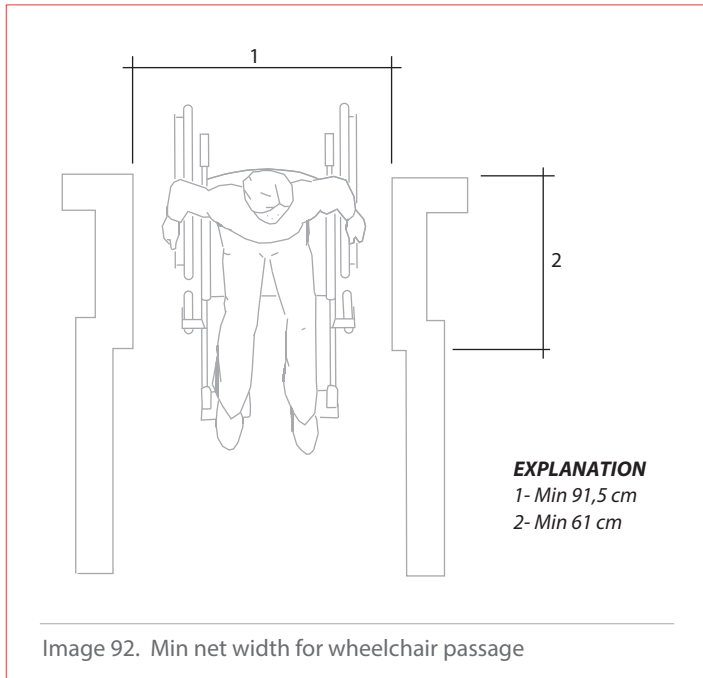
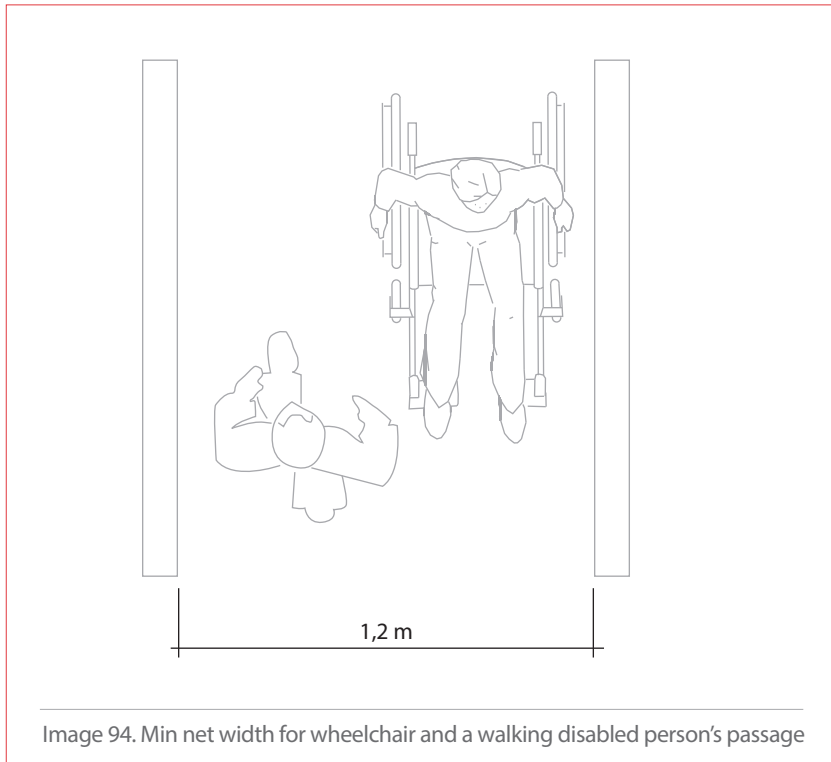


Image 91. Interior building circulation

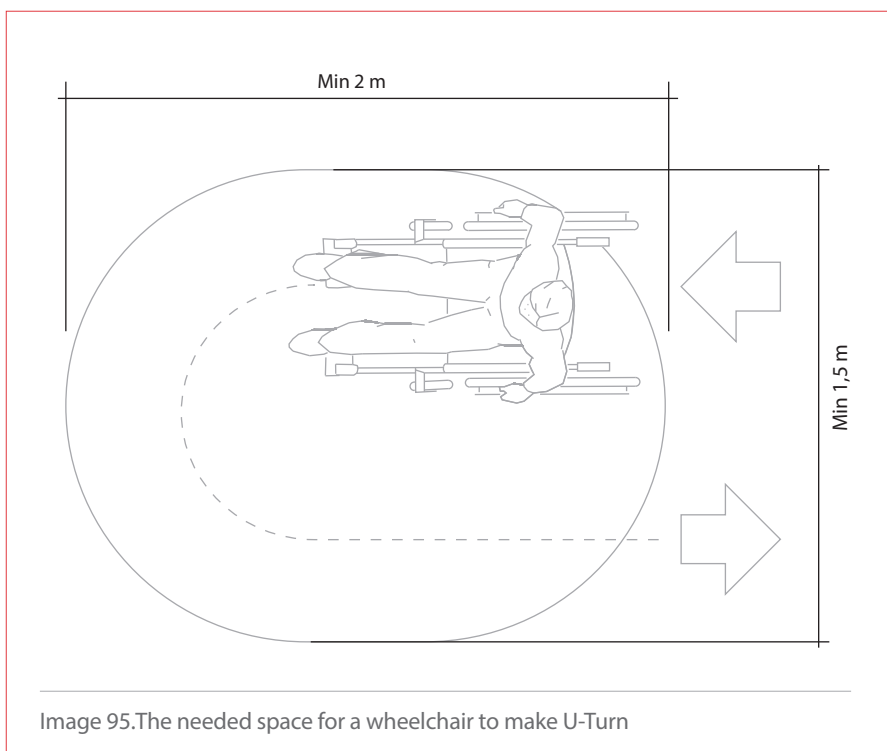
An acceptable width for ramps is a minimum of 90 cm and a minimum turning diameter of 150 cm to allow for manoeuvrability of wheelchair or scooters in a barrier-free path of travel for horizontal and vertical circulation within a building. (ADA, 1994)

A minimum width of 81.5 cm is required for a single wheelchair to travel safely through a corridor or hallway with no obstacles; however, a minimum width of 91.5 cm is preferred. A corridor that is 152.5 – 162.5 in width will allow 2 wheelchairs to pass side by side comfortably. The minimum width of 122 cm would allow an individual to pass side by side with an individual using a wheelchair. (TS 9111)

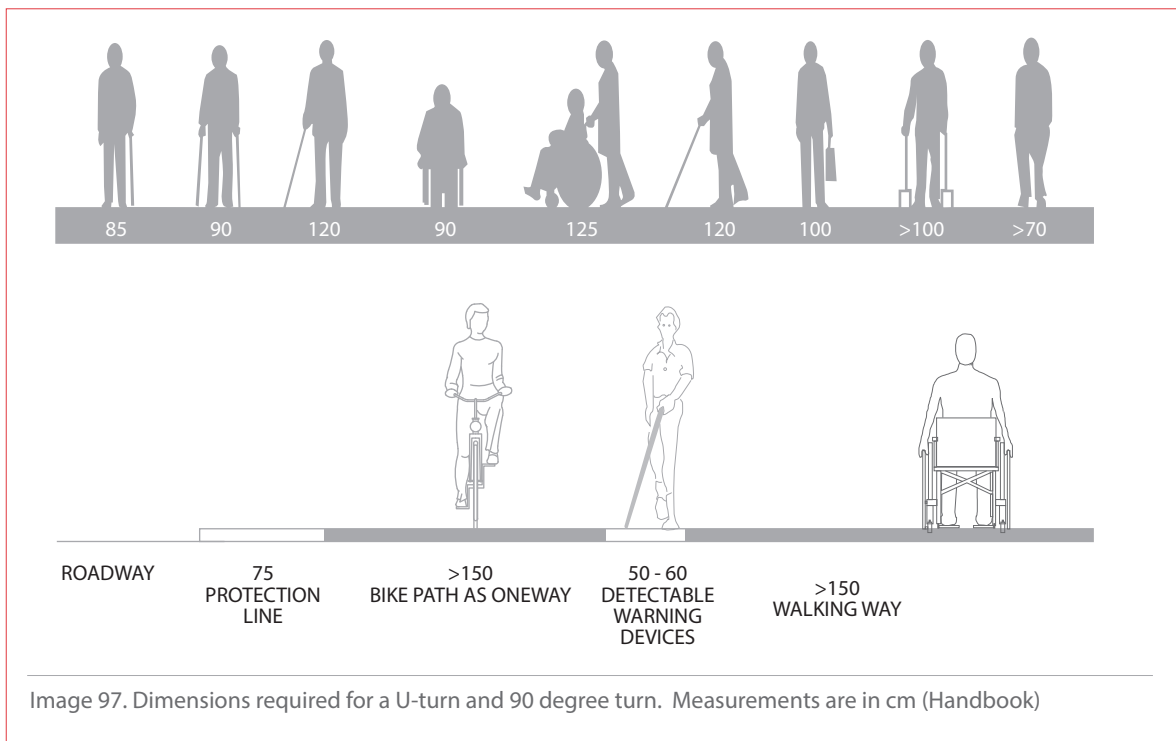
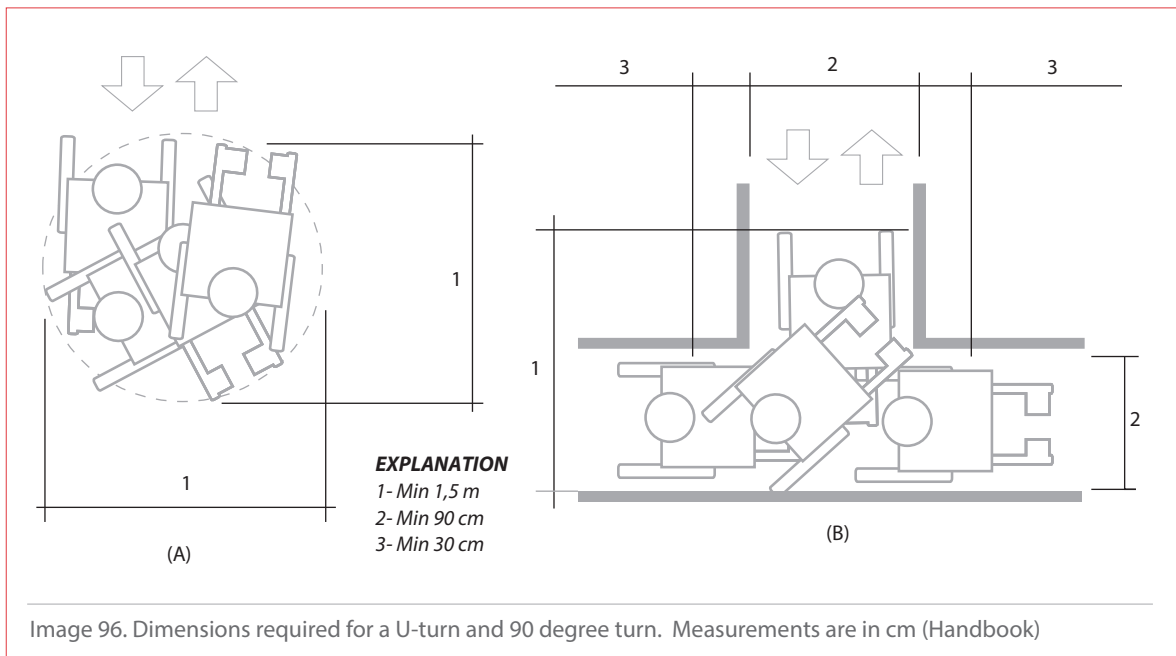




The needed width for a wheelchair 180 degree turn is min 1,5 m



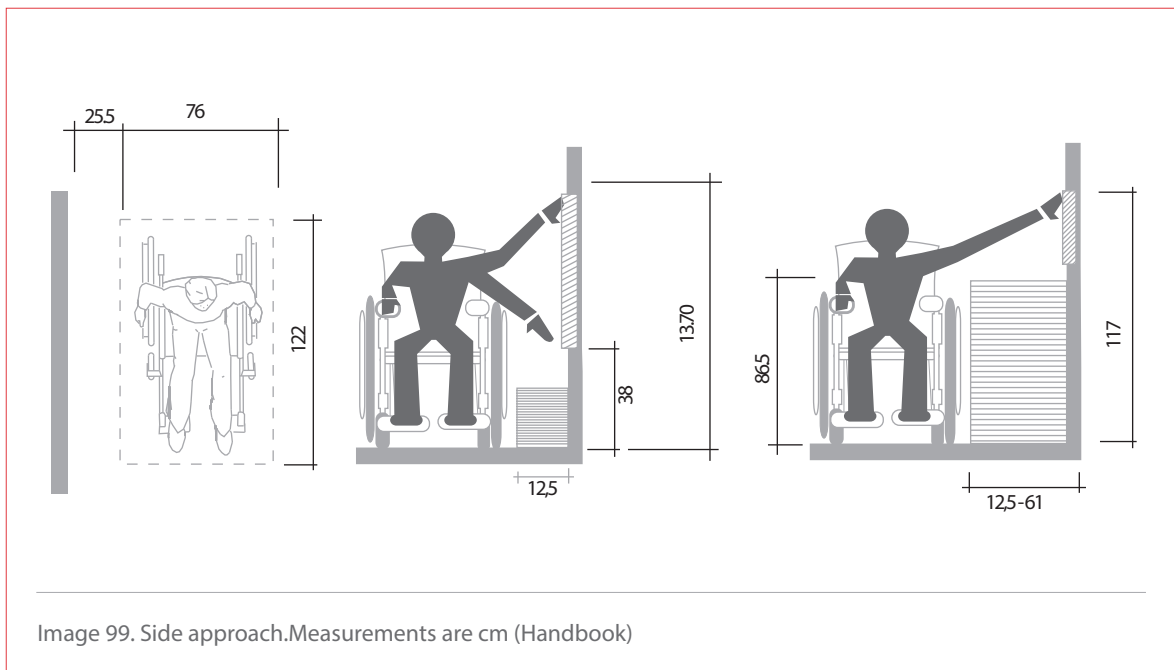
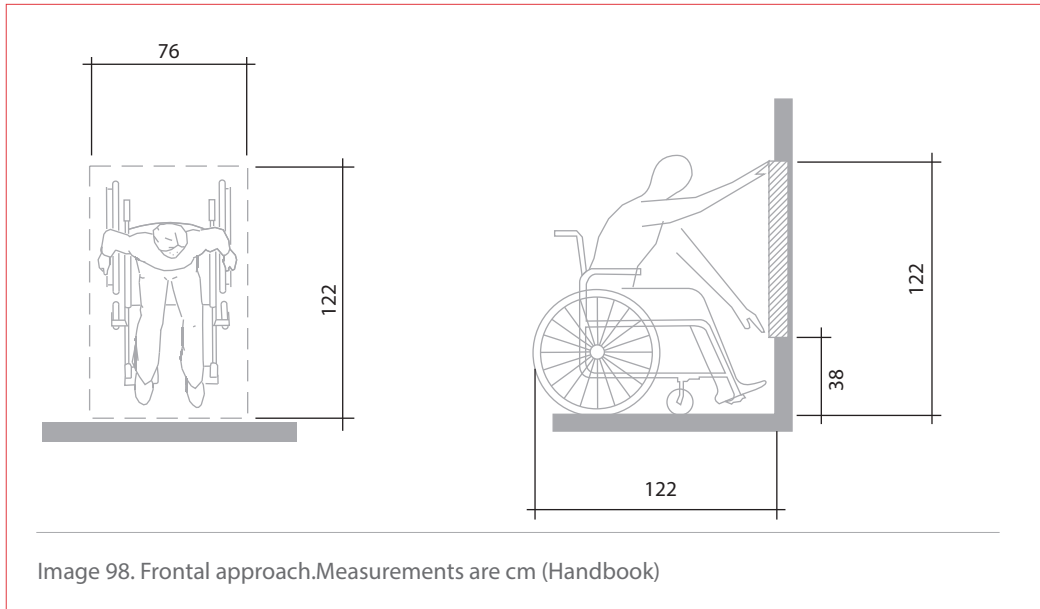




The minimum dimension of 152.5 cm is recommended for a wheelchair to make a 180 degree turn. The minimum widths recommended for a wheelchair to make a U-turn with ease from a 106.5 cm width corridor turning into a 122 cm wide space and onward.

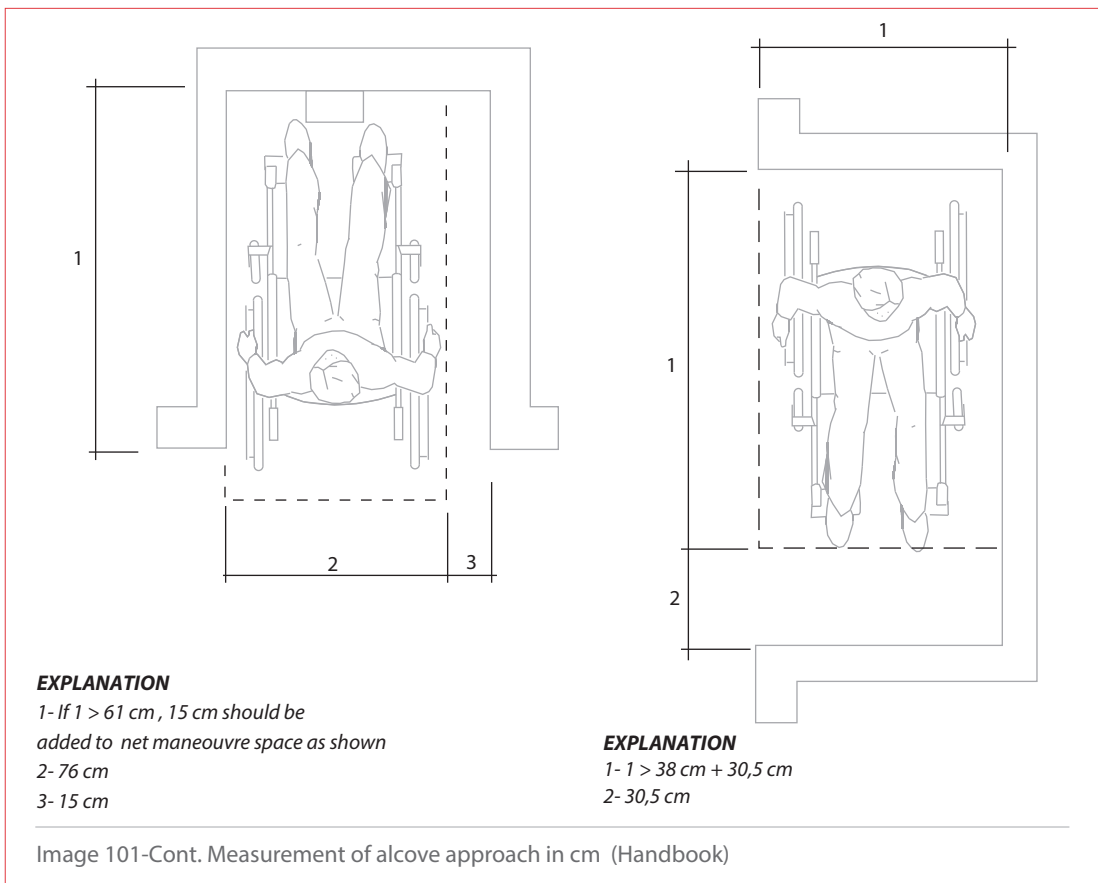
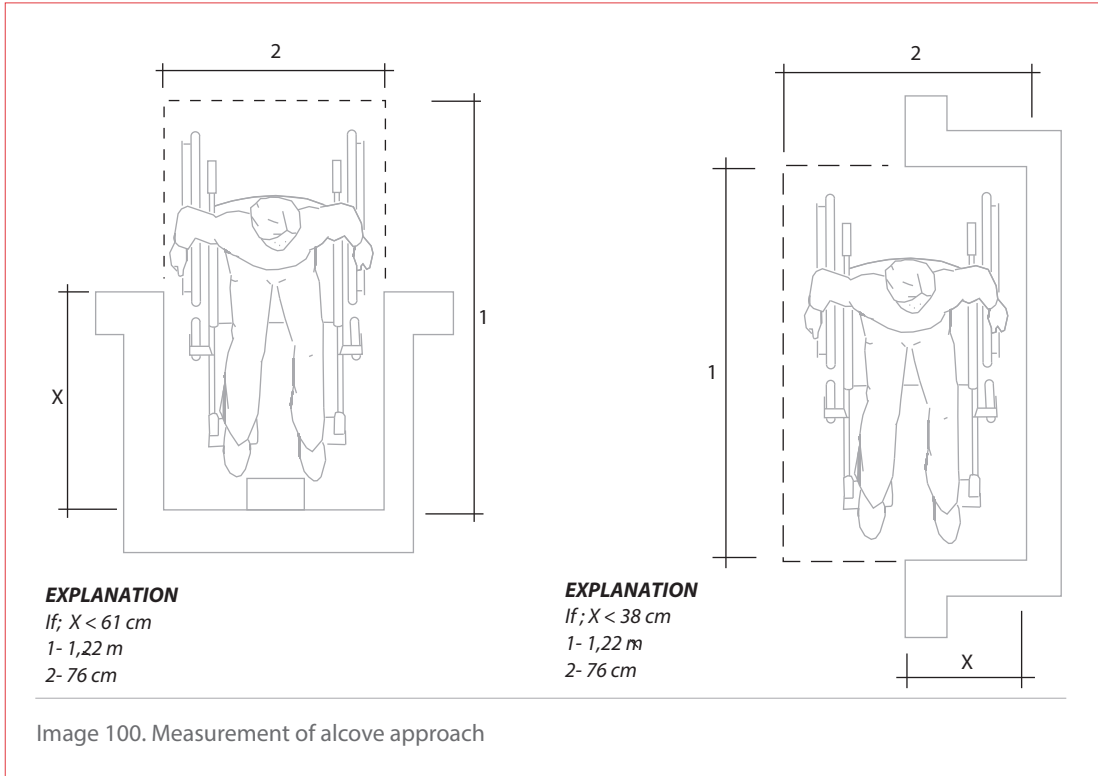


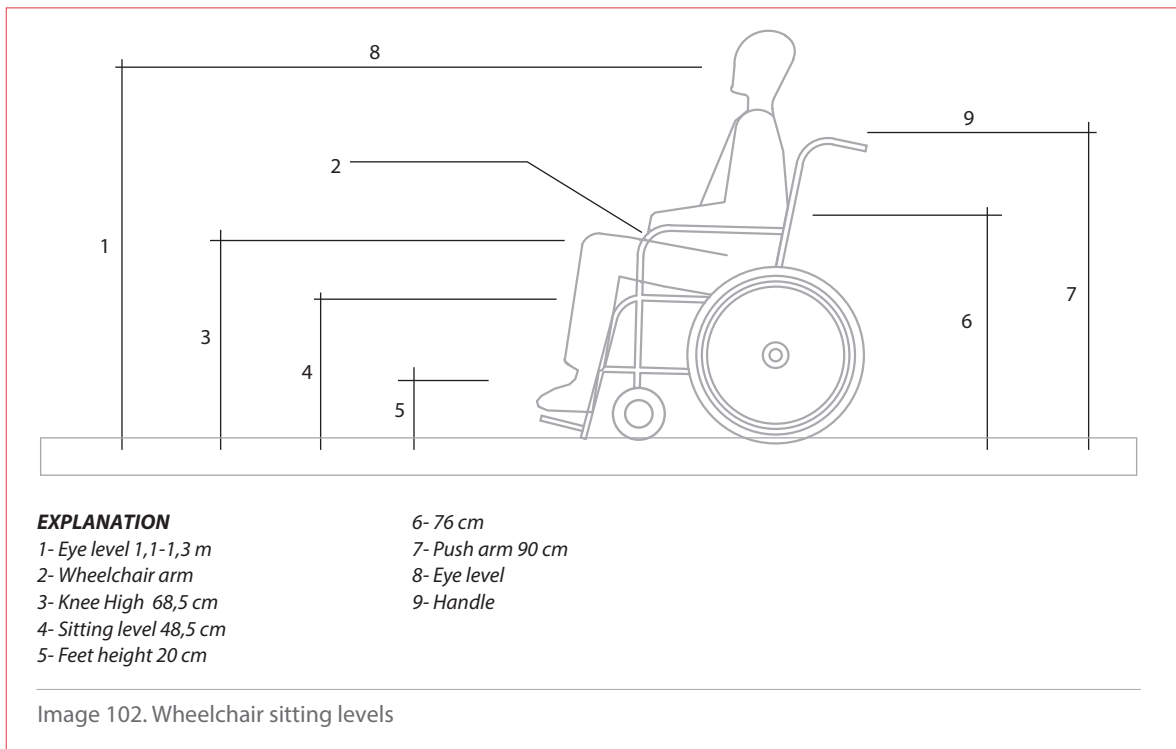
Alcoves are sometimes necessary to house equipment such as drinking fountains, telephones, banking machines in a narrow corridor or small space to ensure the equipment and the people who may use them do not become obstacles in the flow of pedestrian movement. A smaller alcove that only allows for front access by a person in a wheelchair should install the equipment between 38 to 122 cm. (TS 9111)



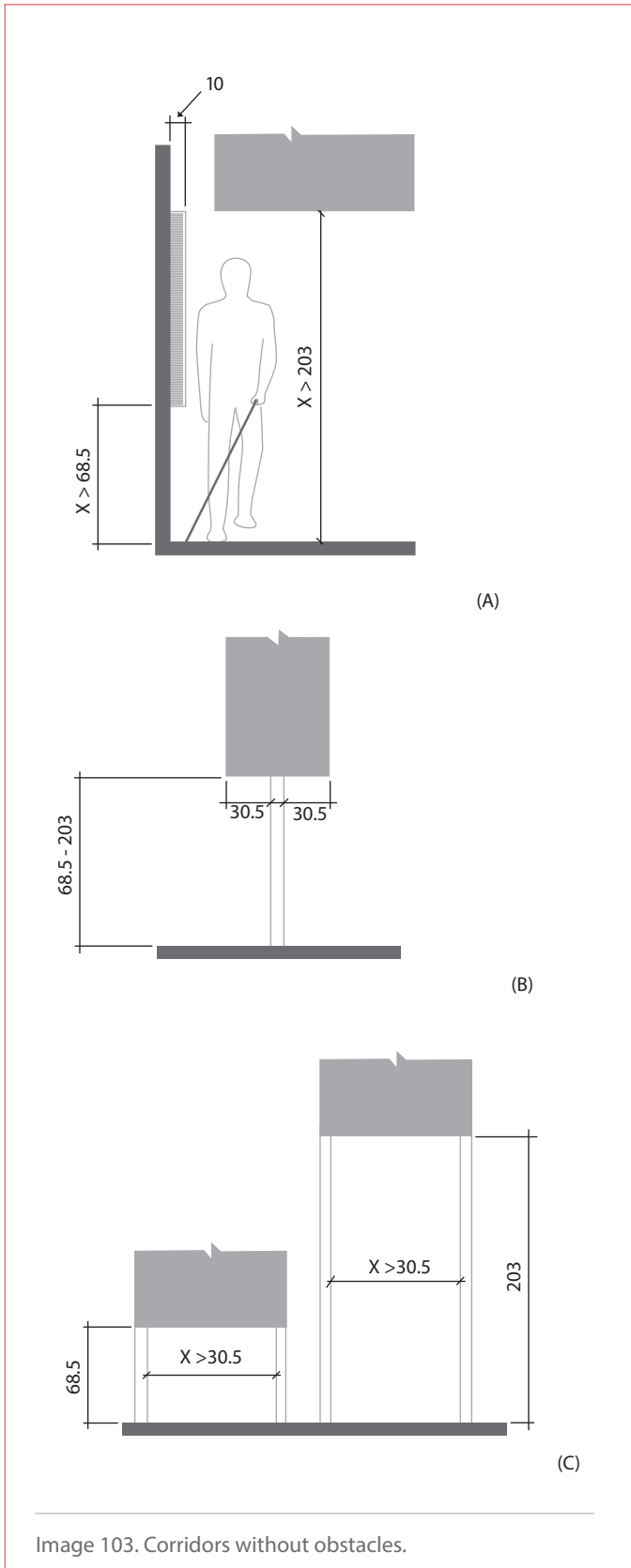
If a parallel approach is available, the equipment should be installed between 23 – 137 cm at the most to ensure sufficient and ease of access when measured from the finish floor. These measurements only apply when the obstruction(s) are no higher than 30 cm or protrude more than 12.5 cm. (TS 9111)

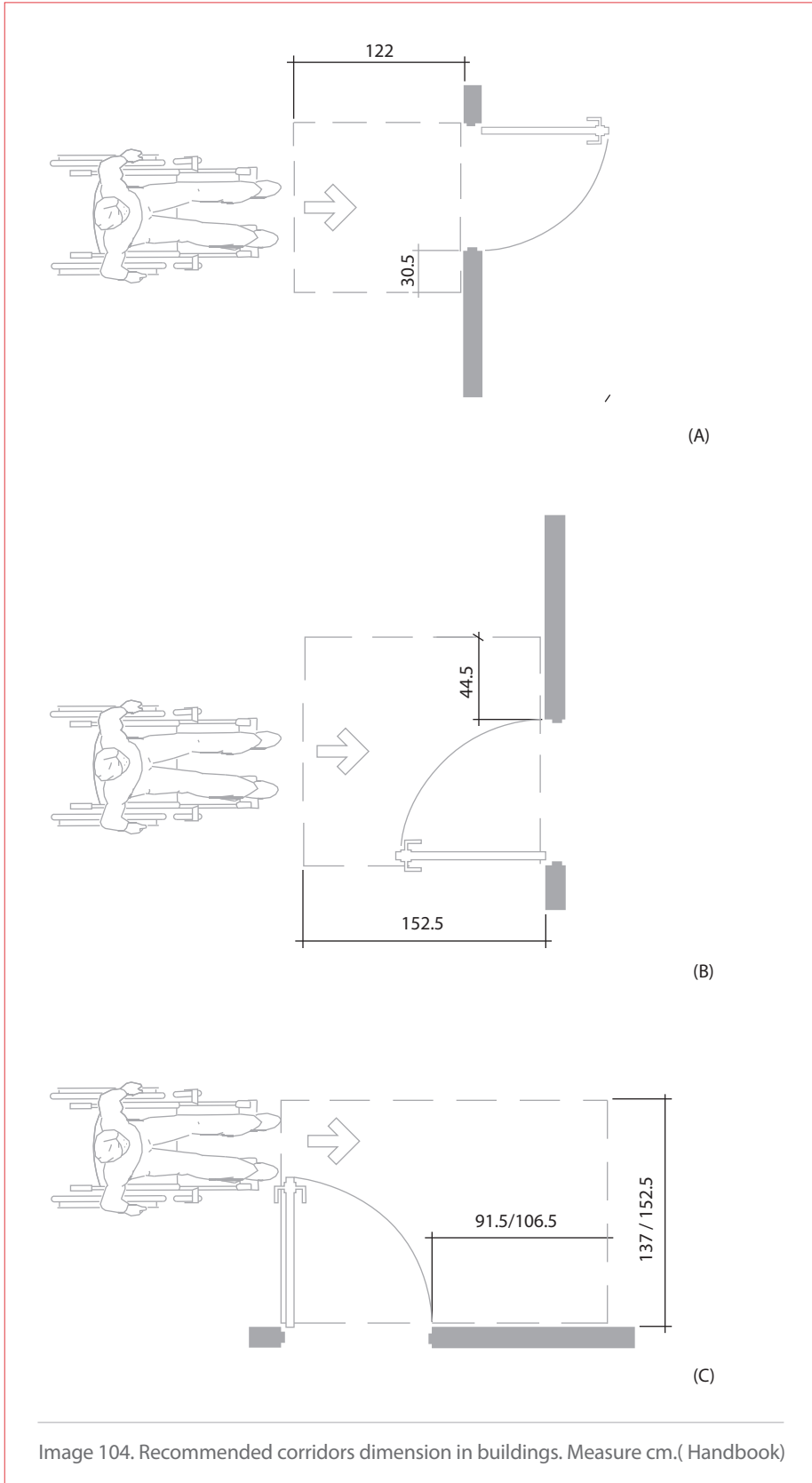
The alcove walls or the corners and any obstructions should be rounded to minimize injuries.

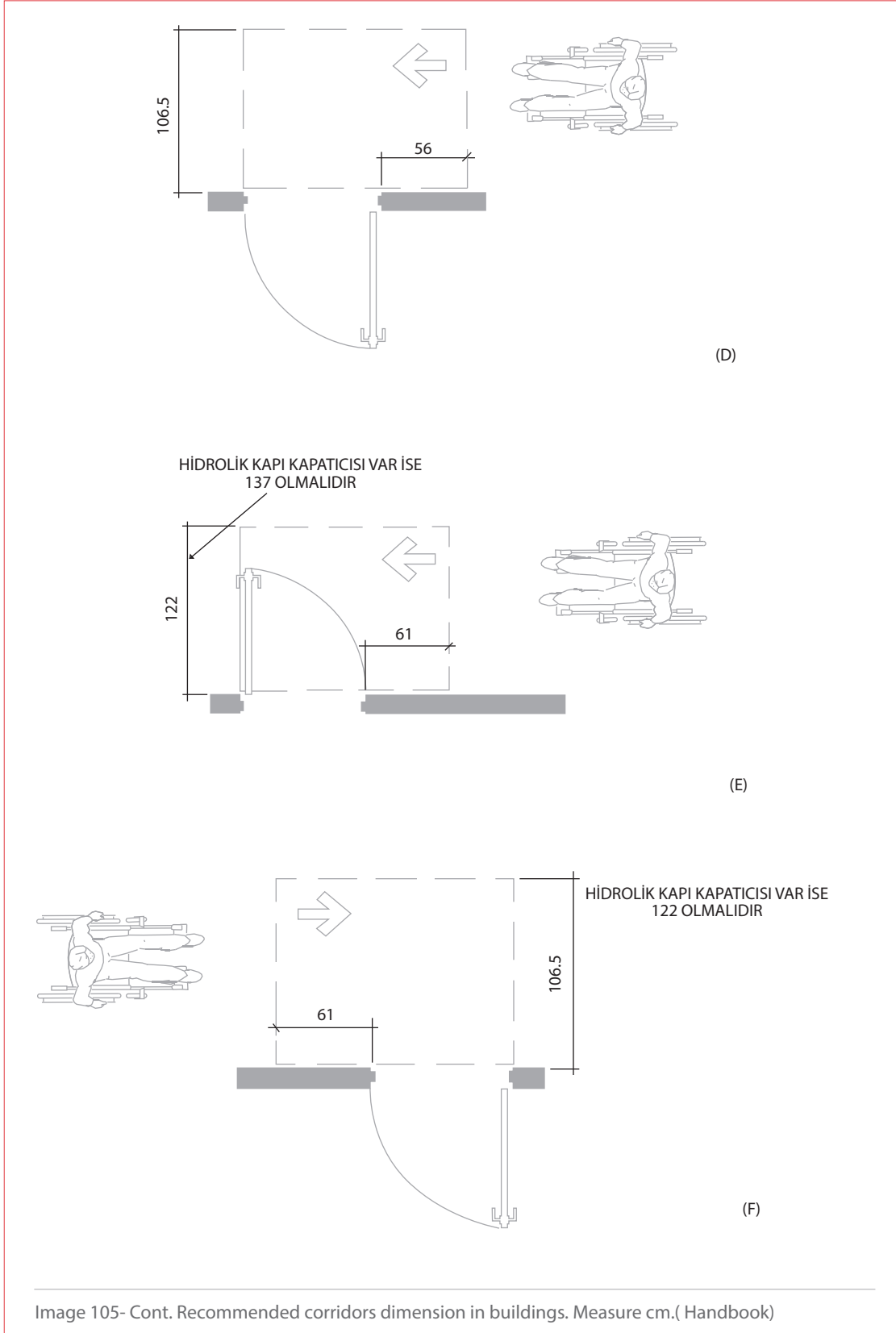


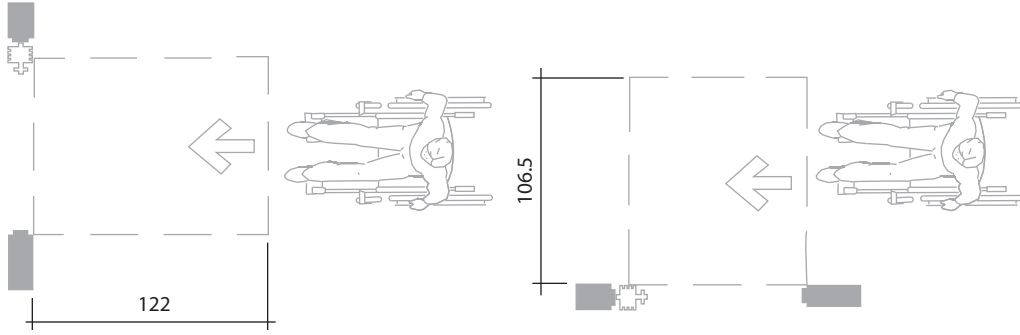


Corridors should be clear of protruding obstacles such as display cases or radiators that people may collide with including people who use wheelchairs and children. However, if it is necessary to mount such objects, the object should not be wider than 10 cm. Corridors also need to be kept clear of overhead obstacles or hazards. Signage, lamp fixtures or other hanging or protruding objects should be mounted at a minimum height of 203 cm when measured from the bottom of the object to the finished floor to minimize injury to all people, including people with visual disabilities. (TS 9111).

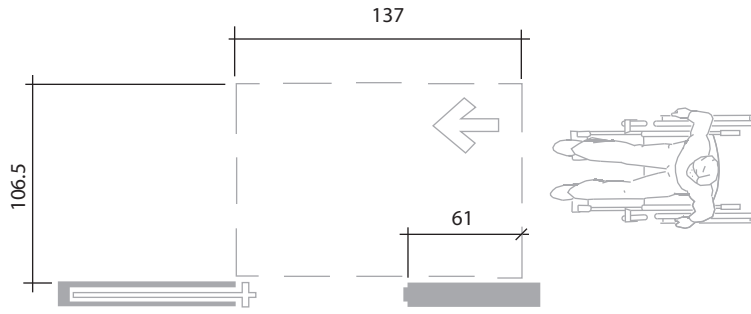




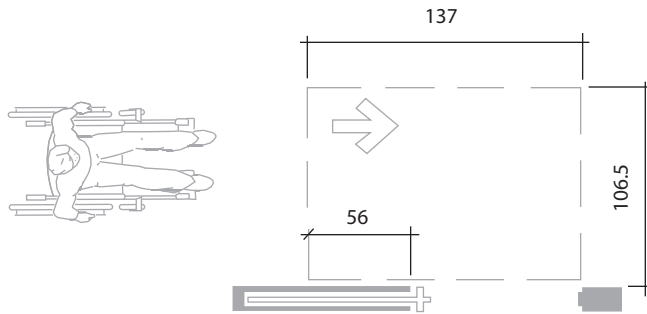




(G)



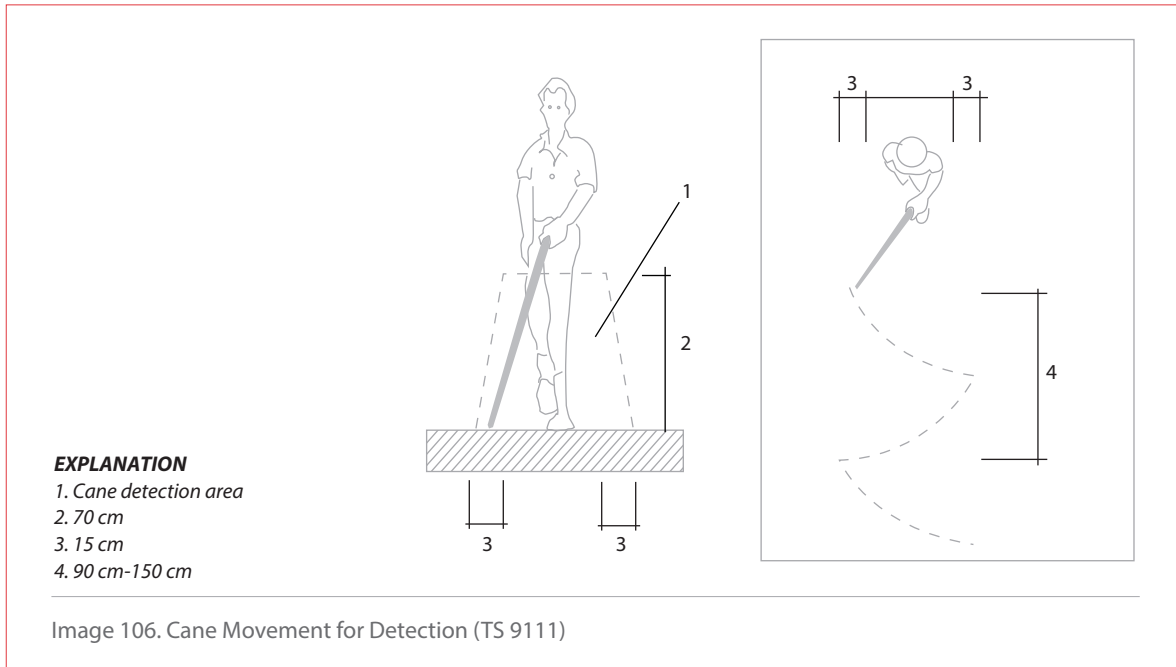
(H)



(I)

Şekil 105. Bina içindeki engelsiz koridorlara ait ölçüler. Ölçüler cm.dir. (El kitabı)





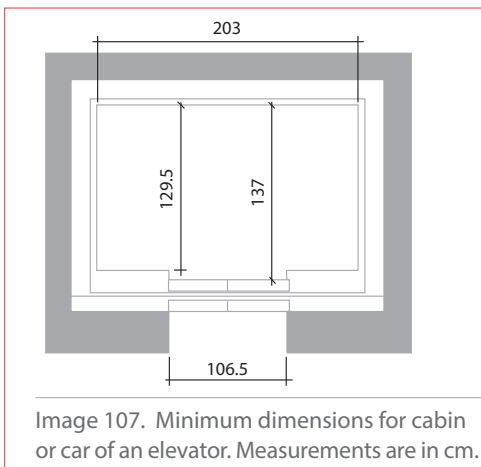
### 13.7.19. INTERIOR BUILDING VERTICAL CIRCULATION

#### A-Elevators

Elevators are important to vertical circulation between floors of buildings. The vertical circulation elements shall be designed with the necessary arrangements to accommodate the needs of persons with mobility limitations and persons with visual disabilities.

Passenger-elevating devices provided in a building should serve all floors, including mezzanine, basement and sub-basement storeys, and be designed to be usable by people with disabilities. Elevator cars shall be equipped with a self-levelling feature that will automatically bring and maintain the car at floor landings with a tolerance of  $\pm 13$  mm under rated loading or zero loading conditions.

The door opening into the elevating device shall not be narrower than 915 mm. Ideally the opening should be 106 mm or greater. Doors will remain open for 10 seconds before the doors begin to close. Elevator doors shall automatically open and close and be equipped with photocell sensor or other device to detect an object or person in the path of a closing door without requiring contact. The automatic device in elevators should be set to activate between 125 mm and 735 mm heights with a  $\pm 25$  above the floor. Door re-opening device shall remain effective for a period of no less than 20 seconds.





### 1- Cabin Interior

Cabin should be designed for people who use wheelchairs or other mobility devices by providing adequate space manoeuvrability and access to controls. The cabin of the elevating device should also provide adequate access for a patient stretcher when in prone position. Access is also required to the emergency telephone or intercom directly linked to building security or the contracted maintenance agency. The car should have a hand railing installed to provide greater stability and for safety for people with minimised strength or balance. A fold-down seat is also recommended.

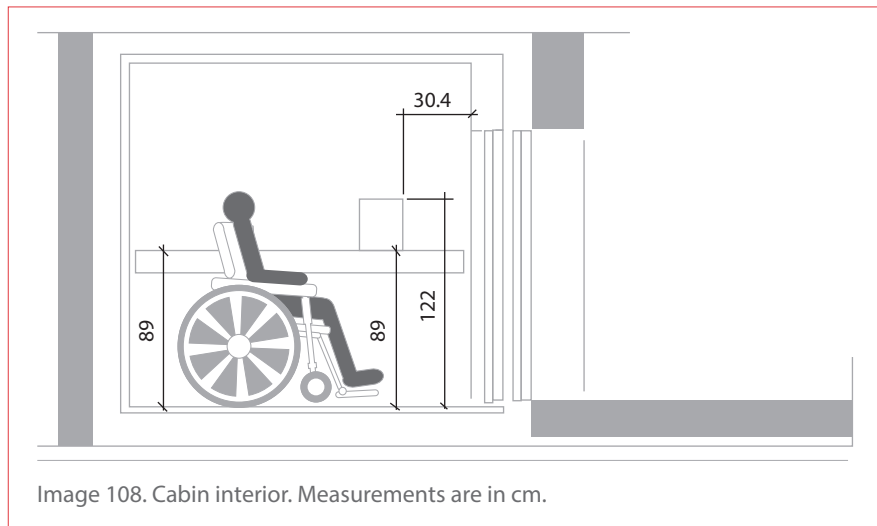


Image 108. Cabin interior. Measurements are in cm.

*Note:* a stable, firm and slip-resistant floor surface would allow for easy movement of wheelchairs. Secured or non-secured carpeting may be an obstacle to manoeuvrability and not recommended for use. Carpeting can create mould and contain unpleasant odours when it becomes dirty and wet.

2- Control Panel Buttons: the button dimension shall be a minimum of 19 mm. Buttons or surrounding button collars should be raised a minimum of 1.5 mm. Buttons should be arranged with the numbers in ascending order. When there are two or more columns are provided, they shall read from left to right. Tactile characters and Braille shall be placed immediately to the left of the button to which they apply.

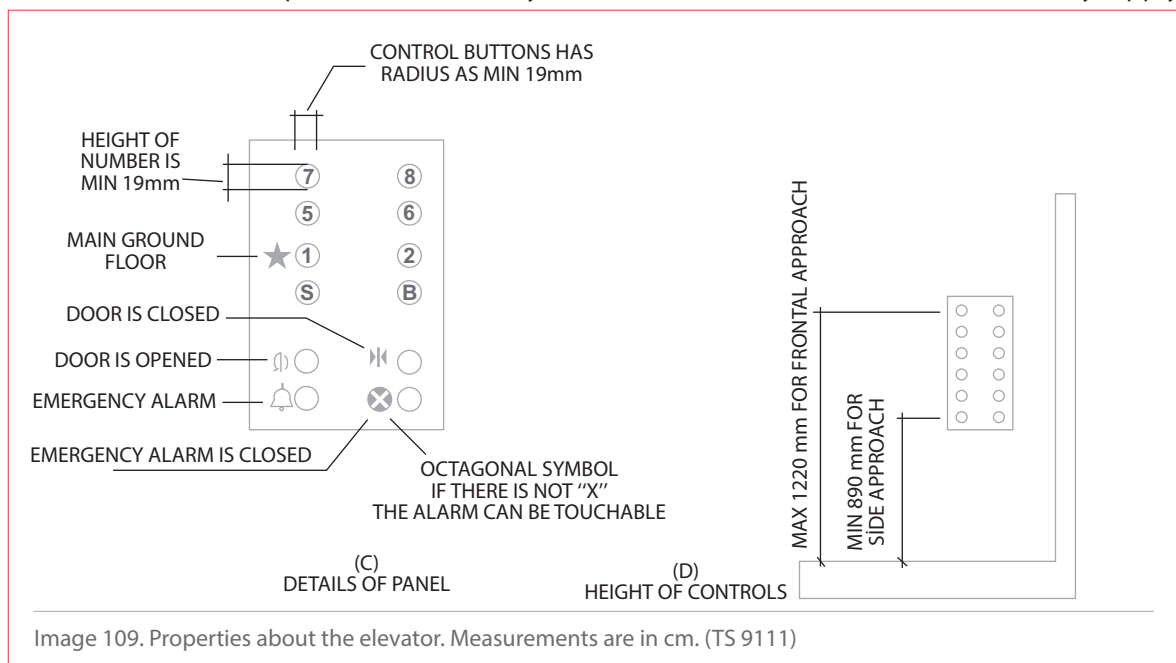


Image 109. Properties about the elevator. Measurements are in cm. (TS 9111)



The location of buttons with floor designations shall have a maximum height of 1370 mm if the approach is parallel and if it is a frontal approach the maximum height of 1220 mm is allowed when measured from the floor of the finish cab or car to the midline of the topmost button with the floor designation.

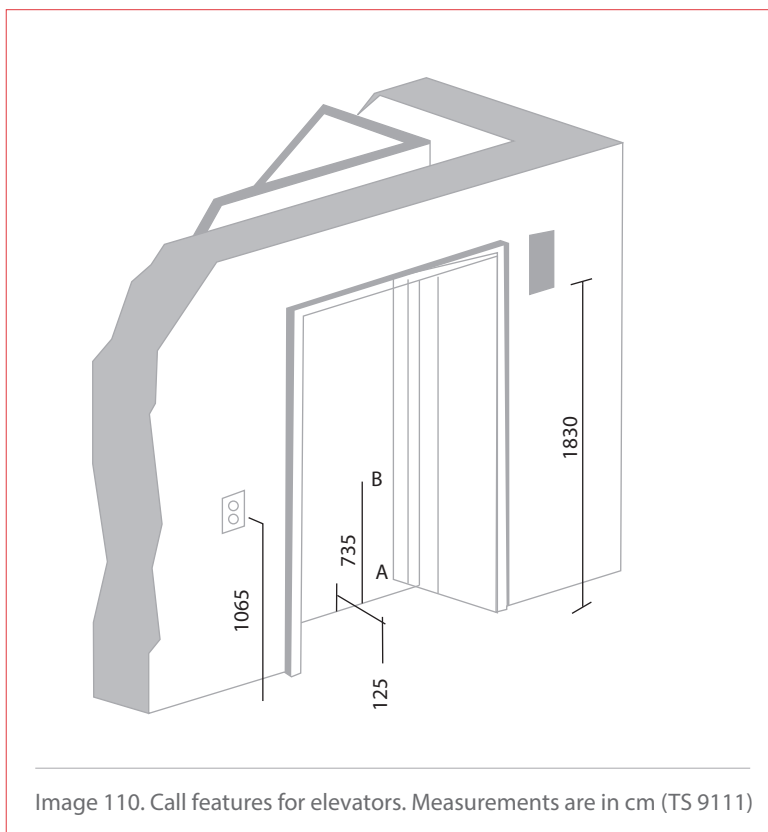
Control buttons for the emergency alarm and stop buttons, including the button to reopen the car door in case of a door obstruction, should be located below the floor designation buttons of the panel with a minimum height of 890 mm above the floor to the midline of the button. These buttons shall also be identified with tactile characters and Braille immediately to the left of the control buttons.

