Interreg Greece-Bulgaria SMiLe
European Regional Development Fund

EUROPEAN UNION

Strengthening primary Medical care in IsoLated and deprived cross-border arEas

D.5.2.4

Toolbox for Equal Health Provision

Project Partner 2: Aristotle University of Thessaloniki - Special Account for Research Fund
Department of Medicine, University Campus, Thessaloniki
Tel: +30 2310999137 Fax:+30 2310999131 e-mail: smyrnak@auth.gr

Deliverable ID

Project Code:	
Acronym:	SMiLe
Project Title:	Strengthening primary Medical care in IsoLated and deprived cross-border arEas

Deliverable:	[Toolbox for Equal Health Provision]
Version:	[V.1.0]

Contract title	[If applicable]
Contactor:	[If applicable]
Author(s):	Tapali Tzoulia, Genitsaris Evangelos, Tsalis Panagiotis, Naniopoulos Aristotelis, Makridoy Efthymia, Dimitrios Nalmpantis, Lazaridou Pavlina, Smyrnakis Emmanouil,
Contracting Authority:	If applicable

Description:	The current document is the Deliverable 5.2.4. It describes analytically necessary guidelines for the creation of an accessible healthcare infrastructure.
Keywords:	[SMiLe, Information, Publicity, Dissemination Plan, Visual Identity, Cross-border Health, Healthcare, Interreg V-A "Greece-Bulgaria 2014-2020" Cooperation Programme, cross-border cooperation, European Union, Thessaloniki, Ardino, Harmanli]

Project Partners

Role	Partner name	Country
Lead Beneficiary	4th Health District of Macedonia Thrace	Greece
Partner Beneficiary 2	Aristotle University of Thessaloniki - Special Account for Research Fund (Department of Medicine)	Greece
Partner Beneficiary 3	Multi-profile Hospital for Active Treatment of Ardino	Bulgaria
Partner Beneficiary 4	Municipality of Harmanli	Bulgaria
Partner Beneficiary 5	National Emergency Aid Center	Greece

Short presentation of the programme

The Cooperation Programme "Greece-Bulgaria 2014-2020" was approved by the European Commission on 09/09/2015 by Decision C(2015) 6283. The total budget (ERDF and national contribution) for the European Territorial Programme "Greece-Bulgaria 2007-2013" is €129,695,572.00. The total financing consists of €110.241.234,00 (85%) ERDF funding and €19.434.338,00 (15%) national contribution. The eligible area of the Programme consists of the Region of Eastern Macedonia-Thrace (Regional Units of Evros, Kavala, Xanthi, Rodopi and Drama) and the Region of Central Macedonia (Regional Units of Thessaloniki and Serres) in Greece and the South-Central Planning Region and South-West Planning Region (Districts of Blagoevgrad, Smolyan, Kardjali and Haskovo) in Bulgaria. The Priority Axes are PA 1: A competitive and Innovative Cross-Border area, PA 2: A Sustainable and climate adaptable Cross-Border area PA, 3: A better interconnected Cross-Border area, PA 4: A socially inclusive Cross-Border area.

Abbreviations

AF: Application Form

CB: Cross Border (area)

JoB: justification of Budget

JS: Joins Secretariat

LB: Lead Beneficiary

MA: Managing Authority

PB: Partner beneficiary

STPP: Start-up Time Plan and Procurement Plan

WBS: Work breakdown structure

Table of Contents

List of Tables and Figures

1. Introduction

Individuals are diverse, differing in age, size, abilities, talents and preferences. It is also known that variations in human abilities such as cognition, vision, hearing and speech, body functions, mobility may affect usability of products, services and spaces.

Built environments, transport systems and information are often inaccessible. Lack of access to transport can be a major barrier for a disabled person to reach healthcare services. There may also be physical barriers to the infrastructure itself.

Access to information can be a further barrier for people with sensory disabilities (visual and hearing impairments). Information is frequently unavailable in accessible formats, and some people with disabilities are unable to access basic information and communication technologies without special provisions.

A main reason for the above could be that the built environment and accompanying services are most of the times designed with a "standard" user in mind and, therefore, do not fulfil the wide range of differing needs of individuals. Individuals that fall into the category of "persons with reduced mobility", including the individuals with disabilities, the elderly, children, pregnant women, parents with small children, individuals with differing dimensions, travelling people carrying luggage, individuals carrying loads etc., therefore, cannot participate in life activities as equally as others. It is also known that any provisions for inclusion of these user groups benefit all user groups and provide easier use and access for all.

In Article 25, the United Nations Convention on the Rights of Persons with Disabilities (CRPD) "recognizes that persons with disabilities have the right to the enjoyment of the highest attainable standard of health without discrimination on the basis of disability. States Parties shall take all appropriate measures to ensure access for persons with disabilities to health services that are gender-sensitive, including health-related rehabilitation. In particular, States Parties shall:

(a) Provide persons with disabilities with the same range, quality and standard of free or affordable health care and programmes as provided to other persons, including in the area of sexual and reproductive health and population-based public health programmes;

(b) Provide those health services needed by persons with disabilities specifically because of their disabilities, including early identification and intervention as appropriate, and services designed to minimize and prevent further disabilities, including among children and older persons;

(c) Provide these health services as close as possible to people's own communities, including in rural areas;

(d) Require health professionals to provide care of the same quality to persons with disabilities as to others, including on the basis of free and informed consent by, inter alia, raising awareness of the human rights, dignity, autonomy and needs of persons with disabilities through training and the promulgation of ethical standards for public and private health care;

(e) Prohibit discrimination against persons with disabilities in the provision of health insurance, and life insurance where such insurance is permitted by national law, which shall be provided in a fair and reasonable manner;

(f) Prevent discriminatory denial of health care or health services or food and fluids on the basis of disability."[1]

The concept of "Accessibility" refers to the environment and the features that allow safe, comfortable and independent access to services and goods. This access should take place without discrimination based on sex, age, disability or other characteristics. The term also refers to functionality, i.e. if one can use a service. Moreover, accessibility refers to the communication, when one can have access to information as the rest of the population.[2]

According to the new Greek Building Regulations published at the Official Government Gazette (OGG 79/A'/9-4-2012)[3], accessibility is the characteristic of the environment that allows all persons, regardless of sex, age or other characteristics such as size, strength, nationality, to have access to it and approach and use all infrastructure and services autonomously, safely and comfortably.