Telephone-style keypads may be used more prevalently in multi-storey buildings as in-car controls. This would eliminate any awkwardness experienced by people with visual disabilities. The buttons shall be a minimum of 19 mm and only require raised numbers with a minimum height of 1.5 mm.

**3- Car Position Indicators:** Elevator cabs should require both visual and audible indicators to identify the floor location it has passed or is stopping on. Visual indicators should be located above the control panel or above the door. The numerals shall be a minimum height of 16 mm. The audible indicator shall announce the floor it is stopping at and have a decibel at a minimum of 10 Dba over the ambient with a maximum of 80 Dba and a frequency of 1500 Hz. An automatic announcement is preferred over of sound signal like a bell or buzzer.

**4- Emergency Communications:** Emergency two-way communication systems may be a handset with a cord located behind an identified compartment door that is activated when the handset is removed from the cradle. A handsfree intercom that is automatically activated when the emergency alarm becomes activated is preferred to assist people with limited hand/finger dexterity or speech disabilities or in case the passenger may become incapacitated.

### 5- Call Buttons and Directional Signals





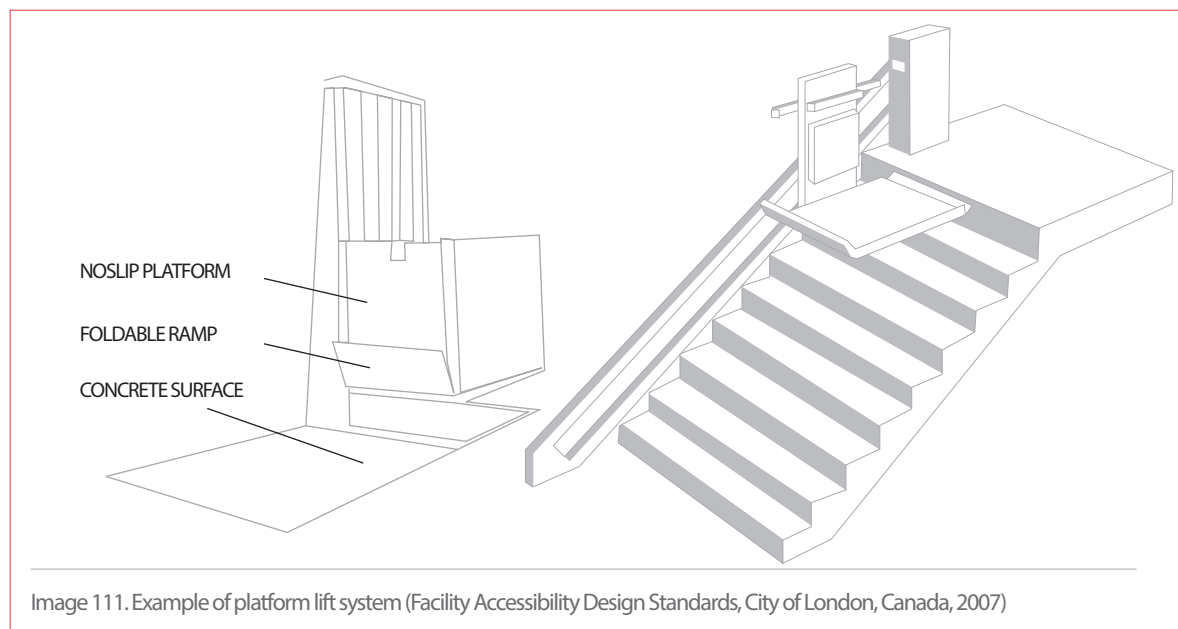
**6- Call Buttons:** the elevator call buttons should be located at a height of 1065 mm when measured from the midline of the lower button to the finished floor with a clear floor space of a minimum of 760 mm X 1220 mm. The calling buttons should be a minimum of 19 mm in diameter. The call buttons should light up to indicate that the car has been called and turn off when the car arrives.

**7- Directional Signals:** should be located above the car or adjacent and at the top of the elevating device. The visual signal shall be accompanied by an audible signal to indicate ascent or descent when the car has answered the call. The audible signal shall sound once to announce an upward direction and twice for the downward direction. The visual signal should be a minimum of 63 mm in dimension for visibility.

**8- Platform Lift :**A platform lift system may be used to assist persons with mobility limitations to safely ascend or descend a shallow set of stairs, only if there is no other safe alternative like an elevator or ramp. A clear and flat landing area of 1500 mm X 1500 mm is required at the top and bottom of the stairs.

A lift system should be operable without assistance by people with disabilities and seniors, even parents with strollers, who need to bypass the stairs. Exterior stairs may require protection from inclement weather and greater maintenance. Exterior stairs require protective railings on the lift as well as at the top landing. Proper signage should indicate a barrier-free path of travel to the accessible lift system.

In addition, a connection to the interior of the building is required for safety in an emergency and for protection from inclement weather (Facility Accessibility Design Standards, City of London, Canada, 2007).



## B- STAIRS

Stairs are another form of vertical circulation for people, including people with sensory disabilities. Therefore, the stairs should be designed to prevent missteps, tripping or slipping for all users, including people with visual disabilities. Emergency stairwells should be designed with the same requirements.

The handles and railings of the stairs in outer places should be extended a minimum of 45 cm beyond the top and bottom step of the stairs, as differently from the stairs arrangements about the interior places. Between 80 cm – 90 cm height of the handles and railings from the stairs surface is recommended also for outer places. Railings should be designed on both sides of the outer place stairs and the distance between every railing and handle, should be max 180 cm. Water discharge grooves should be located on the sides of the outer place stairs. Stairs should be marked with 120 cm length tactile surface covering at the beginning

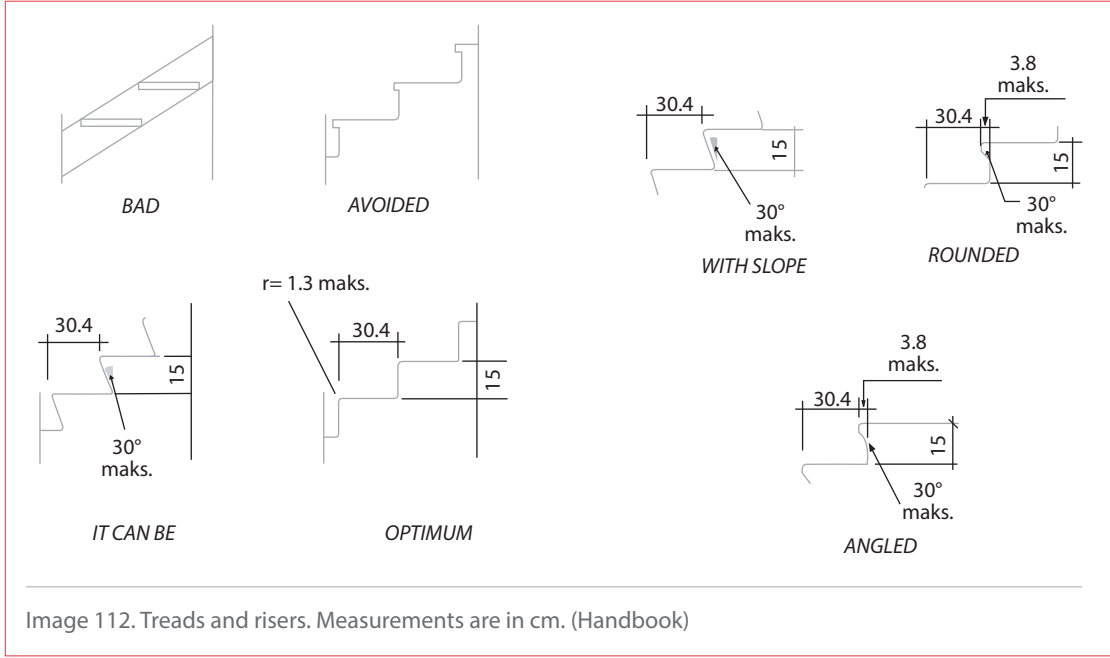


and the end of the stairs (TS 12576) (Image 112-113-114).

If arm of the stairs reach a height more than 180 cm, there should be a landing of min 200 cm length and if there is a direction change on the landings, area of 180 cm x 180 cm sizes should be reserved (TS 12576).

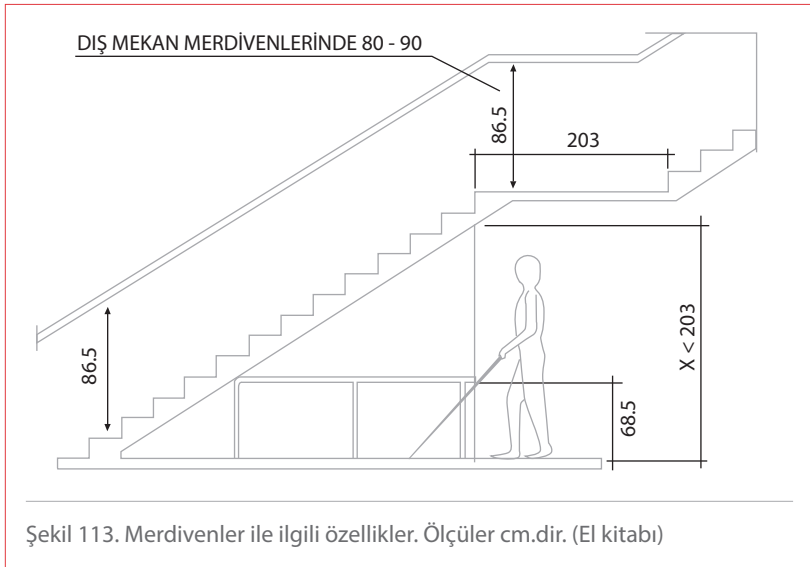
### Treads and Risers

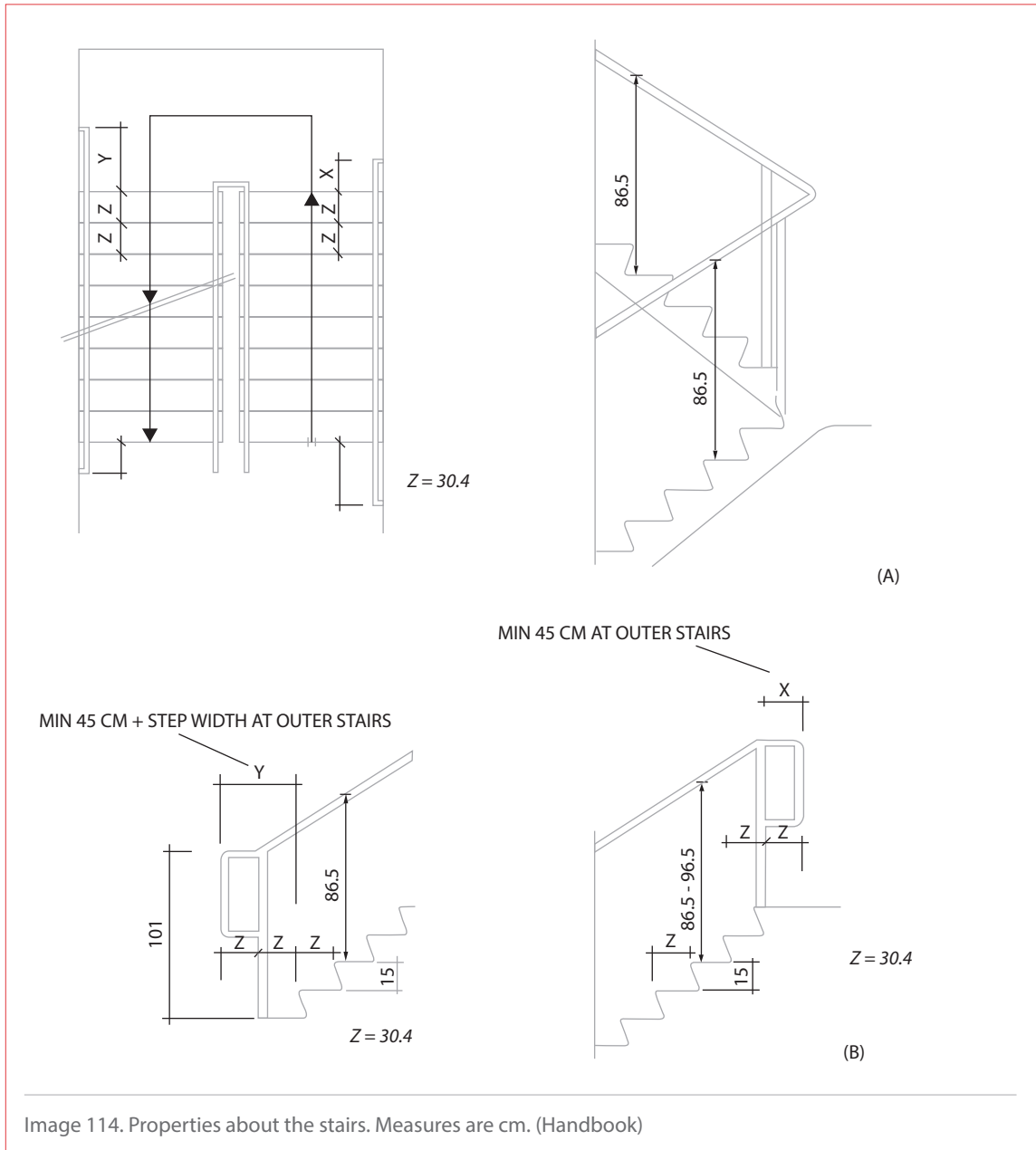
The rise of a step shall have height no less than 150 mm and no greater than 200 mm. The run shall be no less than 125 mm and no greater than 250 mm. Every tread and riser shall have a uniform run and rise, and it shall not alter significantly in run and rise in successive flights in any stair system.



In addition, each tread and riser should be contrasting in colour or, it can be a 30 mm textured or non-slip strip on the tread and riser of colour contrast at the nosing or edge of the step. Any applied surface material should be incorporated into the step to prevent tripping of all people, including persons with visual disabilities and the elderly.

Exterior stair systems, if possible or necessary, should protect the top of the stairs against inclement weather





### Landing on Path with Stairs

A stair system that travels in the same direction should have a 120 cm platform between every set of stairs 180 cm in height. At the top of the stairs system, there should be a 60 cm tactile and contrasting material to indicate that a person, including people with visual disabilities, is approaching a change in level.

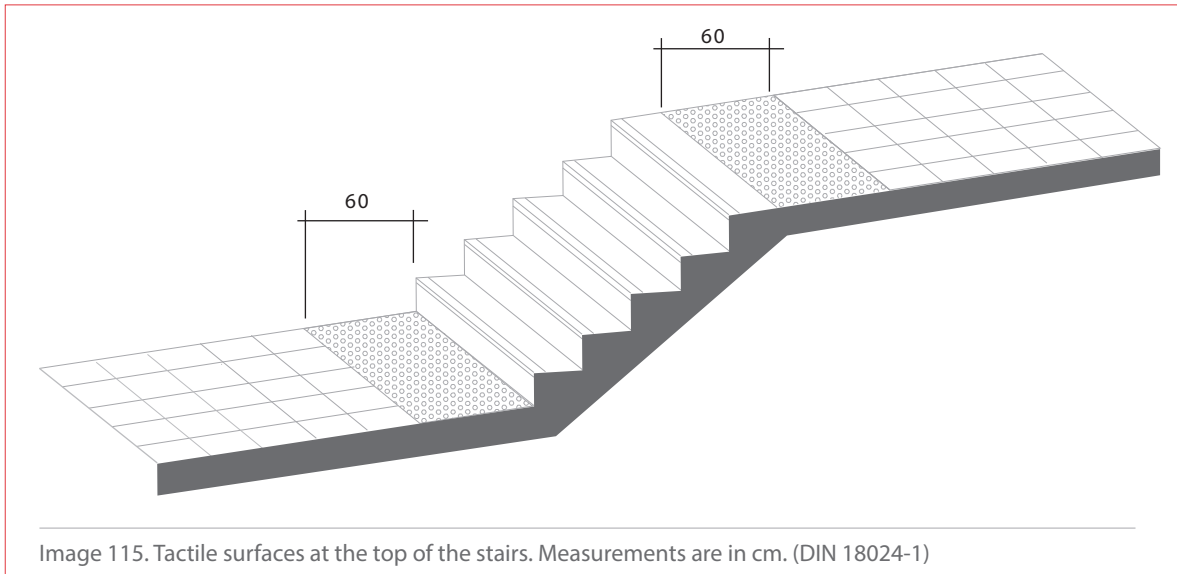


Image 115. Tactile surfaces at the top of the stairs. Measurements are in cm. (DIN 18024-1)

If the stair system changes direction, the platform area should be at least 180 cm x 180 cm. Clear width at the stairs from the railing to railing should be at least 180 cm. Water drainage gutters should be placed on the sides of the stairs (TS 12576).

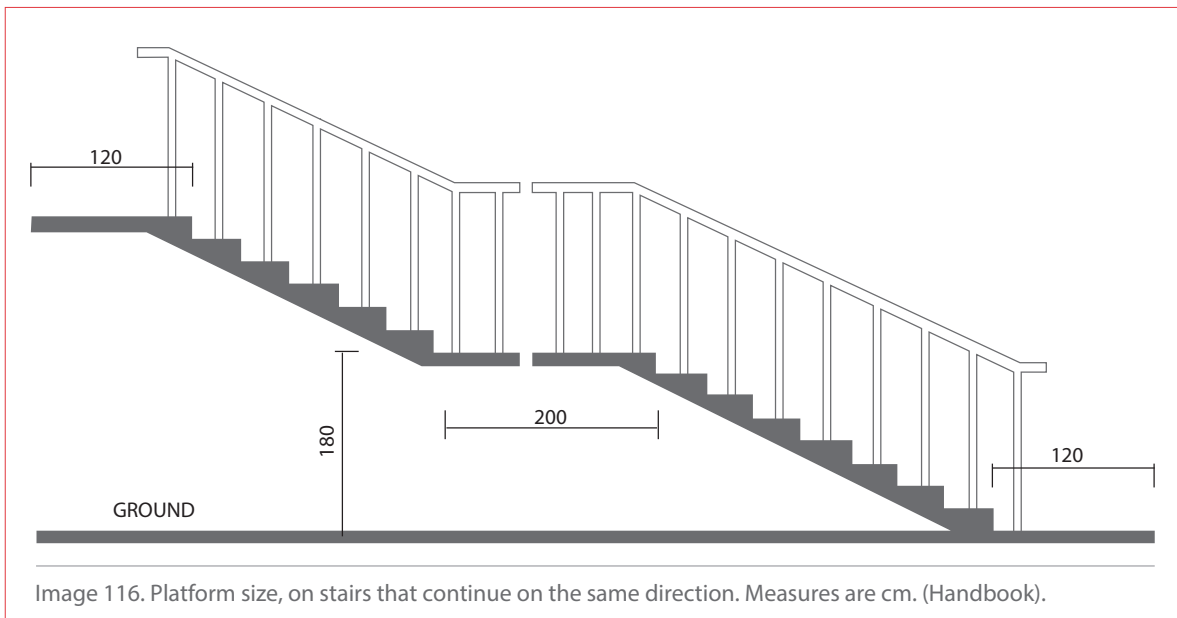


Image 116. Platform size, on stairs that continue on the same direction. Measures are cm. (Handbook).

### 13.7.20. Exits

Accessible routes that can serve as accessible place or unit can also serve as a connection provider for a accessible area of rescue assistance or an emergency exit.

Access to the exit should be considered in the scope of exits and evacuation accessibility exit paths. Stairs, step and escalators should not be a part of accessible exit paths. Evacuation elevators can be used as a unit of accessible exit ways in multi-floor buildings that has floors over and below the exit. In new constructions, if there isn't a automatic sprinkler system, there should be area of rescue assistance.



Area of rescue assistance should be the one of following:

- A part of a stair landing in a place with a smoke protection.
- A part of the outer balcony next to the exit stairs if it is proper for the local conditions.
- A part of the corridor next to the exit place that has one hour fire strength.
- An entering hall that is constructed with similar standards to a corridor next to the exiting place with necessary fire resistance.
- A part of the stair landing inside the exiting place that is separated with at least one hour fire resistant doors from inside the building and that goes outside.
- A room or an area that is approved by the building management and is separated from the other sides of the building with smoke barriers.

Smoke barriers should be adjacent with the Area or room of rescue assistance and should have at least one-hour fire resistance. Doors at the smoke barrier should be defined, has at least 20-minute resistance to the fire and should be automatic or self-closing.

Area or room of rescue assistance should have a direct exit to the exiting place. Area or room of rescue assistance should have the same level of fire resistance with the exiting.

System of elevator front area should get activated with smoke detectors located on every floor. This system should be reserved from the other parts of the building with construction that has at least two-hour fire resistance.

There should be at least two areas that are not smaller than 76cm x 122cm measures on all area of rescue assistance. This area of rescue assistance shouldn't be less than 1 per floor for every 200 people. Exception: If the number of users is less than 200, local management can lessen the measurements of this area of rescue assistance.

There should be visible signs at the area of rescue assistance. Signing can be provided as easy precaution as a blinking electric button that shows the way to the area of rescue assistance. All place is separated for area of rescue assistance, should be defined with an international accessibility symbol that shows the purpose of it.

Providing emergency communication with only sound can endanger the safety of persons with hearing and speech disabled. A two way communication should be provided with visual and sound signals between the building main entrance and area of rescue assistance.

### **13.7.21. Rules for environment arrangements**

#### **Parking Structures**

##### **Parking Lots (TS 9111)**

Disabled parking lot should not be farther away than 30 m to the building entrance, it should as closer as possible, it should have enough space to get on/off to the car and should be adjacent to the building with a safe path. Night lighting of the parking lot should be sufficient. Parking lots should be protected from weather conditions such as snow and ice and should be closed over if possible. Reserved parking lot for persons with disabilities should have min 250 cm height.



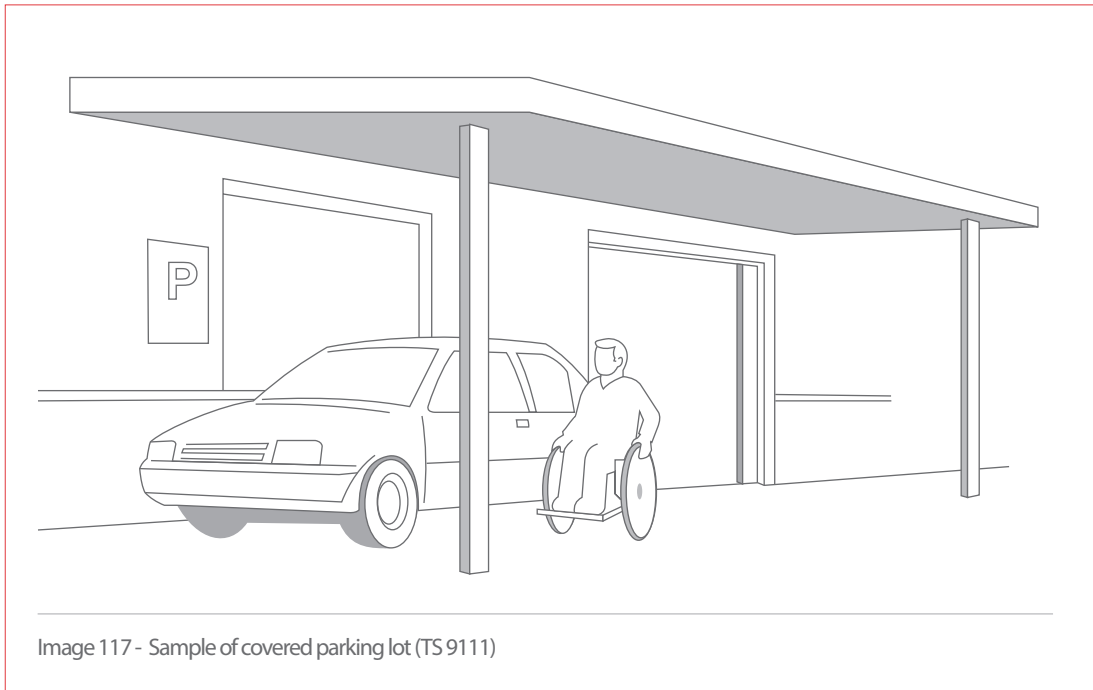


Image 117 - Sample of covered parking lot (TS 9111)

Persons shouldn't pass between vehicles for Access from the parking car to the walkway, a straight access should be provided without any intersection with the traffic. If there is only one disabled parking lot it should have min 400 cm width and 600 cm length.

Parking lot should be thought in a place as close to the building entrance as possible and in a proper place where persons with disabilities and elders can access. If there are more than one disabled parking lot, its width should be min 250 cm. The length of the parking lot should be min 600 cm to provide easy manoeuvre around the vehicle.

Area of 150 cm width and 600 cm length, without obstacle and parallel to the vehicle, should be reserved as a manoeuvre area between two parking lots to provide easy access to the vehicle from the wheel chair. If there is a level difference between this area and where the car parks, slope should be max 1/50 (Image 117-118).

In a case of providing access for the wheel chair from behind the car, measurements for parking lot are given on Image 119.

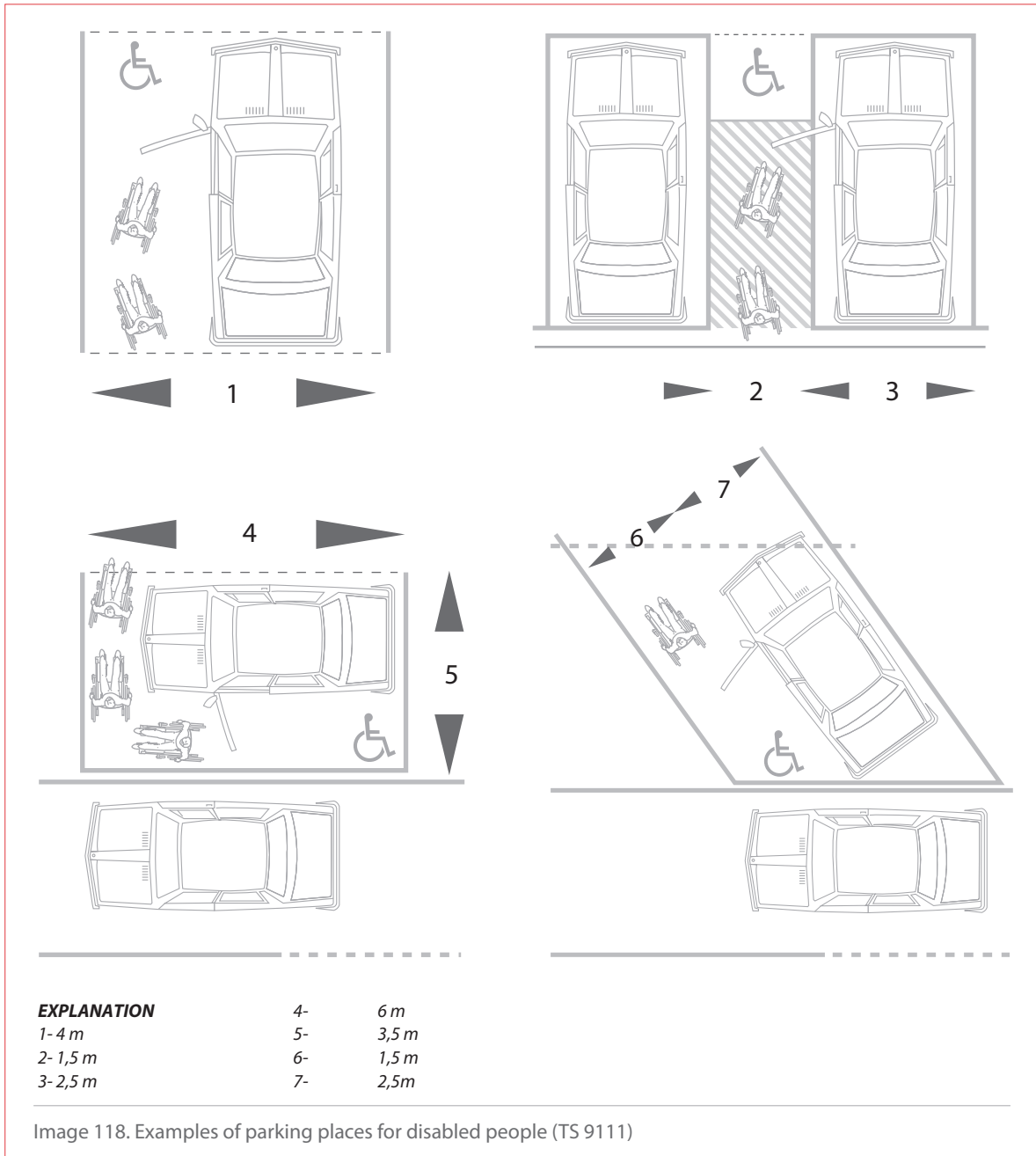
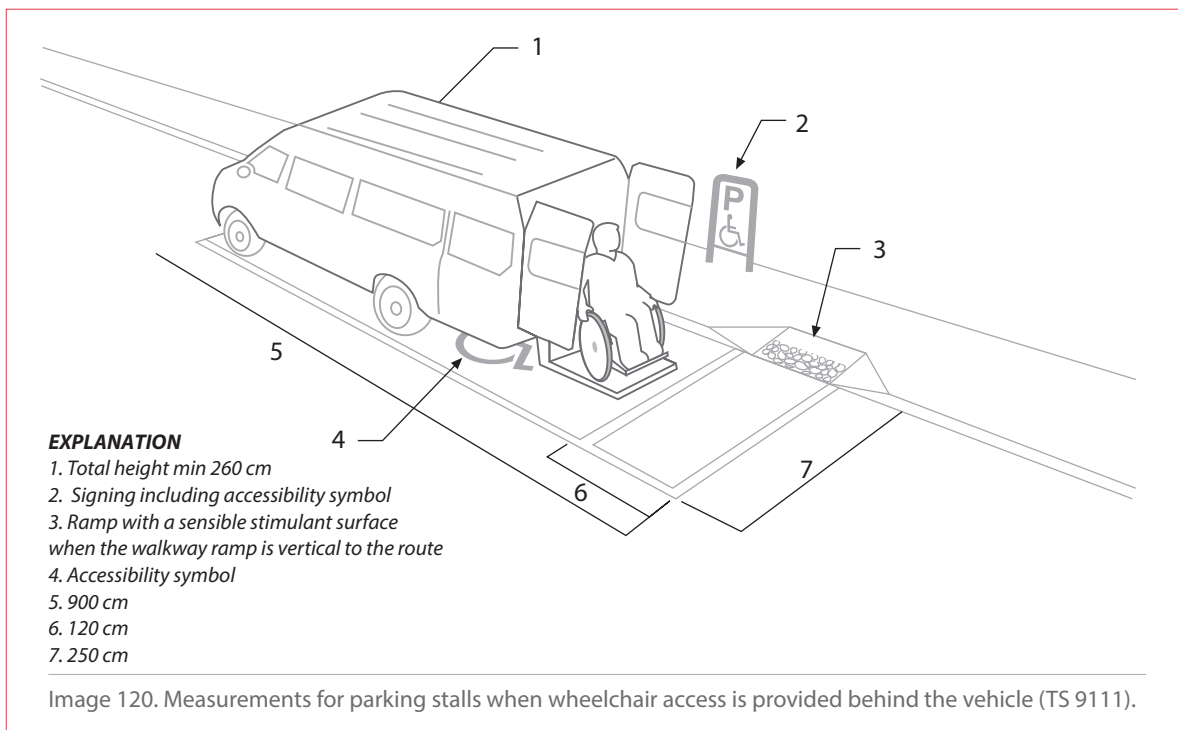
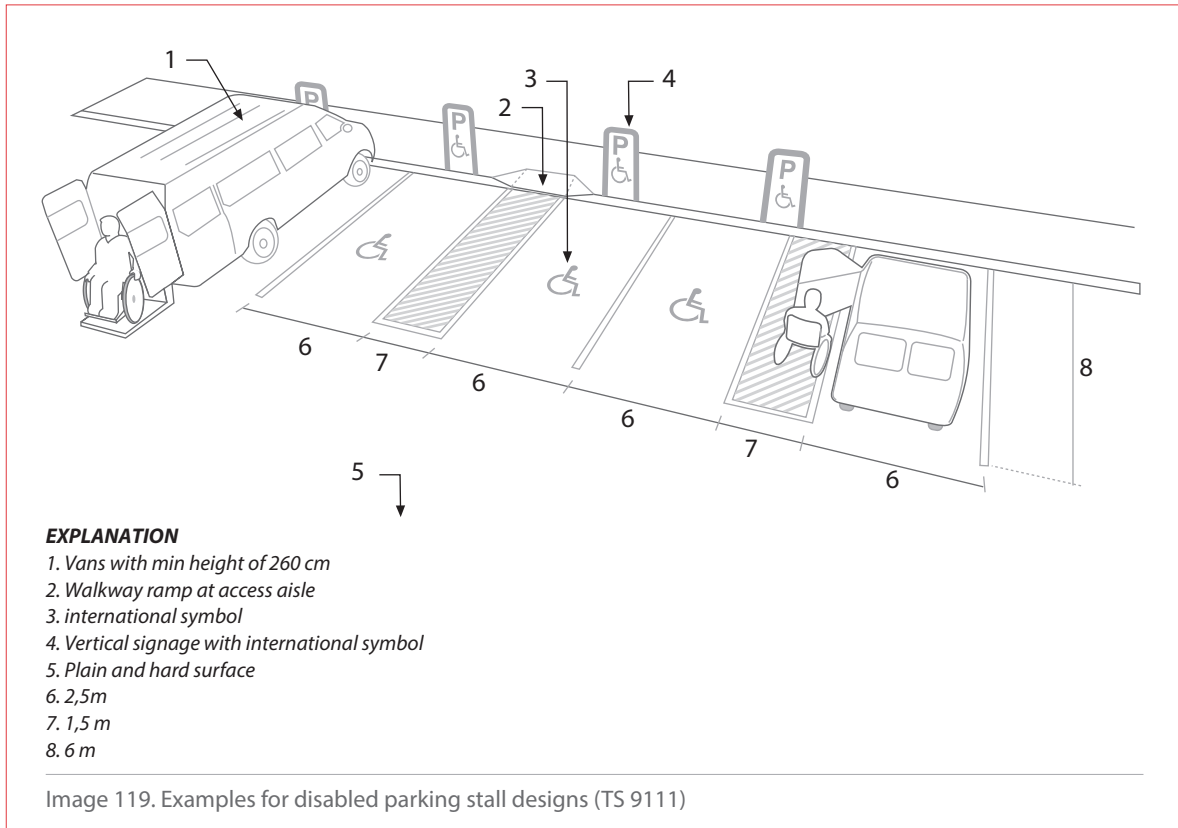


Image 118. Examples of parking places for disabled people (TS 9111)





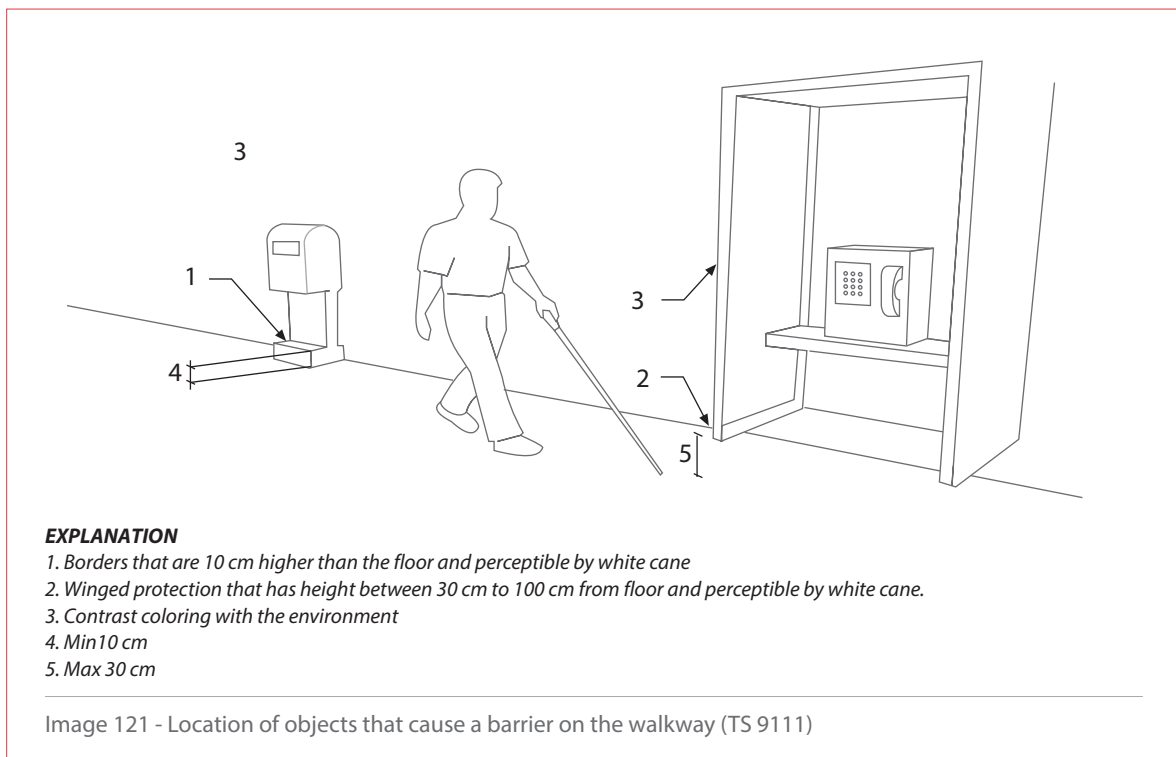
### Entrance walkways (TS 9111)

If there are parking lots as a garage or an outdoor parking lot in the building construction area, paths and passages that is used by persons with disabilities, shouldn't intersect with roads that are open for vehicle traffic, if necessary, passage spots with proper hardware should be provided.

Path that will be used at the entering should have min 200 cm width and preferably 300 cm width. There shouldn't be any sharp, piercing and damaging objects at the entry way. At the path route, objects that are higher than the road surface (signs, tree branches) should have min 220 cm height.

On the path, objects with sharp edges that are mounted to the wall at 68 cm to 22 cm height (phone etc.), shouldn't have projection more than 10 cm. Objects has projection between 10 cm to 30 cm from the floor and that are 220 cm higher than the floor should be clearly seen and distinguished with a white cane.

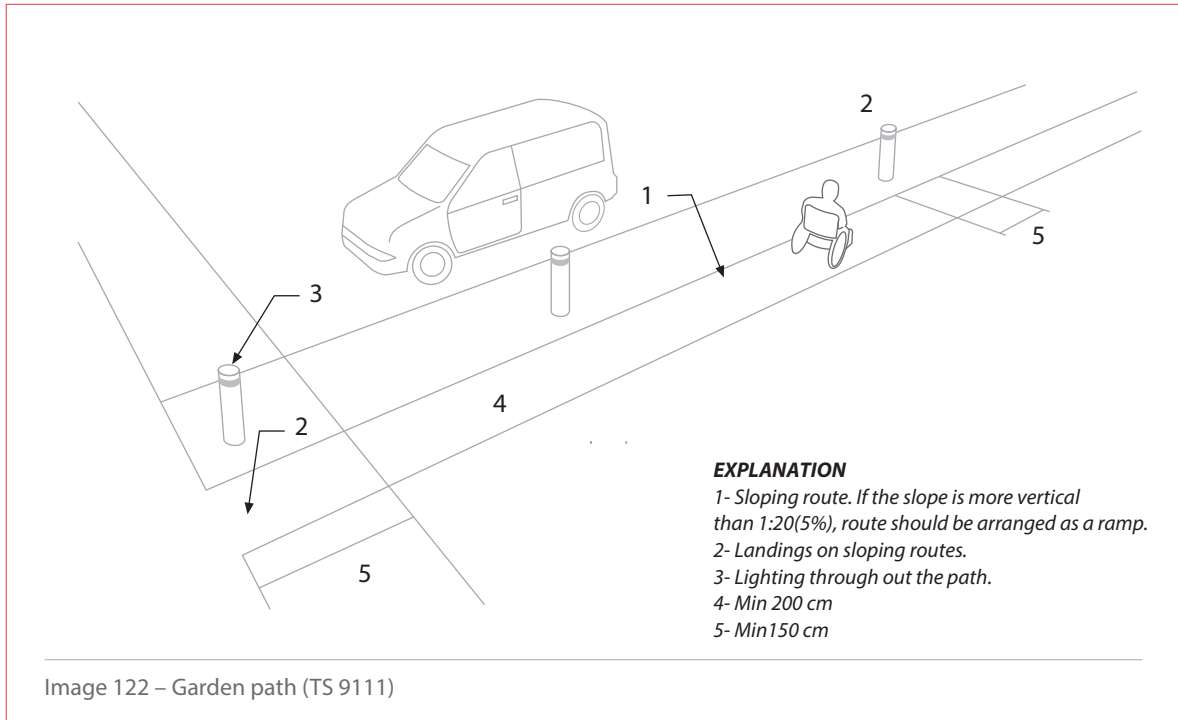
Objects that are lower than 75 cm cause danger for persons with sight disabled. Permanent hardware that have no possibility to be placed somewhere other than a walkway should be easily seen with a light reflecting feature and should warn about the danger circumstances and should be perceptible by individuals who use white cane (Image 120).



### 2- Garden Walkways (TS 9111)

Walkways that access to the buildings, between and around the buildings should have hard, stable, flat and non-slippery surface; there shouldn't be any drainage grates. Route or path that provides entrance to the building in the parking lot or from the residence border that the building is located in, should provide entrance, exit and approach possibility for all people.

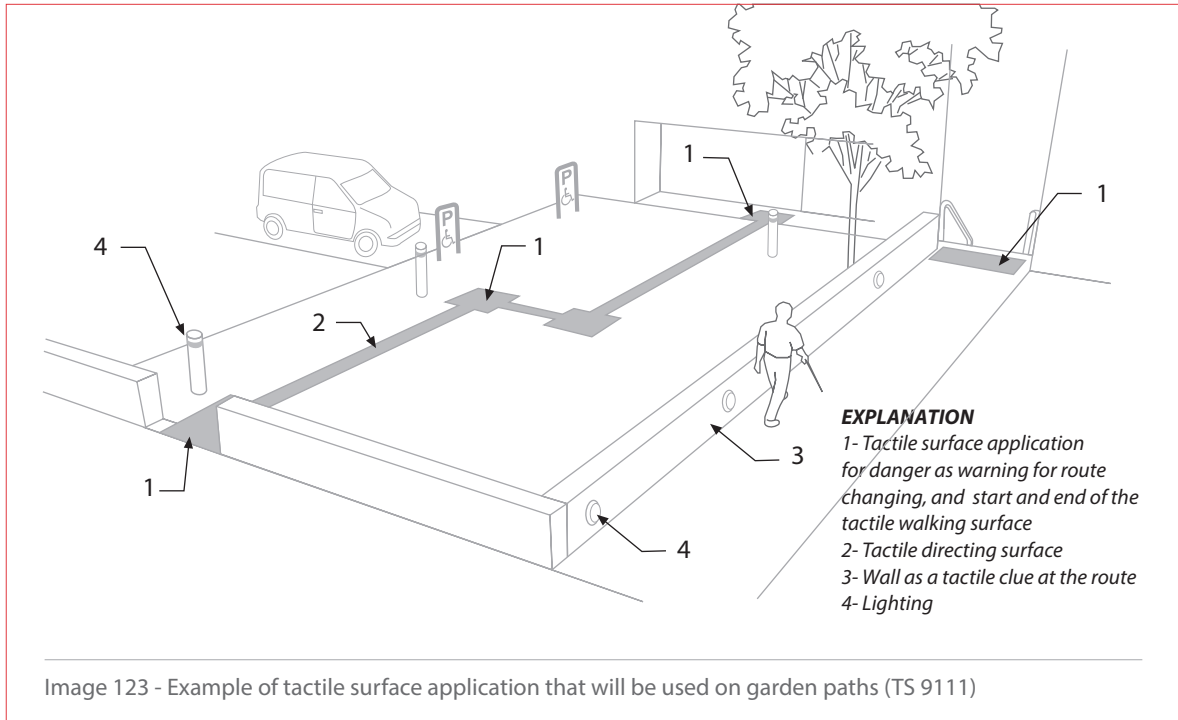
Garden paths should be min 200 cm width. They shouldn't be covered with loose and slippery materials such as gravel



Objects, columns or footed signs that are located on the walls of the walkway should be avoided. If these kind of barriers will be used inevitably, they should be marked with clear visual stimulants. Visual stimulants should have min 75 mm length and should be located in between 90 cm- 100 cm and 150 cm- 160 cm height from the floor.

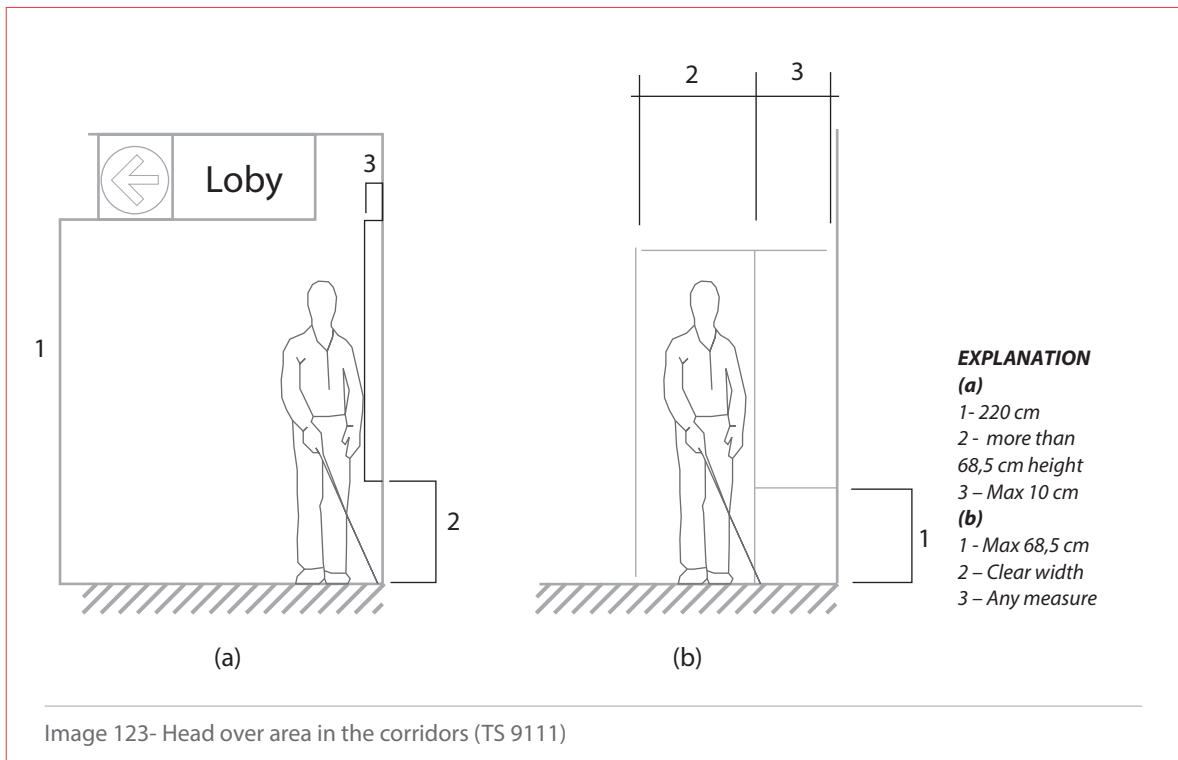
At the important decision making spots, for providing orientation and to help finding the route, additional lighting or contract brightness and information with tactile surface such as material change or tactile surface coverings .

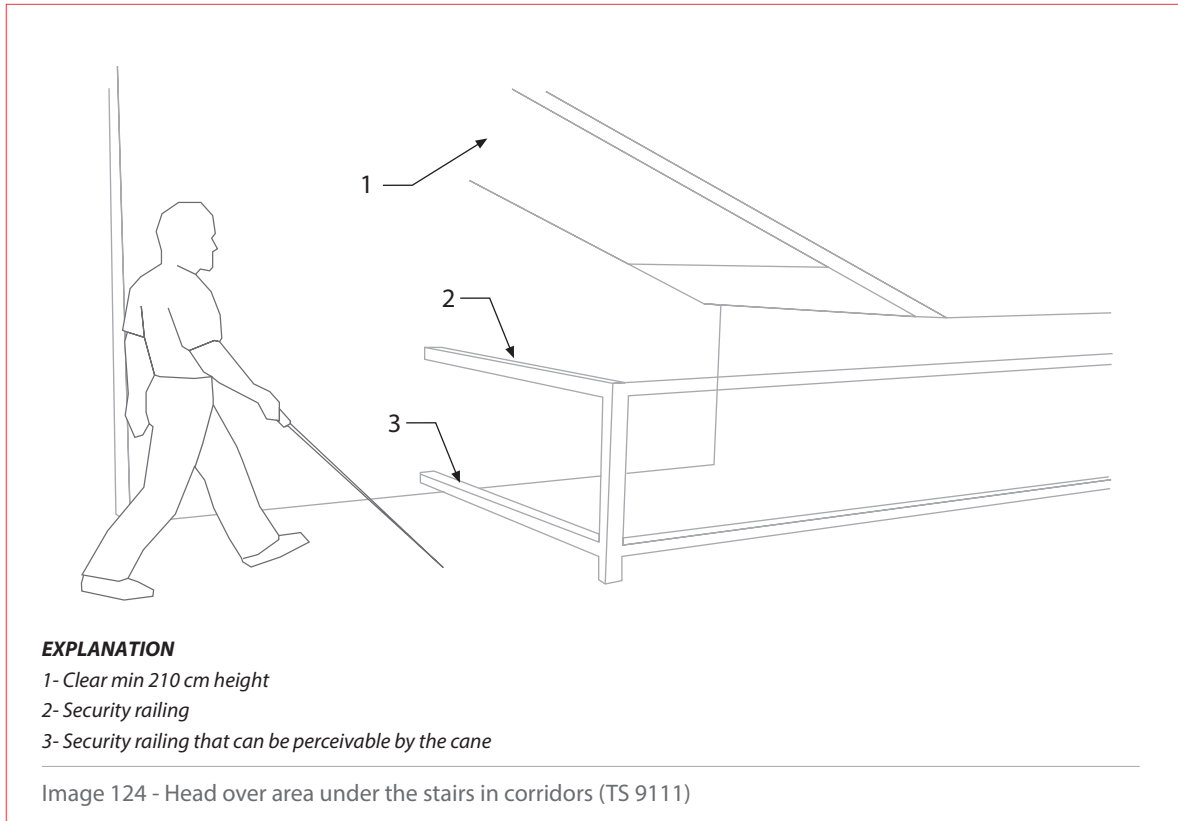
To provide directing to the building, if there aren't any other directors, linear orientation should be provided with tactile surfaces. If usage of stairs, elevators, escalators, walking bands or ramps with a slope more than 6% are inevitable on the route, tactile warning surfaces and visual signings should be provided. Objects that make sound (wall clock, fountain) can be used as a complementary essence to assist finding the route for persons with sight disabled and lesser sight, especially for individuals who have more than one disability and for elderly.



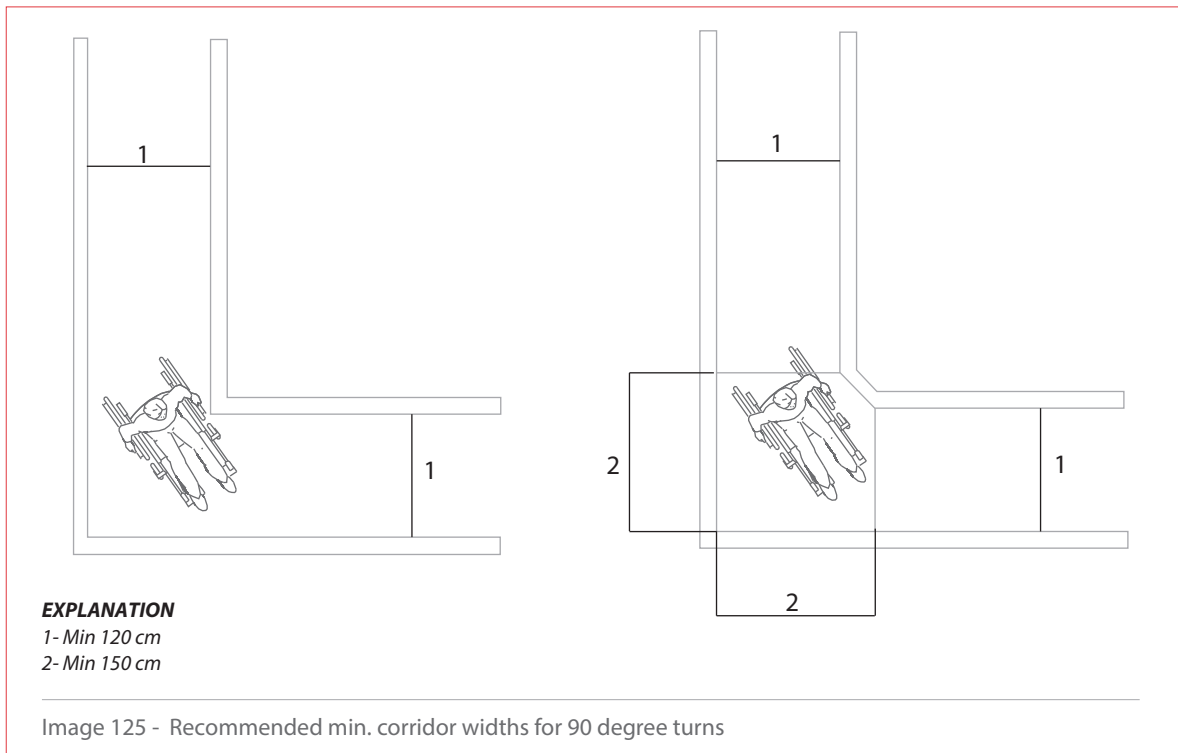
### 13.7.22. Corridors and Hallways (TS 9111)

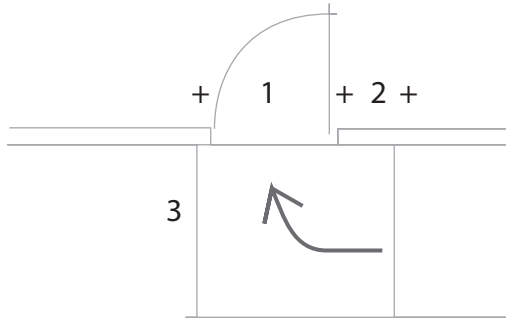
Corridors inside the building should have 90 cm clear spacing and 210 cm clear height from the floor. There shouldn't be any horizontal or vertical barriers inside this area. This height should be provided for below the stairs on the halls.





Turning (manoeuvre) examples depending on the corridor widths are given

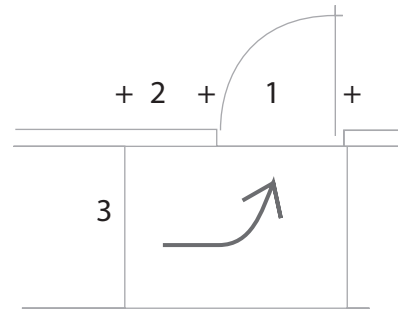




(a)

**Explanation (a)**

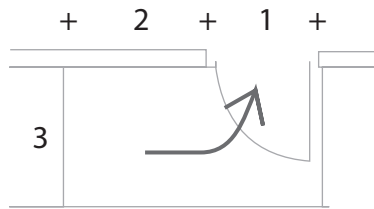
- 1- 100 cm
- 2- 50 cm
- 3- 120 cm



(b)

**Explanation (b)**

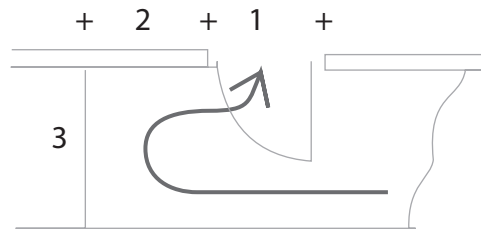
- 1- 100 cm
- 2- 65 cm
- 3- 110 cm



(c)

**Explanation (c)**

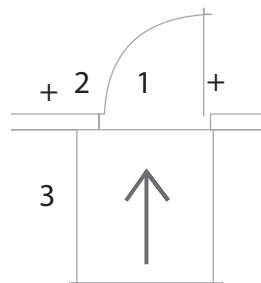
- 1- 100 cm
- 2- 130 cm
- 3- 120 cm



(d)

**Explanation (d)**

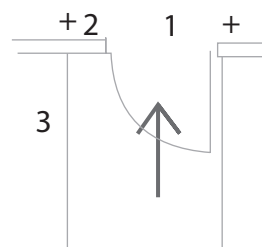
- 1- 100 cm
- 2- 110 cm
- 3- 140 cm



(e)

**Explanation (e)**

- 1- 100 cm
- 2- 20 cm
- 3- 140 cm



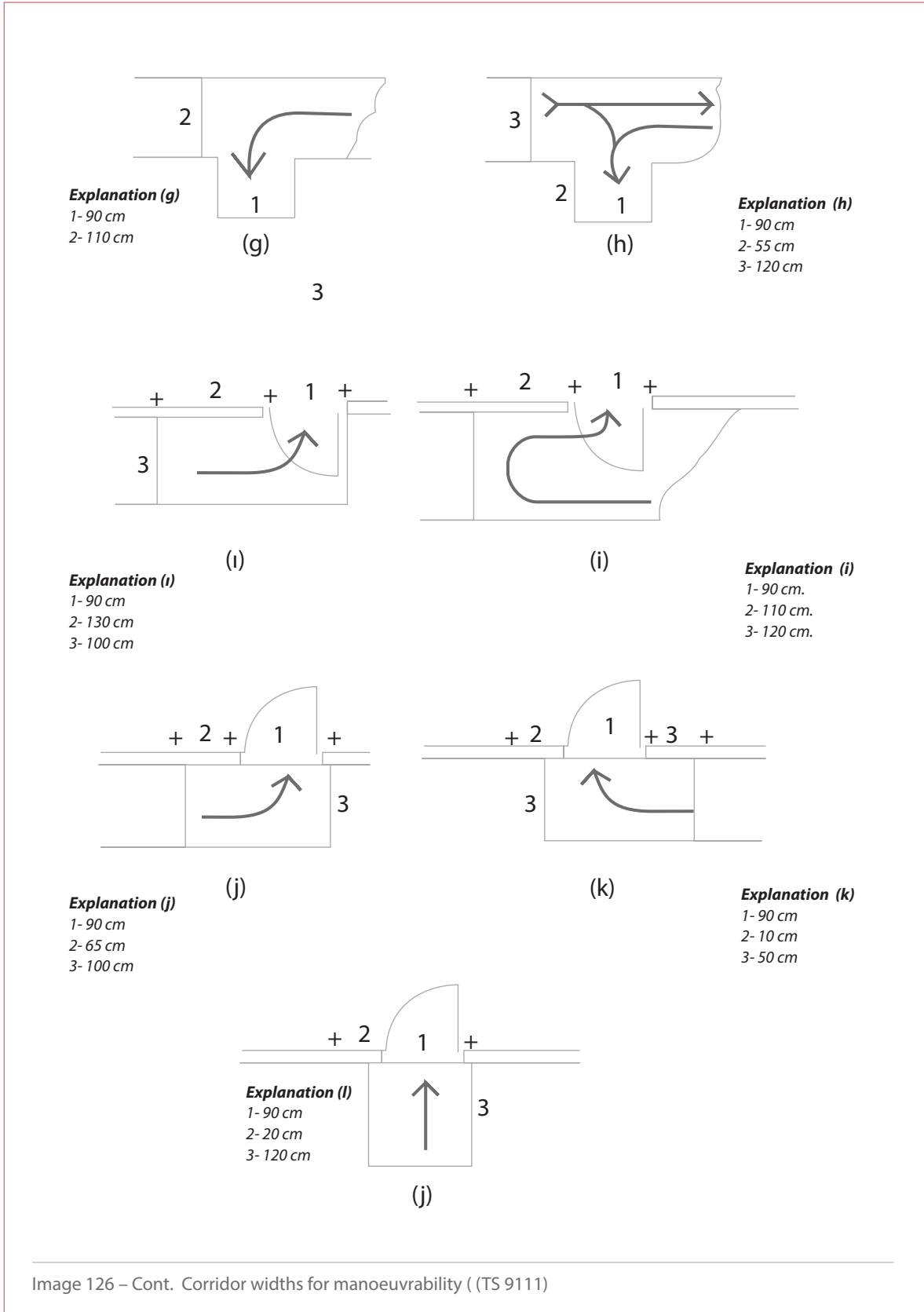
(f)

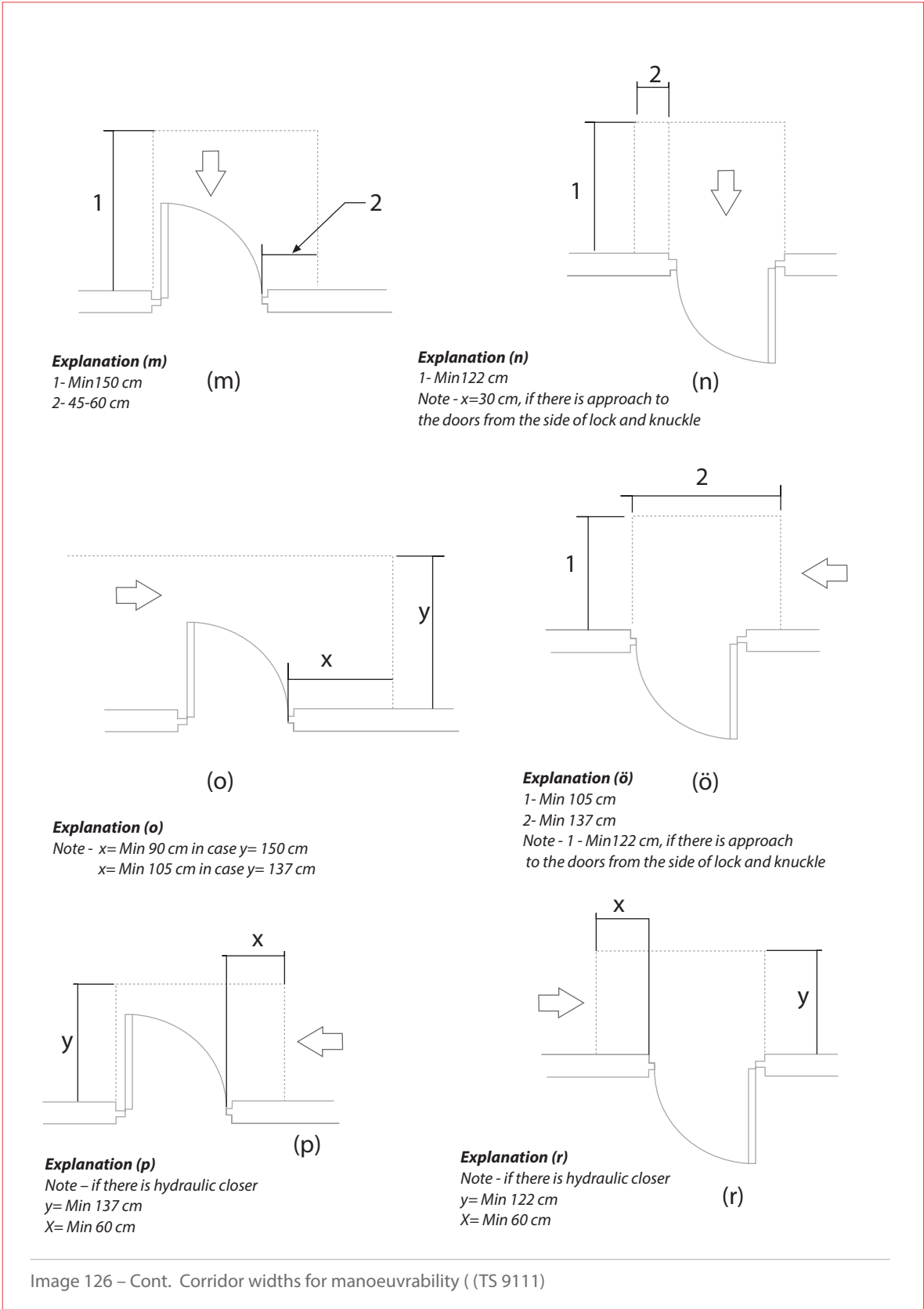
**Explanation (f)**

- 1- 100 cm
- 2- 35 cm
- 3- 200 cm

Image 126 – Corridor widths for manoeuvrability ( TS 9111)







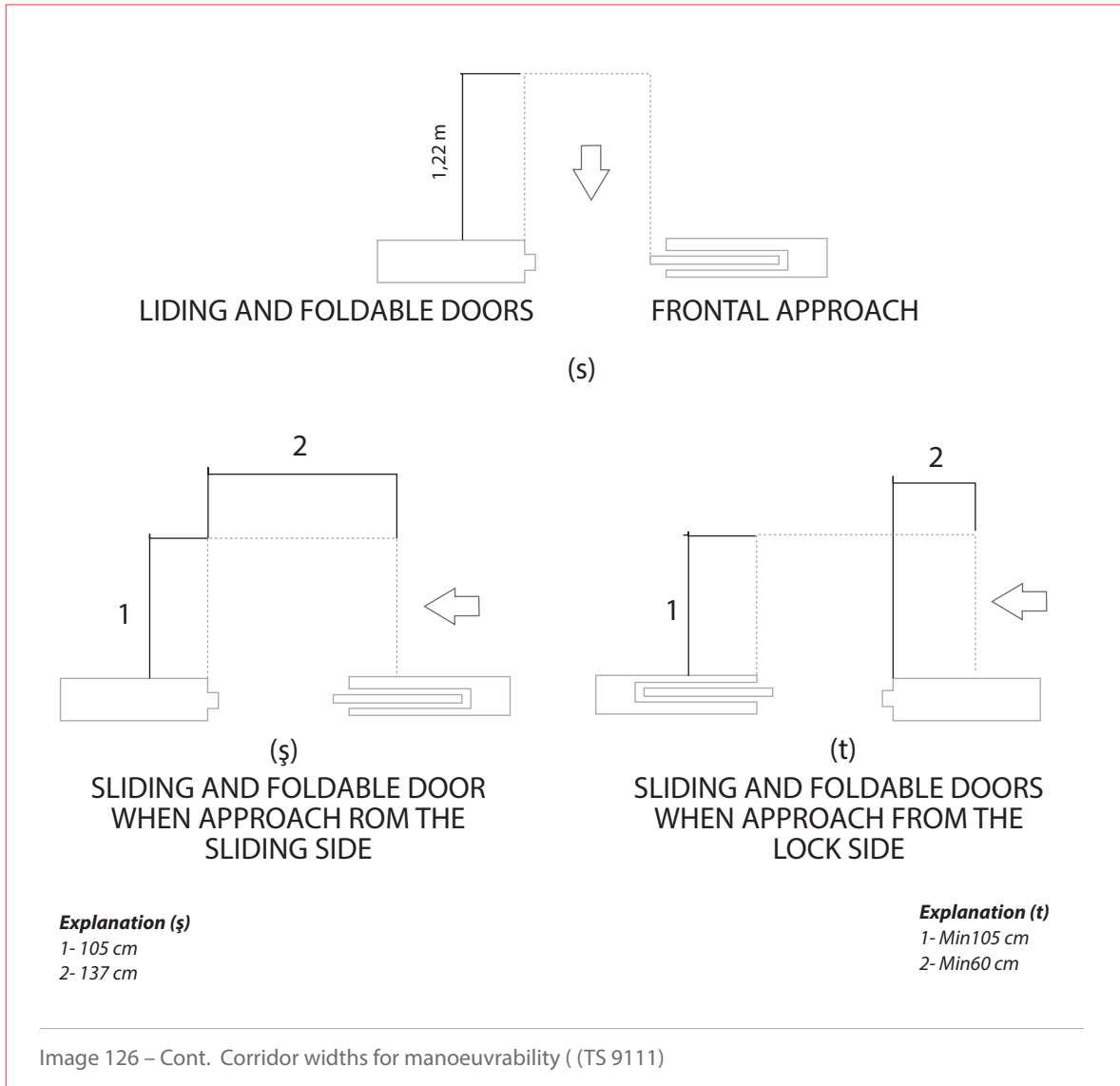


Image 126 – Cont. Corridor widths for manoeuvrability ((TS 9111)



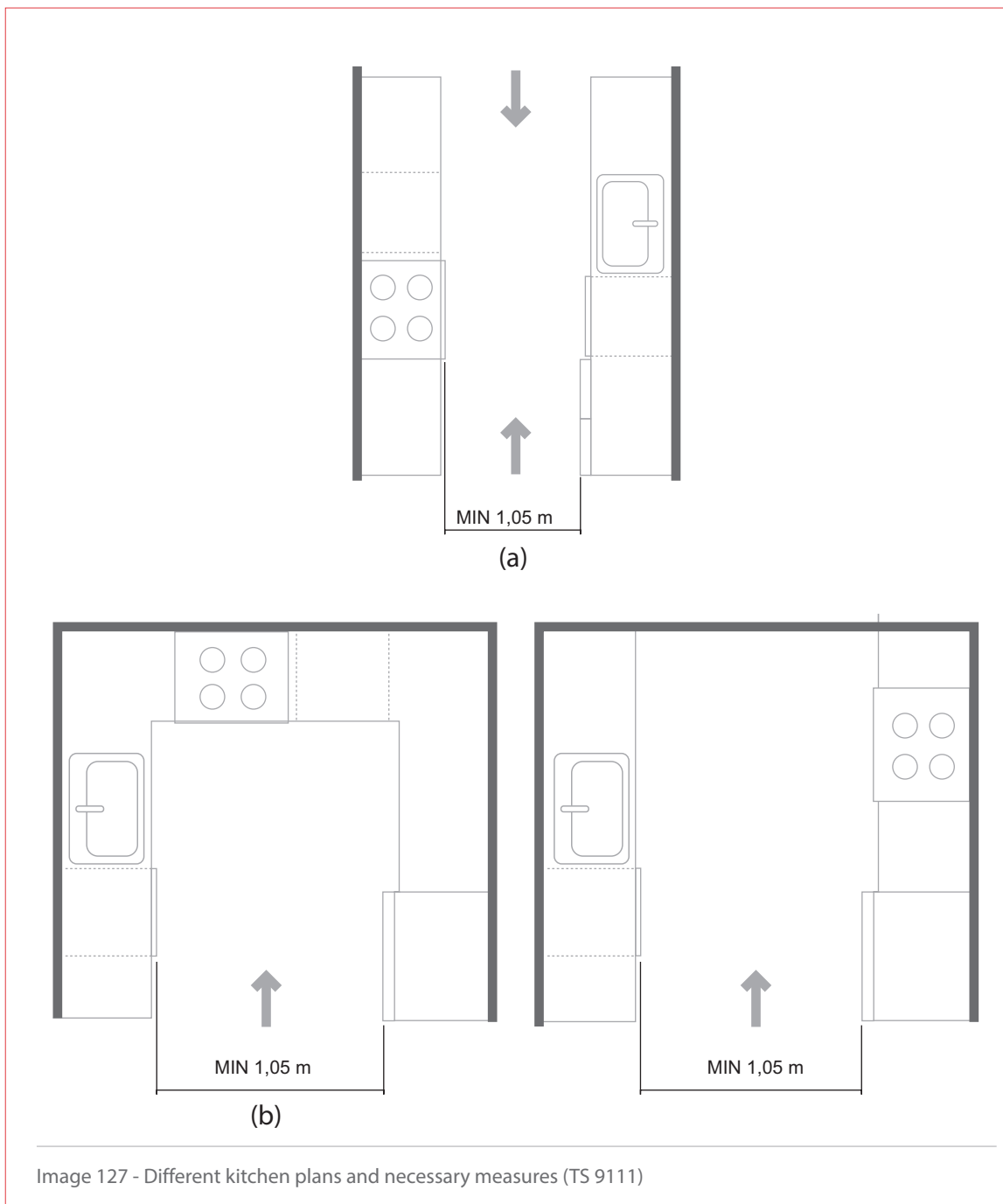
There should be handles on two different heights as 70 cm and 90 cm mounted on the walls in circulation areas. Narrow sided mold or steel panel radiators should be chosen for the radiators that will be used in circulation areas.

**13.7.23. Kitchens (TS 9111)**

Accessible and adaptable kitchens and their components should be on an accessible route.

**Plan net usage area (TS 9111)**

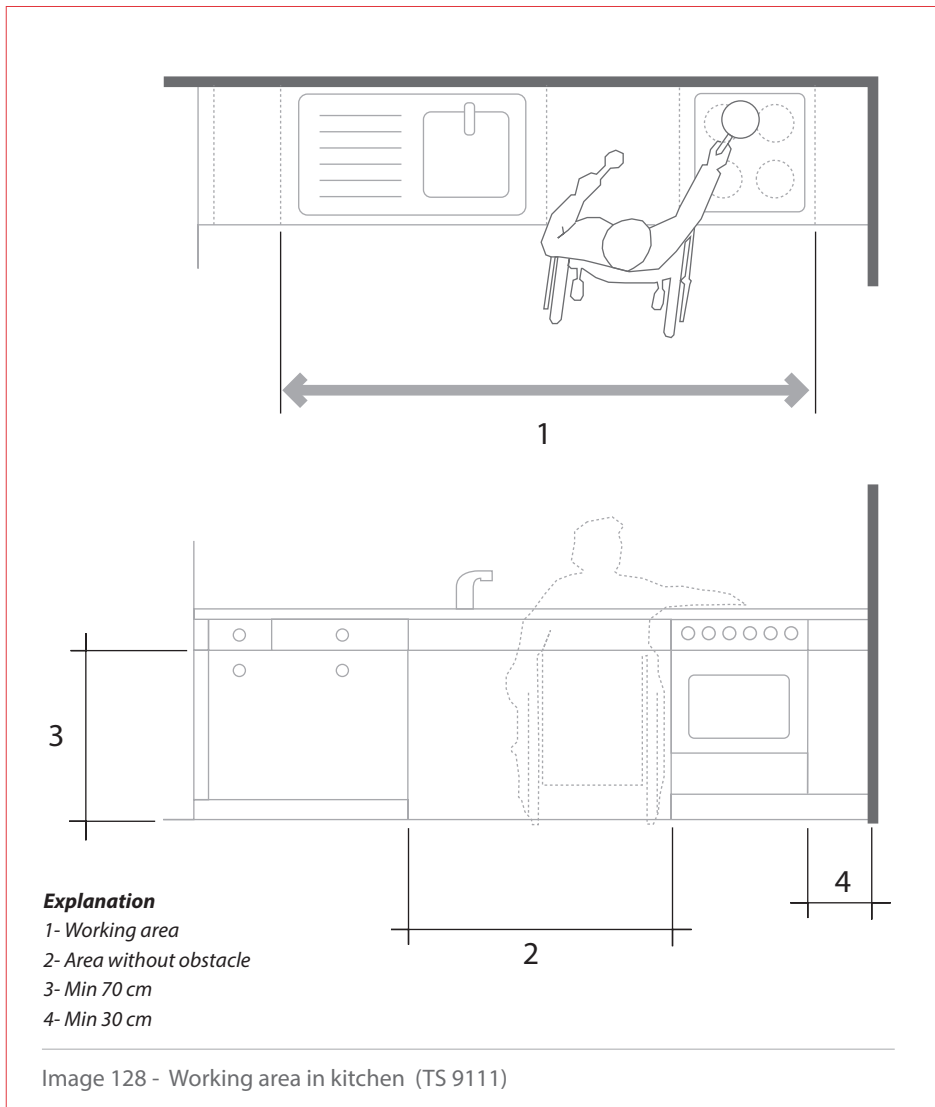
There should be an area without obstacle as min 150 cm x 150 cm measures or 150 cm radius left in the kitchens to let wheel chair users to manoeuvre. Spacing between all cupboards, benches and the walls, shouldn't be less than 105 cm (Image 127 a, b and c).





All hardware in the kitchen (oven, refrigerator/freezer, dish machine, etc.) should be arranged to allow wheel chair users to approach from front or sides and there should be a 80 cm x 122 cm measured movement area in front of these hardware.

Hardware in the kitchen (oven, refrigerator/freezer, dish machine, etc.) shouldn't be located in the corner. They should be located min 30 cm away from the inside corners (Image 128).

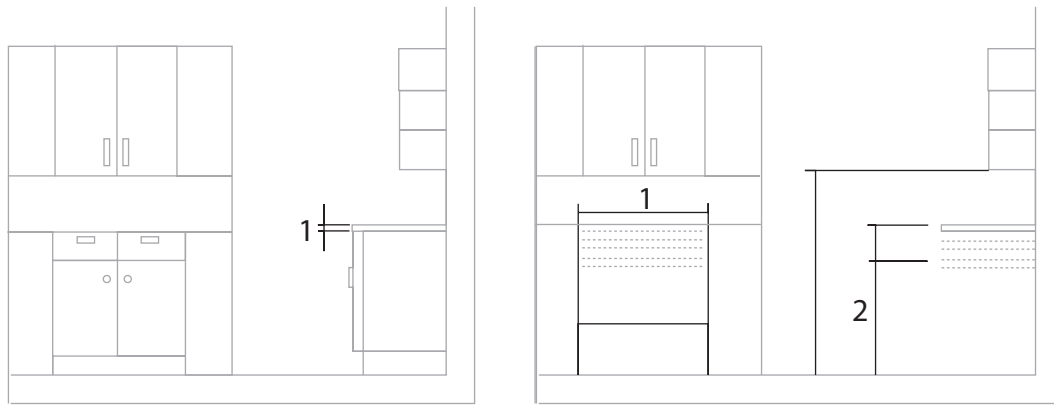


### Counters and working surfaces(TS 9111)

Min 80 cm length of the kitchen counter should be arranged as a working surface like in Image 129 a, b and c. If there is a sub-cabinet, min 80 cm part of the front surface should be removable in the using process. Counter can be applied so that counter upper surface and flooring (floor covering) upper surface height will be max 86 cm, counter lower surface and flooring (floor covering) upper surface height will be min 75 cm. If the counter is not fixed, it can be adjusted to provide different heights between counter upper surfaces and flooring upper surface (71,5-81,5-91,5 cm) or it can be a replaceable unit.



At the place where flooring area is 80cm x 122cm, a wheel chair user can approach the counter from front. Clear open area has min 80 cm width, 75 cm height and min 49 cm depth, should be left at the counter for the knees. There shouldn't be any rough and disturbing surfaces under these kinds of counters.

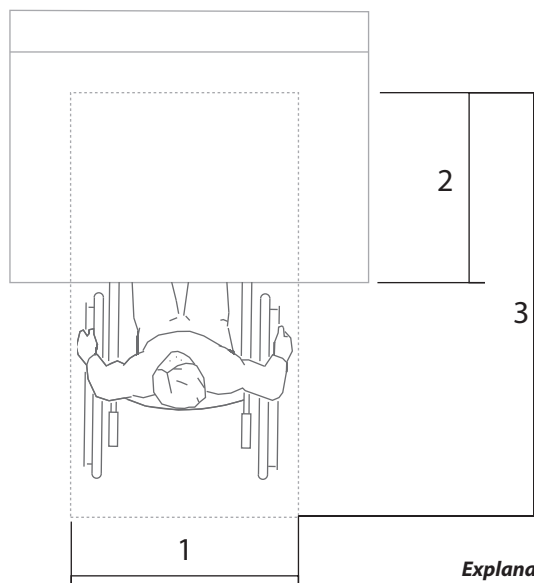


(a)  
BEFORE REMOVING CUPBOARD AND SHELF

(b)  
ALTERNATIVES FOR REMOVED CUPBOARD

**Explanation (a)**  
1- 5 cm

**Explanation (b)**  
1- 80 cm  
2- 71,5 - 91,5 cm



(c)  
CLEAR FLOORING AREA UNDER  
WORKING TABLE

**Explanation (c)**  
1- 80 cm  
2- 49 cm  
3- 1,22 m

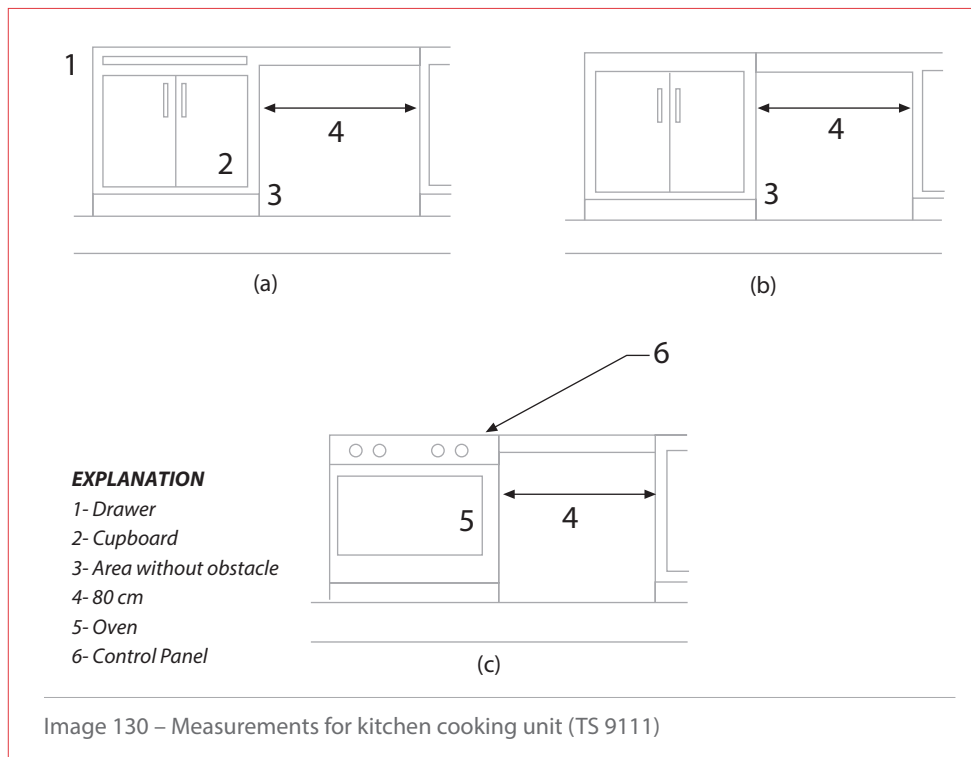
Image 129 - Kitchen counter measurements (TS 9111)



### Cooking unit, cookers (TS 9111)

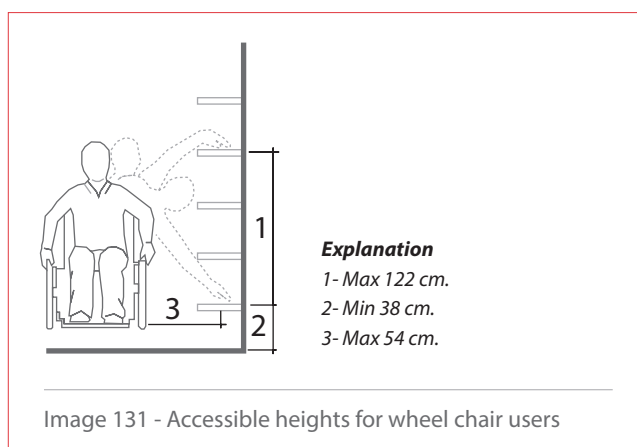
Clear open area of min 80 cm width, 70 cm height and 49 cm depth should be left for the knees under the cookers. If there are parts under the oven or the stoves that knees can get in, these should be taken into protection and isolated for preventing electric shocks and burnings.

Control buttons of ovens and stoves should be located to prevent burning on cross reaching.



### Kitchen cabinets (TS 9111)

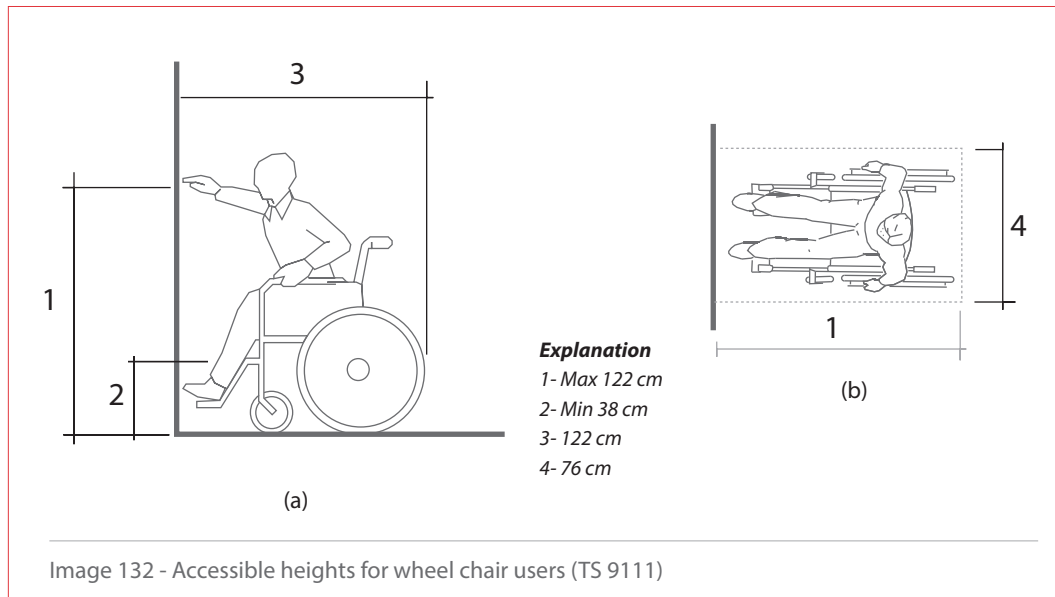
Cabinet, drawer and shelf accessibility measurements are given on Image 131.



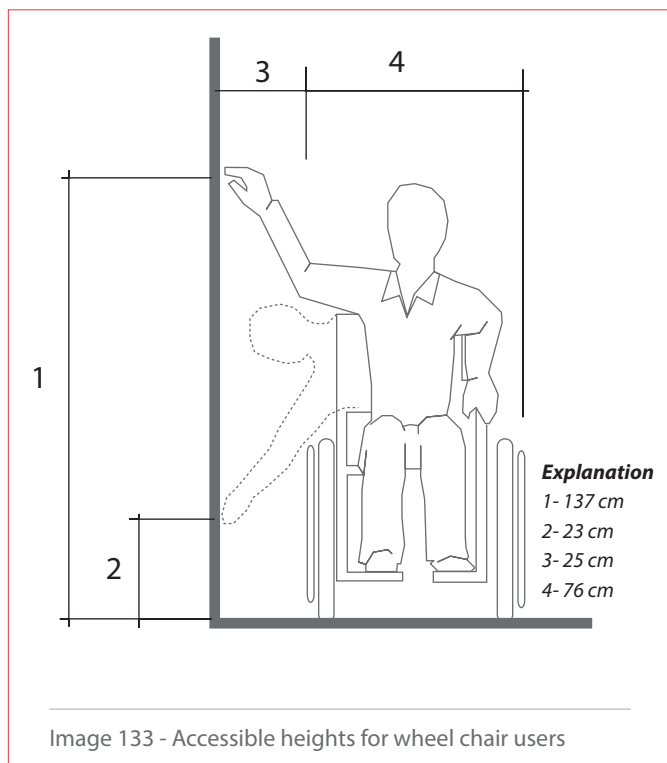


In all cabinet and storage shelves, at least one shelf should have a height of max 122 cm. Covering handles and pushing handles of upper cabinets should be as close as possible to the lower parts of the cabinet covers. Covering handles and pushing handles of lower cabinets should be as close as possible to the upper parts of the cabinet covers.

If it is only possible to get closer to an object from the front face, accessible heights should be between 38 cm to 122 cm for wheel chair users (Image 132 a and b).



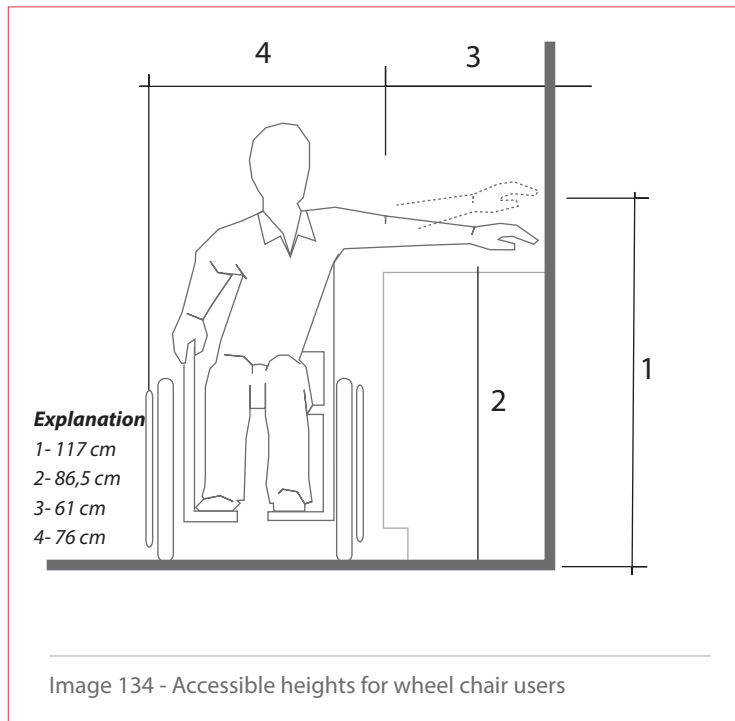
Accessible heights as parallel or from side face should be min 23 cm and max 137 cm (Image 133).







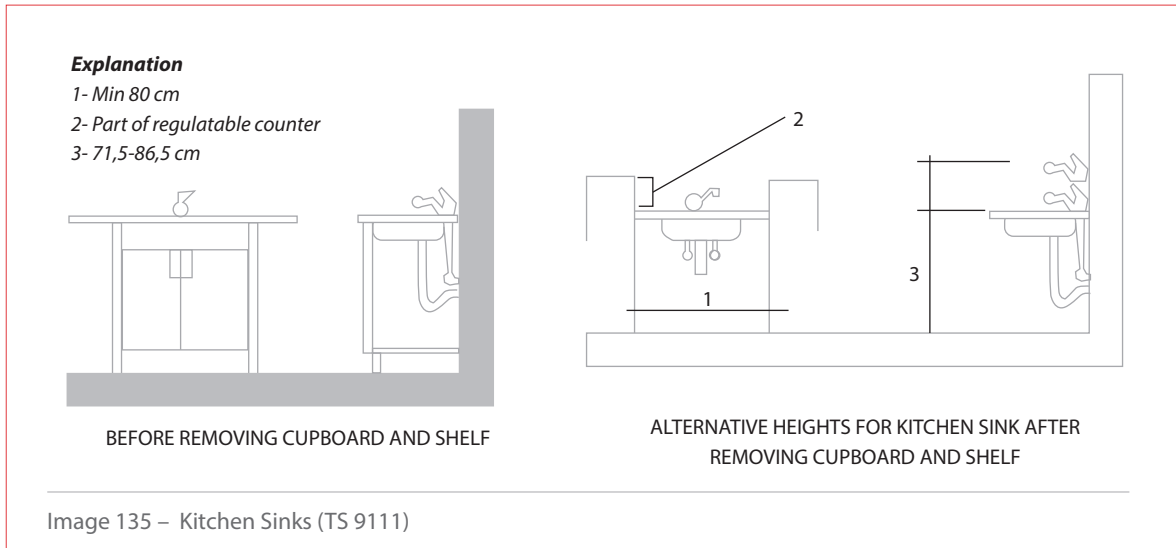
When persons wants to access counter from the side with at most 86,5 cm height and 61 cm depth, accessible height should be max 117 cm (Image 134).



### Kitchen Sink (TS 9111)

Sinks and the counter around it should have following properties and should be according to Image 135.

- sink and the sink counter can be applied as max 86,5 cm height between upper surface and flooring upper surface or it can be adapted to provide different heights (71,5-81,5-91,5 cm) between counter upper surface and flooring upper surface or it can be a replaceable unit. Sink and around of counter should have total 76 cm width.
- Piping for providing water coming/leaving for sinks can be attached to 71 cm height.
- Sinkhole shouldn't be deeper than 16,5 cm. In sinks with two or three cells, it is enough that only one cell provides this condition.
- If there are lower cabinets, min 76 mm full part of the frontal face of the sink and around of counter, should be detachable/separable. On the necessary clear opening area, thickness of counter and carrying part can be max 50 mm.
- In the sizes of 760 mm x 1220 mm clear flooring surface can let frontal approach to the counter. Max 49 cm of the clear flooring surface can reach under the sink.
- Min 76 cm width and 49 cm depth of a clear open area should be left for the knees.
- There shouldn't be any disturbing and rough surfaces under the sink. Hot water and drainage pipes should be isolated or covered.



### Ovens (TS 9111)

Ovens should be self-cleaning or they should be located adjacent on a counter that has knee opening and adaptable height under it. In the side opening ovens, door latch should be next to the open counter surface. Control buttons in ovens should be on the front panel.

### Refrigerator/ Freezer (TS 9111)

In refrigerators combined with freezers, min 50% of the area should be less than 137 cm height from the floor. All of the refrigerator area and control buttons should be lower than 137 cm from the floor.

### Trashcan (TS 9111)

Trashcans should be accessible.

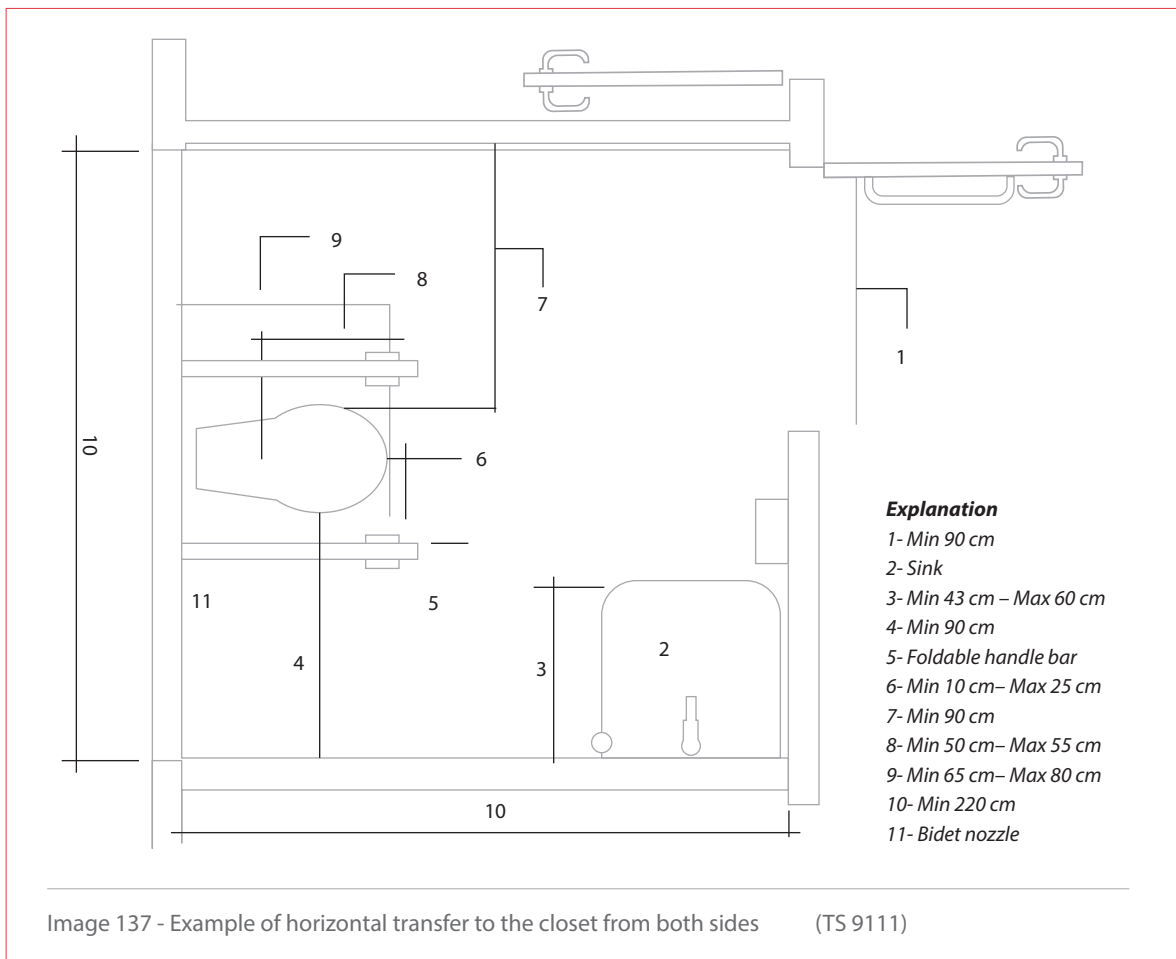
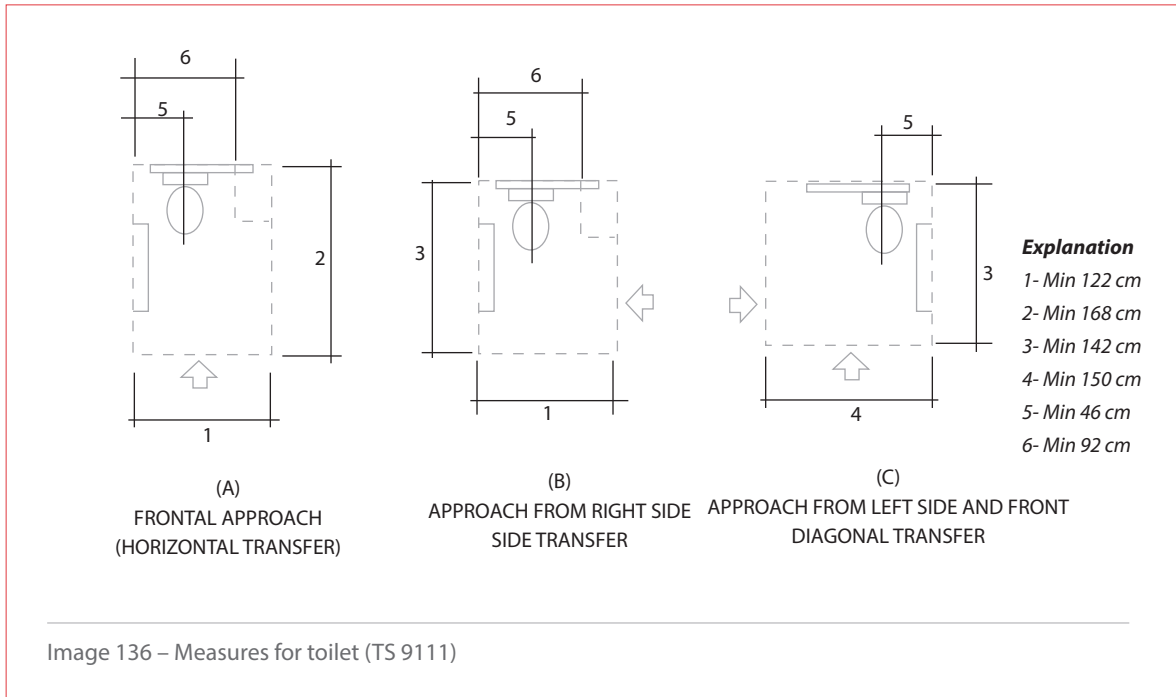
### 13.7.24.Toilets (TS 9111)

1 woman disability toilet and 1 man disability toilet, urinal and sink should be located as accessible for max 25 persons In buildings like office, mall, store, market, bazaar, hotel etc. and for max 50 persons in public buildings like movie theatres, theatres etc.