In Article 9 the CRPD states:

"1.To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:

(a) Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces;

(b) Information, communications and other services, including electronic services and emergency services.

2. States Parties shall also take appropriate measures:

(a) To develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public;

(b) To ensure that private entities that offer facilities and services which are open or provided to the public take into account all aspects of accessibility for persons with disabilities;

---

1 United Nations (2006) "Convention on the Rights of Persons with Disabilities". Available at http://www.un.org/disabilities/documents/convention/convoptprot-e.pdf

2 E.S.AmeA. (National Confederation of Persons with disability) (2008). Policy planning in disability-trainee manual. Athens.

3 Greek Official Governmental Gazette 79A/09.04.2012 – New Building Regulations

(c) To provide training for stakeholders on accessibility issues facing persons with disabilities;

(d) To provide in buildings and other facilities open to the public signage in Braille and in easy to read and understand forms;

(e) To provide forms of live assistance and intermediaries, including guides, readers and professional sign language interpreters, to facilitate accessibility to buildings and other facilities open to the public;

(f) To promote other appropriate forms of assistance and support to persons with disabilities to ensure their access to information;

(g) To promote access for persons with disabilities to new information and communications technologies and systems, including the Internet;

(h) To promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost".[4]

Another important notion described in the United Nations' Convention on the Rights of Persons with Disabilities is the "reasonable accommodation" requirement. This refers to "necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms (see Article 2 of the CRPD).[5]

This growing need for environments and services that offer greater equity, accessibility, and usability for all people has led to the development of "the design for all" approach.

The "design for all concept" is an umbrella term that unites concepts of inclusive design, adaptive environments, universal design, barrier-free design, accessible design. Even though there are subtle differences in definitions of these concepts, the main idea of all is that the built environment and services should be designed in a way that all people, regardless of mobility, age, gender, culture, size, sensory functionality, and body functions can access and use the environment and participate in life activities equally to the greater extent possible. Nowadays, universal design is more commonly associated with "design for all" concept and is interchangeably used.

The Center for Universal Design at North Carolina State University defines universal design as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design".[6]

4 United Nations (2006) "Convention on the Rights of Persons with Disabilities". Available at http://www.un.org/disabilities/documents/convention/convoptprot-e.pdf

5 United Nations (2006) "Convention on the Rights of Persons with Disabilities".

6 The Center for Universal Design (1997). The Principles of Universal Design, Version 2.0. Raleigh,NC: North Carolina State University.

In order to specify concretely the design for all concept, the principles of universal design have been developed. There are seven principles for universal design which are: (1) equitable use, (2) flexibility in use, (3) simple and intuitive design, (4) perceptible information, (5) tolerance for error, (6) low physical effort, and (7) size and space for approach and use.

- Equitable use principle aims to achieve designs that are "useful and marketable to people with diverse abilities". This principle implies that identical means of use should be provided for all users and, in cases where this is not possible, the means provided should be equivalent. Privacy, security, and safety provisions should be equally available for all users. Designs that appeal to all users should be aimed. Such an approach will prevent or keep segregation of users with different abilities to minimum. For example, rather than providing an accessible entrance separate from the main gate, an entrance space with a sensor type automatic door where all users enter the building from the same space by same means conforms with equitable use principle. Similarly, an elevator located next to an escalator will help prevent segregation among users with different mobility levels.
- Flexibility in use principle refers to design that "accommodates a wide range of individual preferences and abilities". Providing alternate choices for the same use is fundamental for this principle. Designs that give access and use for users with different attributes, that offer adaptability to the user's pace and that facilitate the user's accuracy and precision should be aimed. For example, devices than can be used either left- or right-handed and be grabbed with small amount of force will give different options in use and thus will provide flexibility in use. Handrails on both left and right sides of a walkway, or double leaf doors will provide safety for both left-and right handed users. Grab bars located at multiple heights in showers or bathtubs will allow for both seated and standing use.
- Simple and intuitive design principle suggests that "use of the design is easy to understand regardless of the user's experience, knowledge, language skills, or current concentration levels". Designs with no unnecessary complexity, that are consistent with user expectations and intuition, and that can accommodate variety of literacy and language skills form the basics of this principle. Similarly, in simple and intuitive designs, available information should be consistent with its importance and effective prompting and feedback in the use process should be provided. For example, single level faucets are simple and intuitive to use and use of icons in can reduce complexity for users.

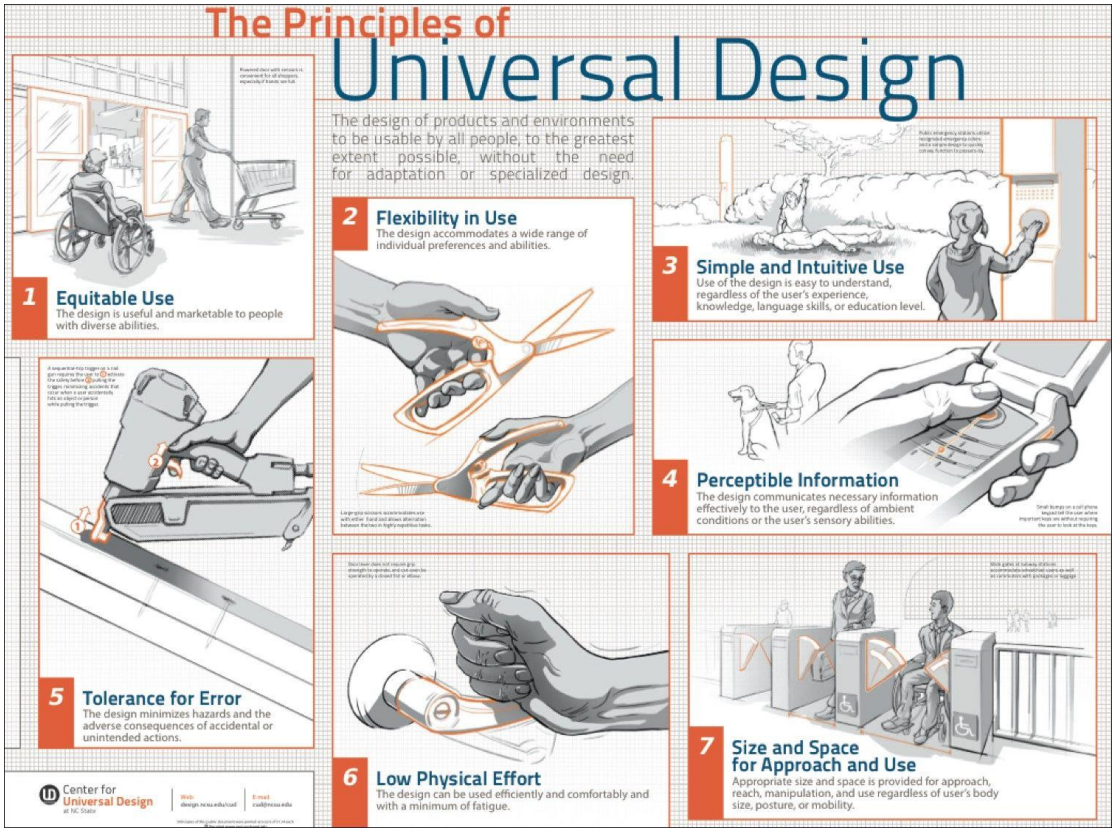


Figure 1 : Principles of Universal Design

- Perceptible information principle is defined as "designs that communicate necessary information effectively to the user regardless of ambient conditions or the user's sensory abilities". Uses of alternate modes, providing adequate contrast with the surroundings are important factors that will maximize legibility in transferring the essential information. Providing compatibility with a variety of techniques or devices used by people with sensory limitations is also essential for this principle. For example, some ticketing devices for public transport machines have push buttons for audio instructions providing users with alternate forms of communication.
- Tolerance for error principle refers to designs "minimizing hazards and adverse consequences of accidental or unintended actions". Providing warnings of hazards and danger and ability to remove the hazard caused by unconscious action are key elements in offering tolerance for error. Tolerance for error can be provided in designs by placing mostly used elements in most accessible locations and using features that are fail safe. Undo command in most computer software and kerbs used at sides of ramps preventing slipping off are basic examples of tolerance for error.
- Low physical effort principle defines designs that can be "used efficiently and comfortably and with a minimum fatigue". Designs that can be operated or used with minimal amount and repetition of physical effort where neutral body position can be sustained translate into low physical effort designs. Lever type door handles that can

be opened with fist or elbow with no requirement of significant force to be applied are examples for low physical effort design.

- Size and space for approach and use principle means that "appropriate size and space is provided for approach, reach, manipulation, and use regardless of the user's mobility, posture or body size". Providing designs that can be reached by all users, standing or seated, by all users with different hand or grip sizes should be aimed for this principle. Important elements lined at sight level for all users, wider approach spaces for users with different attributes can help to fulfil this principle. Lower counter sections at information desks and use of full-length transparent surfaces at the side of the doors help reach and visibility users with different heights.

Whereas these principles are important in specifying concretely the "design for all concept", it should be noted that all principles may not be applicable to all designs and may need contextual modifications. Nevertheless, they provide guidance in creating environments and products welcoming all users; and the main goal in designing for all should be providing inclusion of all people by good, equitable, and accessible designs.

Furthermore, access to a health provision infrastructure implies the design of an accessible transport chain, with the provision of accessible public transport means, accessible routes and accessible information.

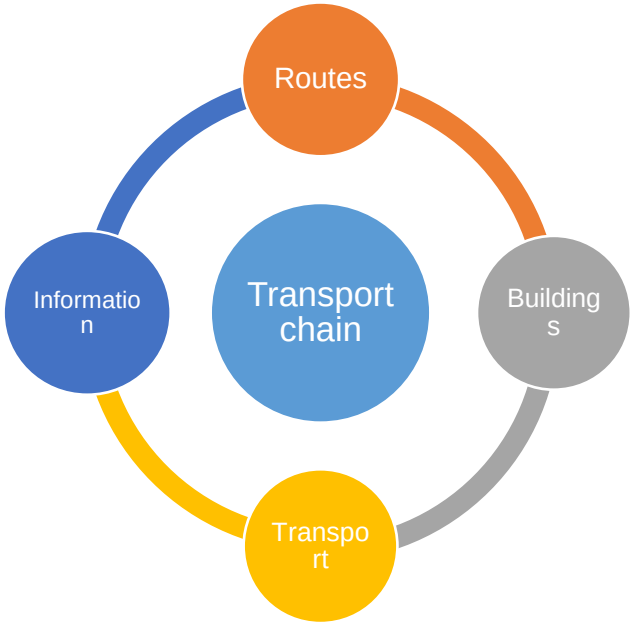


Figure 2 : Transport chain

The project toolbox is mostly based on Greek Accessibility Guidelines, with additions and alterations necessary in order to provide professionals of the cross border area with the necessary tools for the creation of accessible healthcare infrastructure.

2. Accessibility guidelines

The following guidelines are based on the "design for all" guidelines issued by the Hellenic Ministry of Environment and Energy. Their principles are based on European and International guidelines, thus they can be easily implemented in health service infrastructure located in Bulgaria. The guidelines cover the following subjects:

- Configuration of external areas for pedestrian movement
- Design of parking spaces
- Public buildings
- Ramps
- Stairs and staircases
- Mechanical means for connecting different levels
- Signage
- Buildings' entrances
- Public toilets
- Accessible examination rooms

2.1 Configuration of external areas for pedestrian movement

Pavement Design Elements

Pavements are defined as pedestrianized urban roads, which are intended for the continuous, safe and unobstructed circulation of pedestrians and persons with restricted mobility. Pavement width is defined as the distance from the street-side line up to the edge of the kerb.