### Plan of clear usage area (TS 9111)

Toilets should be located on an accessible route. Minimum flooring surface can be arranged as left or right approach in the toilets.

Providing the door opening to the outside, minimum clear width and depths of floor surface should be 122cm x 167,5 cm on frontal approach (for a straight transfer); 122 cm x 142 cm on right approach (for a diagonal transfer); 150 cm x 142 cm on both frontal and left approach (for side transfer). When Closet is located, middle axle should be min 46 cm away from side wall and clear width of closet should be min 92 cm. For toilets with different plans, measurements are given on Image 136, 137, 138, 139 and 140. Closets should be used in toilets.



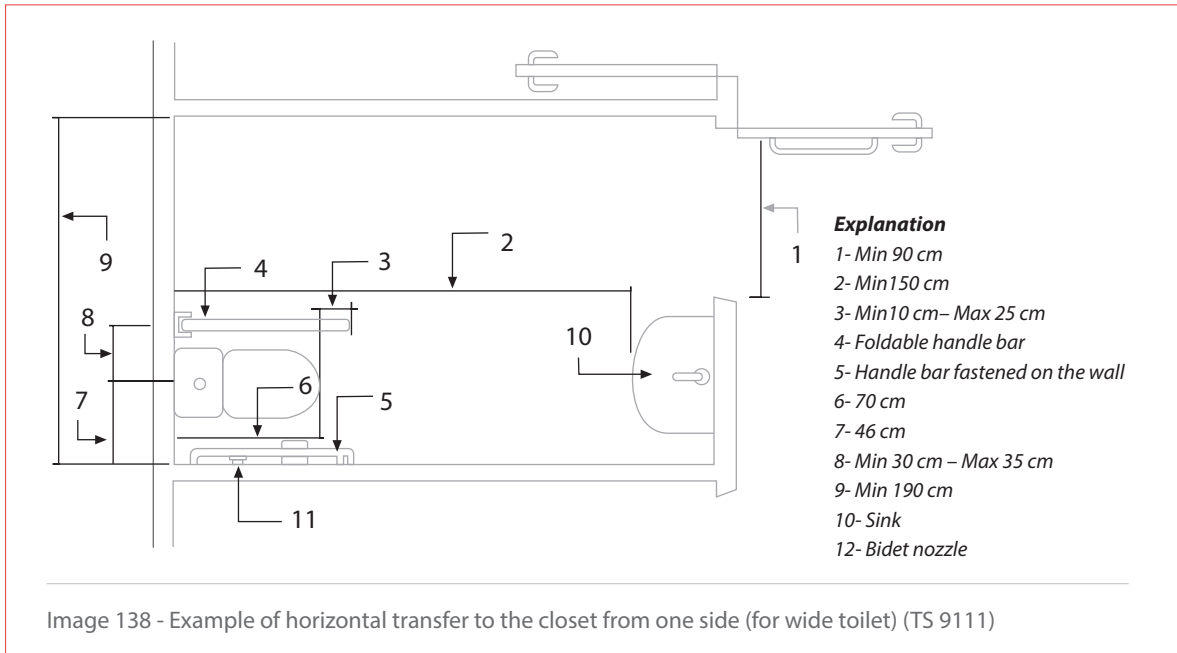


Image 138 - Example of horizontal transfer to the closet from one side (for wide toilet) (TS 9111)

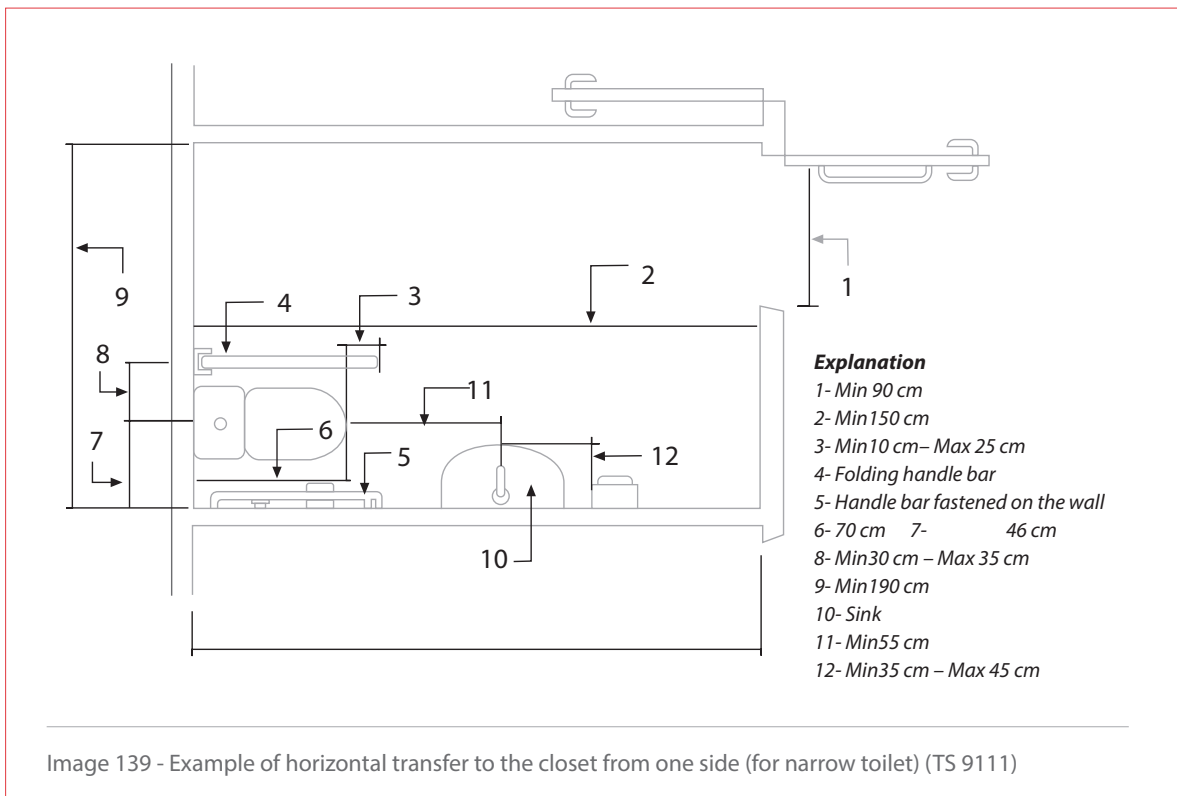
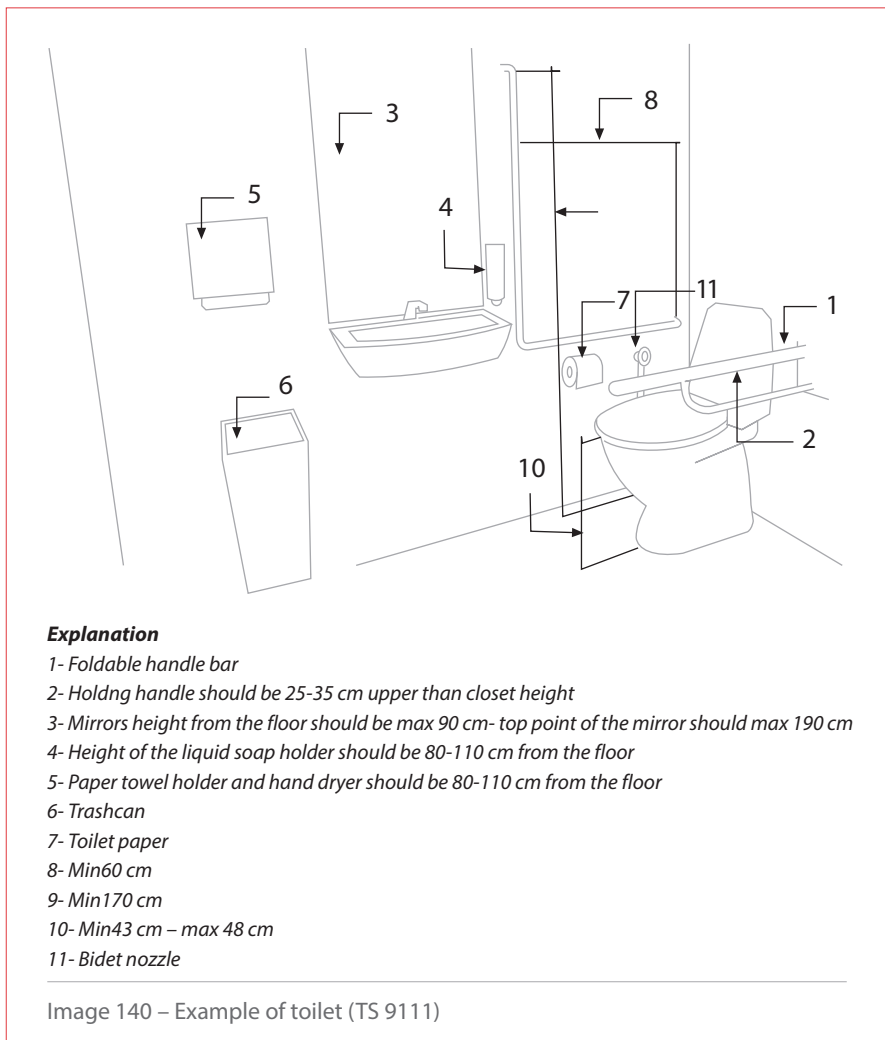


Image 139 - Example of horizontal transfer to the closet from one side (for narrow toilet) (TS 9111)



### Flooring (TS 9111)

Flooring of the toilets should be designed as without level differences and not to prevent the movement of the wheel chair. If there is a level difference at the entrance, it shouldn't be more than 6 mm. Level differences between 6-13 mm should be attached with a slope not more than  $\frac{1}{2}$ . Bathroom and toilet outgoings should be designed to prevent water accumulation in front of the door.

### Doors (TS 9111)

Hinged doors should be able to open min 90 degrees. Clear opening on the doors should be min 90 cm.

### Toilet Cabinets(TS 9111)

Toilet cabinets should be at an accessible route. A standard toilet cabinet with min 150 cm width shouldn't have less than 142 cm depth if it's mounted to the wall and 150 cm, if it's mounted to the floor.

Light control switches should be inside the toilet cabins or they should be automatic with movement.

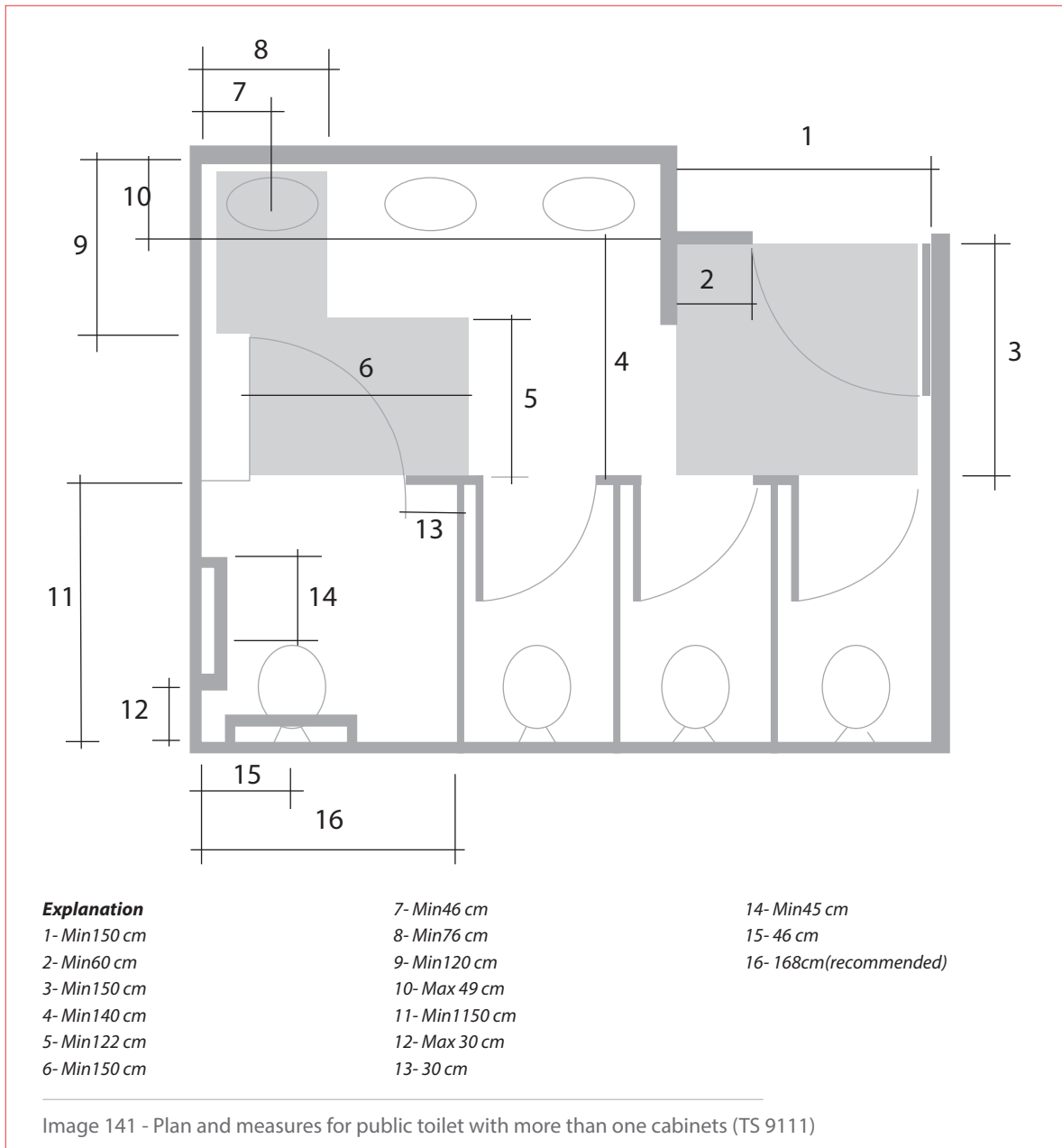
Since the time spent by persons with disabilities in the toilet and bathroom is long, toilet section and the bathroom should be arranged as separate as possible.

In public disability toilets, emergency call appliance should be located to access from the closet and the



floor and it should have a feature to work with pulling a rope.

Toilet plan and measures for public toilets with more than one cabinets are given in Image 141 and 142.



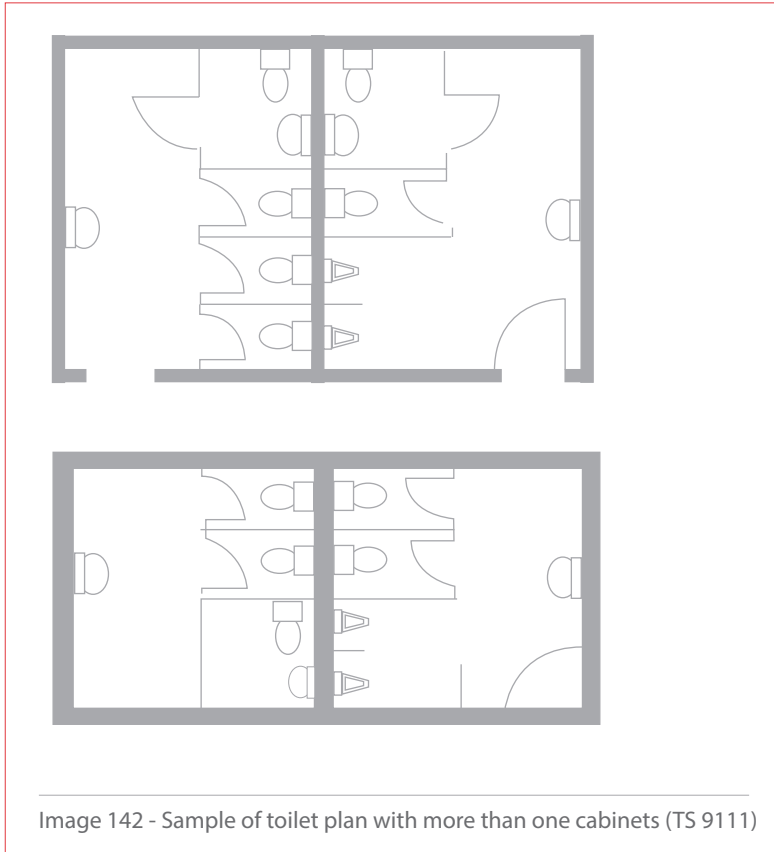


Image 142 - Sample of toilet plan with more than one cabinets (TS 9111)

### Height (TS 9111)

Sitting spots of the closets should have a height between 43 cm and 48 cm. It is recommended that the closet is able to be mounted an adapter for adjusting the height

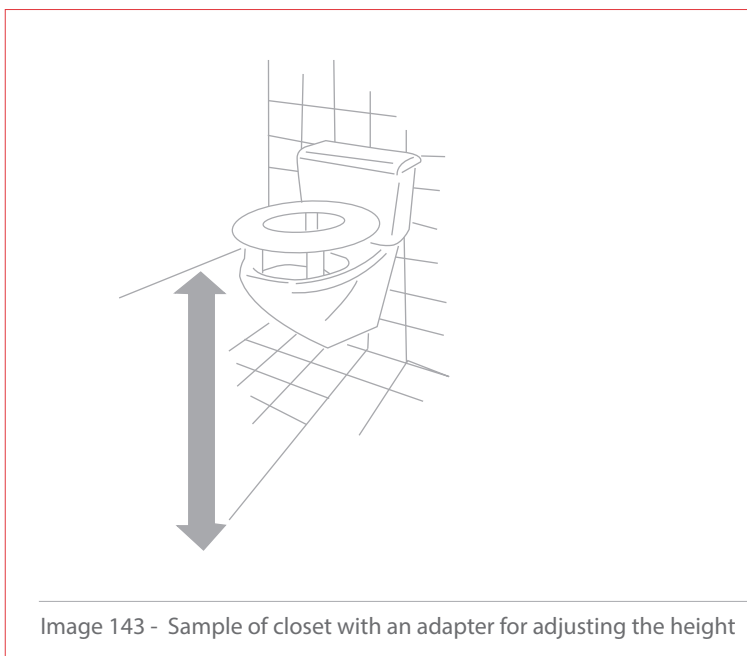
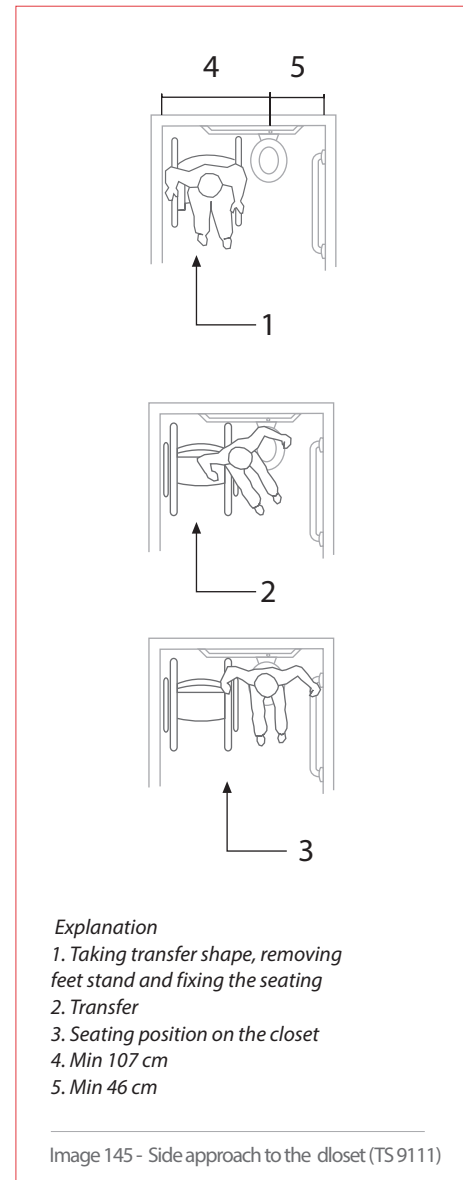
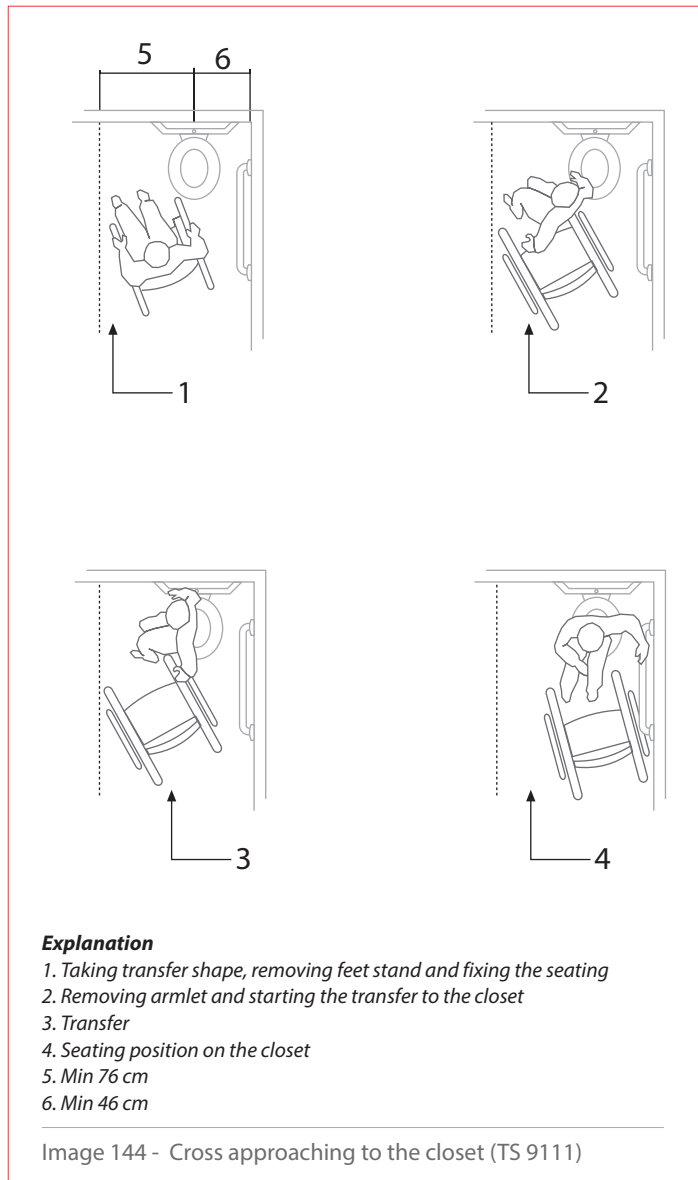


Image 143 - Sample of closet with an adapter for adjusting the height



Closet should be located to allow transfer from the wheel chair to the closet. Cross and side approaching to closet examples and measurements are given in Image 144 and Image 145.



### Water control (TS 9111)

It is recommended that the flush handles should be photo celled but it can also be remote controlled by hand or automatic. These handles should be easily controlled by hand and it shouldn't require more power than 22,2 N. Flush handle should have max 112 cm height from the floor. Bidet nozzle should be easily controlled by one hand and they should be in the accessible distance.

### Toilet paper holder (TS 9111)

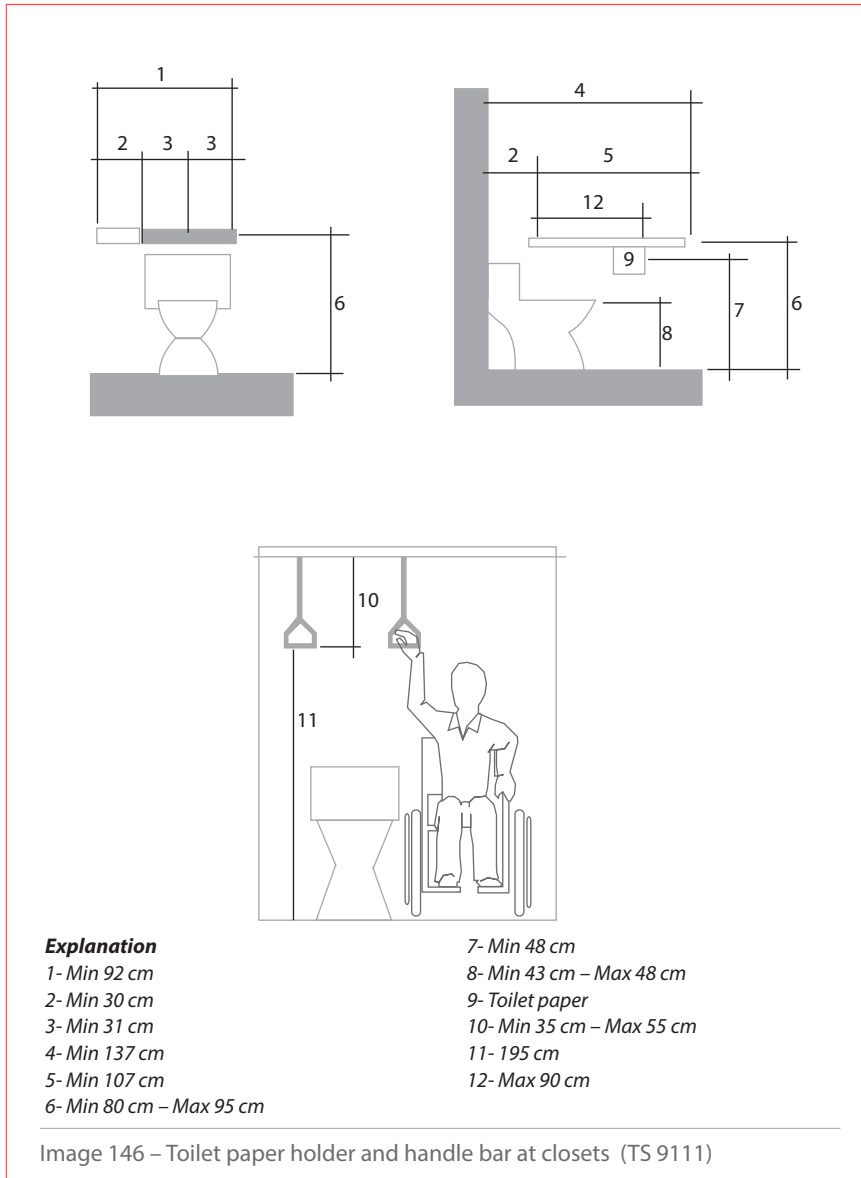
Toilet paper holders should be according to and should be located accessible height and have features as Image 146. For the closet mounted on the back wall, distance of toilet paper holder shouldn't be more than 90 cm from the wall.





### Handle bar at closets (TS 9111)

Handle bar at closets should be designed according to Image 146.



Radius of the handle bar should be between 32 mm and 38 mm. if it is mounted on the wall, there should be 4 cm distance between the wall and the handle bar.

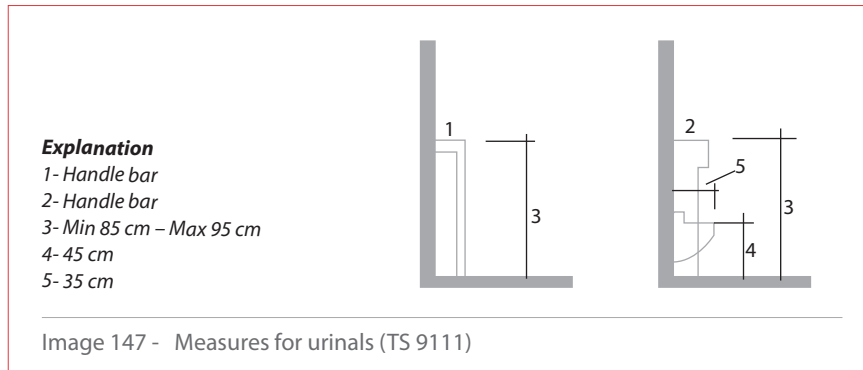
Handle bar on the back wall of the closet should have height between 80 cm and 95 cm. Handle bar on the wall that is at the back of the closet should have at least 92 cm length. Handle bar should continue min 30 cm to the right or left side from the closet. The other side of the handle bar's length should be min 62 cm.

Handle bar that are located on the side of the closet also should have max 30 cm distance to the wall and they should have min 107 cm length. Distance for the tip of this handle bar from the back wall should be min 137 cm. Handle bar on the side wall should have 80 cm – 95 cm height from the floor.



### 13.7.25. Urinals (TS 9111)

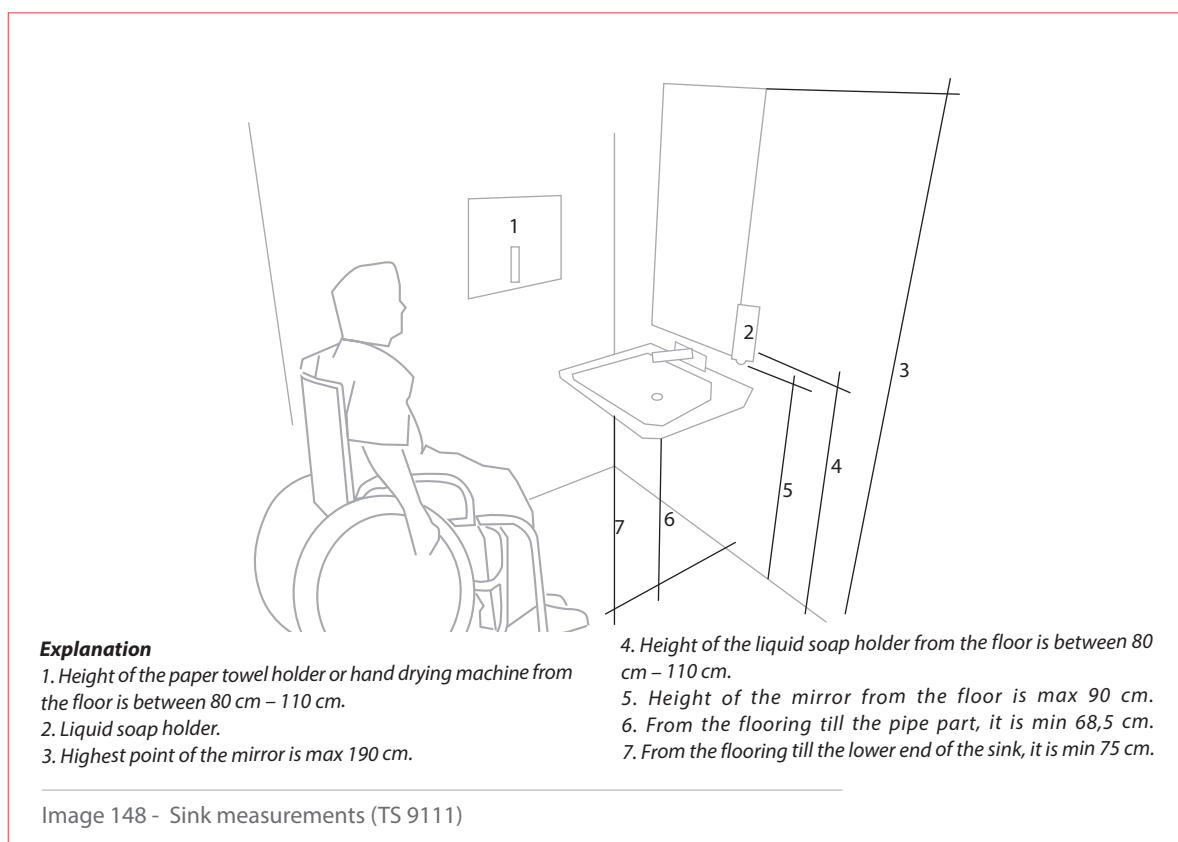
Urinals should be designed as a section or As Hanged type by longest side on the wall that have max 45 cm height from the flooring.



A clear area of 76 cm x 122 cm in front of the urinals should be provided for frontal approach. This area can cross with the accessible route. Urinal sections shouldn't be longer than urinal edges, in these cases, clear gap between urinal edges can be left as 74 cm.

### 13.7.26. Sinks (TS 9111)

Pedestal wash basin shouldn't be located and there shouldn't be any cabinets under the sink. Sink measurements should be according to Image 148.

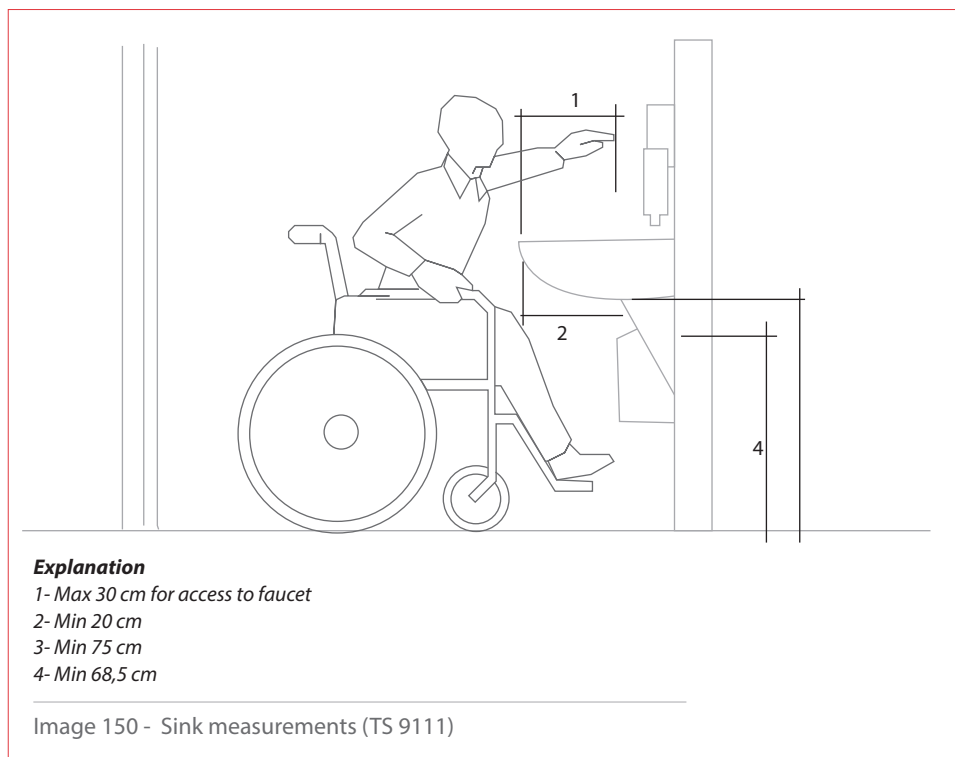
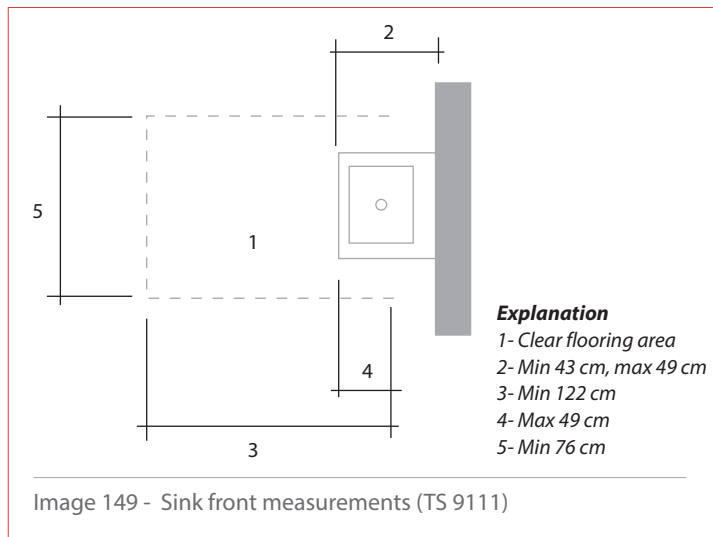




For the sink use, an empty floor surface in front of the sink and a knee opening under the sink should be provided (Image 149). Sink depth (distance of the front end to the wall) should be min 43 cm and max 49 cm.

On the frontal approach, there should be a 76 cm x 122 cm clear flooring gap in front of the sink. Max 49 cm left of this clear flooring surface can be extended under the sink (Image 149). Height from the flooring till the pipe section of the sink should be at least 68,5 cm for the knee space. This minimum height should also have 20,5 cm depth from the front end of the sink inward.

Clear height of sink should be min 75 cm till the sink's lower end and max 86 cm till the sink's front upper end (Image 150).

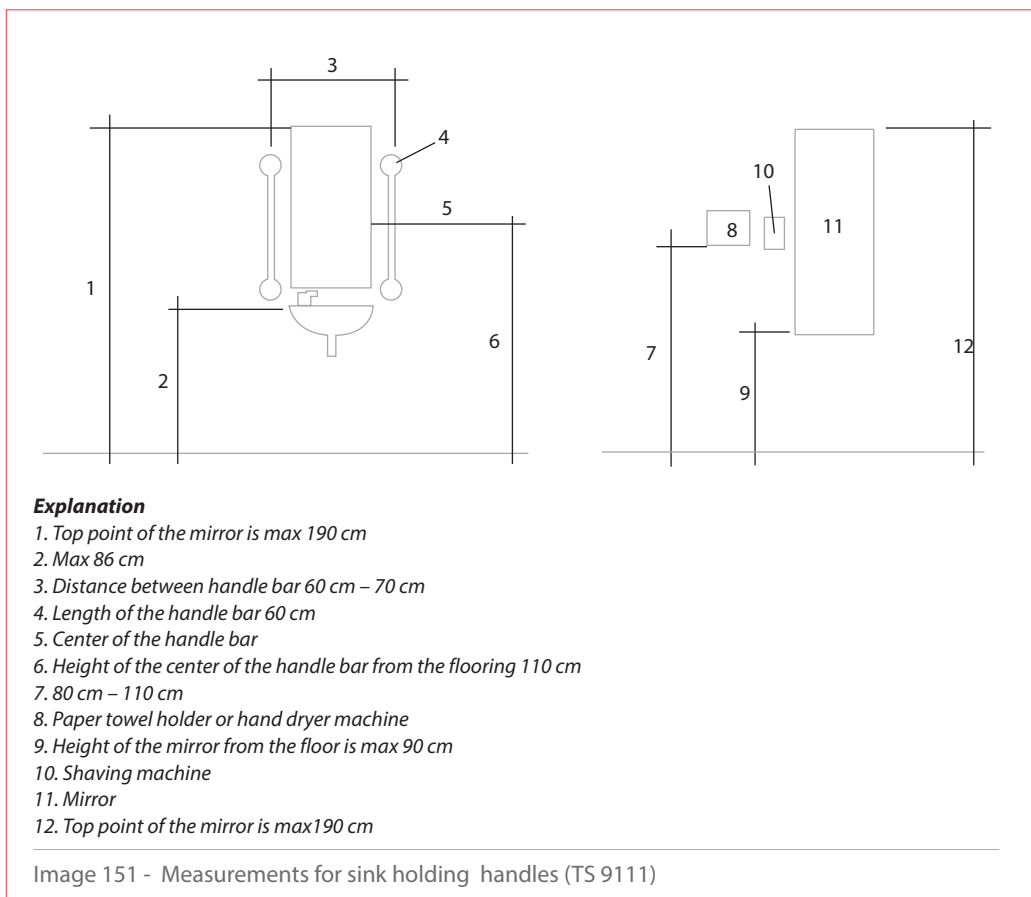




Armatures (faucet, taps) should be with handle, pushing type or with a electronic control mechanism. Faucets and other control devices should be used with one hand easily and should not require more power than 22,2 N to work. If faucets with photocell feature are being used, they should stay open for min 10 seconds. When choosing armatures, it is important to consider the distance between hand and sink during the hand washing easy.

Hot water and drainage pipes under the sink should be isolated or protected against touch. There shouldn't be any rough and disturbing surfaces under the sink.

On either sides of the sink, handle bar should be located for individuals having problem with standing up (Image 151).



### 13.7.27. Mirrors (TS 9111)

Lower end of the mirrors should be max 90 cm from the floor and the upper end should be min 190 cm height. Adaptable mirrors for wheel chair users that can come up and down should be preferred, when the mirror is stable, mirror with 10 degrees to 15 degrees slope to the front should be preferred.

### 13.27.28. Bathrooms (TS 9111)

Bathrooms should be located on accessible routes and they should be designed to enter and move around comfortably with a wheel chair. Shower tank instead of bathtub should be preferred.

### Plan of clear usage area (TS 9111)

Clear flooring area is designed taking into account the approach to bathroom entrance and the bathing unit (bathtub, shower) with the wheel chair (Image 152, 153, 154 ve 155).

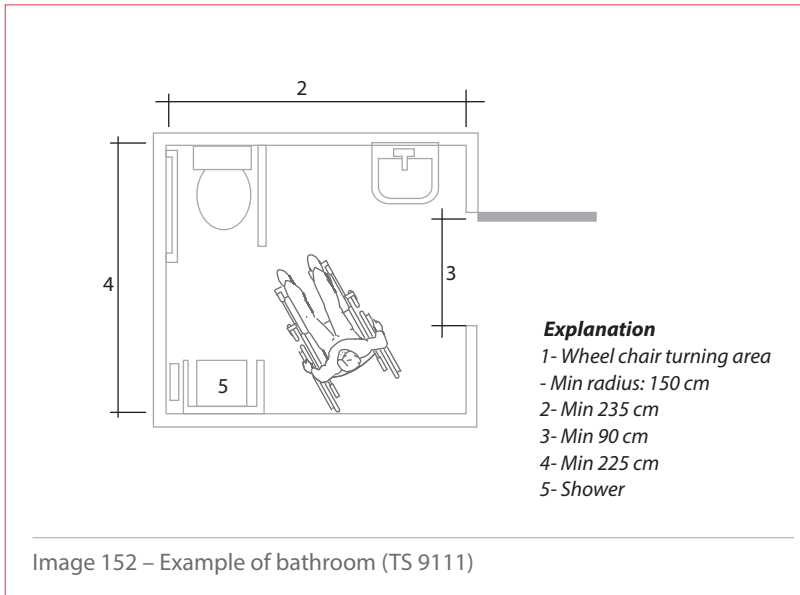


Image 152 – Example of bathroom (TS 9111)

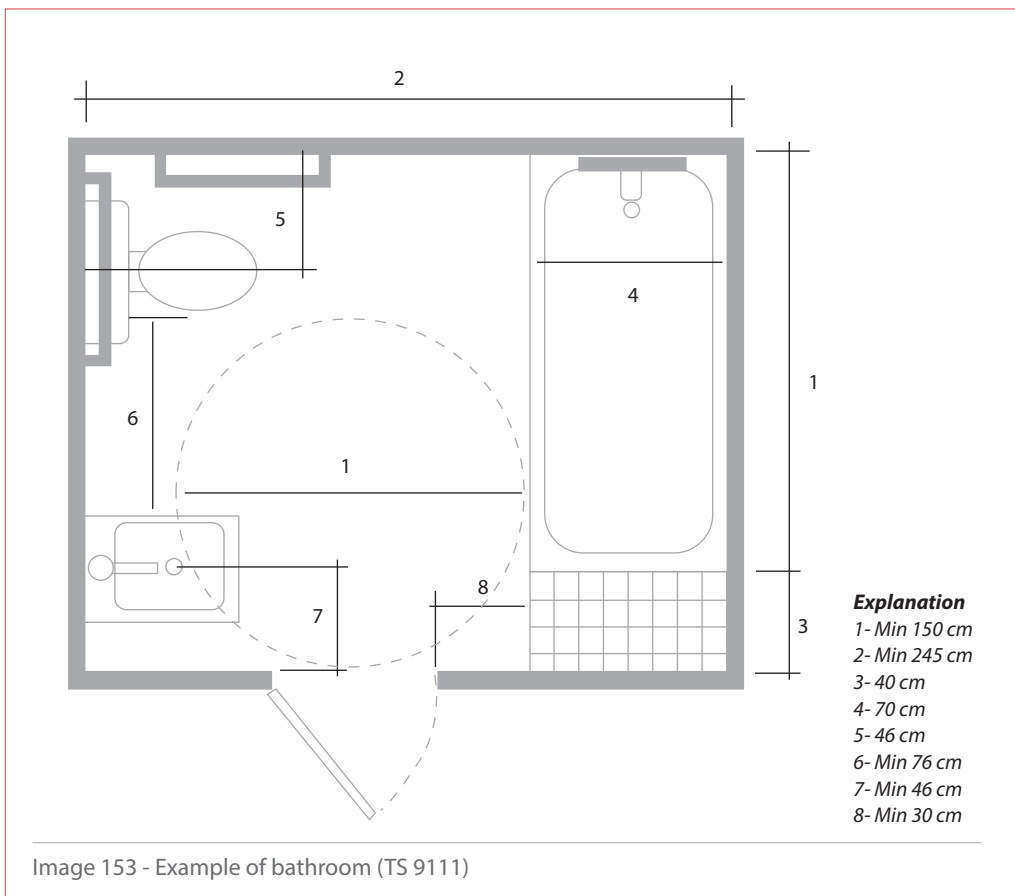
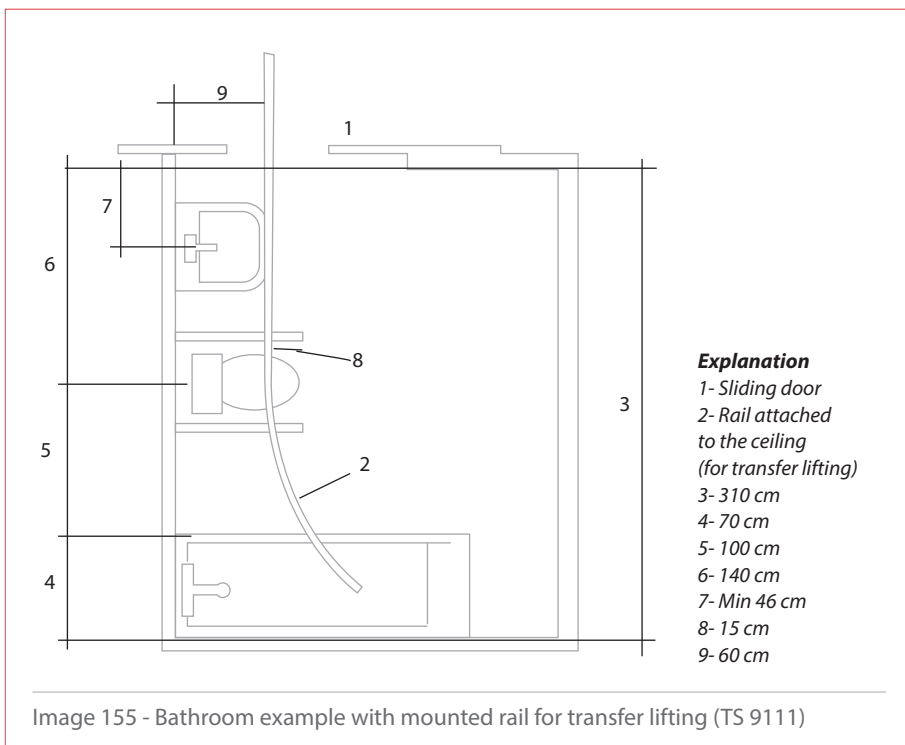
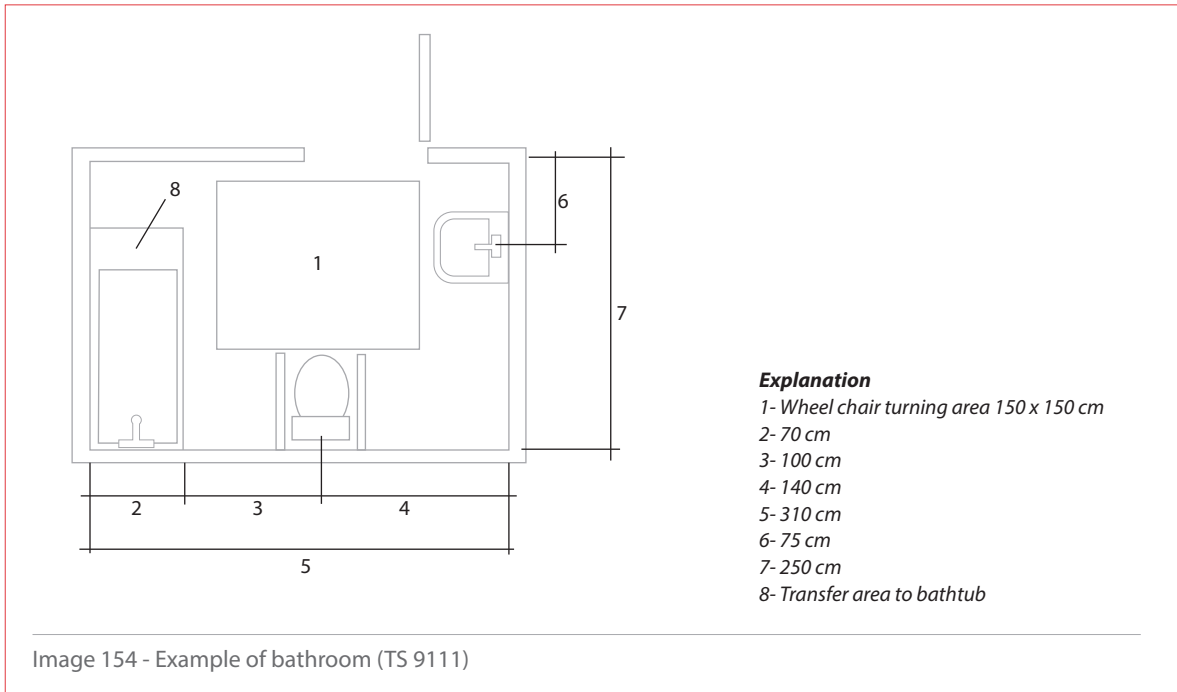


Image 153 - Example of bathroom (TS 9111)





### Doors (TS 9111)

Hinged doors should open min 90 degrees. Clear opening at the doors should be min 90 cm.

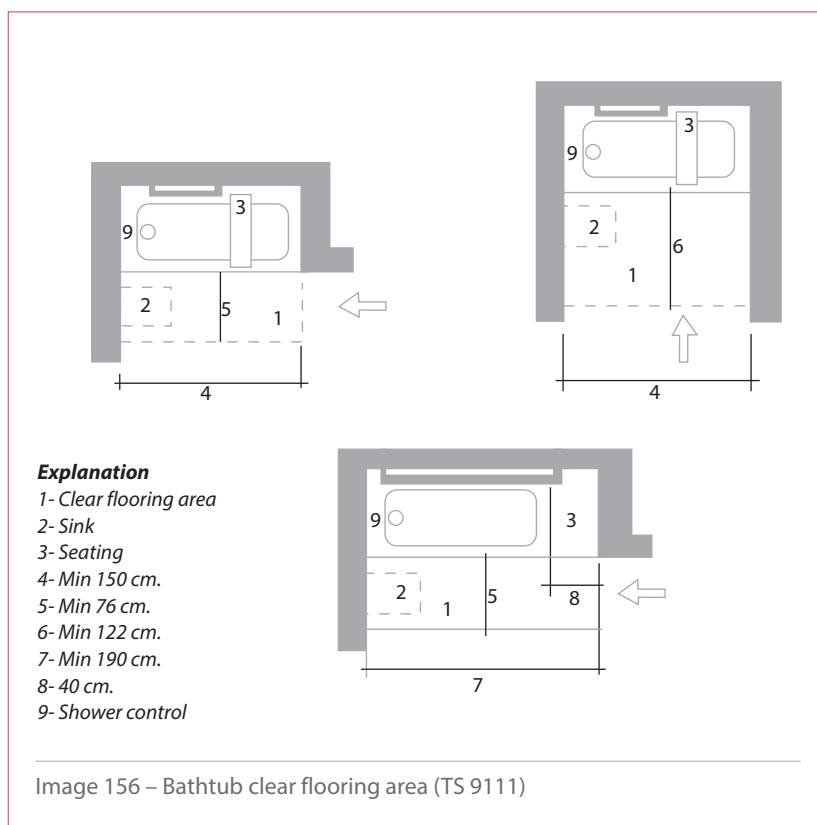
### Bathtub (TS 9111)

Usage area in front of the bathtub should be proper with “Image 153,154 and 155” depending on the different hardware and plans in the bathroom.

If there is an approach from side to the bathtub, there should be clear opening as min 76 cm width and min 150 cm length. If there is a vertical approach to the bathtub, a clear open space is needed min 122 cm width and min 150 length.

If there is seating on the head side of the bathtub, there should be opening on the parallel approach as min 76 cm width and min 190 cm length (Image 156).

Clear height of the bathtub from the floor should be max 45 cm – 50 cm. Special bathtubs that the side of the bathtub can be opened and closed, can be preferred. Bathtub base shouldn't be gradual.



**If there is a seating place in the bathtub (TS 9111):**

There should be a handle bar of min 60 cm length from the outer edge on the feet part. There should be two handle bar on the back wall. Handle bar mounted on the back of the bathtub (long side) should be min 61 cm length and they should be max 61 cm away from the head side of the bathtub and max 30 cm away from the foot side.

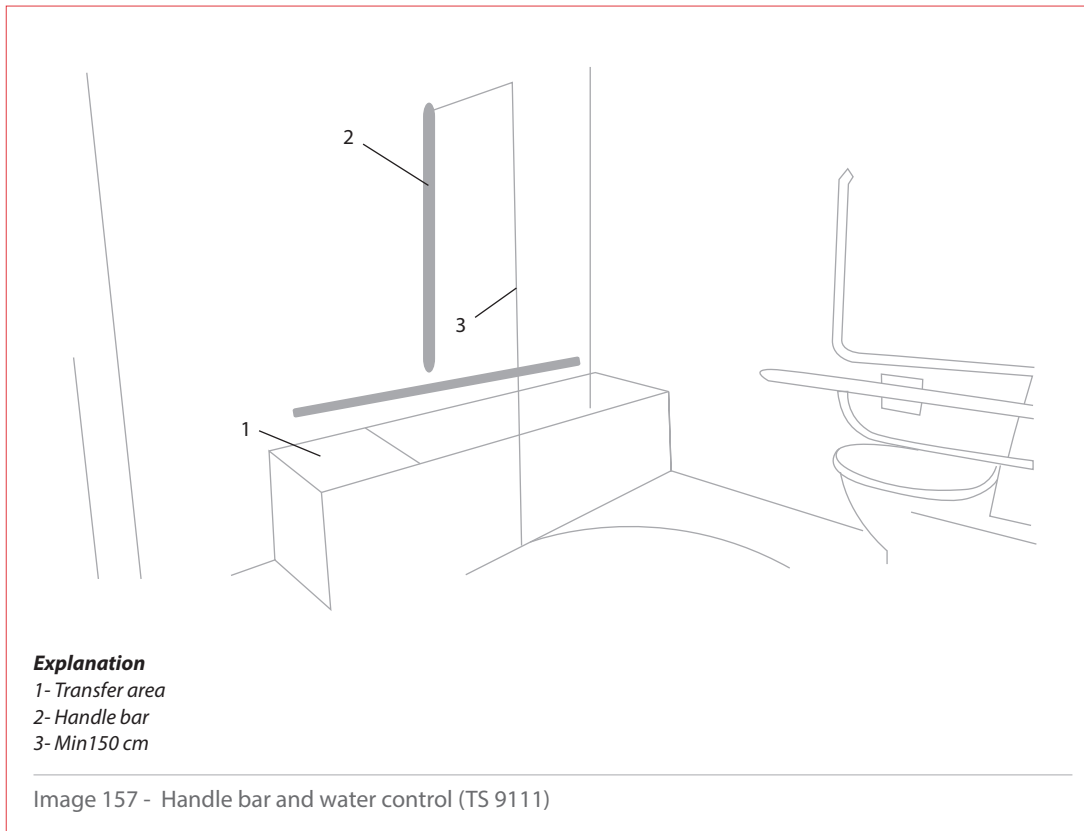
A handle bar should be located over 23 cm of the bathtub edge. Others should be over 84 cm and 91 cm of the bathroom floor. Handle bar on the head side of the bathtub should be min 30 cm from the bathtub's outer edge.

**If there is a seating on the head side of the bathtub (TS 9111):**

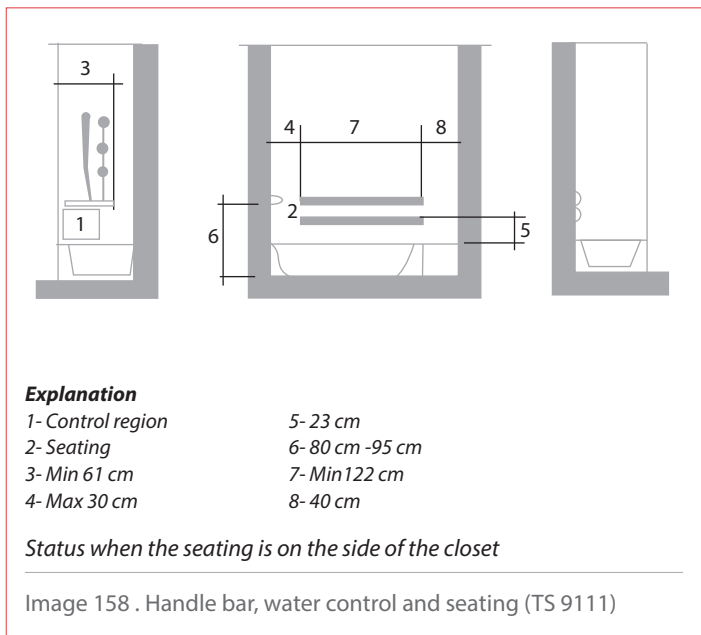
There should be min 60 cm length handle bar at the foot side of the tub. Two handle bars are necessary on the back wall.

Handle bars mounted on the back side of the bathtub (longer side) should be min 122 cm length and they should be located max 38 cm from the head side of the bathtub and max 30 cm from the foot side of the bathtub. Heights of the handle bars are as defined on up.

Place and height from the floor of the handle bar should be designed according to Image 157 and Image 158.

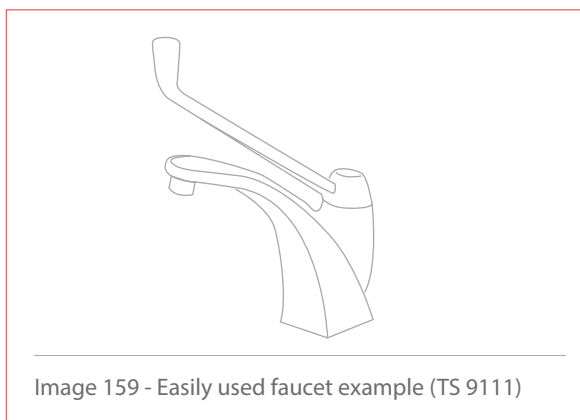






### Faucets (TS 9111)

Faucets and other control appliances should be manageable with one hand and easily; they shouldn't require more power than 22,2 N (Image 159)



### Shower (TS 9111)

Showerhead should have min 160 cm hose and it should be used both as a stable showerhead and by holding hand. When a shower that has an adaptable height on a vertical stick is used, it should be located not to prevent the usage of vertical handle bar heater of water should be controlled by thermostat.

### Seatings (TS 9111)

There should be a moving seating appliance in the bathtub or an area should be left for seating on the side of the bathtub. Width of the seating should be 40 cm. Seating parts should be mounted safely and they shouldn't slip during usage.



### Bathtub cabinet or curtains (TS 9111)

If there are any bathtub panels, they should not prevent entrance/exit to the bathtub and access to the controls and use the seating. There shouldn't be railings attached to the bathtub edges on the panels that enclose the tub.

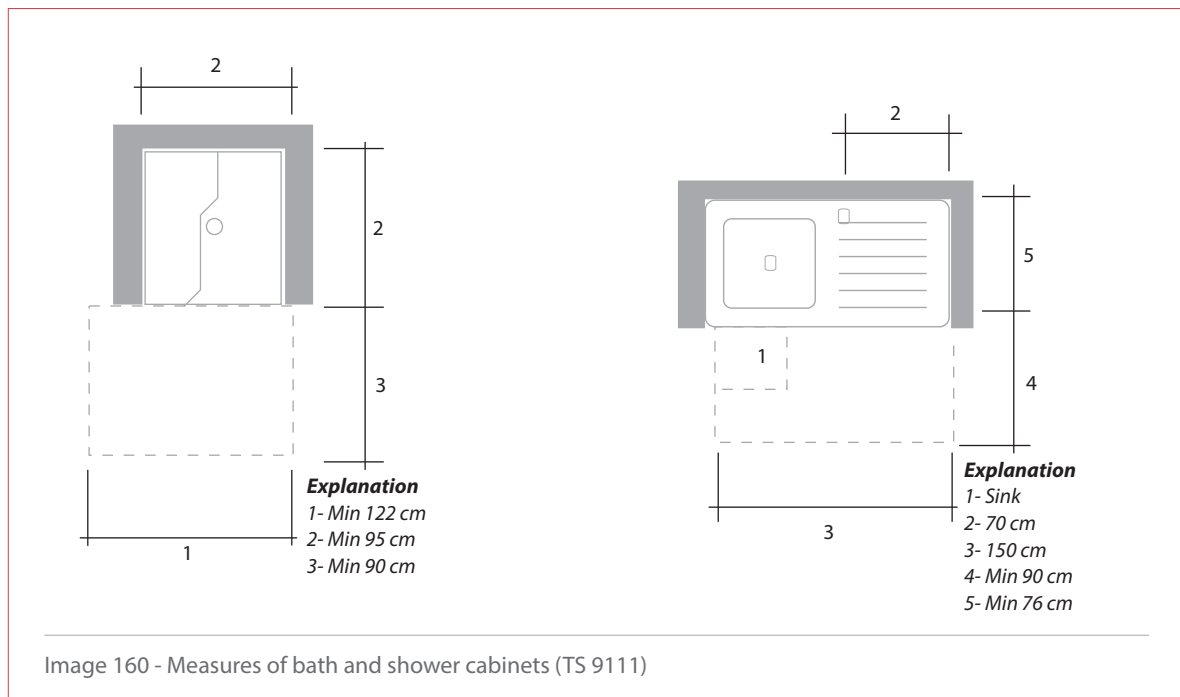
### Bathtub edge (TS 9111)

Width for long outer edge of the bathtub should be between 8 cm and 12 cm for persons with disabilities and elderly to be able to sit easy. Edge that looks outside shouldn't be shaped to cut the body.

### 14.1.17 Shower Cabins (TS 9111)

#### Clear usage area

Shower cabins should be min 95 cm x 95 cm or 76 cm x 150 cm sizes (Image 160,161 and 162). In a 95 cm x 95 cm shower tray; a clear opening as min 90 cm width and min 122 cm length should be provided for parallel approach in front of the shower bathtub. The clear length of opening area in front of a shower tray that is 76 cm x 150 cm, should be min 150 cm throughout the shower tray and the width should be min 90 cm (Image 160, 161).



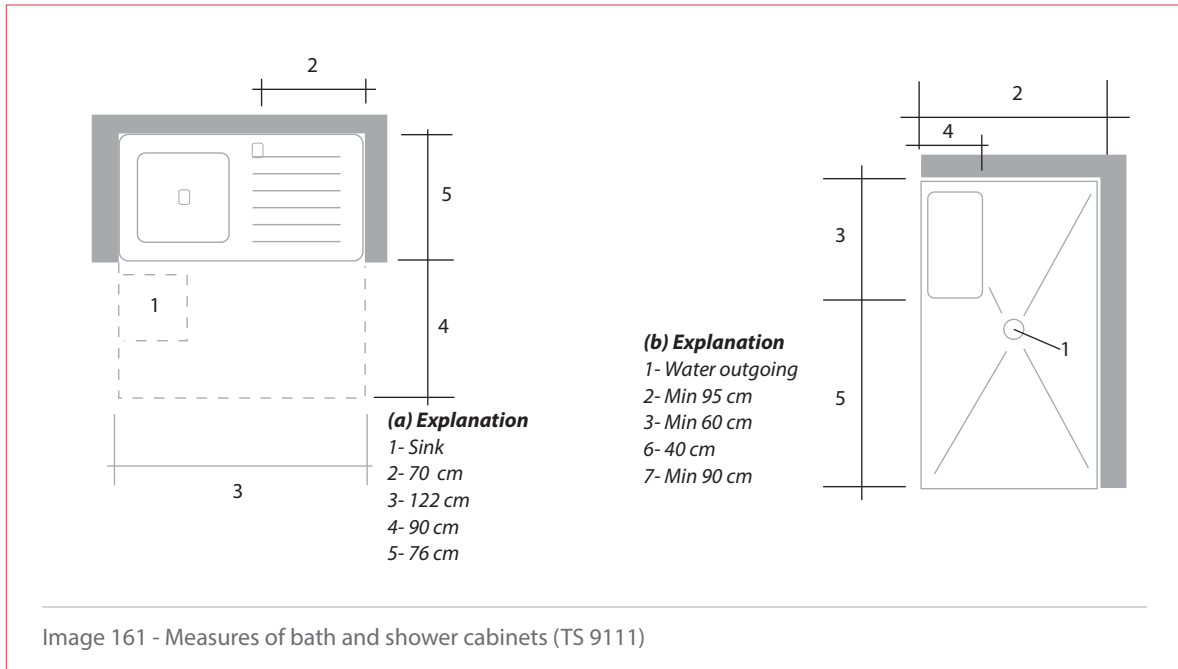


Image 161 - Measures of bath and shower cabinets (TS 9111)

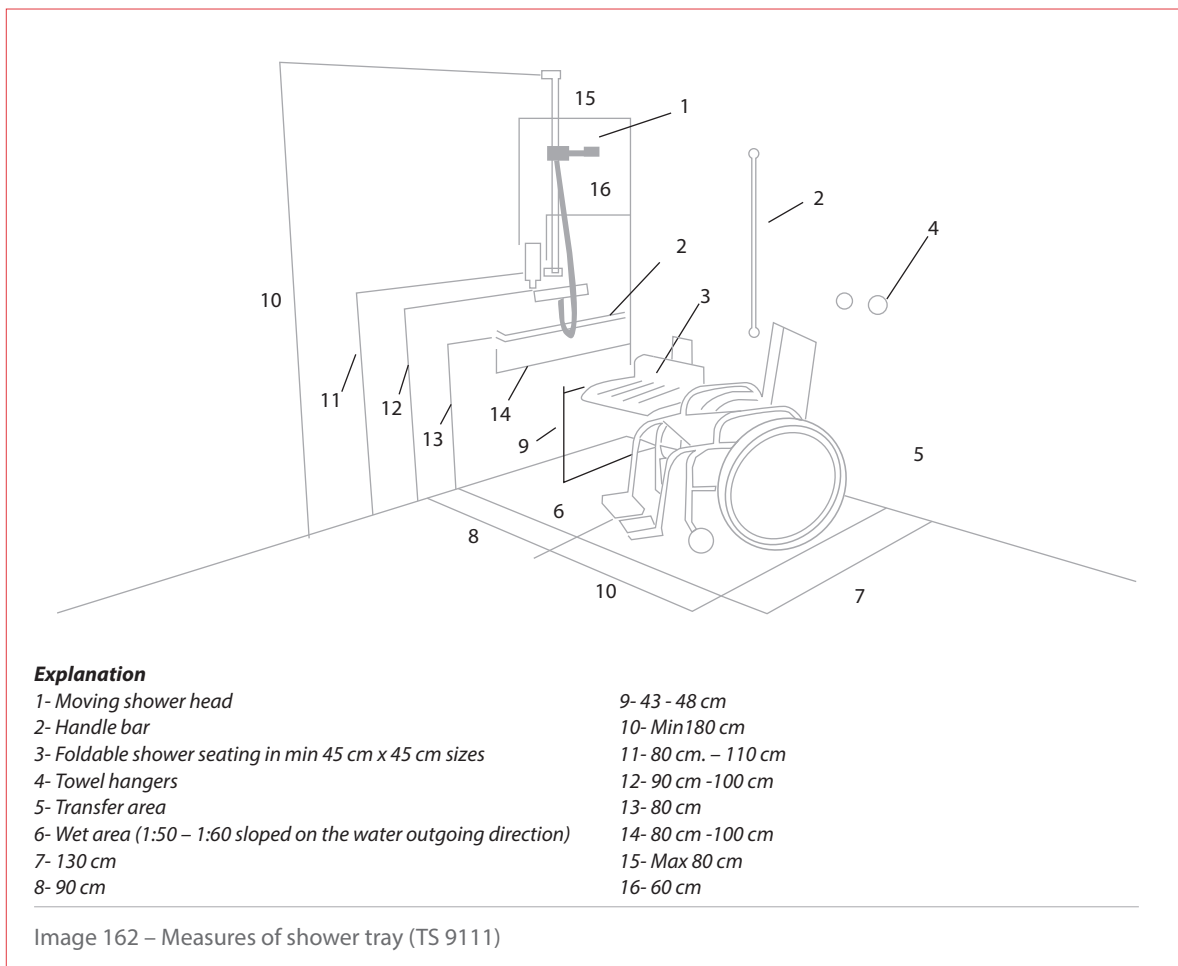


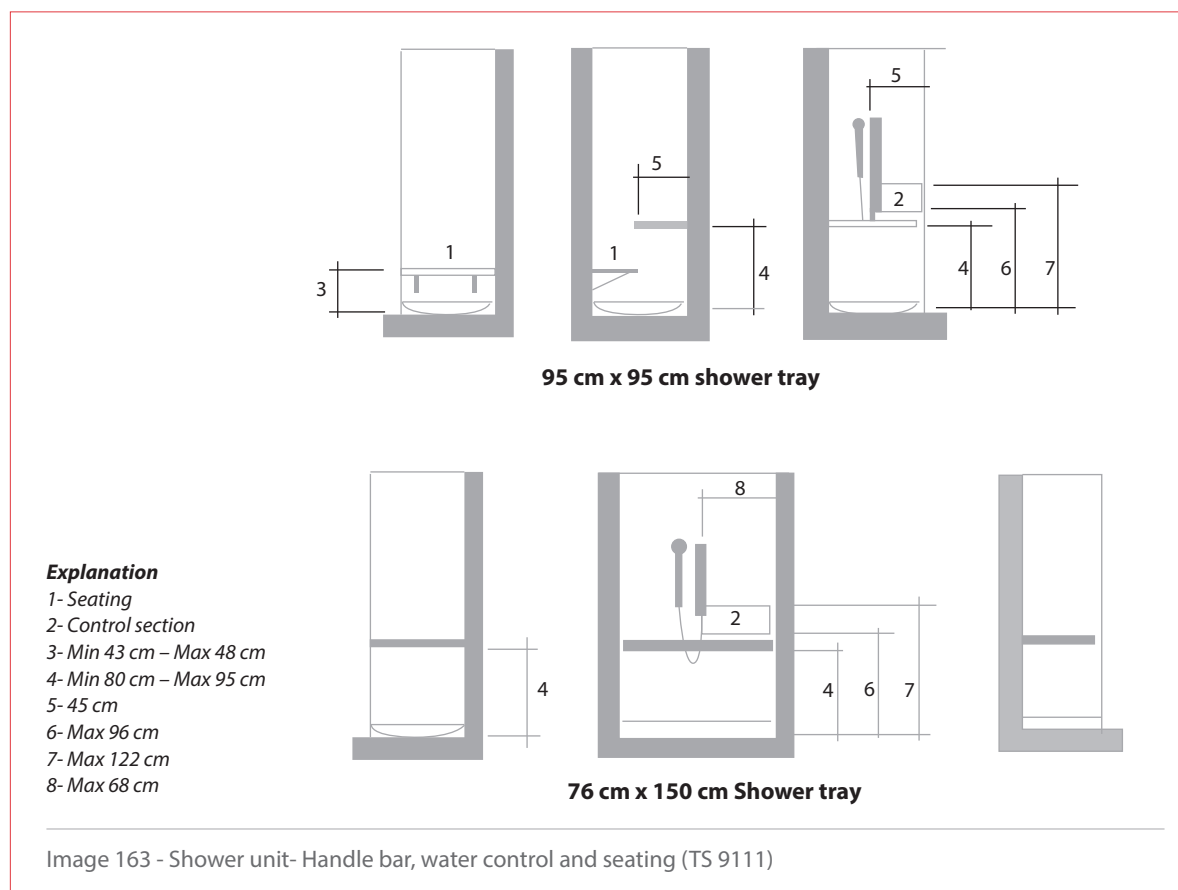
Image 162 – Measures of shower tray (TS 9111)



### Handle bars(TS 9111)

Handle bars should be located at an 80 cm to 95 cm height from the shower floor. If they are mounted to the wall, distance between the wall and the handle bar should be 4 cm. Width or the radius of handle bar should be between 32 mm – 40 mm. In a 95 cm x 95 cm shower tray; an L shaped handle bar should extend all through the wall that the water controls are located at the opposite of the seating section and through the half of the back wall.

In a 76 cm x 150 cm sized rectangular shower tray; U shaped handle bar should be arranged to surround the shower tray (Image 160). If there is foldable seating in a 76 cm x 150 cm sized rectangular shower tray, handle bar should be arranged according to Image 161.



### Water Controls (TS 9111)

Faucets and other control devices should be easily used with one hand and they shouldn't require more power than 22,2 N. Water control devices should be located according to Image 163. Faucets and other control devices should be at a distance that can be accessible from the seating point.

### Shower

Showerhead should have min 160 cm length hose and it can be used by hand and stable showerhead. When a height adaptable showers located on vertical handle bar is being used, vertical handle bar should be located not to prevent the usage of handle bar. Heat of the water should be controlled with a thermostat.

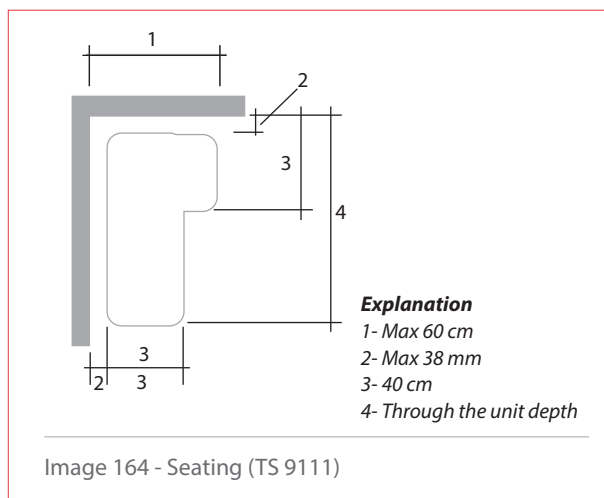


### Seating (TS 9111)

Seating place in a 95 cm x 95 cm shower cabinet, should be designed. This seating should be mounted 43 cm to 48,5 cm height from the bathroom floor and it should extend through shower cabinet depth. Seating should be max 38 mm away from the side and back walls. Width should be 40 cm depth starting from the back wall.

L shaped part of the seating that widens through the sidewall should have max 38 cm depth from the sidewall. The width of this seating shouldn't be more than 60 cm starting from the back wall (Image 164).

In a 76 cm x 150 cm sized shower cabinet, The relation between the location of seating and the control devices should be in Image 163.



### Protection border (TS 9111)

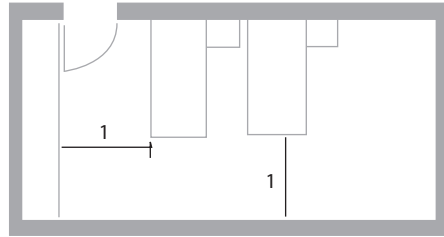
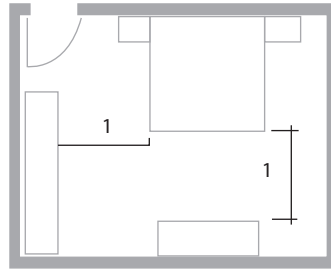
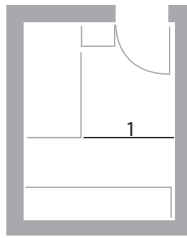
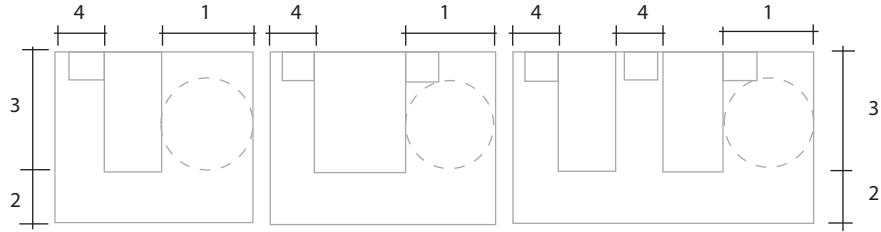
If there is a protection border in the 95 cm x 95 cm sized shower cabinet section, border should be max 13 mm height. There is no need for a protection border in 76 cm x 150 cm sized shower cabinet.

### Shower cabin or curtains (TS 9111)

Shower cabin or curtains shouldn't prevent the transfer from a wheel chair to the shower seating or using the water control devices.

### 13.7.29. Rooms (TS 9111)

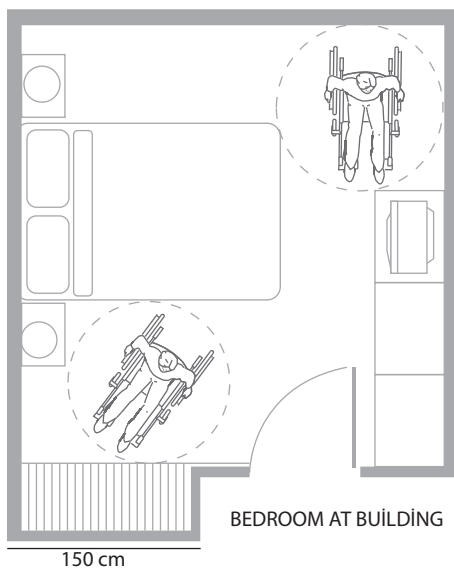
Rooms should be on the accessible route. It should be located to provide entering and exiting with a wheel chair and to access furniture and not to prevent moving in the room (Image 165 and 166). There should be a 150 cm radius area left around the bed (side edge and foot side) in the bedroom to provide transfer from a wheel chair to the bed.



**Explanation**

- 1- 150 cm
- 2- 90 cm
- 3- 195 cm
- 4- 76 cm

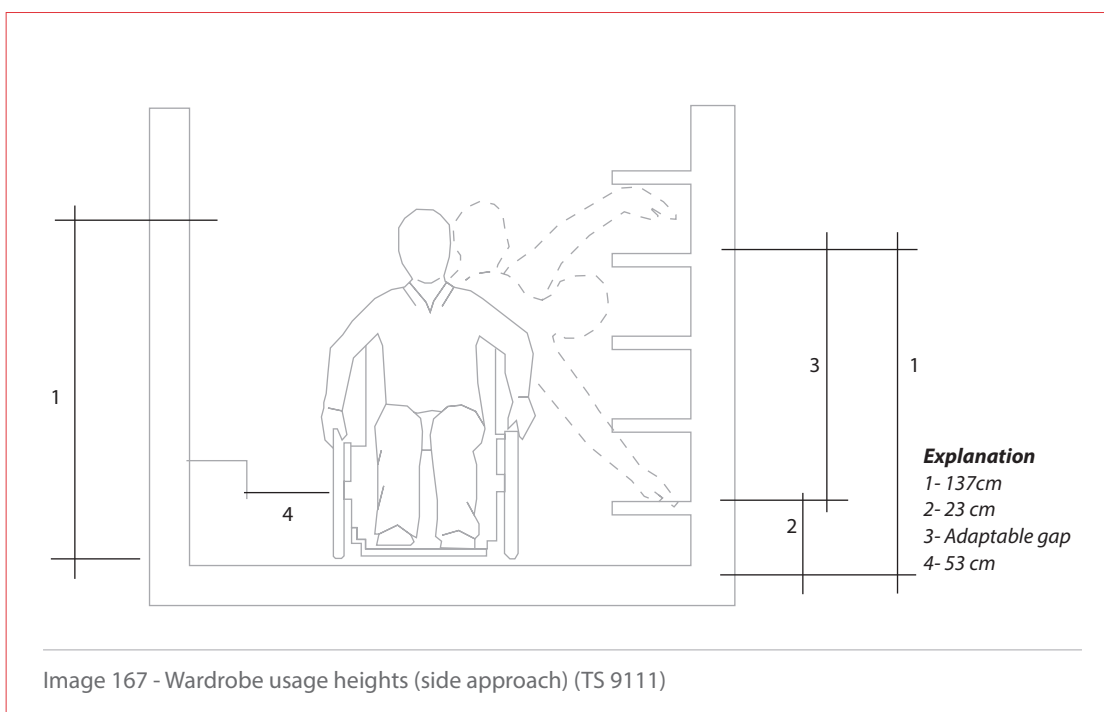
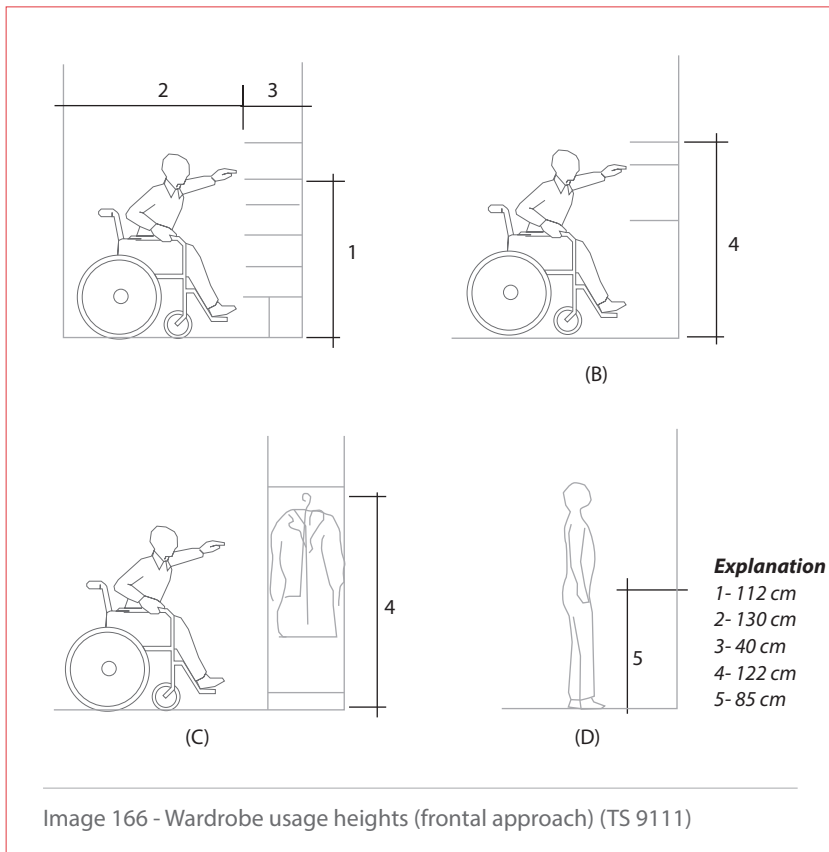
Image 165 - Bedroom settlement examples (TS 9111)



Şekil 166. Yatak odası yerleşim örneği (TS 9111)



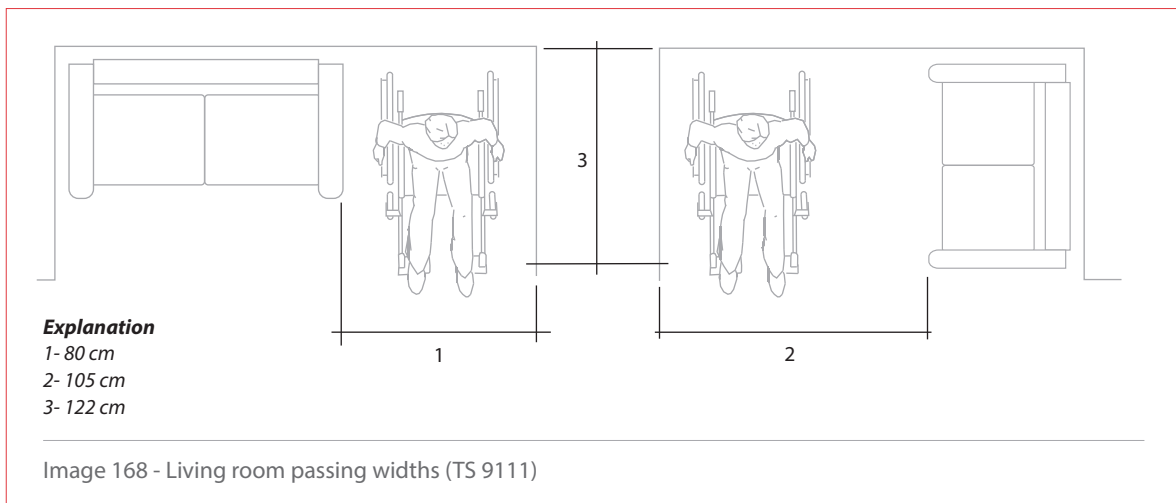
Height of bed should be between 45 cm – 50 cm. Usage height for wardrobe in the rooms should be designed as measurements at Image 105 and 106.



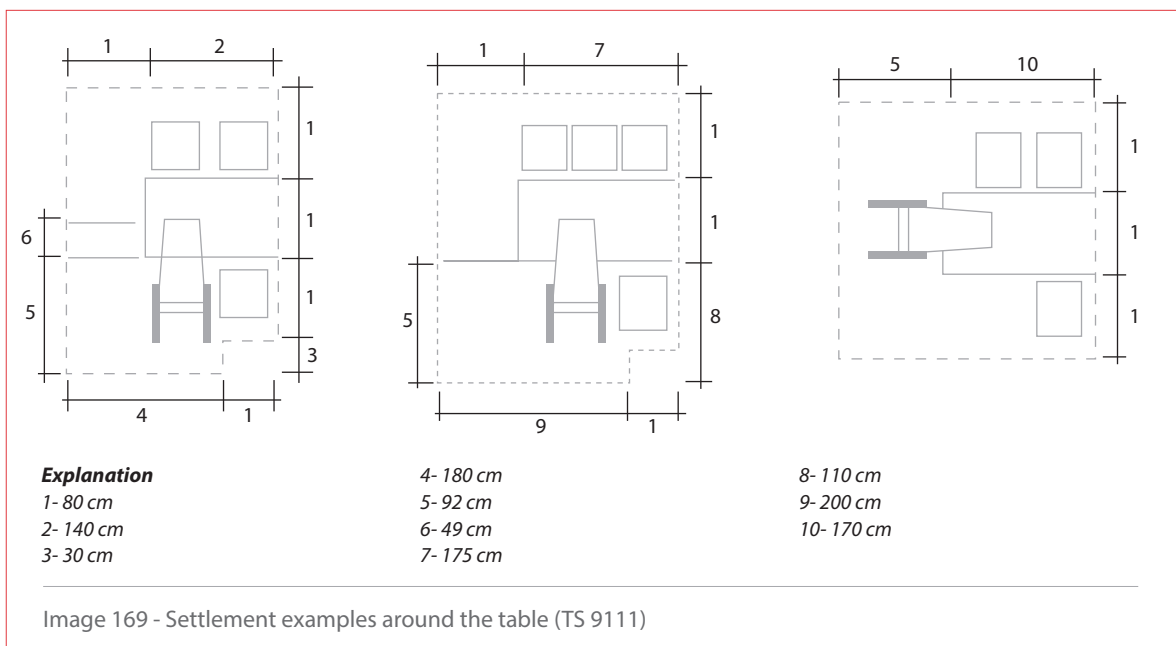


If there is only one approach side to the wardrobe and drawers, due to the accessible heights for a wheel chair user are min 38 cm, max 122 cm, dress hanger sticks in wardrobe should be min 122 cm height from the floor. Accessible depth inside the wardrobe is max 53 cm starting from the wardrobe front.

Reaching at a distance max 25 cm to an object in a parallel/ from side, accessible heights should be min 23 cm and max 137 cm (Image 167). Living room passing widths are given on Image 168.



Settlement examples for dining room are given in Image 169. For approaching to the table with a wheel chair, clear opening area as min 76 cm width and 122 cm length should be provided. There shouldn't be any preventing objects through under the table in a 49 cm depth. Necessary measures for approaching to the sitting area or the table are given in Image 169.







### 13.7.30. Balcony and terraces (TS 9111)

Parapet heights shouldn't prevent the sight of wheel chair users. Height of the closed parts should be max 80 cm, total height should be min 90 cm.

Sizes of the balconies and terraces should be proper with the front and side approach distances of a wheel chair. Precautions for slipping and falling at the ground floor terraces should be taken.

### 13.7.31. Signs at buildings (TS 9111)

Signs should be clear and understandable for everyone. Good lighted, clear and readable signs should be located on a proper height. Written information should be supported with symbols to make it easy for everyone to understand. Signs should be made by materials that are hard and easy to change, clean and repair. Too many numbers of signs should be avoided.

#### Main types of the signs (TS 9111)

- Directing signs** : Plans, sketches, models, etc.
- Direction signs** : Signs that show the direction from A point to B point.
- Functional signs** : Explanatory information.
- Information signs** : Only information, for example a name.

#### Location of the signs (TS 9111)

Information signs should be located adjacent to the entrance door in a well-lit and easily seen way. Sign should be located at the side with the door latch. Communication system should also be located on the door latch side and preferably 100 cm to 120 cm height from the floor level. There should be a directing plan right after the main entrance in the public buildings.

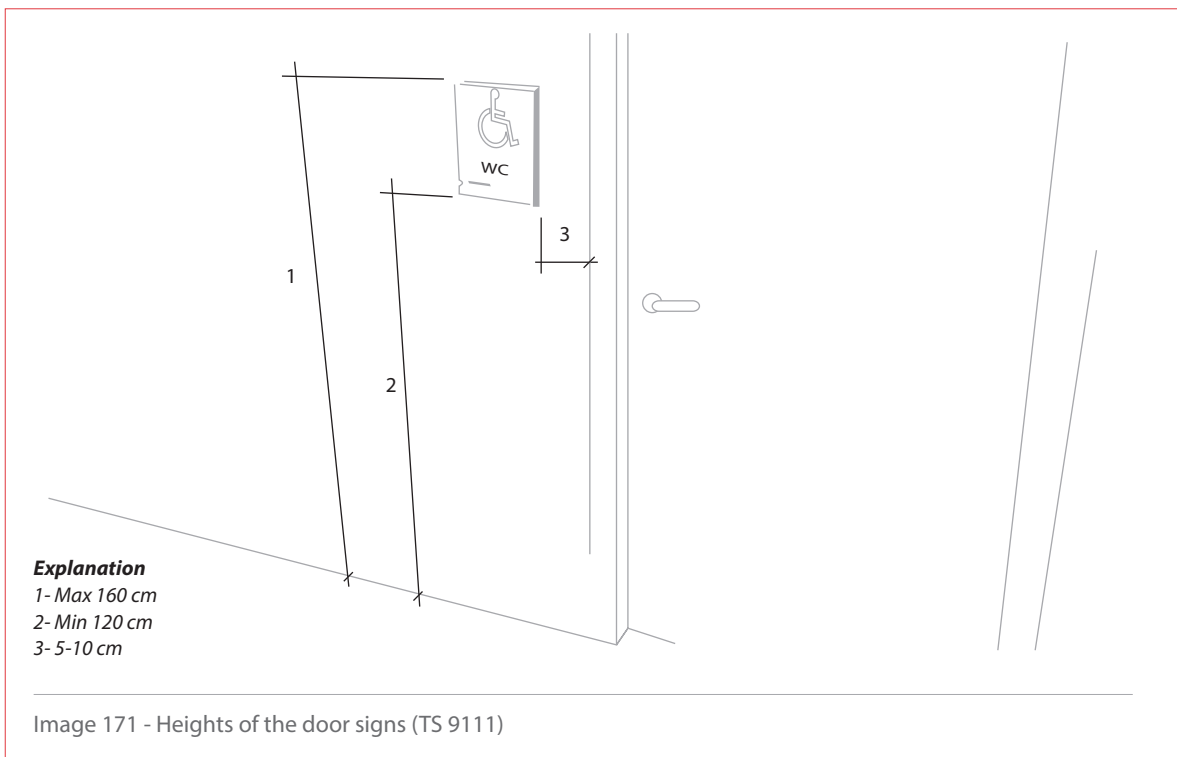
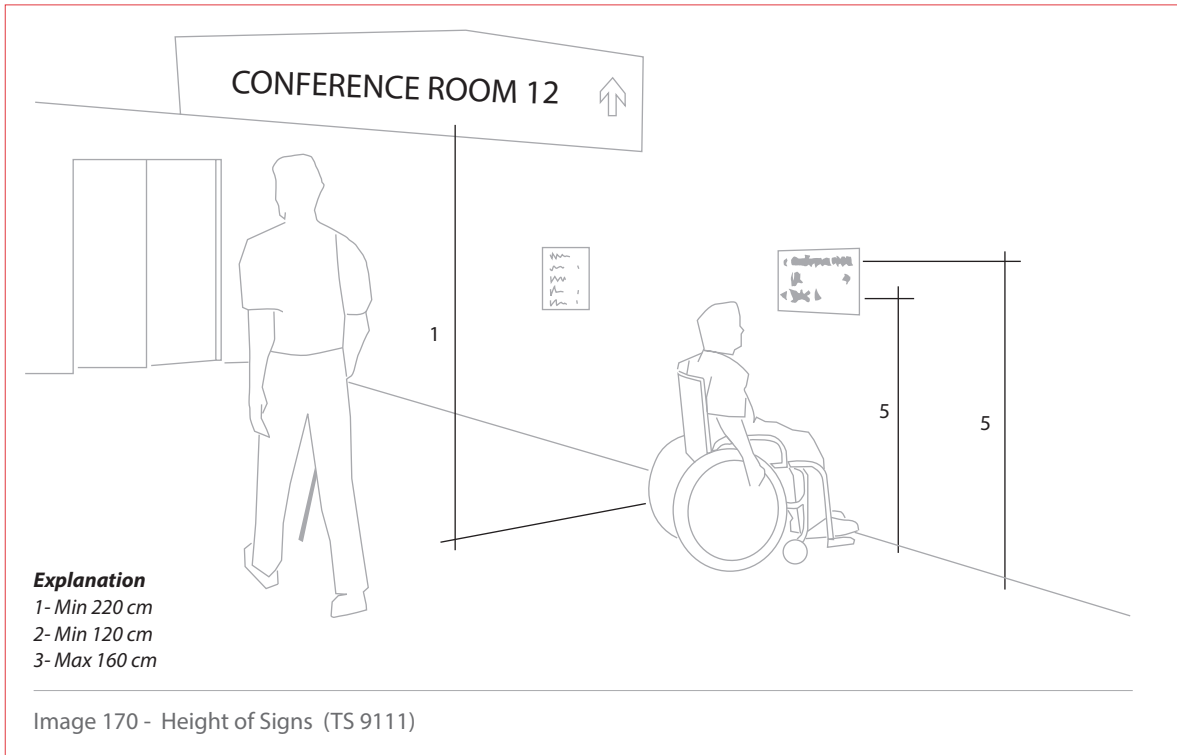
Direction signs should be at places to direct individuals directly to the facilities, where individuals make direction decisions and they should create a logical directing sequence from the start point to the different spots of the route. These should be repeated at every direction change possibility in coming/leaving, but this shouldn't be very frequent. Directing signs to the toilets should be at every part of a section or a building. There should be informing signs that define all entrances and exits at stairs gaps. Floor numbers should be located at every floor, at every outer frame of elevator entrance.

#### Places and heights of the signs (TS 9111)

Height of the signs should be designed as Image 170. Directing functional signs that are located on heights less than 160 cm, should include Braille and sensible raised signboards. Signs should be located so individuals can see them clearly in seating, walking positions and when on stand. Signs should be at a 120 cm – 160 cm height from the floor covering or the floor surface and they should be easily read when in close contact (Image 171).

In places where signs can be a barrier, for example crowded places, signs should be located min 220 cm height. This height is also for signs mounted on the ceilings or walls. In this case, two signs should be provided, one positioned on a distance that can be seen from over individuals' head and the other at a recommended height as a complementary.

Door signs should be located on the door where the door latch is positioned. Side edge of the sign should be at a 5 cm – 10 cm height from the jamb.





### Font and writing size (TS 9111)

Writings should be easily read, writing type should be “Helvetica or Arial medium like Sans Serif type”. Letter height depends on reading distance. Letter height should be applied as growing it 20 mm – 30 mm for every meter in the seeing distance. Letter height shouldn’t be less than 15 mm.

Using big cases and small cases together in every word is recommended (sentence usage). Words shouldn’t be located too close with each other. Line spaces should be separated in proper heights. Text lines should be sequenced in between a vertical line. One-word signs can be centered.

### Color choosing in signing (TS 9111)

Red- green combination should be avoided in signing. When colors as green, olive green, yellow, orange, pink and red is used, perception gets difficult.

### Not shinning/ bedazzling (TS 9111)

Signs shouldn’t shine when mounted. This condition is related with how the sign is located, its material and lighting. Back plan, symbols, logos and other properties should be matt or with low shine.

### Lighting (TS 9111)

Signs should be lit well and without bedazzling. Signs can be lit with glint or artificially.

### Being understandable (TS 9111)

Signs should be easily understandable. They should be designed to be simple and easily interpreted. Message should be clear. Short sentences and simple words should be used. Because it’s hard to understand long words and abbreviations, these should be avoided.

### Raised and Braille Signs (TS 9111)

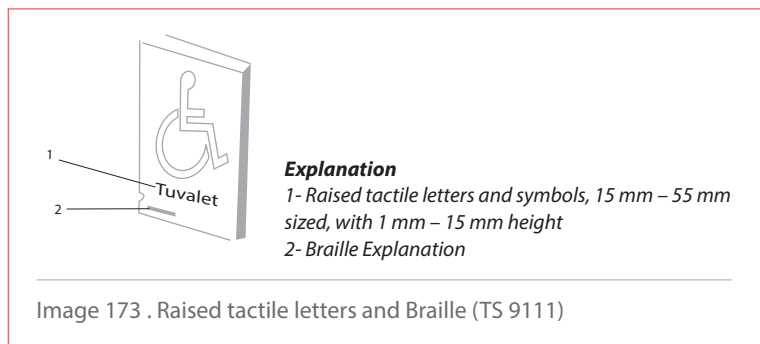
Signs should be raised and Braille alphabet should be provided at locations like control panels in elevators, room numbers in hotels, doors of the public toilets and places like these.

Information boards with raised tactile words should have height between 120 cm – 160 cm from the floor. Information tactile signs that are at a lower height should be mounted with an angle (preferably 20 – 30 degrees, maximum 45 degree).

Letters that are 15 mm – 55 mm sizes and has 1 mm – 1,5 mm raise height should be preferred.

When an arrow is used on tactile signs, a small arrow should be provided for Braille readers. Braille should be raised, domed and it should be easy to touch with hand, it should be located 8 mm lower than the lower edge of the text and should be pushed to the left (Image 172).

yükseltilmiş, kubbeli ve elle dokunulması rahat olmalı, metnin alt tarafından 8 mm aşağıya yerleştirilmeli ve sola yanaşık olmalıdır (Şekil 173).



**Tactile symbols (TS 9111)**

Tactile symbols applied at railings, doors, maps or floor plans should be done as raised like tactile letters.

**Raised maps and floor plans (TS 9111)**

Only important information should take place on tactile maps or on floor plans. Maps and floor plans should be located on horizontal platform, they should be mounted to create 20 – 30 degrees angle for easy reading. Lighting on the surface of the map should be between 350 lux and 450 lux and it shouldn't bedazzle.

Explanation part of the map (legend) should be leaned to left and located on the lower side of the map. Map should be designed building centered.

**Informing screens (TS 9111)**

If video or media informing screens are being used, these should be located on proper heights and the used letters, etc. should be according to the recommendations given before. A complementary sound information system should be provided.

**Symbols (TS 9111)**

Symbols should be used at all possible location in a unity with building signing systems.

**Symbols should have following properties:**

- It should provide high contrast with its environment and should be lit properly,
- It should be tactile,
- It should be used in guides and direction signings.

Sizes of the symbols are depending on sight distance (D) of text and other information and the height of the application. For individuals with normal sight, symbols and minimum size of the text's (s) inner frame lines is had by  $s = 0,01 D$  formula and it can be applied for sight distance between 1 m – 100 m. For individuals with 1/10 partial sight, minimum size of the symbol's and text (s) inner lines can be had by  $s = 0,09 D$  and it can be applied in 1 m – 10 m sight distance.