Minimum pavement width is defined as 2.05 m, in which are included 0.20m for architectural protrusions, 1.50m for free pedestrian zone and 0.35m for signage, protective rails and the construction of a kerb.

The width results from:

- all additional needs of urban equipment (waste boxes, mailboxes, telephone booths, kiosks, public sanitary facilities, etc.)
- road service activities (road marking, signposts, information signs, urban stops transport, etc.),
- planting,
- people waiting in front of store windows, where the main use of the area is determined by the design as commercial, etc. The width is added to the minimum width of the pavement and the sum determines the mixed width of the pavement, which varies depending on the needs.

The free pedestrian zone is defined as the minimum width required, used for the continuous, safe and unhindered traffic for each category of users.

The minimum width of the free pedestrian zone is defined as 1.50m, which is the minimum required for comfortable meeting of a pedestrian with a user of a wheelchair of any form.

Free walking height is defined as the minimum actual height in the free walking zone for the smooth movement of the pedestrians; it is equal to 2.20m.

A tactile surface indicator for the blind is a strip of the free pedestrian zone, of different texture and colour, which aims in the guidance and safe movement of people with visual disabilities. It is installed at a distance of 0.50 m at least from the building line, with a width of 0.30 up to 0.40m.

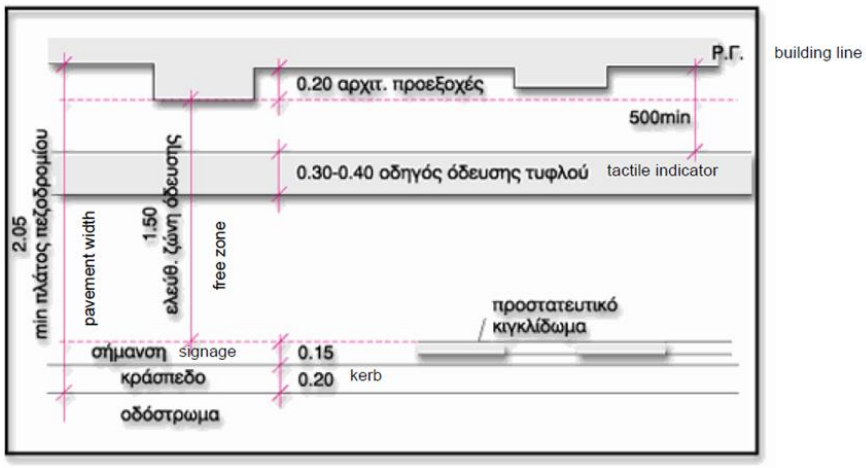


Figure 3 : Pavement width

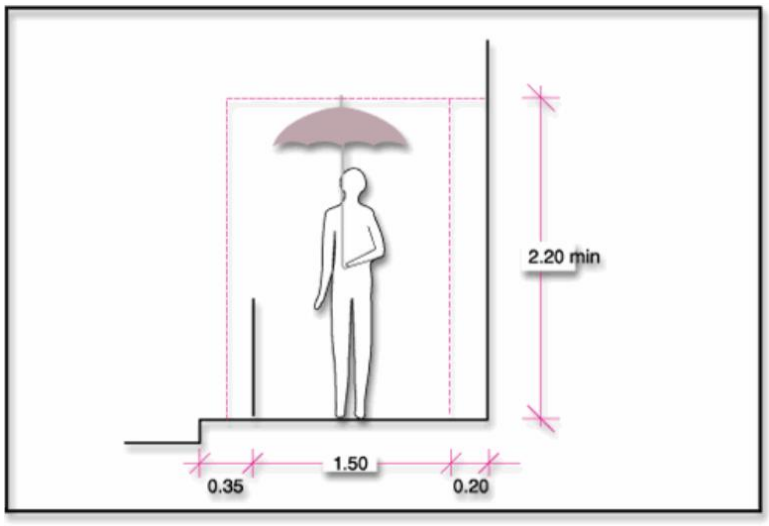


Figure 4 : Free height

The height of the pavement should not be greater than 7-10cm, because then it creates problems in the configuration of the pedestrian crossings.

Longitudinal inclination in the direction of the free pedestrian zone must not exceed 12%. Transverse pavement slope is the slope of the pavement at a vertical direction to the direction of the free pedestrian zone and should not exceed 4% with a desired 1-1.5%.

The floor materials must ensure slip resistance, homogeneity, stability, durability and us, low reflectivity and ease of cleaning and maintenance under both normal and special weather conditions (rain, snow, frost, etc.).

Urban equipment - Obstacles

Urban equipment is defined as permanent or temporary facilities of the pavement, which aim at the safety, information and service of all its users. It must always be placed outside the free pedestrian zone. An additional width of 1.30 m is recommended to be added to the minimum pavement width, to create an urban equipment zone.

When designing the urban equipment zone, provision should be made, every 100.0m in central areas and every 200.0m in remote ones, for the creation of spaces of dimensions 0.80 * 1.30m for resting of wheelchair users, combined with other elements of urban equipment. Components of urban equipment such as mailboxes, garbage cans, telephone booths etc. should be designed so that they can be easily traceable by blind pedestrians using white cane and be easily used by persons of short statute. Their operating parts must be mounted between 0.90 and 1.20 m from the ground.

Permanent obstacles are defined as all fixed structures and facilities of the pavement that can be controlled during the stage of design (e.g. mailboxes, waste containers, telephone booths, trees, signs, lights etc.).

Temporary barriers are defined as all the elements that occupy for a limited time the sidewalk or part of it.

Obstacles at a height of less than 2.20 m, inside or outside the free zone for pedestrians, should be avoided. In any case, they should be projected on the ground in a way detectable by white cane users.

Elements of the pavement, such as grilles, gutters, joints, etc., should not break the uniformity of the pavement floor by intervening with the smooth movement on it. Grids should be placed outside of the free-zone and create a dense grid.

Protective railings, in the shape of a Π and at least 75 cm high, are the safest. They should be made of heavy-duty iron tube Φ2 INS with rounded corners. At the bottom and at a height of 10cm from the floor carry a horizontal bar, to be easily traceable by the cane of people with vision impairments.