Accessible symbols below should be used to show a specific usage of a facility. Usage locations below should be signed for persons with disabilities.

**(a) For individuals with movement constraints (TS 9111):**

- Car parking places (parking lots, garages),
- Access and entrances without stairs to the buildings, especially if these are different entrances than the main entrance,
- Accessible elevators, when they are not all accessible; platform lifts and same kind vehicles,
- Accessible sanitary facilities,
- Journey locations and accessible seating areas for wheel chair users
- Dressing rooms,
- Pool entrances or mechanical lift vehicles.



**(b) For individuals with sight disabled (TS 9111):**

- Hardware about guidance dogs,
- Places that sound and tactile information is provided.

**(c) For individuals with hearing impaired (TS 9111):**

- Phones and emergency call hardware equipped with sound enhancers,
- Providing an assisting listening system.



Image 173 - Accessible usage or entrance (TS 9111)



Image 174 – Accessible ramp (TS 9111)



Image 175 - Accessible unisex restroom (TS 9111)



Image 176 - Accessible ladies' restroom (TS 9111)



Image 180 – Guidance and service dog (TS 9111)



Image 177 - Accessible men's restroom (TS 9111)



Image 181 – Person with sight disabled (TS 9111)



Image 178- Accessible elevator (TS 9111)



Image 182 - Hardware for hearing impaired (TS 9111)



Image 179 - Individual with a movement constraint (TS 9111)



Image 183 - Loop system with sound enhancer (TS 9111)

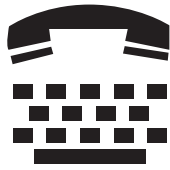


Image 184 - Text phone (TS 9111)



Image 185 - Sign language translation (TS 9111)



Image 186 - Accessible route for evacuation (TS 9111)

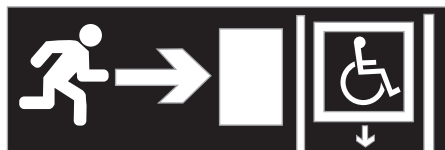


Image 187 - Accessible route that goes to the elevator that can be used in fire evacuation (TS 9111)



## **Alarms (TS 9111)**

### **A- Audible voice alarms (TS 9111)**

It should be at the frequency and efficiency that can get the attention of the individuals that lost their partial hearing ability (These individuals can not percept frequencies over 10.000 Hz).

Audible emergency alarms should give min 15-decibel sound that can get over the sound level that are at the same status or they should be to suppress any maximum sound level through 30 seconds with 5 decibel. Sound levels shouldn't be more than 120 decibel for alarm signals.

### **B- Visible alarms (TS 9111)**

Alarms should be located that will be activated in emergencies at places where sleeping or persons with hearing disabled are at. These alarms should be set to heighten the present light or to give signal for being effective.

Light amount and type that can awake a hearing impaired individual from sleep in a dark room depends on the factors like the size of the room, place change, distance, and flare radius. In some of the cases, 150 watt flashed light can be enough.

Visible alarms should be shinning lights connected to a flash with a connection to the audible emergency alarms. Flash frequency of the visible alarms should be 1 Hz. Special systems that use advanced technology can be used in the place of these to create equivalent conditions for the usage of buildings and residences by persons with disabilities

### **C- Vibrated alarms (TS 9111)**

These kinds of alarms should be to get the attention of persons with disabilities and elders and to transmit a mechanical energy to the body that will warn them. These systems should be arranged to get sight and hearing disabled individuals and sleeping individuals for moving in emergency.

### **D- Assisting alarms (TS 9111)**

They can be at walking surfaces, doors, windows and on walls. As an assisting alarm:

- Placing warning elements in front of the dangerous part in between 60 cm – 122 cm height
- Using contrast colors on different sections,
- Precautions like material changes on the surfaces are acceptable.

### **Electric fixture (TS 9111)**

Electric sockets should be min 40 cm height from the floor. It is recommended that the electric socket and the door handles should be at the same level. Turning switches are not recommended.

### **Heating system (TS 9111)**

Heating system should be to give the same heat in a building or residence; room temperatures should be controlled in a proper way. Room temperatures can be set by simple thermostats located in rooms, on an at most 122 cm height from the floor.

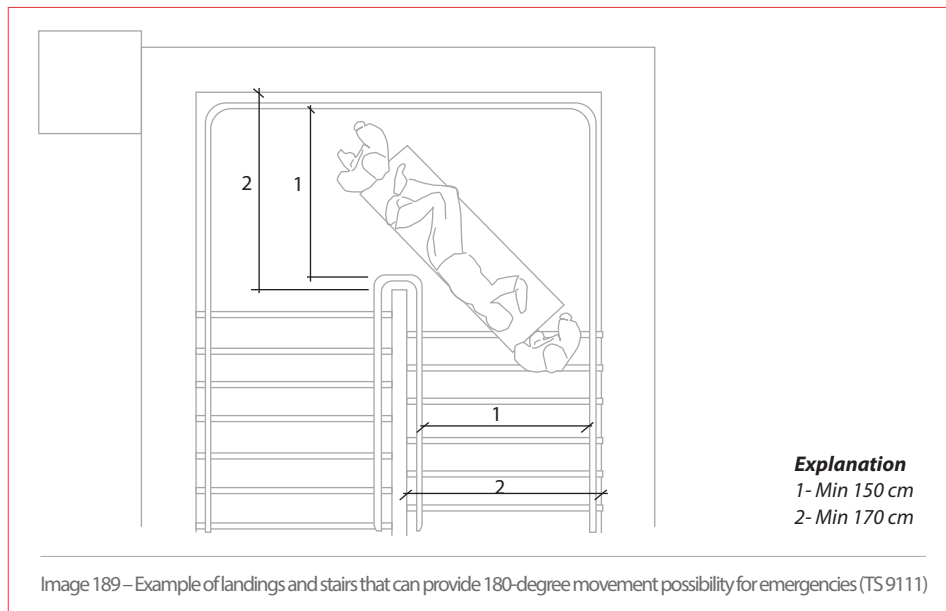




## 13.8. SPECIAL DESIGN RULES FOR BUILDINGS WITH FEATURES

### 13.8.1. Health Buildings (TS 9111)

Health buildings taking place in this item include places that individuals can have physical and medical treatments, they can need in emergencies and that they can stay more than 24 hours. Health structures should be designed according to the conditions below.



### Hospitals (TS 9111)

10% of the hospital bedrooms and restrooms in every service with at least one quantity and all public and general usage areas should be designed and arranged to be accessible.

### Buildings or units for physical treatment and rehabilitation, orthopedics (TS 9111)

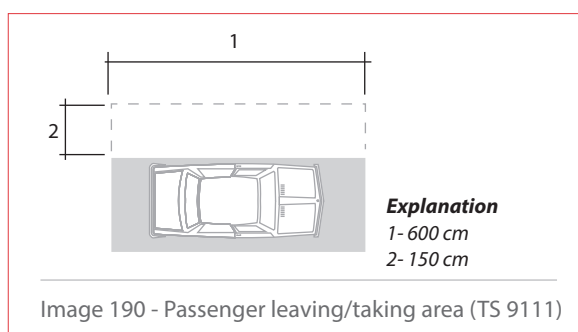
All hospital bedrooms and restrooms and all public and general usage areas should be designed and arranged as accessible.

### Care buildings for long term, nursing homes (TS 9111)

At least 50% of the patient rooms and all public and general usage areas should be arranged and designed to be accessible.

### Entrances (TS 9111)

There should be at least one accessible entrance should be provided. There should be a passenger taking/leaving area just like in Image 190.





### Patient rooms (TS 9111)

Entrance door of the accessible patient room should have min clear 110 cm width. At the patient bedroom entrance doors in the acute treatment units in the cases where the door is min clear 115 cm width, there is no need to leave a maneuver area at the part where the door latch is.

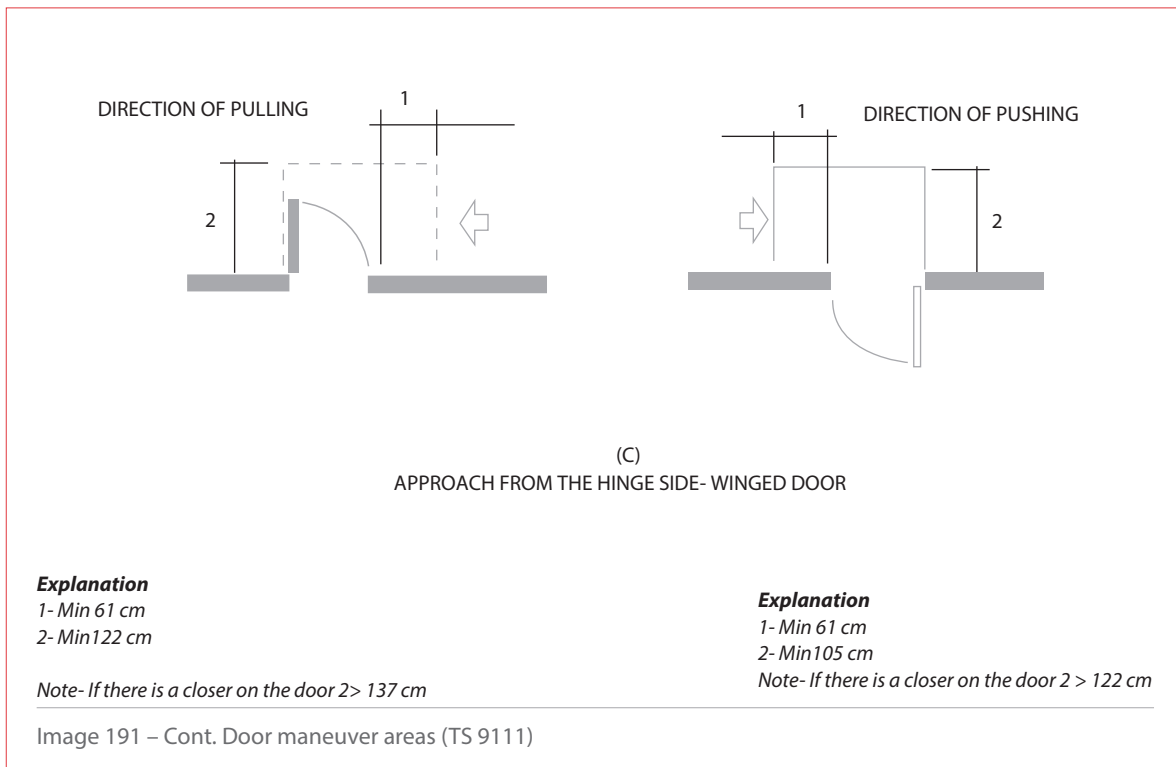
(A)  
FRONT APPROACH- WINGED DOORS

**Explanation**  
1- Min 150 cm  
2- Min 45 cm  
3- Min 122 cm  
4- 30 cm  
**Note** -4 = 30 cm when there is a closer and a latch on the door

(B)  
APPROACH FROM THE HINGE SIDE- WINGED DOORS

**Explanation**  
When  $y = 150$  cm  
 $x > 90$  cm  
When  $y > 105$  cm  
 $x > 137$  cm  
**Note**- 1 137 cm  $y = \text{min } 105$  cm (when there is a automatic closer and latch on the door, y should be min 122 cm)

Image 191 - Door maneuver areas (TS 9111)



In all patient bedrooms, an area should be left for wheel chair maneuver. In patient bedrooms with more than one bed, this maneuver area is preferred to be in between the beds. A minimum clear 90 cm width should be provided through the foot side and the long side of the beds in all patient bedroom.

#### **Patient restrooms and bathrooms (TS 9111)**

For cases when the restrooms and bathrooms are inside the patient's bedroom, there should be an accessible restroom/bathroom that its door opens outside.

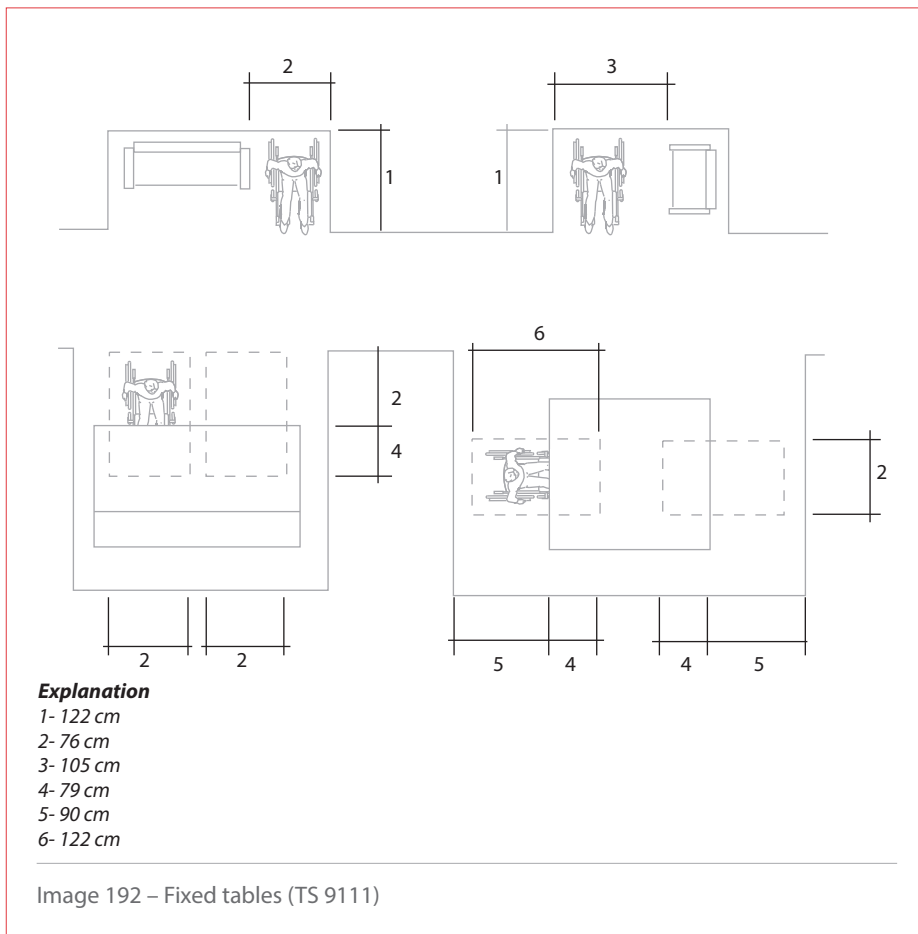
#### **Eating areas (restaurants and cafes) (TS 9111)**

Accessible restaurants and cafes should be designed according to the accessibility conditions except the special technical arrangements.

#### **Fixed table or eating-drinking counter (TS 9111)**

In places with fixed tables or eating-drinking counters, 5% of the fixed tables and counters not to be less than one should be arranged according to Image 192. Accessible fixed table and eating-drinking counters should have 70 cm – 86 cm height from the floor.

The number of accessible fixed table or eating-drinking counters should be distributed proportionally in smoking and no-smoking areas. In new structures and constructions, accessible fixed table and eating-drinking counters should be spread at the place or all building.



### Counters and bars (TS 9111)

In counters which has a height more than 86 cm for services food or drinks to customers who sits on the stools or who is on foot, min 150 cm length of the counter should be arranged as accessible or service should be provided to customers who are seated on the accessible tables in the same area.

### Passage corridors (TS 9111)

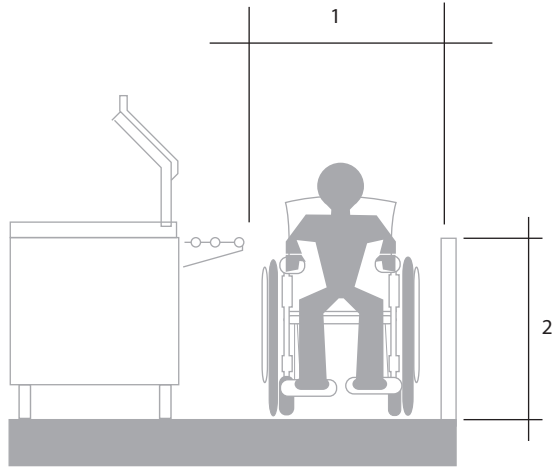
There should be clear circulation area without tables, chairs and other furniture as min 90 cm width around of fixed tables

### Eating areas (TS 9111)

All eating areas at outside, that has level differences, a covered top, open sides, should be accessible.

### Self- service counters (TS 9111)

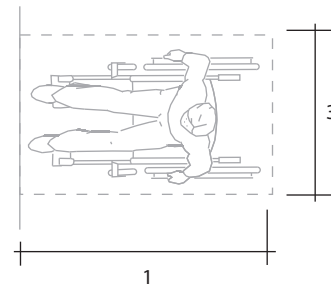
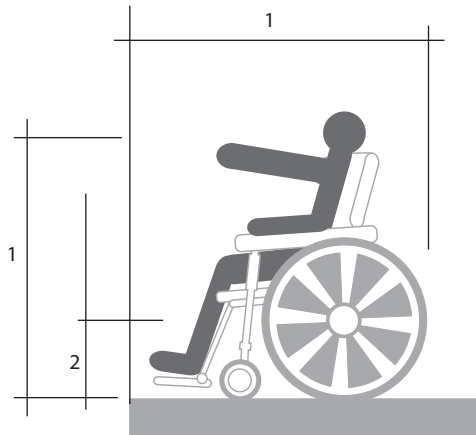
The self-service food taking locations should have min clear 90 cm width, for providing wheelchair users' passage, it should preferred to be 120 cm. Tray sliding counters should be fixed at min 86 cm height from the flooring. At food taking places without any employees, at least 50% of the presentation counters for every kind of food should be designed according to the measurements and arrangements shown on Image 193.



(A)

**Explanation**

- 1- Min 90 cm
- 2- Max 86 cm



(B)

**Explanation**

- 1- 122 cm
- 2- 38 cm
- 3- 76 cm

Image 193 –Measuring in self-service food taking places (TS 9111)



### Material service areas (TS 9111)

Counters and tables that are reserved for service materials like fork, spoon, knife, plate and similar appliances, sauces, spice and napkins, should be designed according to Image 194 and should have height between min 38 cm and max 137 cm from the floor.

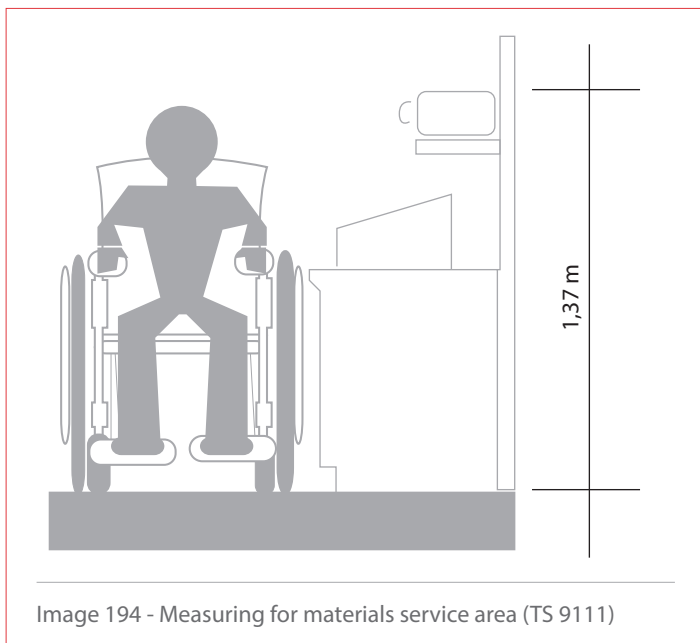


Image 194 - Measuring for materials service area (TS 9111)

### Automatic selling machines and other equipment (TS 9111)

Selling machines and other equipment should be designed as taking consideration the measures for side approach, side approach above an obstacle, front approach and front approach over an obstacle and they should be located on an accessible route.

#### 13.8.2. Commercial Areas and Sales Units (TS 9111)

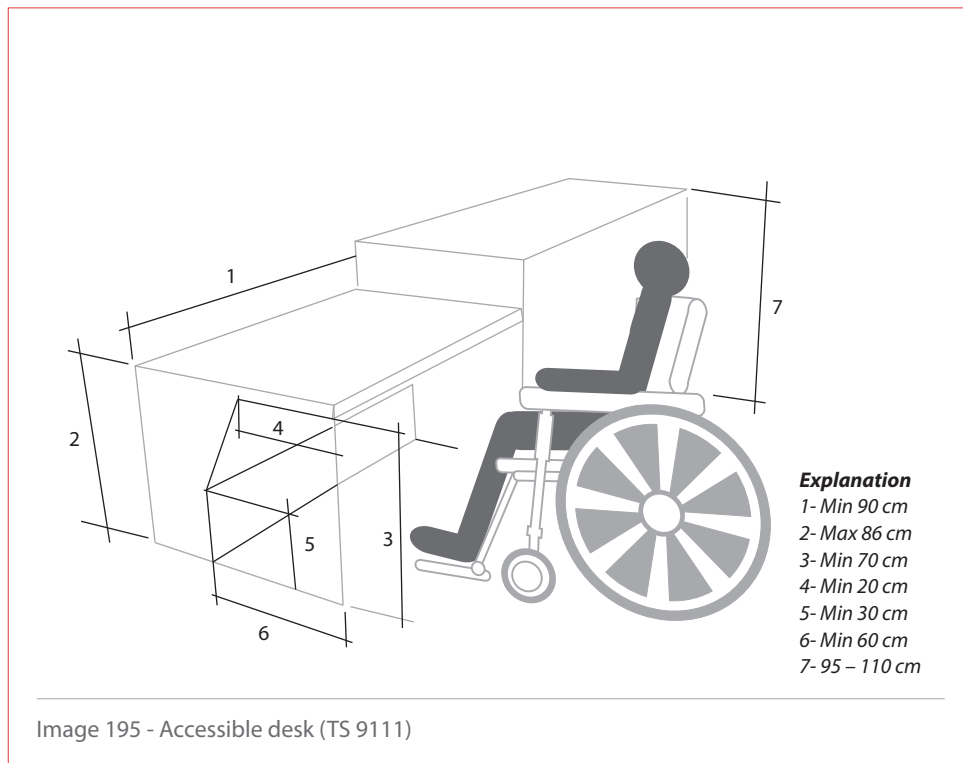
In designs of all areas for public usage and that has commercial processes; following conditions should be provided in addition to accessibility rules.

#### Entrance (TS 9111)

Any device or system that is used to prevent shopping cars being taken away from the store area, shouldn't prevent the access or entrance of the wheel chair users. A second entrance can be provided that have same usage easiness with the entrance that is provided for individuals who do not have any movement disability.

#### Selling and service desks, cash desks, information desks (TS 9111)

In shopping areas that have a cash machine on the desks and that have selling and distributing goods or service for public, min one of the all type commercial service desk should have a bank part with min 90 cm length and max 86 cm height from the floor (Image 195).



Accessible desks should take place at different locations of buildings and facilities. There should be a maneuver area of min 150 cm x 150 cm sizes. Ticket selling units, cash offices, registering desks at temporary residence facilities, informing and information desks, movie theatre ticket box offices, borrowing areas in libraries and similar commercial processing areas that doesn't have cash registers but that sell or distribute goods or services; main desk should be min 90 cm length and 86 cm height or a backup desk with max 86 cm height, close to the main desk should be provided or another arrangement equivalent to these should be done (For example, an equivalent arrangement at the hotel register desk; a foldable shelf system added to the main desk that persons with disabilities can write on it and/or the usage of an area next to the main desk or welcome desk).

At facilities for public usage that separated employees from the users by safety glass or continuous interim sections at the desks and cash registers, sound communication system should be provided at least one of the all type of desk. As an example to these methods we can give; cage systems, speakers, internal phones or phone handsets. Communication possibility should be accessible for wheel chair users and individuals that have descending or bending problems.

#### **Automatic line number machine (TS 9111)**

Automatic line number machine should be proper with side approach, side approach over an obstacle, front approach and front approach over an obstacle measures and they should be located on accessible routes. Information should be perceptible with at least two senses.

#### **Controlled exits (TS 9111)**

Controlled exits and paying points also include specifically designed types for serving different functions. Besides it includes properties like band length, with/ without band, fast registers. In new structures, accessible controlled exits and paying points should be proper with Table 4.



Table 4 - Controlled exits and paying points (TS 9111)

Total number of controlled exit (for all type)	Least number for accessible controlled exits (for all type)
1-4	1
5-8	2
9-15	3
More than 15	20% of additional controlled exit/ paying point number plus 3

When the selling areas are less than 500 square meters, only one accessible controlled exit and paying area is enough. In constructions being done in facilities that have 500 square meter or more selling areas, necessary number of accessible controlled exit and paying points for all paying/exit types should be designed according to the table above.

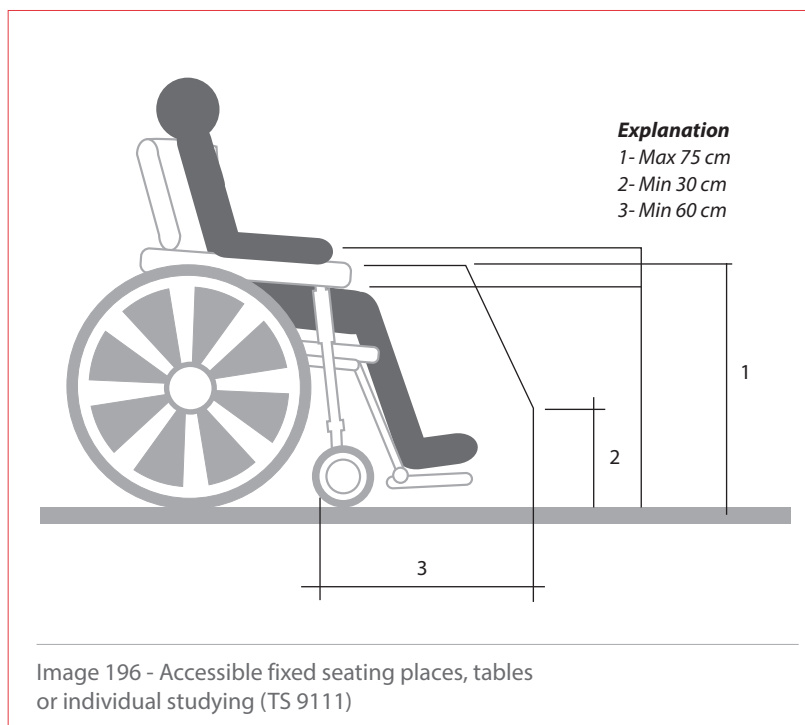
Signs defining accessible controlled exits and paying points should be located at places where casing numbers or paying/exit types are being defined.

### 13.8.3. Library (TS 9111)

In libraries, design of the public usage areas including, reading and studying areas, book shelves, reference book halls, reserved book halls, special services and collections, should be according to the accessibility conditions given below.

#### Reading and studying areas (TS 9111)

At least 5 %, not to be less than one of the fixed seating areas, tables or individual studying places should be accessible. Accessible fixed seating places, tables or individual studying areas should have max 86 cm height from the floor and should be designed as Image 196.





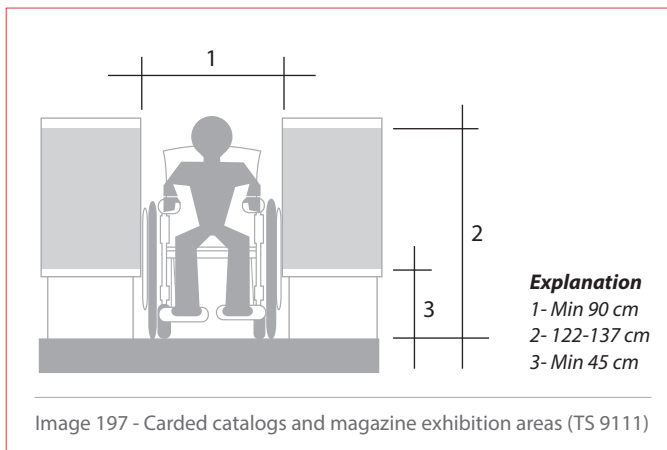


### Areas for borrowing publishing (TS 9111)

At least one band of all publishing borrowing areas should be accessible and available. Doors, tollgates and automatic pass for book safety and entrance/exit control should be accessible.

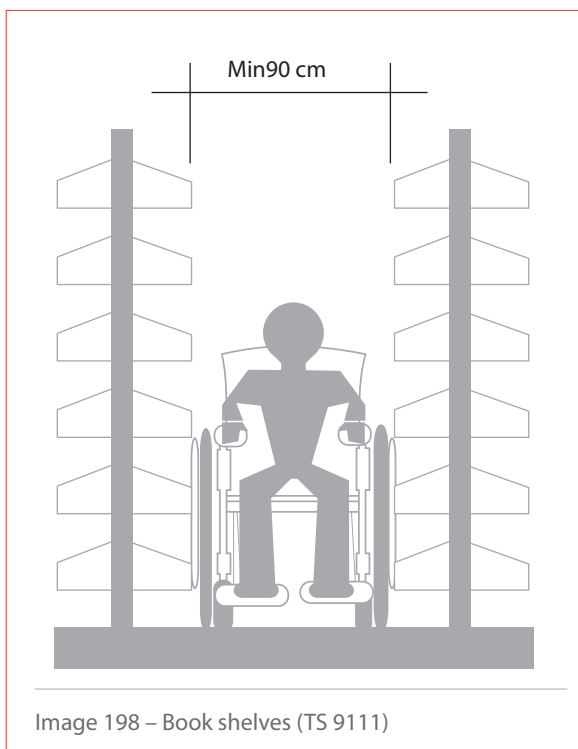
### Carded catalogs and continuous publishing exhibition areas (TS 9111)

Min 90 cm width passage areas should be provided at carded catalog areas and magazine exhibition areas. Carded catalog units should be designed as measures for side approach, side approach over an obstacle, front approach and front approach over an obstacle and the height of it should be 122 cm without considering



### Book Shelves (TS 9111)

Min corridor width between bookshelves should be preferably 120 cm. There isn't any limiting on shelf height at bookshelf areas (Image 198).



**13.8.4. Temporary Accommodation Venues (TS 9111)**

Accessible temporary accommodation venues should be a designed according to the accessibility condition except the special technical arrangements in this section. Temporary accommodation venues include facilities that belong to overnight places that are not classified as health structures or a part of these.

**Accessible units, rooms and suits (TS 9111)**

Accessible bedrooms and suits should have properties at below table and have accessible bathroom. In rooms that should be arranged as accessible without looking at the room number at all boarding schools and dorms, there should be a bathroom inside the room.

*Table 5 - Number of accessible room and accessible room with a bathroom in temporary accommodation venues (TS 9111)*

Total room number	Number of accessible rooms	Number of rooms with accessible bathrooms (in new structures)	Number of rooms with accessible bathrooms (in recovery)
1 -25	1	1	
26 -50	2	2	
51 -75	3	3	1
76 -100	4	4	1
101 -150	5	5	2
151 -200	6	6	2
201 -300	7	7	3
301 - 400	8	8	4
401 - 500	9	9	4 + 1 for every 100 room more than 400
501 -1000	2% of the total	Total	4 + 1 for every 100 room more than 400
1001 and more	20 + 1 for every 100 room more than 1000	Total	4 + 1 for every 100 room more than 400

Rooms for the use of wheel chair users should be designed with two beds; if it is going to be with one bed then it should have middle width. Necessary measures for room design should be proper according to Image 199 and Image 200.

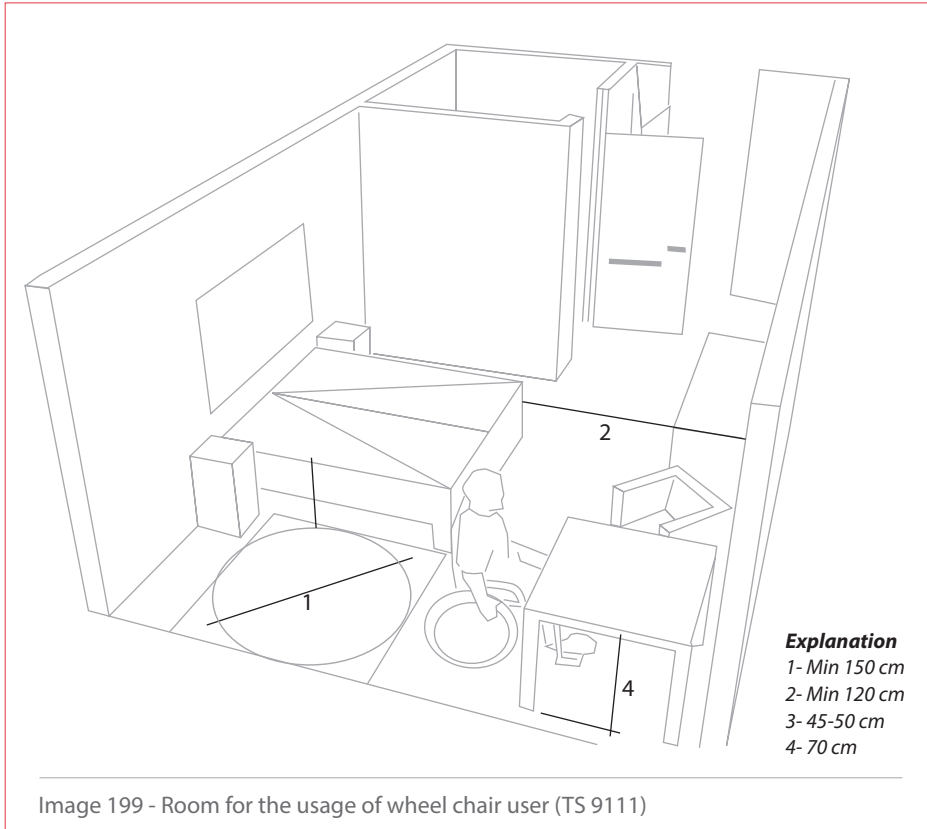


Image 199 - Room for the usage of wheel chair user (TS 9111)

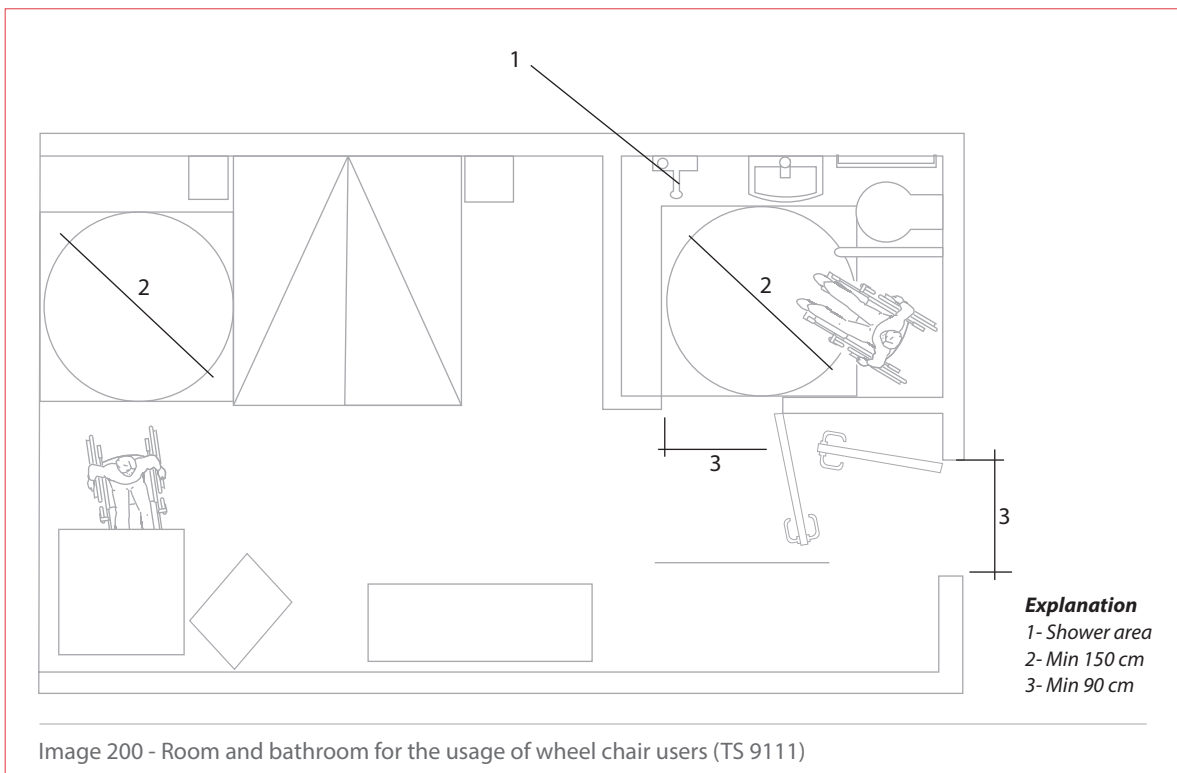


Image 200 - Room and bathroom for the usage of wheel chair users (TS 9111)



### 13.8.5. Transport Structures (TS 9111)

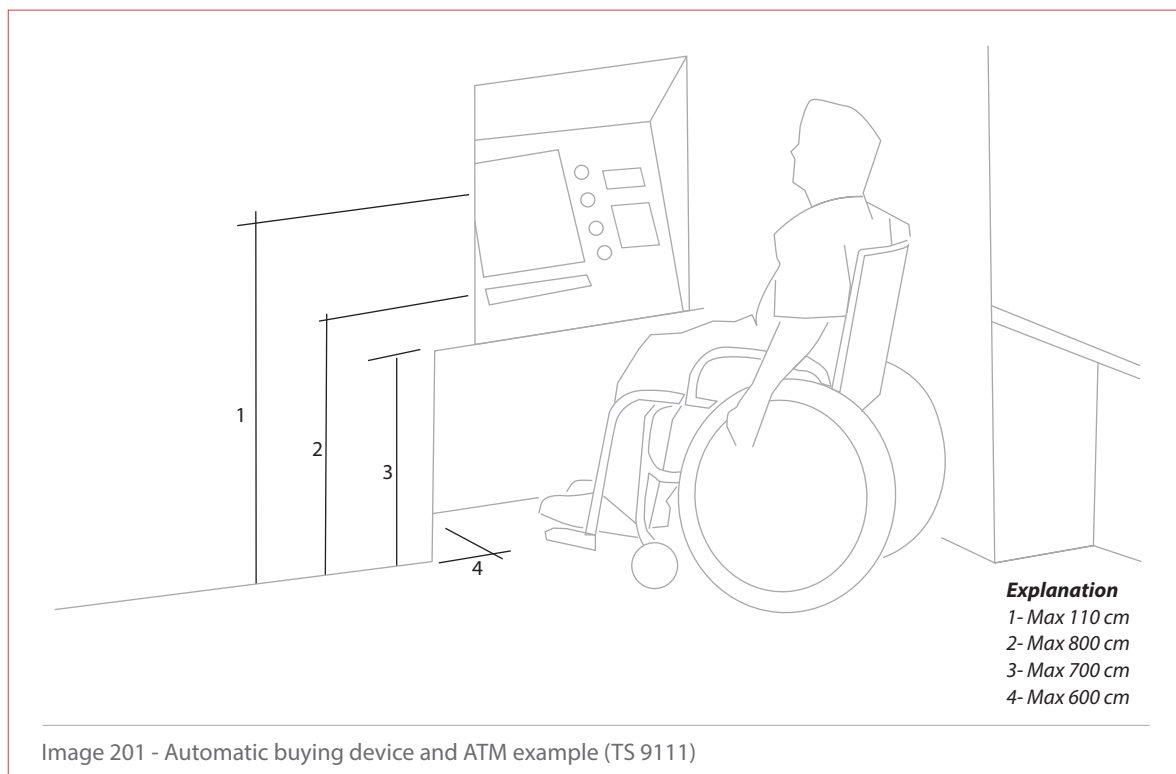
Every station, bus stop, bus hop on/off area, terminal building or other transportation places should be designed according to conditions given below.

Ramps, elevators and other circulation areas, ticket selling, fare collecting areas should be located to reduce the distances (in comparison with the other general users) to be used by wheel chair users and other individuals with movement disabilities. An entrance or an accessible route that is going to be used by persons with disabilities should be integrated with circulation route for general public usage. There should be signs providing directing and defining the accessible route and the entrance. These signs should be located as similar as possible areas in all entrances of transportation system.

At least one entrance in every station should be arranged according to accessibility criteria. If different entrances in a station serve to different fixed transportation route or routes, at least one entrance for every route should be designed as proper for persons with disabilities. All accessible entrances should be as similar as possible with the entrances of public general usage. Direct connections to commercial, selling and residence units should be provided with accessible routes.

At places where a defined entrance of the station is not present but signing systems are, signs should be located on a central area. Automatic ticket buying, collecting systems and ATMs should be designed taking consideration as measures for side approach, side approach over an obstacle, front approach and front approach over an obstacle measures and they should be located on accessible routes.

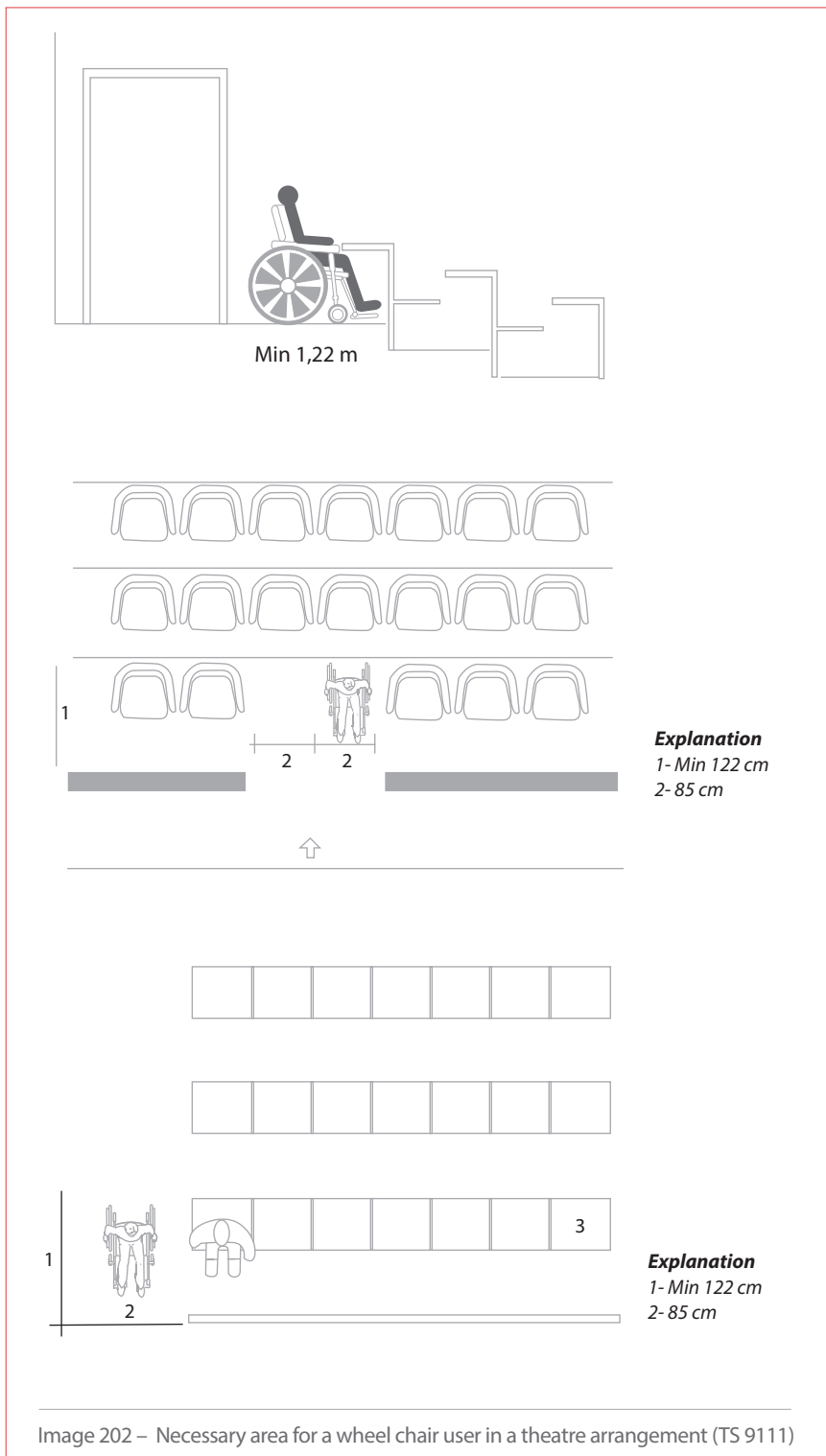
Surface of the doors that needs to be pushed to open by individuals that use movement aid device or wheel chair users, should start 5 cm above the floor level and should extend 70 cm height, should have a straight surfaces and continuous surface.

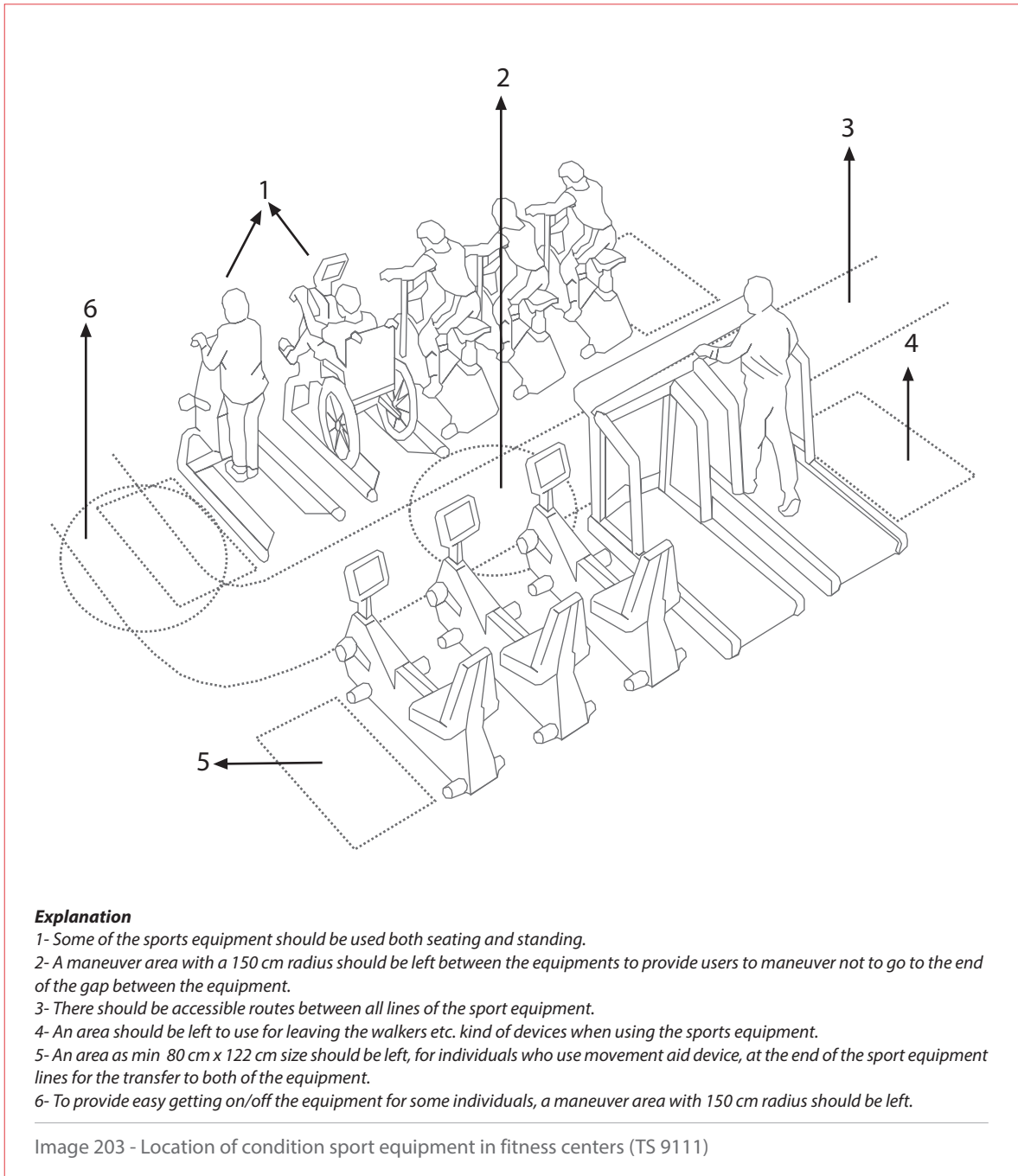




The entire route from the mass transit vehicle to the building entrance (from the airport entrance to the plane, from the bus station to the bus) should be accessible and all equipment that is needed to travel on this route (desks, luggage taking bands and similar equipment) should be accessible.

### 13.8.6. Sample of Design for Parts of Buildings with Features (TS 9111)





**Explanation**

- 1- Some of the sports equipment should be used both seating and standing.
- 2- A maneuver area with a 150 cm radius should be left between the equipments to provide users to maneuver not to go to the end of the gap between the equipment.
- 3- There should be accessible routes between all lines of the sport equipment.
- 4- An area should be left to use for leaving the walkers etc. kind of devices when using the sports equipment.
- 5- An area as min 80 cm x 122 cm size should be left, for individuals who use movement aid device, at the end of the sport equipment lines for the transfer to both of the equipment.
- 6- To provide easy getting on/off the equipment for some individuals, a maneuver area with 150 cm radius should be left.

Image 203 - Location of condition sport equipment in fitness centers (TS 9111)

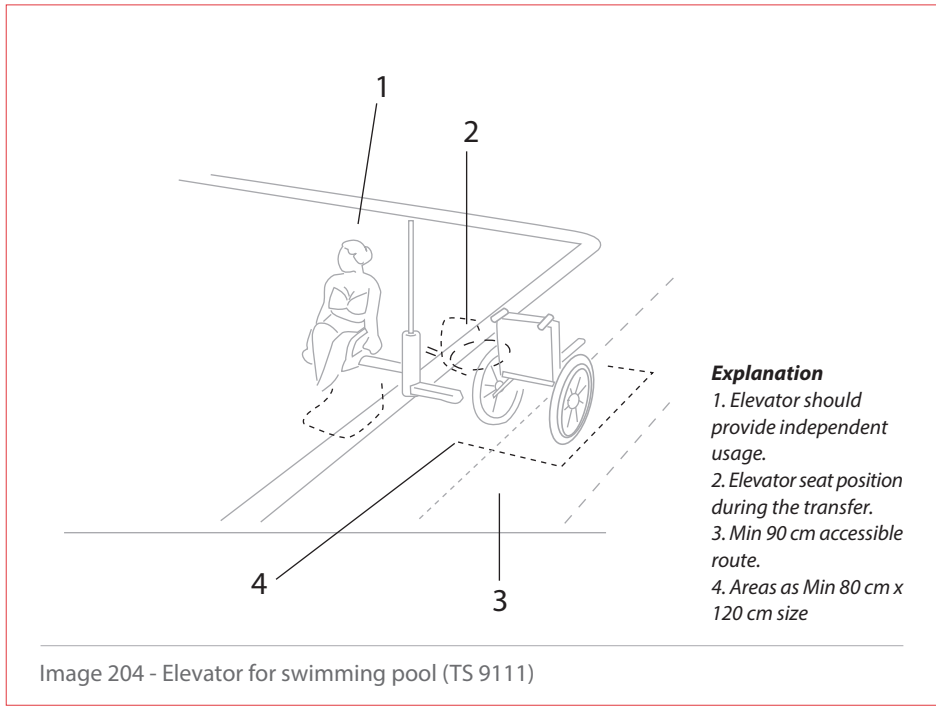


Image 204 - Elevator for swimming pool (TS 9111)

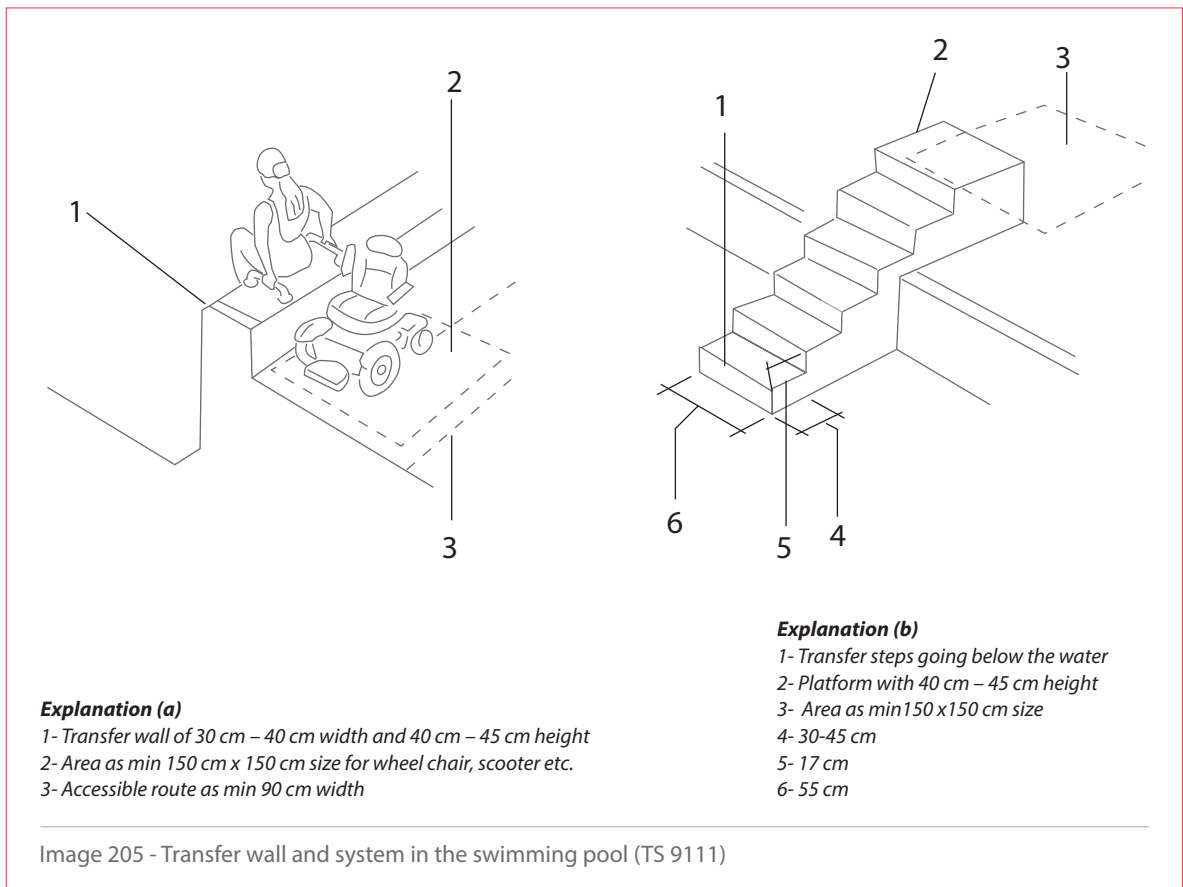
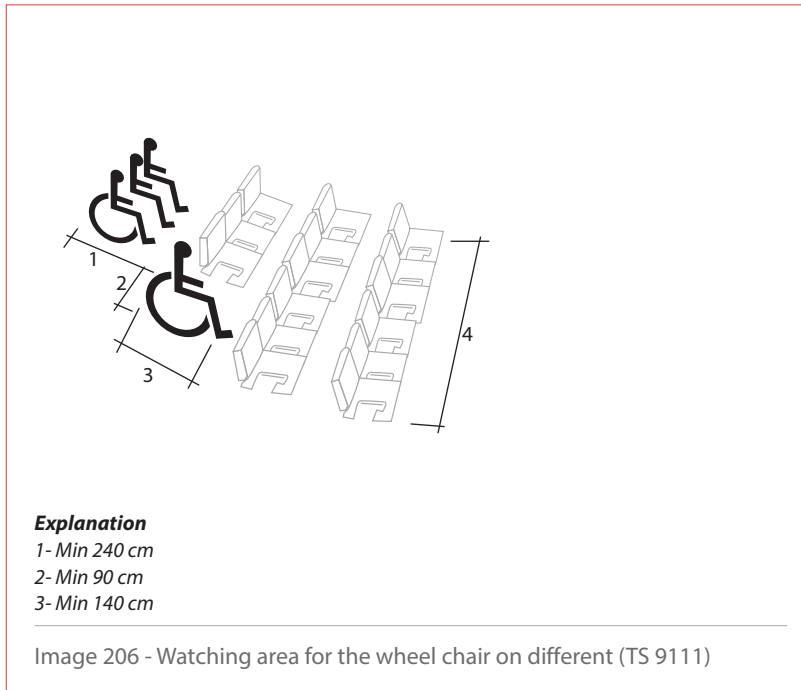


Image 205 - Transfer wall and system in the swimming pool (TS 9111)



## ■ 13.9. EXISTING BUILDINGS

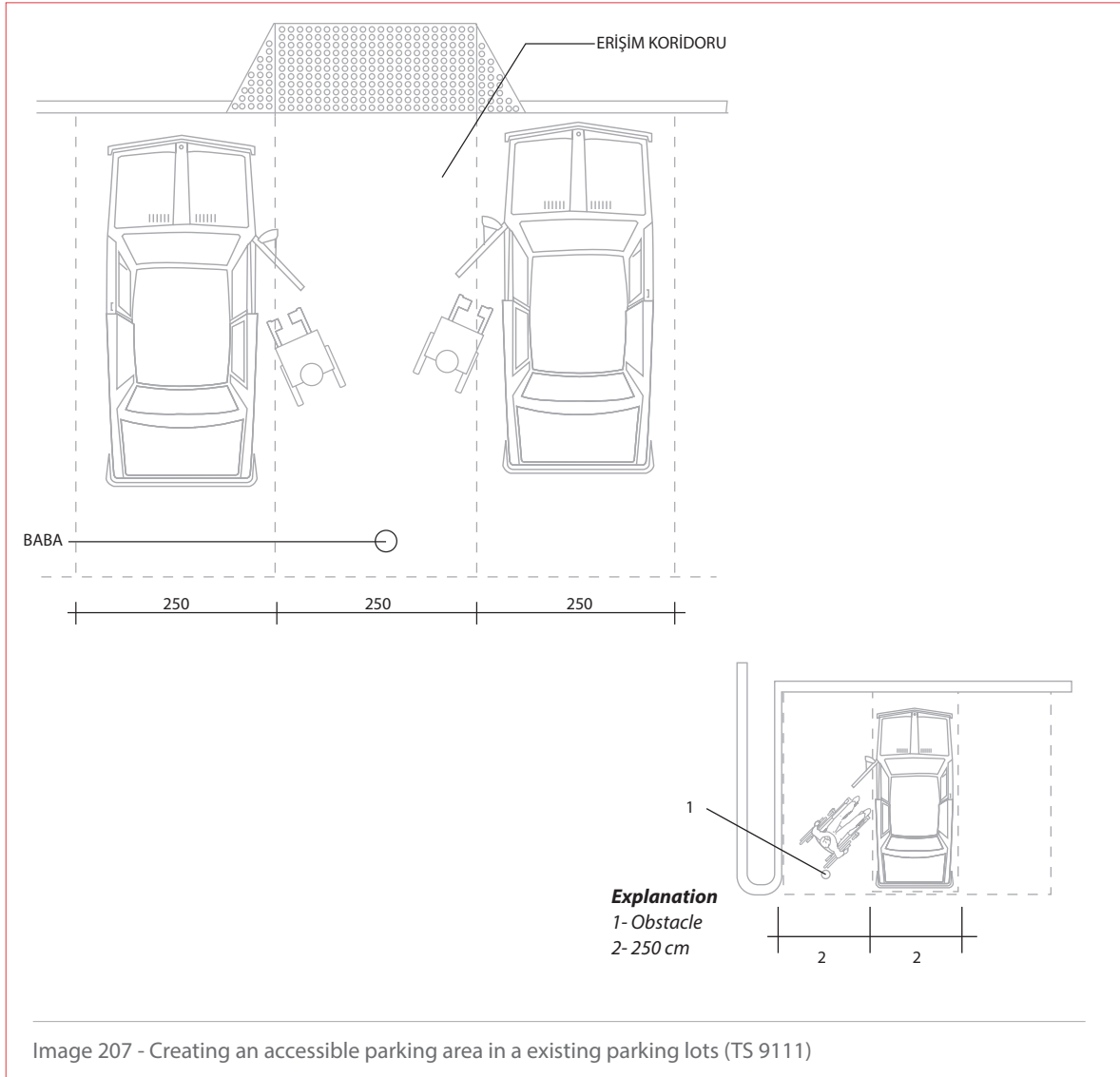
### 13.9.1 Design Rules for Nearby Environment of Existing Buildings (TS 9111)

#### Existing parking lots (TS 9111)

If the parking lots is away from 50 m from the building entrance, an area closed to the vehicle traffic in a 30 m distance from the entrance should be created or an accessible parking lots closed to the entrance should be arranged. If the accessible parking lot is not useful, one of the precautions given below can be used;

- To have an accessible parking lot, the necessary ones of the existing parking lots can be cancelled as proper to Image 207,
- For indoor parking lots that have clear height less than 250 cm, appropriate areas outside for big vehicles carrying the persons with disabilities, should be provided.





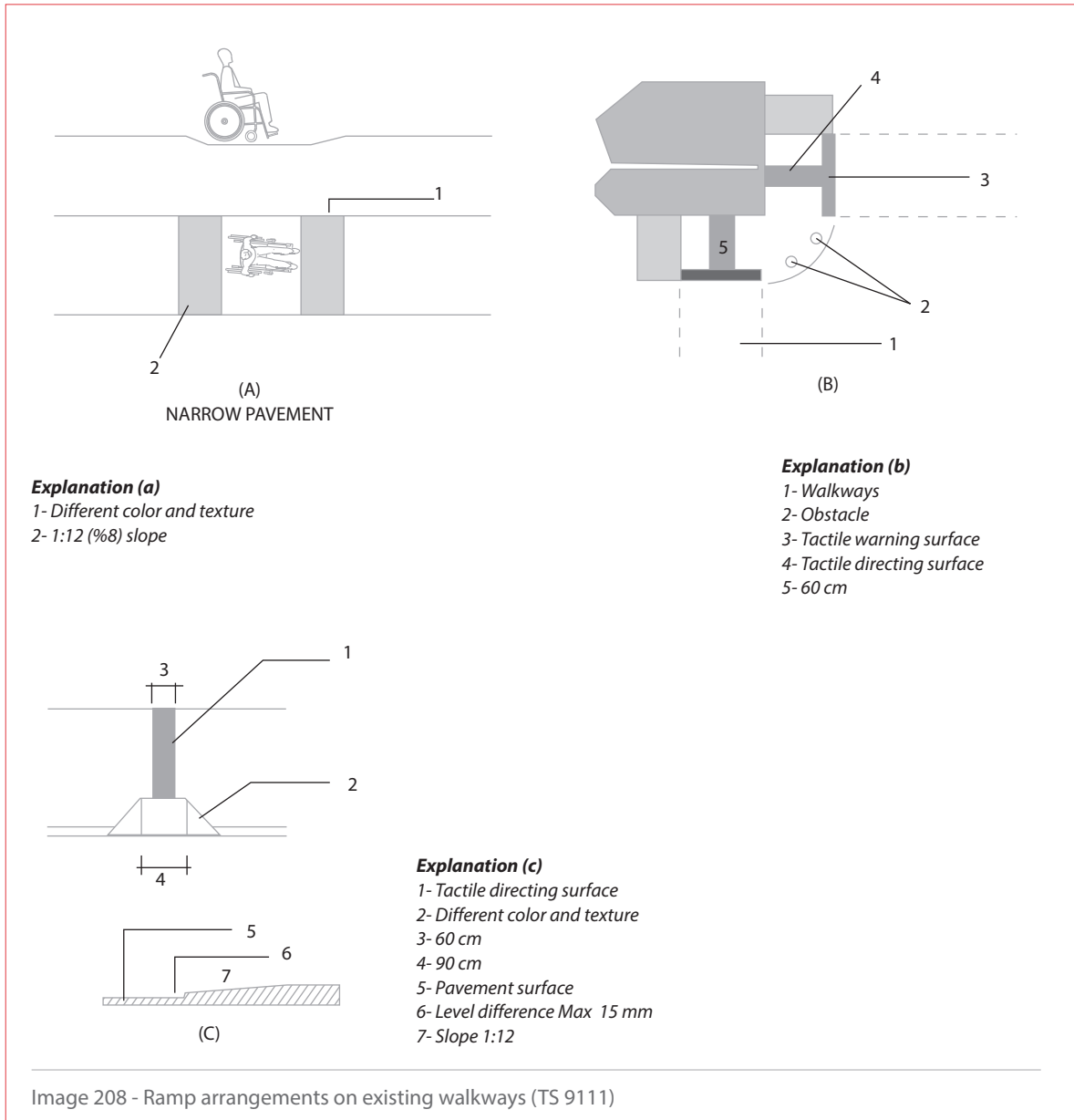
### Existing walkways (TS 9111)

Existing obstacles on the walkways should be removed and designed again. Blocking elements should be located to define the restricted areas for parking or to keep the unwanted vehicle traffic away from the areas for pedestrian usage. These obstacles should be designed to prevent becoming danger for sight disabled individuals. If there is an alternate accessible route, there is no need to arrange existing walkways with stairs or slopes to be accessible.

### Existing ramps (TS 9111)

Proper max height for a border ramp constructed all throughout the high walkway is 10 %. Also the height of side surfaces loosen to the edges should be max 10 %. If the existing border ramps don't comply with these principles, they should be changed.

At the locations where the construction of the border ramps can prevent comfortable pedestrian passage, walkways for narrow walkways with height more than 15 cm can be descended more to provide the needed passage to the road level in between walkways (Image 208).



If the crosswalk is not wide enough, corner border ramps can be dangerous for wheel chair users. Border ramp construction at crosswalks doesn't need to include all crosswalk width.

Existing railings (TS 9111)

In the cases where the existing railings are not proper, these railings need to be restored.

13.9.2. Design Rules for Main Entrance of Existing Buildings (TS 9111)

Existing entrances (TS 9111)

Public buildings should have at least one accessible entrance. This entrance should be the main entrance that used by everyone as possible as it is. Service entrance can be used temporarily as the accessible entrance at existing structures but this entrance shouldn't be the only accessible entrance. If the main entrance cannot



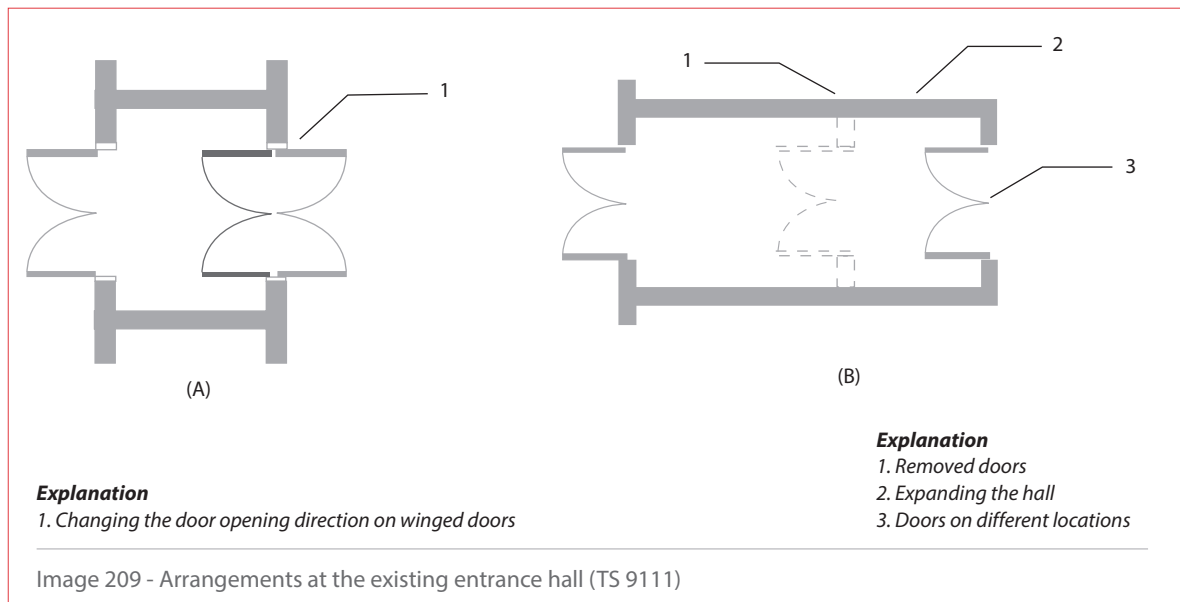
be designed as an accessible entrance because of architectural and technical reasons, an alternate accessible entrance can be provided. The location of the alternate entrance should be defined clearly with signs. To make the accessible entrance possible, one of the solutions below can be used;

- In cases when an alternate solution cannot be provided; ramps, bridges or elevators can be used,
- Entrance level can be changed with filling, landscape arrangement around the environment or slope changed,
- Doors and windows at the ground floor can be transformed into an accessible entrance.

#### Existing entrance hall (TS 9111)

One of the solutions below can be used for narrow entrance halls (doorway, windbreak etc.);

- Changing opening winged doors with sliding doors,
- Changing the door's opening direction so that both doors will open to outside (Image 209- a).
- To locate doors with minimum 120 cm width that opens to both directions at the small entrances,
- Changing the location of the inside or the second door,
- If possible, making the present entrance bigger (This is also recommended for service entrances like emergency exits. Because, solutions like changing the doors' opening direction will not make these areas accessible) (Image 209 – b).





### Existing entrance ramp (TS 9111)

Ramps of the existing building entrances can be designed with the slopes taking place in the table below;

Table 6- Slope of existing entrance ramp (TS 9111)

Max height	Max slope
15 cm and less	1:12 i.e 10%
Between 16 cm-50 cm	1:14 i.e 9%
Between 51 cm-100 cm	1:16 i.e 8%
More than 100 cm	1:20 i.e 6%

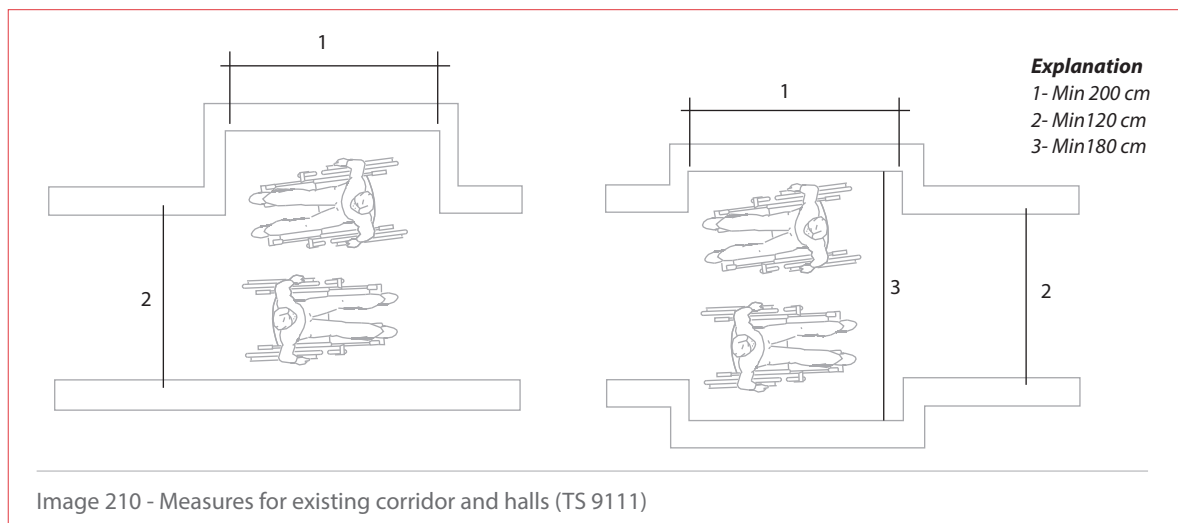
### Existing entrance door (TS 9111)

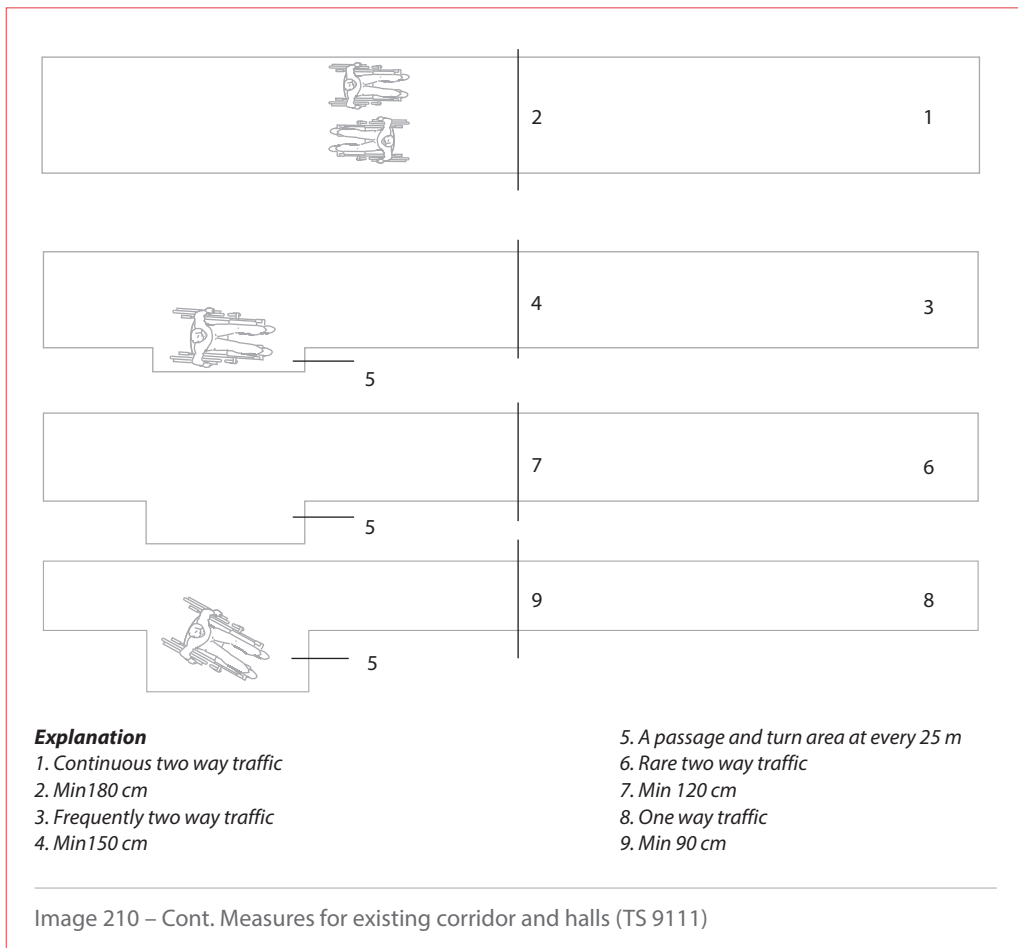
It is recommended that the heavy winged doors that open hard should be changed with automatic doors. Door openings narrower than clear 90 cm width should be widen. A hinged door should open easily with a light push and proper signing should be designed.

### 13.9.3. Existing Circulation Areas

#### Existing corridors and halls (TS 9111)

If possible narrow corridors should be widening all throughout their length; if not, niche should be located at proper distances all through the corridor length. These niches should have min 150 cm width and 240 cm length. Measures for existing corridor and halls are given on Image 210.





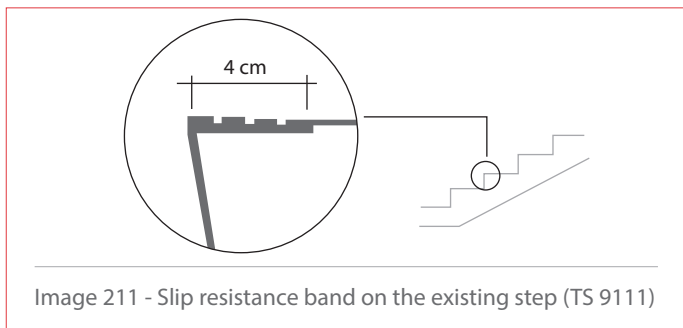
### Existing elevators (TS 9111)

Acceptable min clear size of existing elevator cabins that let only one wheel chair user is 95 cm x 140 cm. smaller cabins should be changed with a new one. Acceptable min clear width of an existing elevator's door should be 80 cm. If sufficient landing areas cannot be left in front of the elevators, danger defining signs must be located.

Calling buttons and control panels that are located at a height till 140 cm from the floor can be used. Control panels that were placed higher than 140 cm should be changed and they should become proper with the access distances for front and side approach. At the places with two same control panels, changing only one is enough.

### Existing stairs (TS 9111)

For cases that the steps tip cannot be changed, slip resistance band can be used as an alternate solution. Slip resistance band should have 40 mm width and its clear thickness shouldn't be more than 0,01 cm starting from the step (Image 211). Color of the bands should be contrast with the step to guide the sight-disabled individuals.



### Platform and stairs elevator (TS 9111)

At the places where it is hard or impossible to locate a ramp or an elevator, access to the existing buildings can be provided with platforms and stairs elevators. Stairs elevators that can move angled usually provides connection between one or more than one floors or angled platform in the existing buildings.

### Existing restrooms (TS 9111)

- At least one handicapped toilet should be provided at every facility of accessible existing buildings.
- Narrow doors can be replaced with automatic/remote-controlled doors at the entrance. Doors limiting the maneuver area can be removed with the consideration of the privacy.
- There is no need for changing the existing urinals, if toilet hardware and accessories are accessible. The height of one urinal can be reduced in every toilet.
- By changing the location of one closet and one common section, connecting two adjacent cabins for an accessible toilet is proper.
- Sink can be arranged to be accessible when seating on the closet in narrow toilets and other usage areas.
- If the railings are not built during the construction of the building, walls can be strengthening to carry the weight or can be mounted on a safe location (ceiling, flooring, etc.).
- If they are accessible, there is no need to change the toilet accessories that are located at max 140 cm height.
- If the existing mirrors have too much height, they can be hanged with an angle or a body mirror can be located on another wall.

### Existing signs (TS 9111)

International accessibility symbol should be located at places and facilities defined as accessible. Directing symbols should be located to clearly define the location and function of the accessible places and facilities. Signs that don't fit to the needs of this design should be changed or moved.

### Arrangements and alterations that will be done in patient rooms (TS 9111)

A certain percentage of the changed or added patient rooms, in cases of an addition or change of the patient rooms with a planned reconstruction (alteration) in an independent area or the whole unit of an existing health structure, should be proper with accessibility conditions.

### Eating areas (TS 9111)

In the buildings without elevators; seating areas at the mezzanine should be lesser than 1/3 of the total accessible seating places areas inside the business and when the same service and decors are being provided at the public eating/drinking area and at the mezzanine, there is no need for an accessible route for vertical access to the mezzanine.

### Selling and service desks, cashiers, information desks (TS 9111)

If it is not possible to provide an accessible desk because of technical problems, there should be an alternative desk that provides these conditions.



### Controlled exits (TS 9111)

When the selling areas are lesser than 500 square meter, one accessible controlled exit and paying area is enough. In alterations of facilities that has selling areas of 500 square meters or more, the number of necessary accessible controlled exit and paying point for every paying/exit type should be according to the table given above.

## ■ 13.10. MASS TRANSIT SERVICES

Mass public transit services should be accessible for everyone and, thus include buses with ramps or lifts, visual announcements and cues and auditory announcements. In addition, differences in levels at stops and pedestrian walkways should be removed to increase accessibility and dignity for all. Jurisdictions should consider inclement weather may be a barrier to the access of public transportation.

### 13.10.1. Vehicles

All mass public transit vehicles that are under jurisdictional control should be equipped to provide equal access to persons with disabilities, including accessible and usable stops and pedestrian pathways.

In general, the following features are recommended for all mass transportation.

- Min 90 cm wide entry
- Slip-resistant steps and flooring
- Provide a ramp or a hydraulic lift
- Visual announcements and cues
- Auditory announcements
- All the entrances and exits should be well lit

#### For Sight Disabled Individuals:

- Warning cues on the step edges (i.e., yellow and black stripes),
- Colour contrast on individual handholds and poles,
- Colour contrast on call/signal (stop request) buttons,
- Audible notification (announcements like “next station...” Or “last station...”)
- Audible notification announcing service numbers and the destinations at the bus stops
- Sufficient and specific place for a guide dog adjacent to the first seat

#### For Hearing Disabled Individuals:

- Visual announcements and cues (like “stop” sign),

#### For Physically Disabled Individuals:

- The priority seating area reserved for wheelchair users should have a clear path of 750 mm or greater
- The priority seating area reserved for wheelchair users should be clearly signed and have an area with a minimum of 1300 mm x 750 mm for manoeuvrability
- There should be a flexible horizontal arm support to one side of the seat space located at an approximate height of 900 mm height and with call button located along that support for ease of use and access

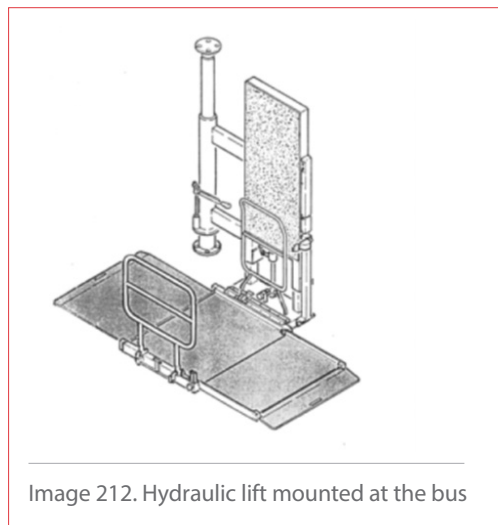




Photo 1. Hydraulic lift mounted at the bus entry

Bus ramps can be of three types depending on the usage location and their costs. These are:

**Portable ramp:**

This can be carried and placed in an intended position when necessary and can be used inside the bus (Photo 2).



Photo 2. Removable ramp, handle bar and Wheel chair user in area for persons with disabilities (ÖZİDA, 2008)

**Hand controlled foldable ramp:** This ramp can be fold; it can be folded by anyone (Photo 3) .



Photo 3. Foldable ramp

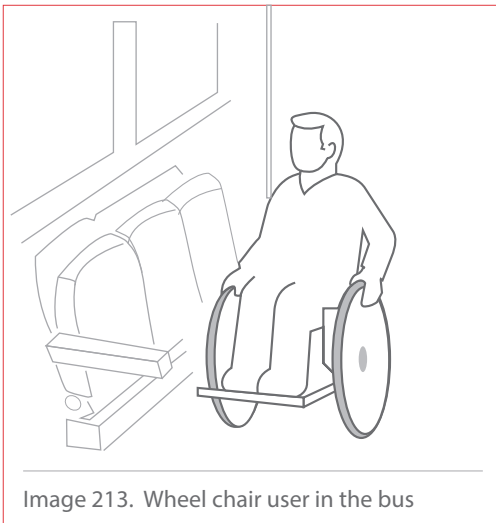




Electrical ramp: This ramp is activated by electricity; ramp angle and height can be arranged depending on the situation.

**Also in the buses,**

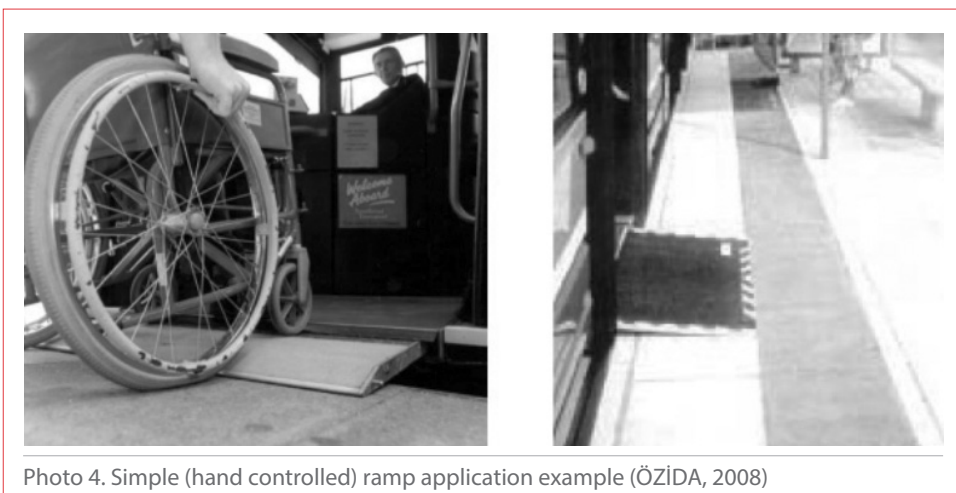
- A place for wheel chairs at a proper location for the journey that will not be an obstacle for other passengers to get on/off the bus, should be left (Image 213),
- Warning buttons provided for passengers that will get off the bus should be located in a 90 cm – 120 cm height from the bus inner floor and should have a Braille explanation.



In addition to these arrangements, applications for different disability groups, should have features at below (Recovery of Transportation for Everyone; Sample Application Guide);

**13.10.2. Waiting, Transfer, Getting On/Off Spots**

These facilities should be proper to the barrier free and accessible principles. Persons with disabilities should be reached the places they need to access, with the shortest, safe rides by bus, private/ commercial vehicles and railed transport vehicles. Location of the stops should be easy, simple, easily understood and can be seen from a certain distance. All advertisement and informing signboards shouldn't be sharp edged and corners (TS 12576).





Also bus stops should be designed properly for usage of persons with disabilities. Circulation areas inside the busses with stairs should be wide and should have an entrance with an elevator and an exit. Stopping part should be heightened from the vehicle road with a 20 cm ramp for providing easy access to the bus (Image 214, Photo 4) (TS 12576).

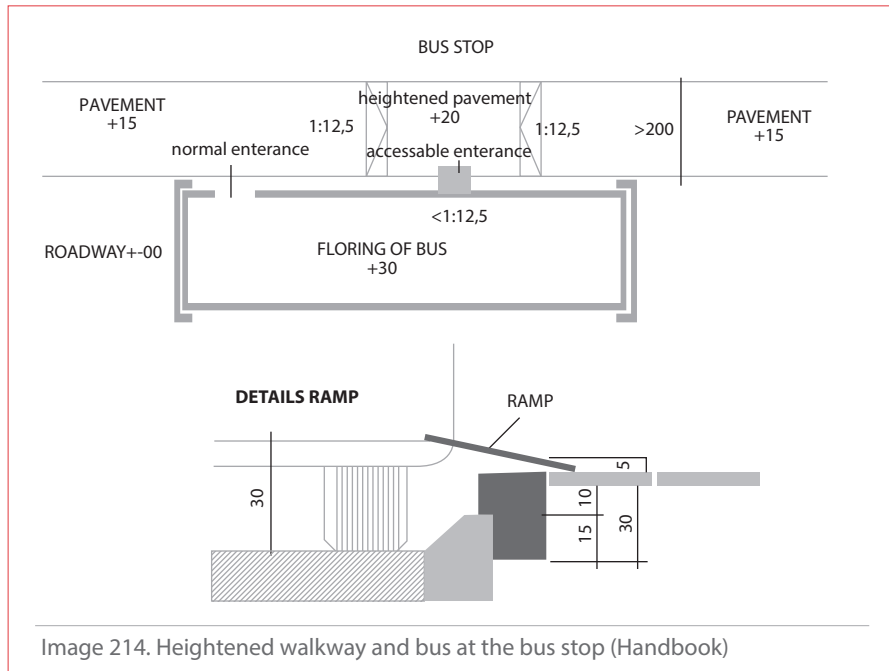


Image 214. Heightened walkway and bus at the bus stop (Handbook)

Seating benches, an area for a wheel chair should be located and protected against the external factors (Image 215) (TS 12576).

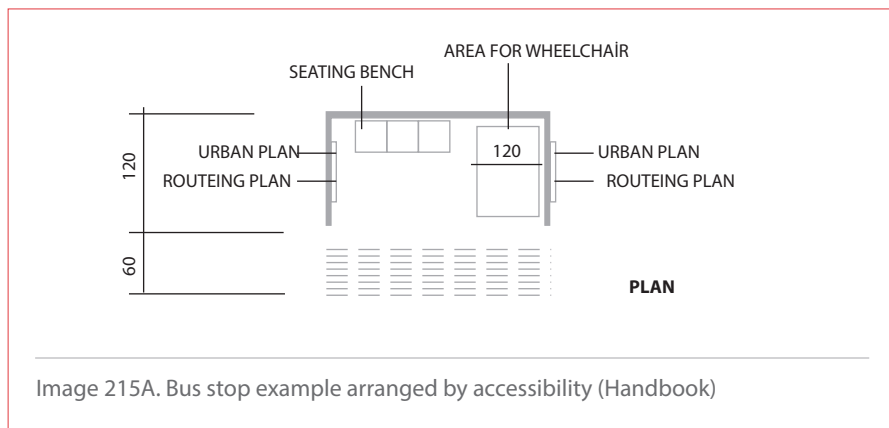
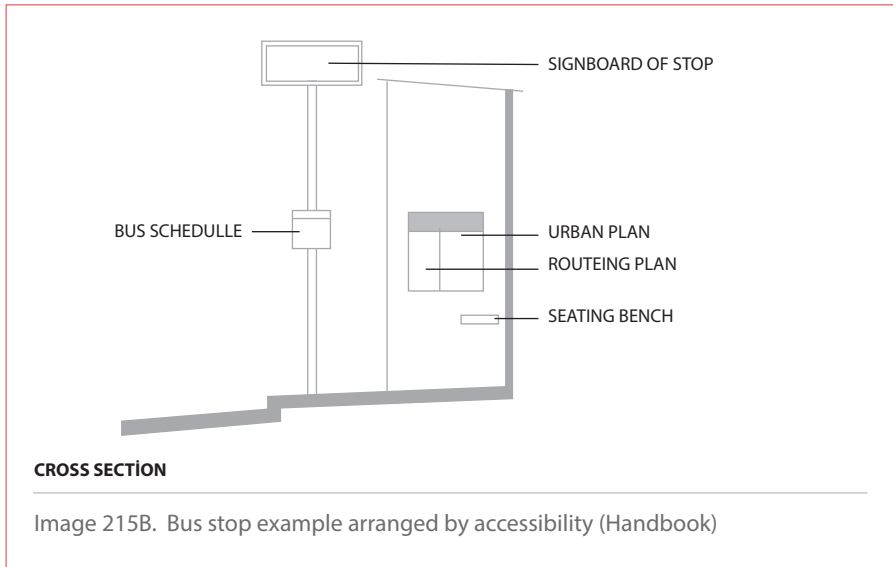
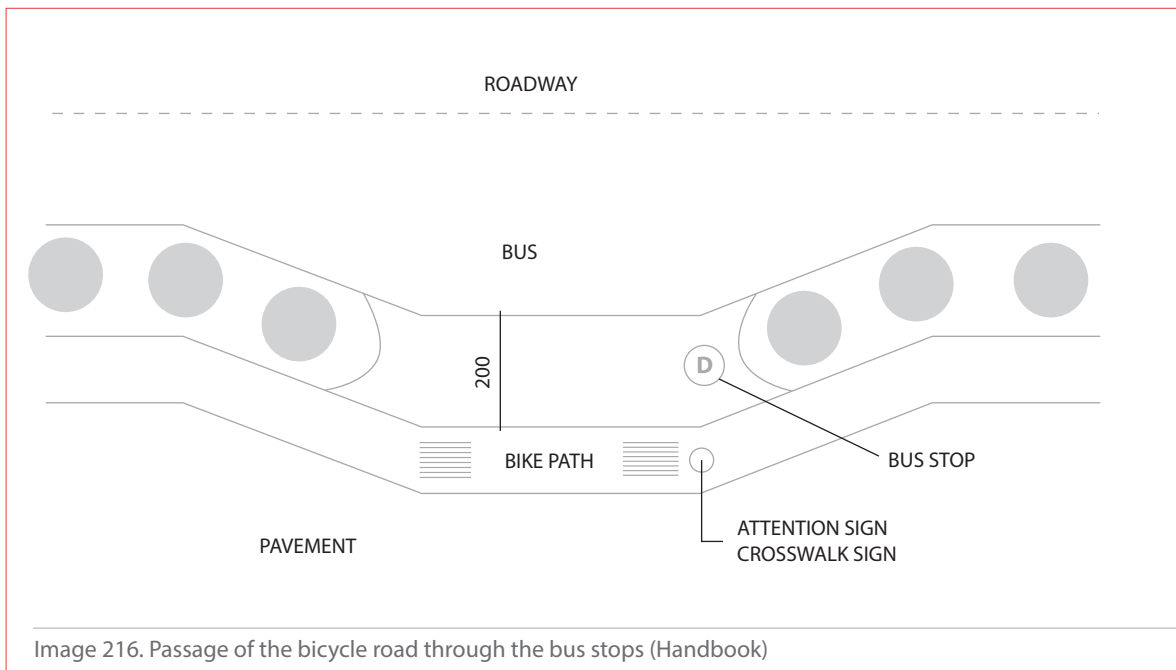


Image 215A. Bus stop example arranged by accessibility (Handbook)



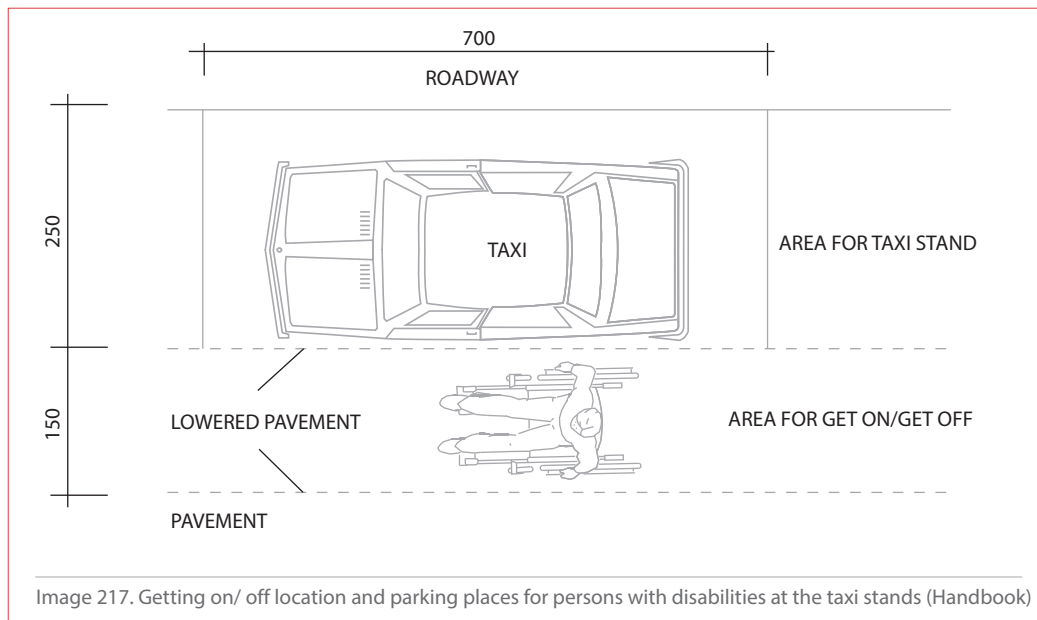
Vehicles except mass transit vehicles should be forbidden to stop and park at the bus stops by vertical and covering over signs at the vehicle road surface. At the bus stops, bicycle paths all through the bus stop should pass with a 200 cm distance left to the stop by not going through the vehicle road. Pedestrian passage signs should be located at the bicycle paths for persons with disabilities and pedestrians (TS 12576) (Image 216).





At the vehicle roads, sufficient numbers of getting on/ off places should be designed also for the persons with disabilities. Standard disability warning plates should be used at these places, wrong road and traffic signs that block usage shouldn't be used (TS 12576).

Places for disabled individuals to get on/ off at the necessary areas of the city centers, at the taxi stands should be left and the walkway and the vehicle road edge level should be equally leveled in these (TS 12576) (Image 217).



### 13.10.3. Railed Transportation Stops

Tramway, subway and train stops should be visible from a certain distance. Wagon door and the platform should be on the same level or there should be automatic entrances with ramps for persons with disabilities to get on/ off these mass transit vehicle barrier-free, independently and not to need any help. Proper flooring coverings that prevent slipping should be used at entrance/ exit surfaces (TS 12576). Detectable warning devices should be used for persons with sight disabled. (Photo 5-6).



Photo 5. Detectable warning devices and direction elements at station and terminal (Naniopoulos, 1999)



Photo 6. Directing the persons with disabilities by tactile surfaces at urban railed system stations like subway, etc

Information point and audible warnings should be located at the station and terminals for persons with sight disabled and hearing disabled (Photo 7-8).

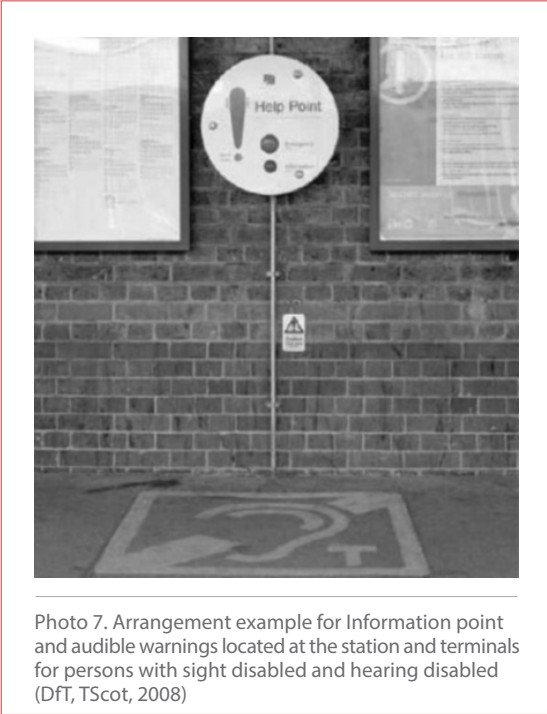


Photo 7. Arrangement example for Information point and audible warnings located at the station and terminals for persons with sight disabled and hearing disabled (DfT, TScot, 2008)



Photo 8. Audible warner with Braille alphabet that is worked by touching (DfT, TScot, 2008)

Ticket selling places at mass transit facilities like station, terminal and ports should have the following properties:

- There should be a separate desk that has height of 75 cm – 85 cm for very short individuals and wheel chair users or some of the ticket offices should have box office desk that can be lowered (Photo 9).



Photo 9. Ticket box office example that can be lowered (DFT, TScot, 2008)

- Enough space under the box office for wheel chair users can buy tickets easy from the ticket office.
- At the places with a security window between the ticket selling officer and the buyer, there should be a separate interview section.
- providing support, railings or handle bars should be located for passengers that have difficulties standing up.
- Lighting over the box office should be around 250-lux level.

### ■ 13.11. INFORMATION, SIGN AND TACTILE SURFACES

#### 13.11.1. Information and Warning Sign

Directing signs and equipments can take place at horizontal and side platform like walkway, crosswalk, building entrance, getting on/off areas (stops, station, terminal, port, etc.), stairs and vertical platform like wall, board and column. These include flooring materials that informs different warnings with raised shapes that take place at horizontal and side platforms at walking areas. According to TS 12576 general principles at below should be taken consideration;

On local roads; readable, clear, understandable and visible signs should be dlocated according to Highway Standard Traffic Signs. A sound addition should be made to the signs for danger warning, traffic arrangement, information, stopping and parking for sight disabled individuals at important cross roads and intense crosswalks between cross roads.

Signs at crosswalks should be simple, easily understood and visible from a far distance. These signs should be,

- Simple and with a clear symbol,
- With a color that is contrast opposite/contrary to the background color,
- With colors that are proper with international standards (TS 7248 ISO 3864), green/white for safety and security, yellow/black for warning/danger, red/white for restriction, stopping, danger and emergency, blue/white for informing
- They should be at locations that can be easily seen and should be lit at a sufficient level.
- International Disability sign should be used for persons with disabilities (Image 218).