Planting should be provided at zones with a minimum width of 0.50-0.70m – which will be added to the minimum width of the pavement.

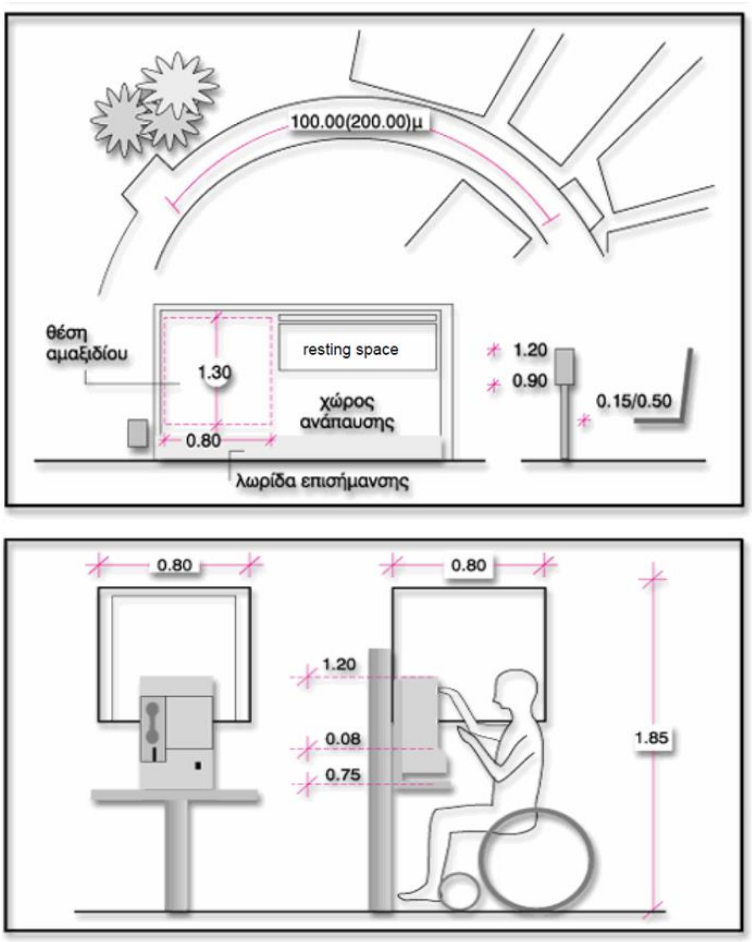


Figure 5 : Equipment

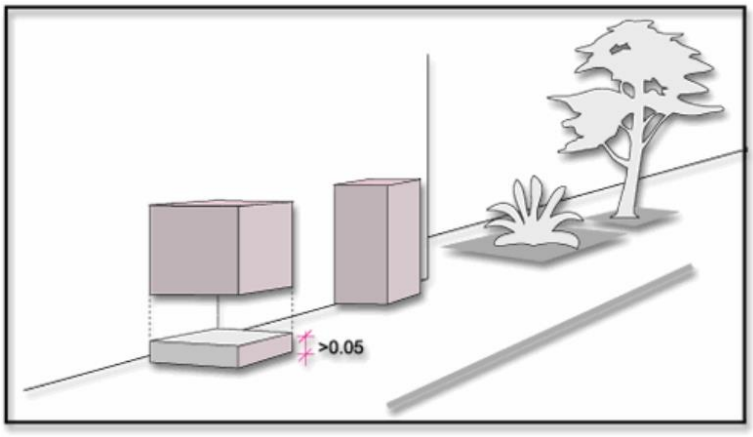


Figure 6 : Signage of obstacles

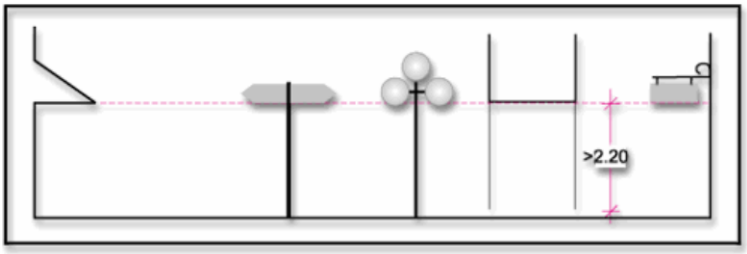


Figure 7 : Placement of obstacles

Signage

Signage is the set of symbols and texts that facilitate the orientation and movement of all people in a structured environment. Each sign must be easily perceived by all individuals including people with disabilities. Signage for one specific information should always appear in the same way, so that it is easily identifiable.

The different types of signage are the following:

- Floor-mounted, essential for informing people with visual disability. Achieved by changing the texture of the floor and, at the same time, intense colour contrast.
- Signs which, if they are on a pole or on special bases, must always be placed outside the free width and height. If they are on the wall and provide permanent information -street names, house numbers, etc.- they should be placed at a height of 1.40-1.60 m from the floor, be embossed and available in BRAILLE.
- Luminous and audible signals that will simultaneously emit light and sound signal and will be placed - apart from the pedestrian crossings - wherever there are temporary or permanent obstacles within the free walking zone. Depending on their use, the sound signals must emit different frequency sounds - but always identical in similar cases – in order not be confusing for people with vision problems.
- Signing through the shape and colour of urban equipment, which must always appear in the same colour and shape.

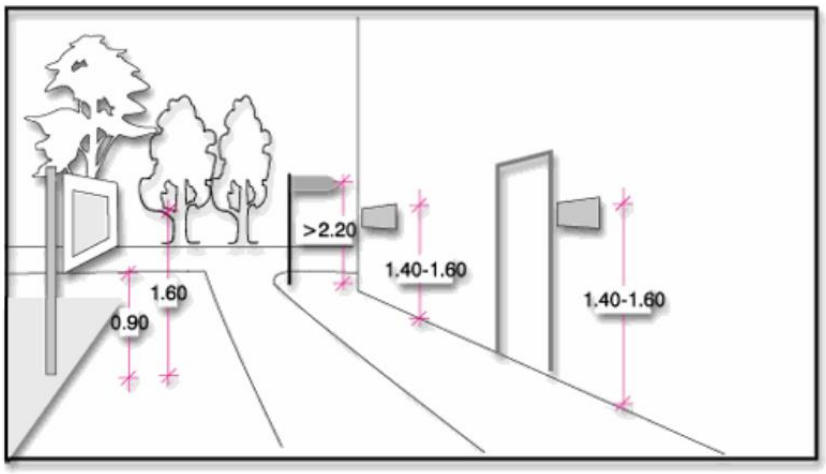


Figure 8 : Signage

According to Greek Law 2621 "Special arrangements for serving disabled people in public areas of settlements intended for pedestrian movement - Article 3 Tactile indicators for the blind", for the safe movement of people with vision impairments the installation of tactile indicators is required at all public spaces intended for pedestrian traffic. The indicators are manufactured with a width of 0.30m to 0,60 m within the free pedestrian zone; and in the specific locations listed below, and consists of strips of different texture and color.

For the construction of the indicators, non-slip, square tiles are used (each side 0.30m. or 0.40m.), in accordance with drawings accompanying this decision:

a) Tile with wide and sparse stripes, type A: "Direction ", which are placed with the stripes parallel to the axis of movement to direct visually impaired people.

These are placed in the free pedestrian zone if it has a width equal to or more than 1.50m. They are installed at a distance of at least 0,50 m from the building line or from an overhang of a building below a height of 2.20m. The same distance is kept by any other obstacle or equipment in the area.

(b) Type B: "DANGER", which are placed to alert people with visual disability for potential risks. These tiles are always yellow and their width is 0.30m. These are mandatory:

- at the beginning and at the end of the ramps and stairs, throughout their width and at 0.30m from the connection of the ramp and the horizontal levels or the edge of the first and last step. Especially at kerb ramps of pavements, they are placed only at the end of the ramps at the side adjacent to the road and at the entire width of the pedestrian crossings or the pedestrian crossing islands.
- Throughout the width of the opening of the lift doors, at all levels, at a distance of at least 0.30m. from the opening of the door.
- along public transport platforms (trains, subways, trams etc.) at a distance of 0.50m. from the edge of the docks.

c) type C: "DIRECTION CHANGE" which are placed on points of change of direction of type A tiles.

d) type D: "SERVICE", which are placed to lead visually impaired persons to services (transportation stops, telephone booths, special tactile signs etc.) or to entrances of adjacent public and private service buildings.

Where a type A-DIRECTION indicator is installed, a Type D- SERVICE tile is placed next to it vertically on the side where a service is located. Where there is no type A guide installed, such Type D plates are placed with the stripes always perpendicular to the user's movement across the width of the pavement and up to the entrance of point of service.

Type D plates, with the stripes perpendicular to the user's movement, are used for the surface of kerb ramps.

In general, the following apply for the tactile indicators:

- Tiles can be made from various materials, but their dimensioning, the relief of their final surface according to the attached drawings, and the use of yellow colour for the "danger" tiles is mandatory.

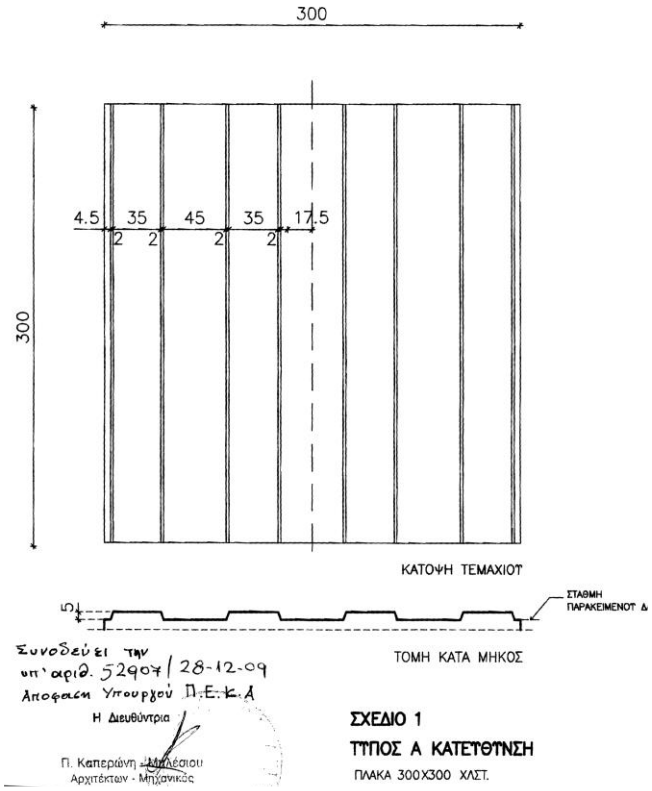


Figure 9 : Type A "Direction"

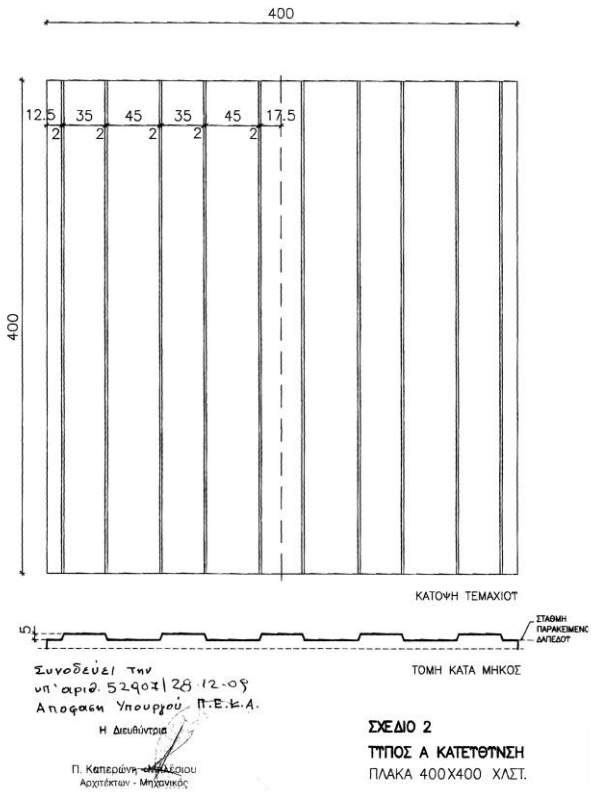


Figure 10 : Type A "Direction"