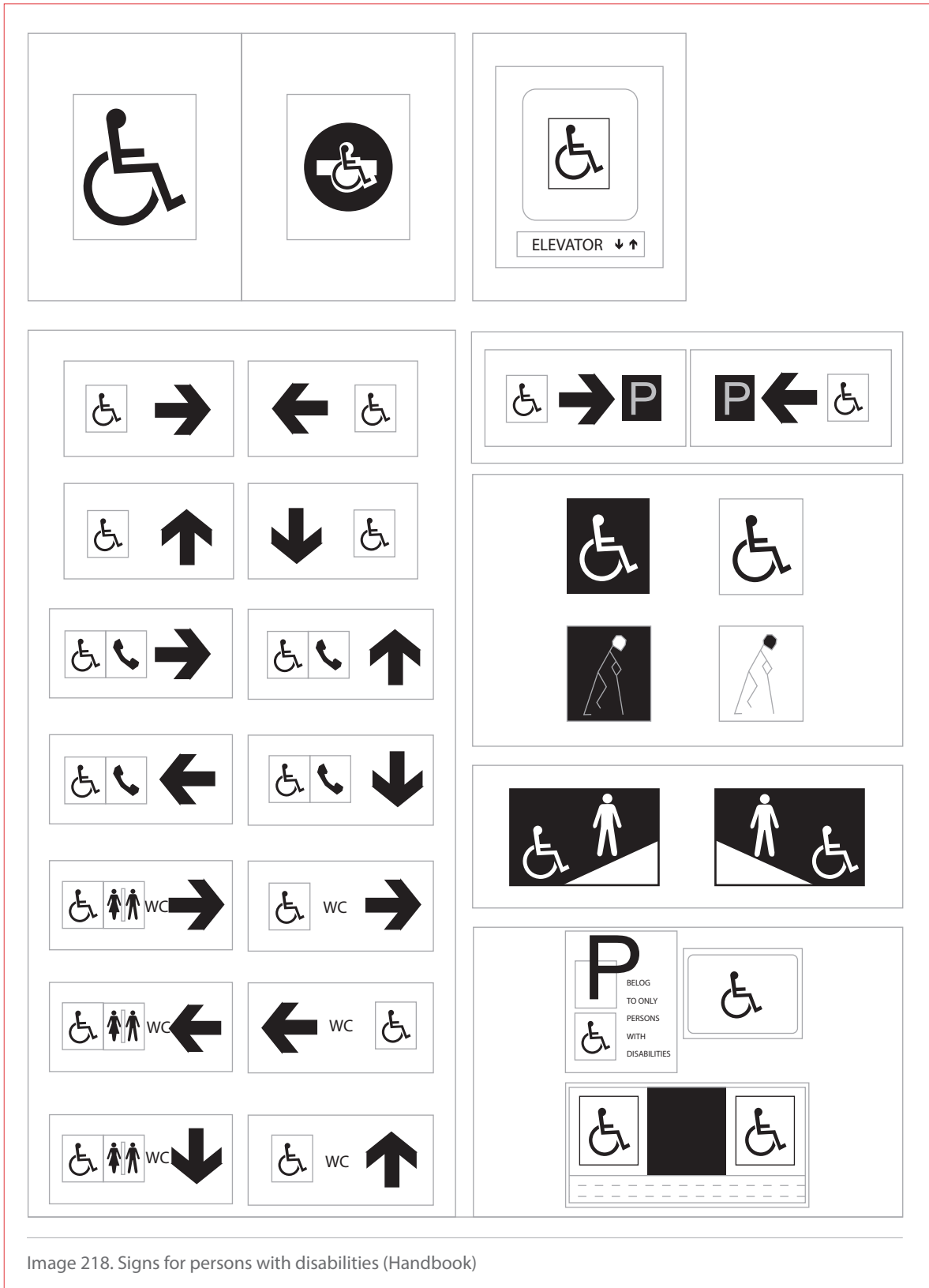


Image 218. Signs for persons with disabilities (Handbook)





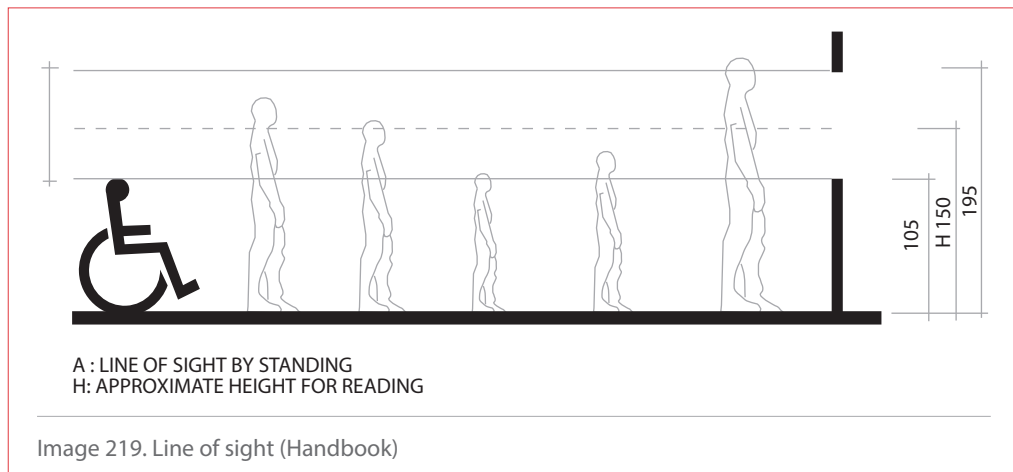
### 13.11.2. Sign at Maintenance of Road

Signs should be used as light and sound signs with vertically and horizontally to warn persons with disabilities at walkways and vehicle road during maintenance and repairing works (TS 12576).

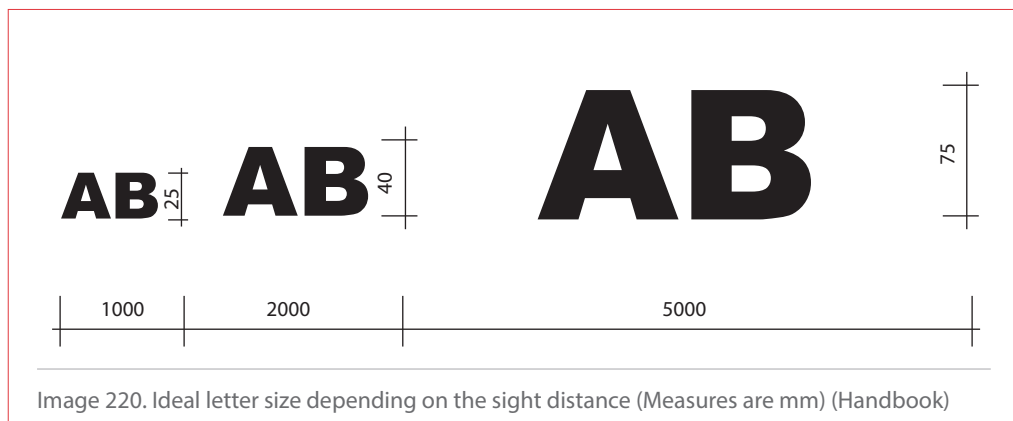
### 13.11.3. Design in Vertical signs at Pavement

Signposts and signboards should not be blocking persons with disabilities; signs in the poles should be visible and directing. At main road has traffic jam, at the main street exit section of the side roads that end through the main road (street or avenue), stop or caution line of 50 cm width from stone tile flooring as a pedestrian passage should be located for the driver to stop, to provide all pedestrians to cross the road safely and to warn the drivers when entering these side roads (TS 12576).

Information signs should be visible, audible and tactile, writings and symbols should be readable, understandable (TS 12576) (Image 219).



Reading distance in the line of sight and the size of the writing should be proper with values given at below (TS 12576) (Image 220).



### 13.11.4. Information Symbols

According to TS 12576, information symbols should have properties at below;

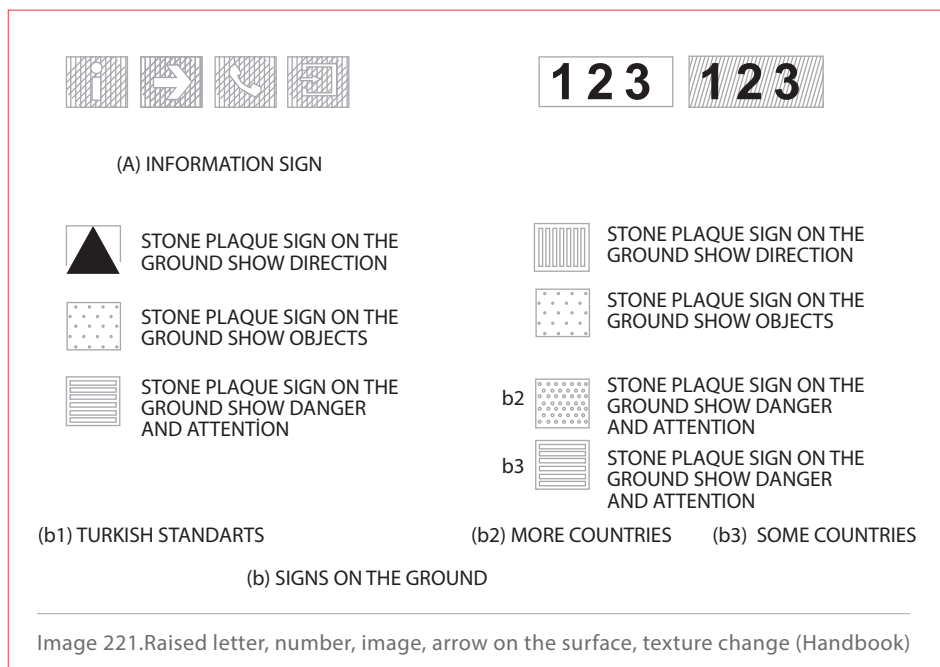
- Remarkable color should be used at Information signs and symbols to be understand easy.
- Text and the symbols should have contrast color with the background.



- Informing signs should be raised for tactile reading.
- Images should be used on symbols instead of letters.
- Audible sound or raised symbols or big fonts should be used in public locations to inform sight-disabled individuals.
- Information symbols should be on eye level.

### 13.11.5. Tactile and Visible Information Signs and Symbols

Information and signs should be felt by touching for sight disabled individuals. On these information signs, raised letter, number should be used. Information should be vocalized and visible for hearing disabled individuals. Also there should be walking lines and/ or arrows on the walking surface(TS 12576) (Image 221).



### 13.11.6. Information Signs and Symbols at Mass Transit Stops

According to TS 12576, Information Signs and Symbols at Mass Transit Stops should have properties at below;

- Readable signboard with blinking light that gives the name of the stop, vehicle's route number and the route and which mass transit the stop belongs to at every stop, should be located at all bus stop.
- At indoor stops, information board on the wall should be on eye level and tactile reading height; there should be information as large font letters, city map, route plan and mass transit fee.
- On the informing board, route plan of the mass transit vehicles and the closest taxi stand with important telephone numbers should be located.
- City map on the stop should be colored and separated into sections, buildings like main streets, important public buildings, commercial centers, sportive areas, mosque, hospital and post office should be shown on the map and also there should be a legend with raised writing next to the map.
- If more than one mass transit is passing through the stop, routes of these should be shown separately on the route plan.



- On the route plan in the stop, location of the stop should be shown with an arrow. If there are stops that can be transferred with other mass transit vehicles, these routes should also be shown on the route plan (Photo 10).
- Edges of the boards in the stop should be rounded.

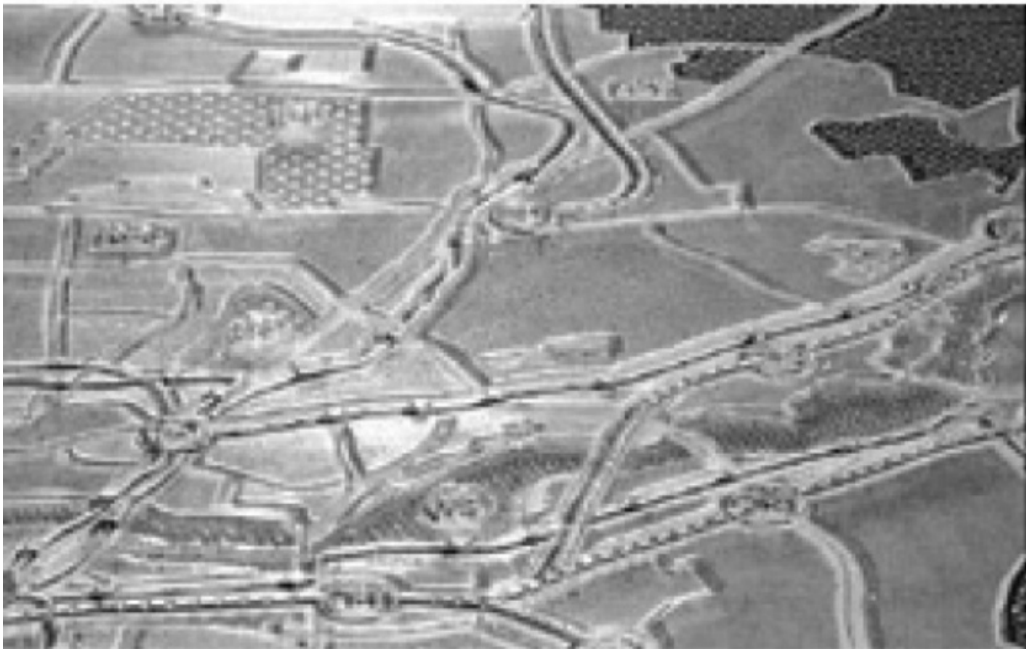


Photo 10. Raised city map (ÖZİDA, 2008)

### 13.11.7. Tactile Surfaces

Raised texture of tactile surfaces should have a shape and a height to be detected by the base of the shoes of sight disabled individuals, but it shouldn't be at an height or with a big raised texture to cause a barrier for other pedestrians or wheel chair users (ÖZİDA, 2008).

Tactile surface can be used at urban places as walkways and other surfaces reserved for walking, crosswalks and pedestrian islands on separated roads, terminal, station and stops, stairs, garden entrances, building entrances, parks, parking lot, toilet, telephone box, information board with the directing purpose on usage.

In different countries, different material, size and rules of floor design For tactile surfaces can be used. This material can be laid down as a thermoplastic material also it can be natural stone, concrete, brick or similar. In this content, three main elements for tactile surfaces are given at below (ÖZİDA, 2008):

#### A- Walking guide sign element

This sign that can also defined as a guide sign in short is designed with tile that has a guiding texture in its surface (Photo 11, Image 222-223-224-225)

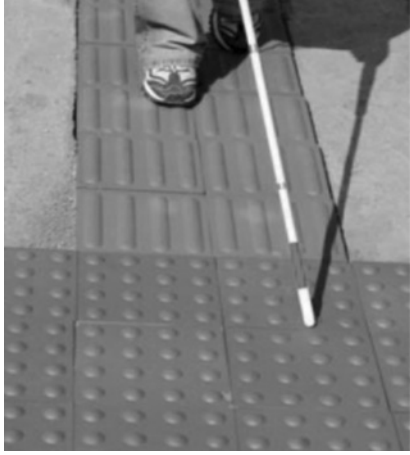


Photo 11. Application example of Walking guide sign and direction element

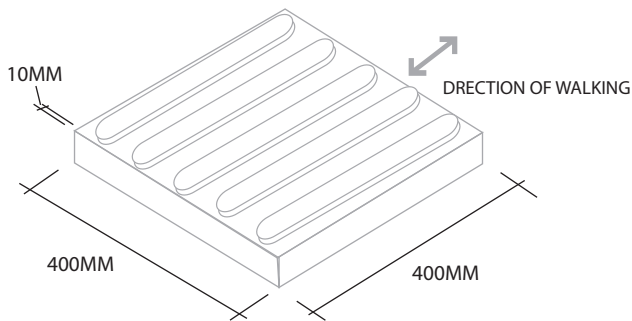


Image 222. Texture sizes on walking guide sign plaque. Measures are mm. (DfT, 2007)

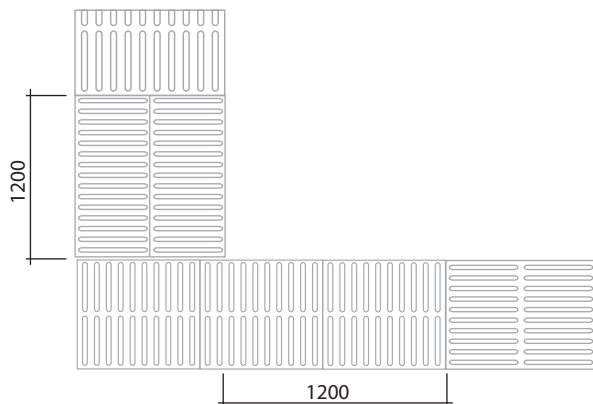
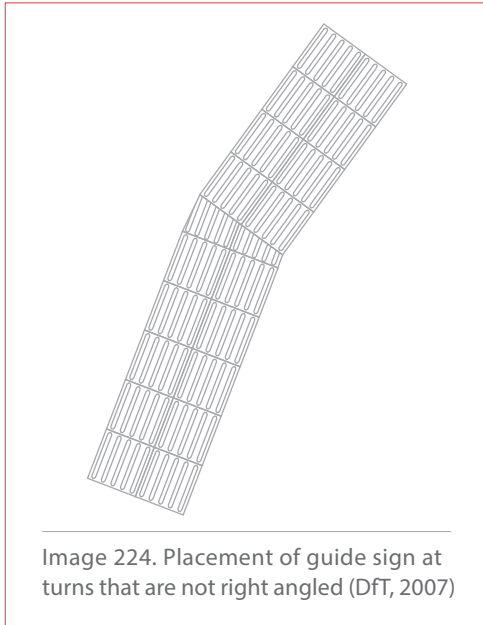


Image 223. Placement of guide sign at a right angled turn. Measures are mm. (DfT, 2007)



According to TS 12576, the width of the guide sign should be min 50 cm. In the BM (2004) Guide, 60 cm width is being recommended. The width should be min 80 cm according to the applications at other countries.

### **B- Direction change element**

It is arranged with tiles that have a texture on its surface that informs the person is at the direction changing location ( Photo 12). There are different applications in different countries for direction change element. When these applications are being analyzed, three main types at applications can be present:

- Element with a hemisphere bubbled texture
- Element with a crossed lined bubbled texture
- Element with raised stick texture

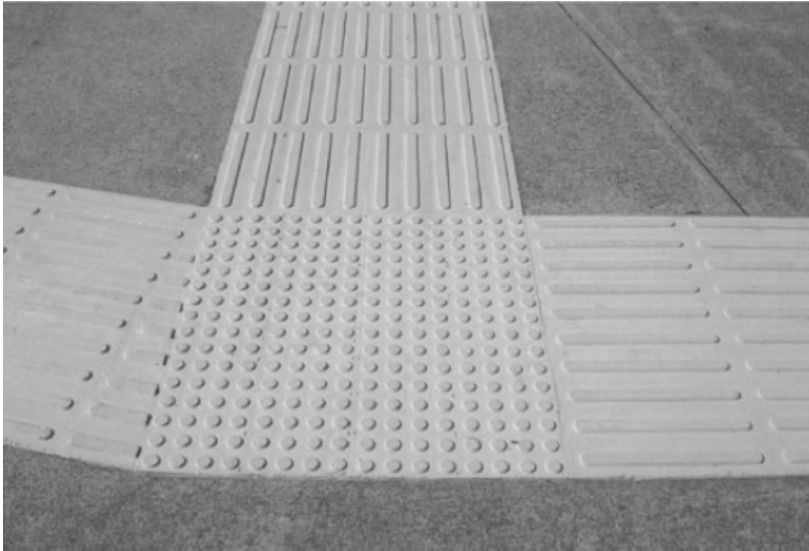


Photo 12. Direction change element ([www.raf.com.tr/urun-582](http://www.raf.com.tr/urun-582))

### C- Warning element

It is arranged with tiles that has a texture on its surface that informs a warning or a barrier (any obstacle or danger that is on the walking direction) is met (Image 226-227-228-229-230-231, Photo 13-14-15-16)

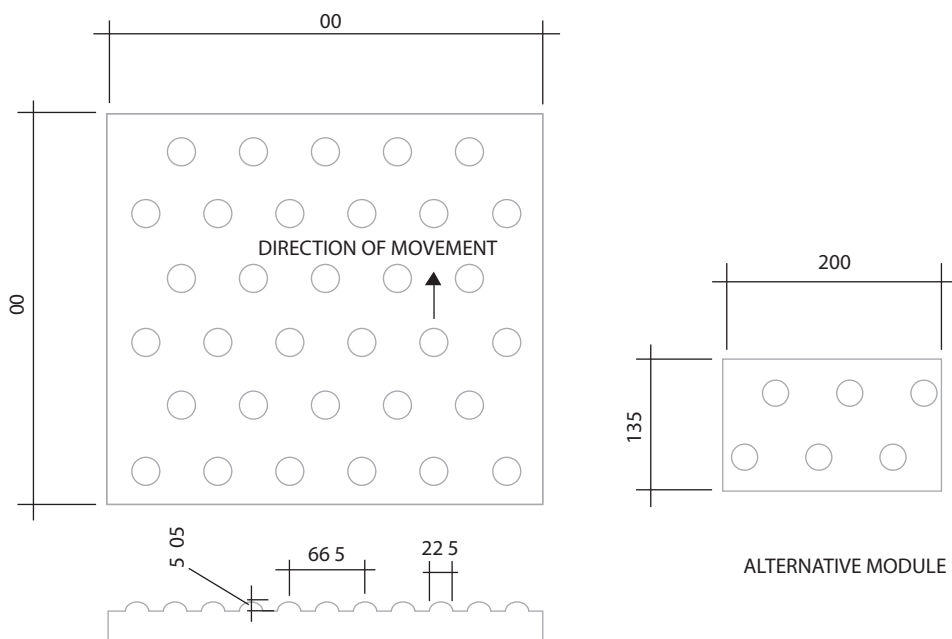


Image 226. Plan and profile of warning element in interior perron area at station etc. Measures are mm. (DfT, 2007)

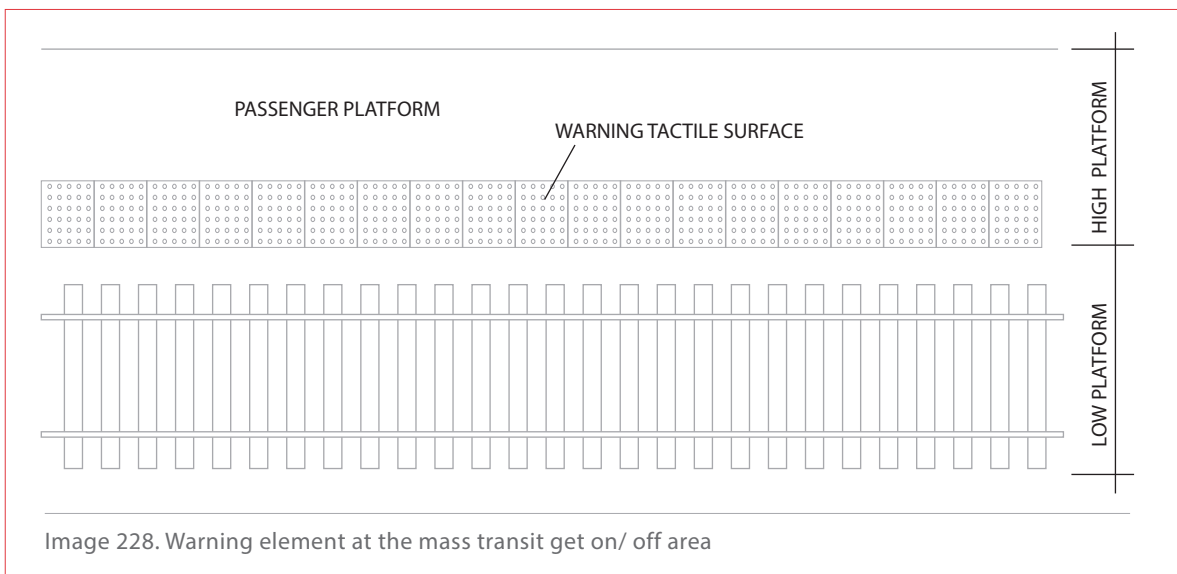
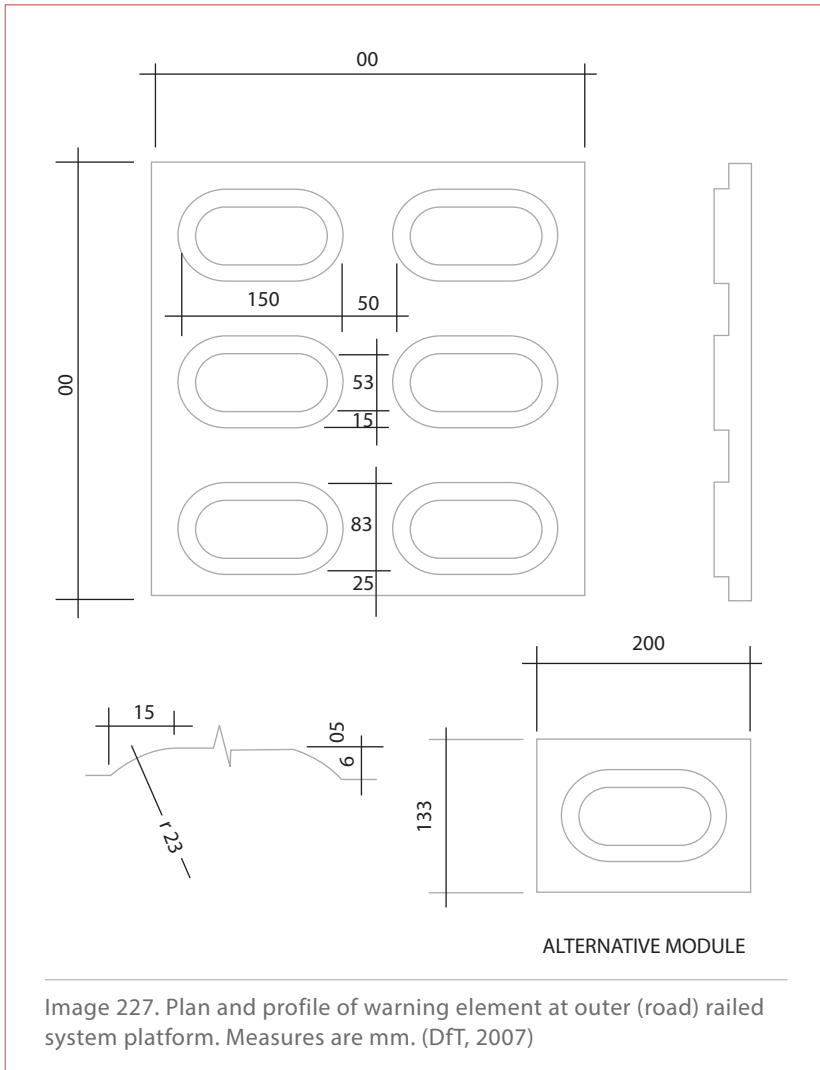




Photo 13. Warning element at station peron level



Photo 14. Warning element at the urban outer railed mass transit get on/off areas

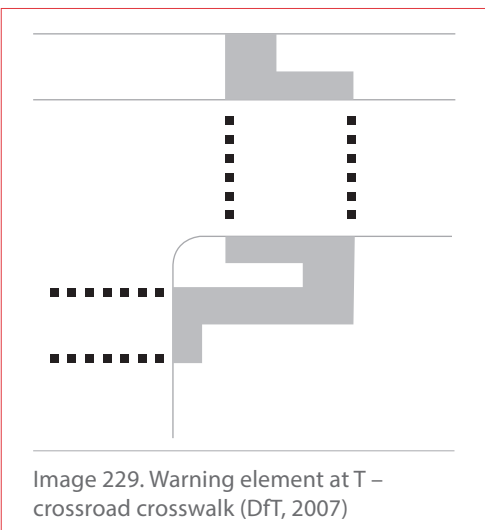


Image 229. Warning element at T – crossroad crosswalk (DfT, 2007)





Photo 15. Warning element at a crosswalk ([www.walkinginfo.org/pedsafe](http://www.walkinginfo.org/pedsafe) - Peter Lagerwey)

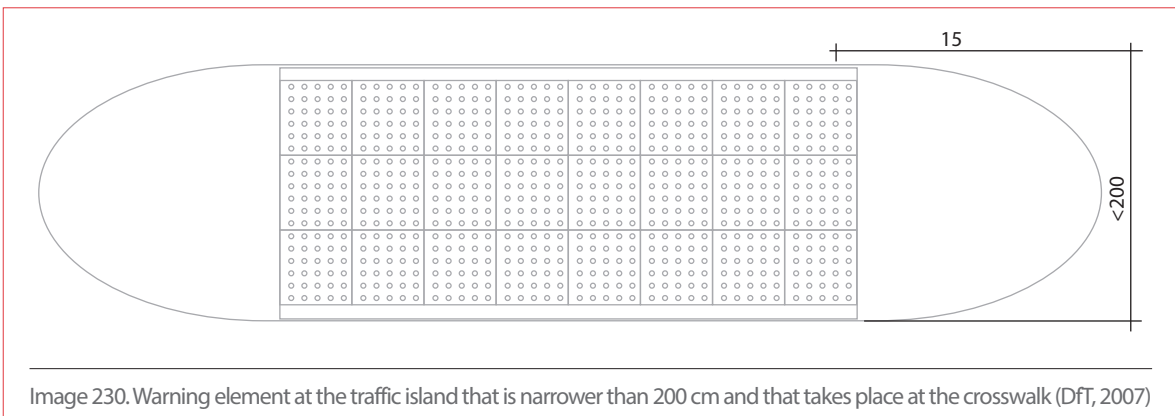


Image 230. Warning element at the traffic island that is narrower than 200 cm and that takes place at the crosswalk (DfT, 2007)

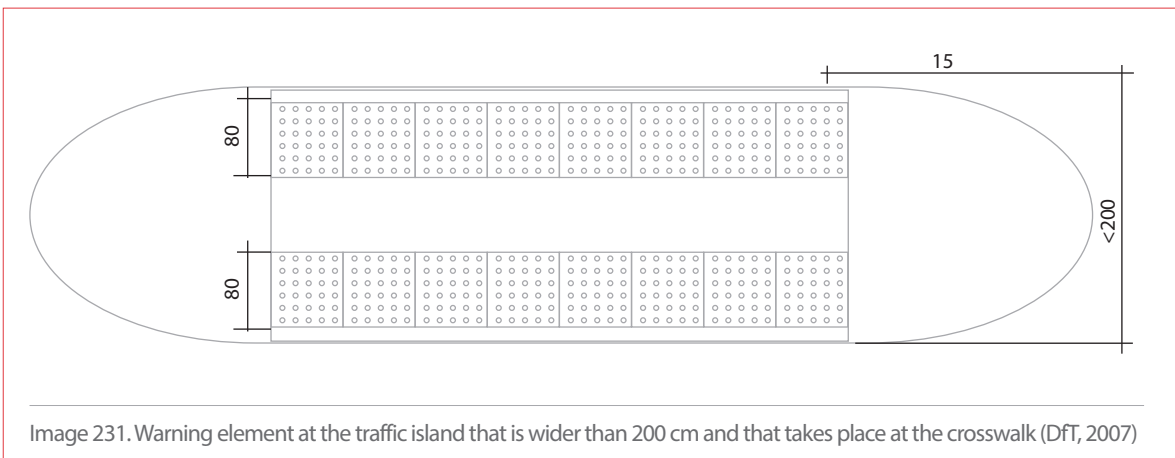


Image 231. Warning element at the traffic island that is wider than 200 cm and that takes place at the crosswalk (DfT, 2007)

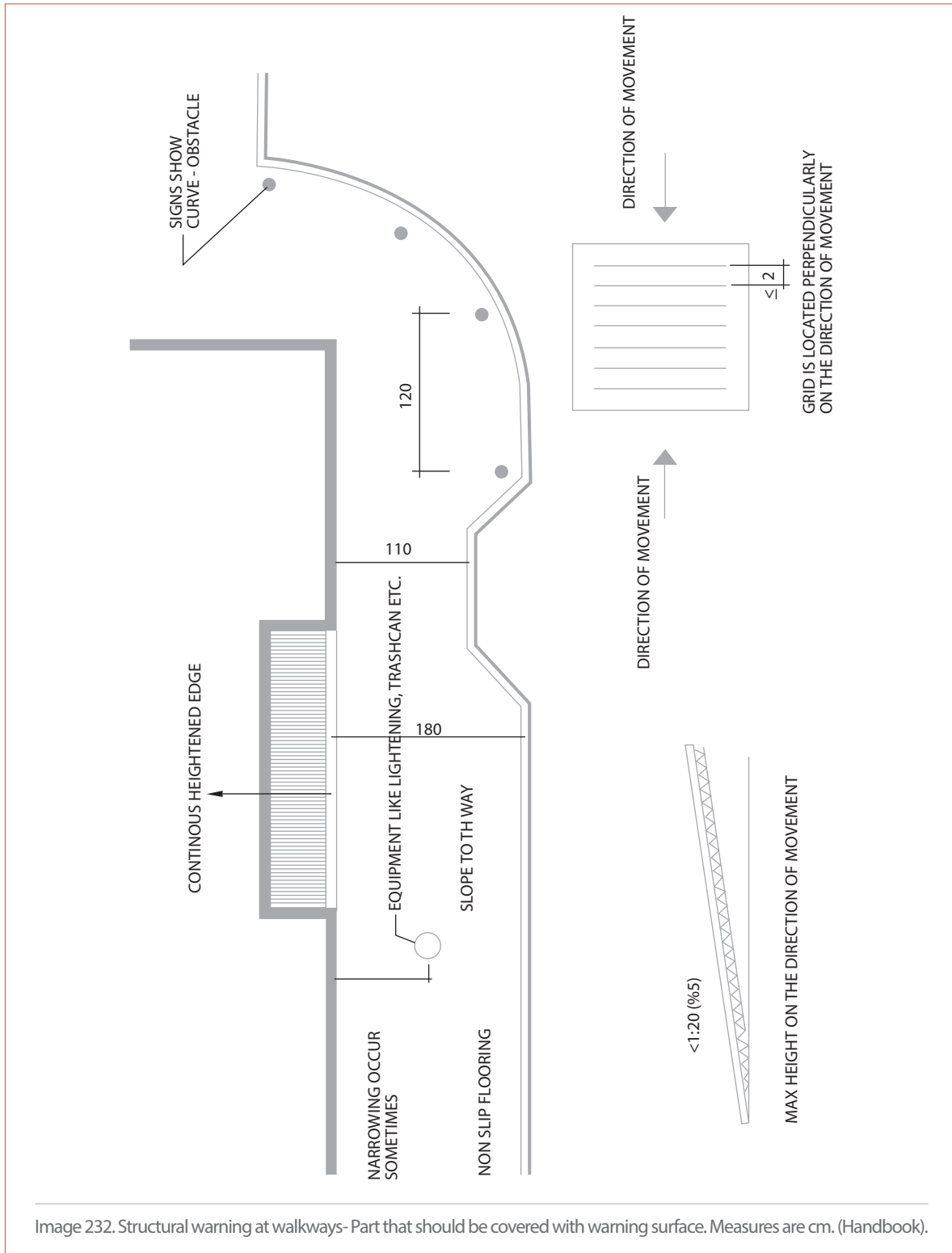


Photo 16. Warning element in front of a step

Despite the similarity of texture on warning tactile surface at controlled (lighted traffic signed) cross walks and the uncontrolled crosswalks, different colors should be different. Tactile surface as red for warning at controlled passages and yellow for warning at uncontrolled passages, should be used (DfT, 2007).

According to TS 12576, persons with disabilities should be warned in areas at below:

- Narrowing at pavements
- If the road has too much slope to the vehicle road,
- Edges heightened without a threshold,
- In the defining process of the part with the maximum heightening on the movement direction,
- At part from the start to end of curves
- Because of the color, suture and joint gap at the parquet covering at the roads,
- Gaps of grates that are not located as crossing on the floor at the movement direction,
- In cases when the walkways are fault.



Barriers like floor grates, trash cans, fire hydrants, mail boxes, poles, trees, flower beds, resting benches on pedestrian roads and squares should be covered all round by concrete tile stone to warn persons with disabilities (TS 12576) (Photo 17).



Photo 17. Warning with walkway flooring against objects

Border stone that specify the walkway and is an element to warn persons with disabilities on the movement direction, should have a tactile texture and height. A security line covered with colored material that is parallel to the border stone and that defines the pedestrian path should be designed in a warning character for persons with disabilities against the objects on the edge of the pedestrian path. Also, floor signing should also be used for stairs and ramp locations (TS 12576) (Image 233).

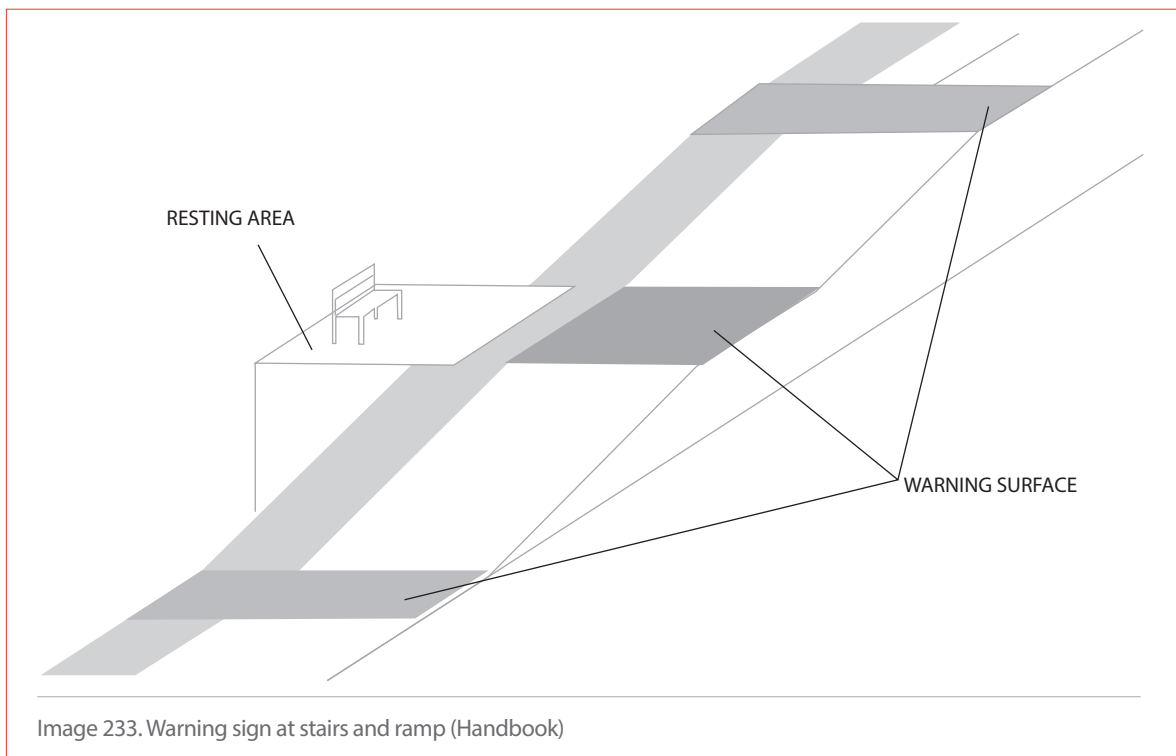


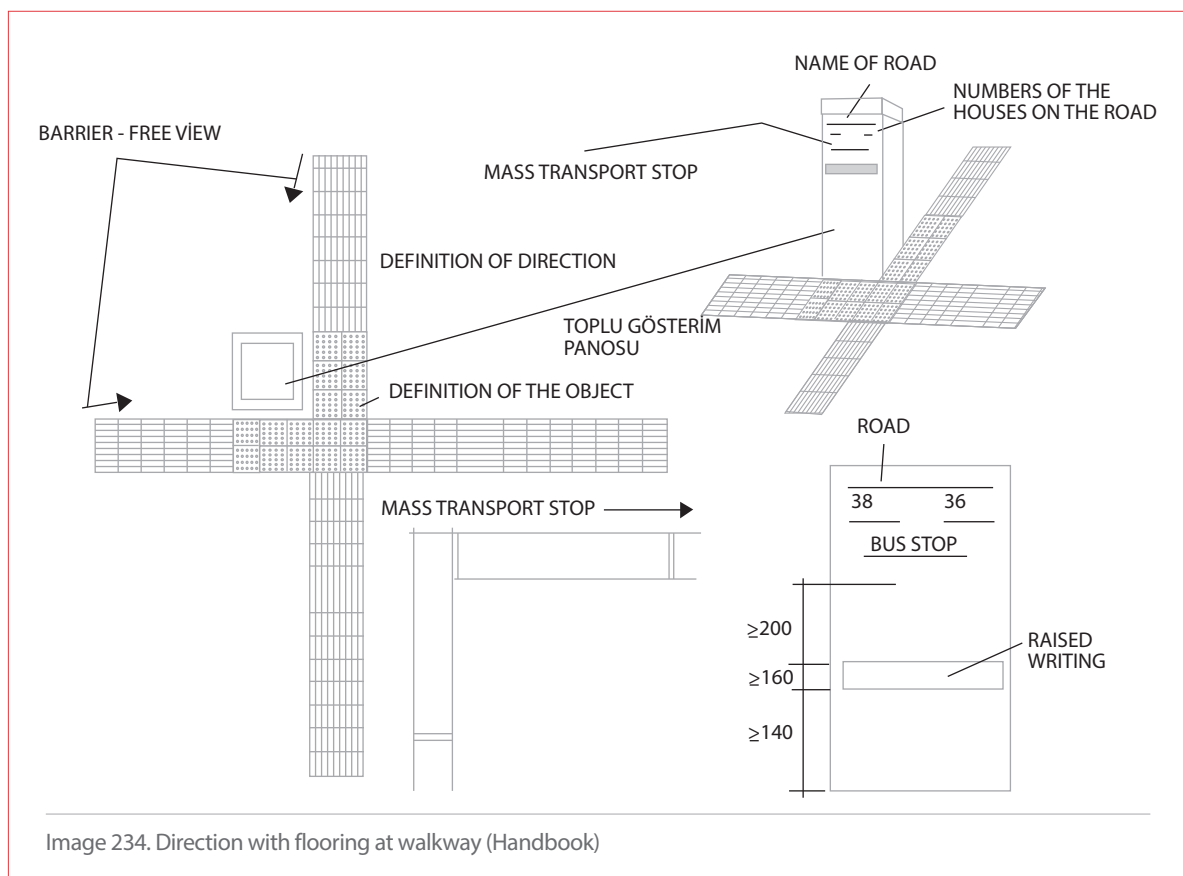
Image 233. Warning sign at stairs and ramp (Handbook)



Cuts on the edges of walkway should be avoided as possible as it is. Covering of the places with cuts should be covered with different walkway colored covering material to warn the persons with disabilities previously. Lighted or fluorescent traffic signs should be located as a warning at the tips of the protective island or refuge beginning (TS 12576)

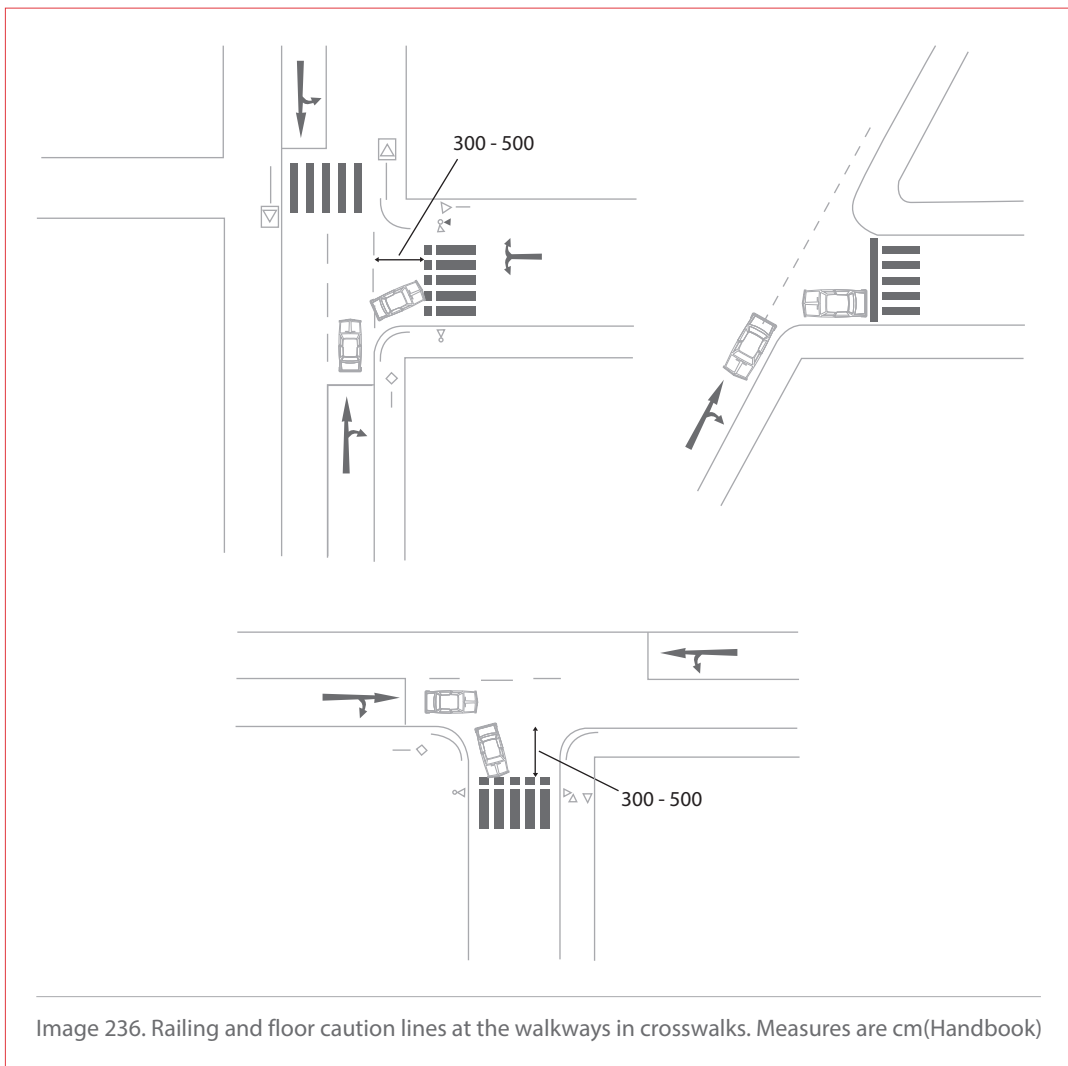
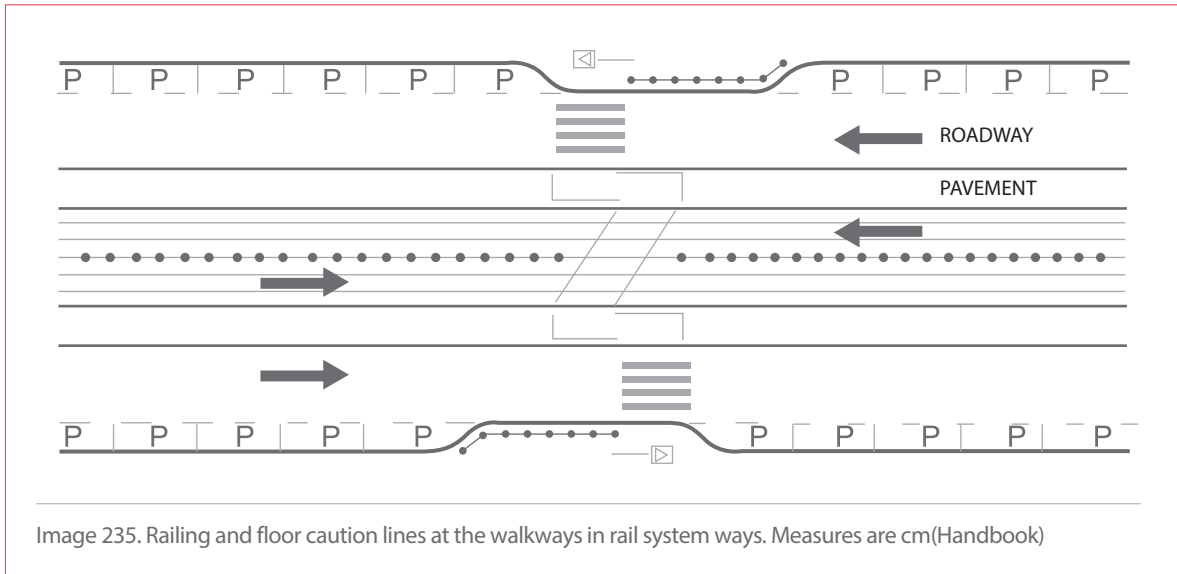
### 13.11.8. Design Guidelines for Routing

Walking strips should be designed to direct sight disabled individuals in open areas as big/wide halls and wide walkways and squares. This strip should be different than the path covering and should be designed with a different textured directing concrete plaque stone covering material that has min 50 cm width and to be detected by a white cane. Joint gap of these stones shouldn't be discomfort during walking and the level difference between these stone plaques with each other should not be more than 0,5 cm height (TS 12576) (Image 234).



At the cross roads, cross road corner stone and protector inside the security line (90 cm height) should be defined by railing pointers for directing of the persons with disabilities freely and without any barriers. Barrier-free usage of crosswalks at cross roads, walkway should be descent to take 2% slope to the vehicle road and walkway curve should be signed with security line and pointers.

Floor caution lines and pedestrian railings should be designed at necessary location to direct pedestrians to the crosswalks and to prevent wrong movements of pedestrians on the retreated floor lines at the cross roads and vehicle roads (TS 12576) (Image 235-236).





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**WHF** : WORLD DISABILITY UNUION

**WDU** : WORLD DISABILITY UNUION

**MFSP** : MINISTRY OF FAMILY AND SOCIAL POLITICS

**UN** : UNITED NATIONS

**ADA** : ACCESSIBILITY GUIDELINE FOR BUILDING AND FACILITIES

**DIN** : DEUTSCHES INSTITUTE FUR NORMUNG

**UNDP** : UNITED NATIONS DEVELOPMENT PROGRAMME

**ECA** : EUROPAN CONCEPT FOR ACCESSIBILITY

**TSE** : TURKISH STANDART INSTITUTION