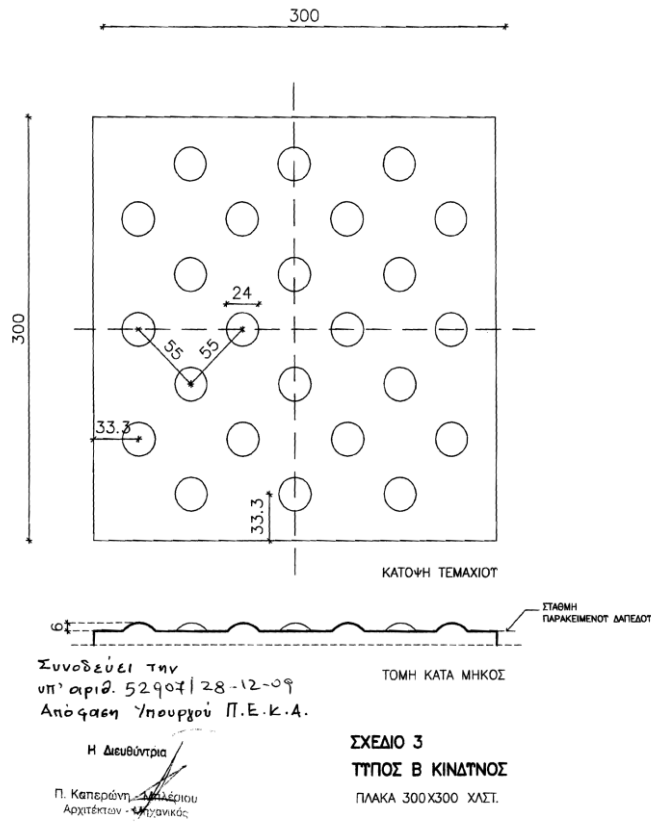


Figure 11 : Type B "Danger"

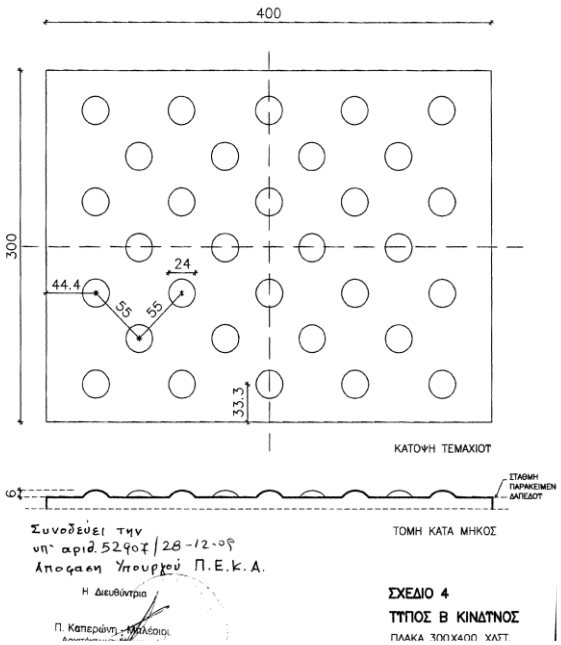


Figure 12 : Type B "Danger"

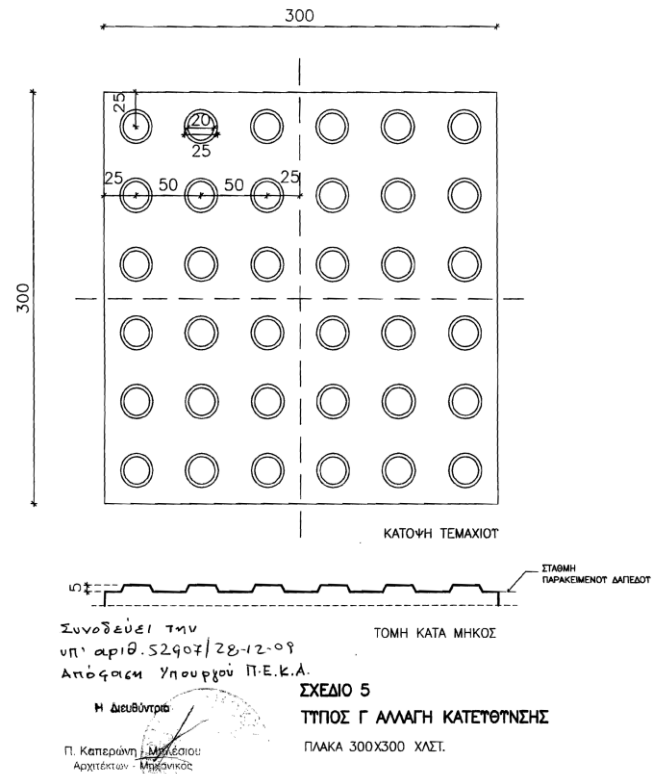


Figure 13 : Type C "Direction Change"

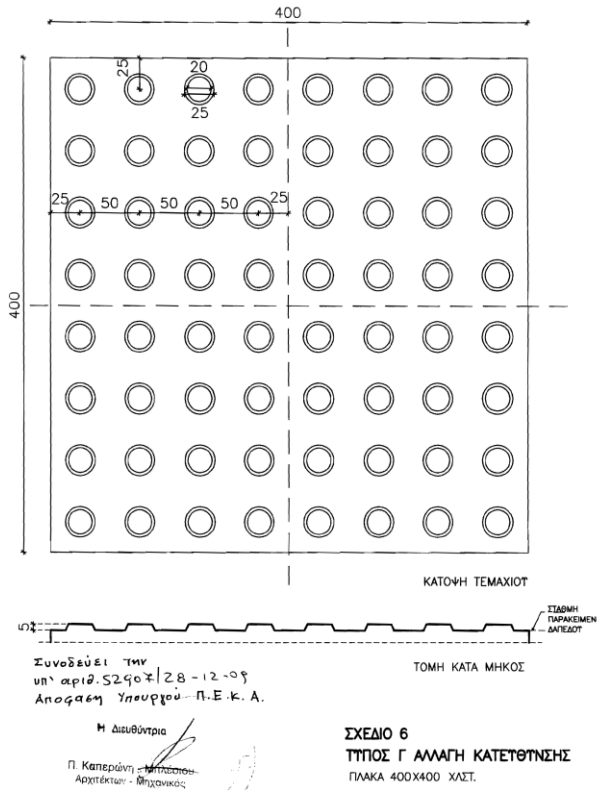


Figure 14 : Type C "Direction Change"

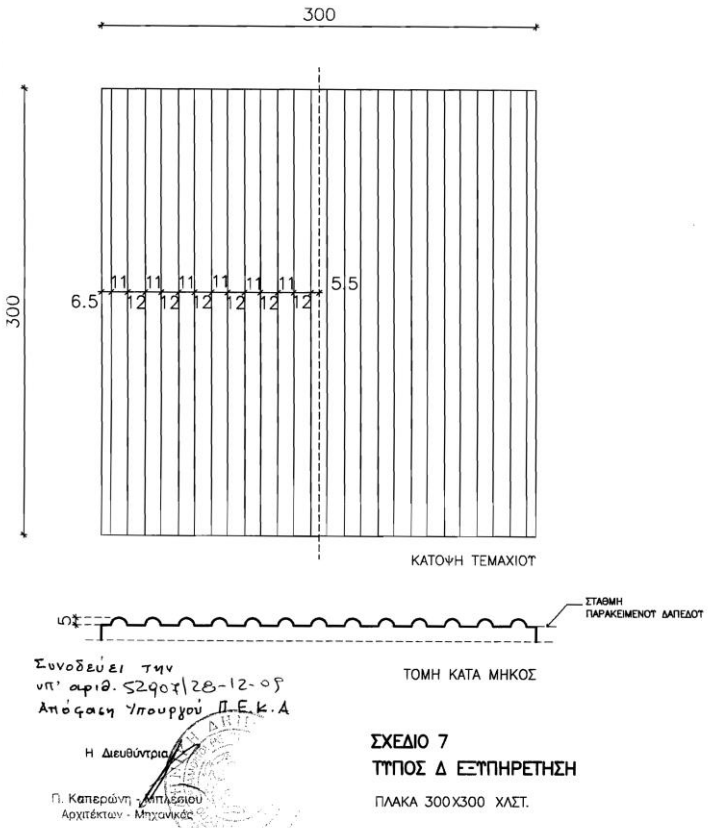


Figure 15 : Type D "Service"

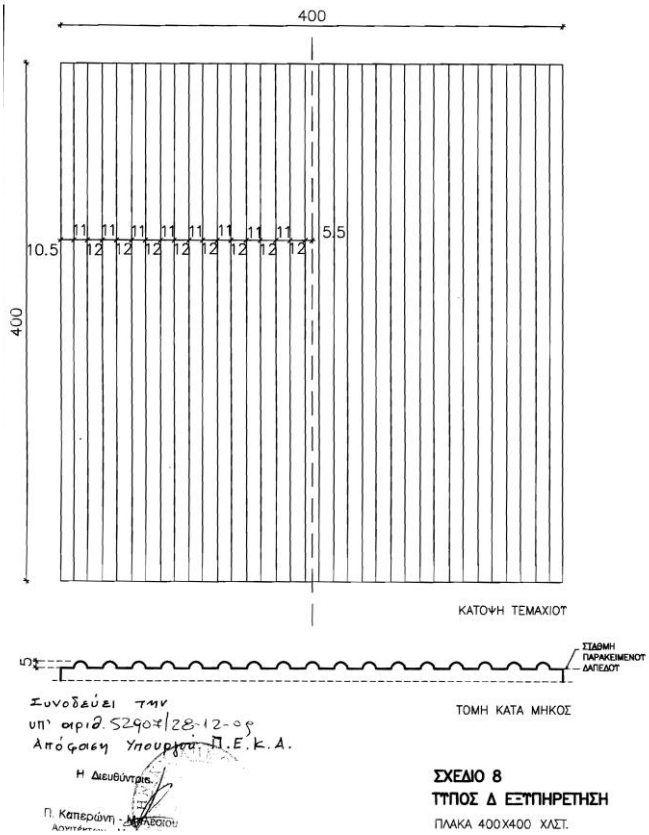


Figure 16 : Type D "Service"

Figure 17 : Improper use of tactile surface indicators

The following figure depicts the creation of a pedestrian ramp surface using the abovementioned tactile indicators.

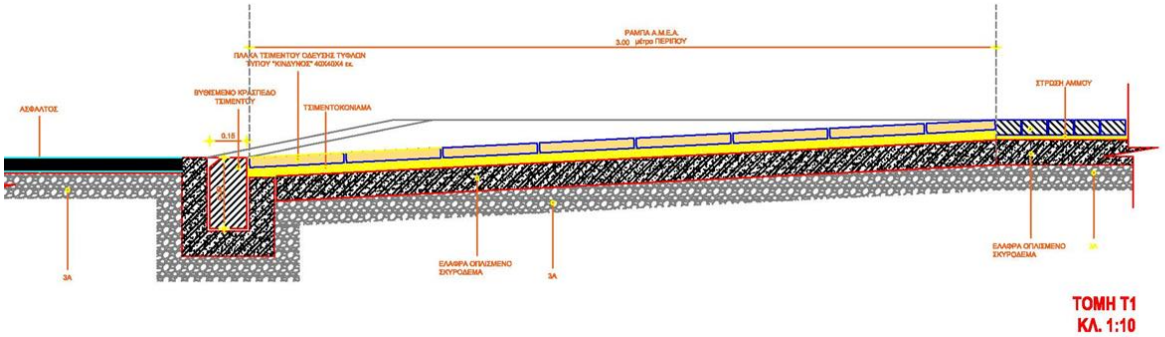


Figure 18 : Indicative ramp design

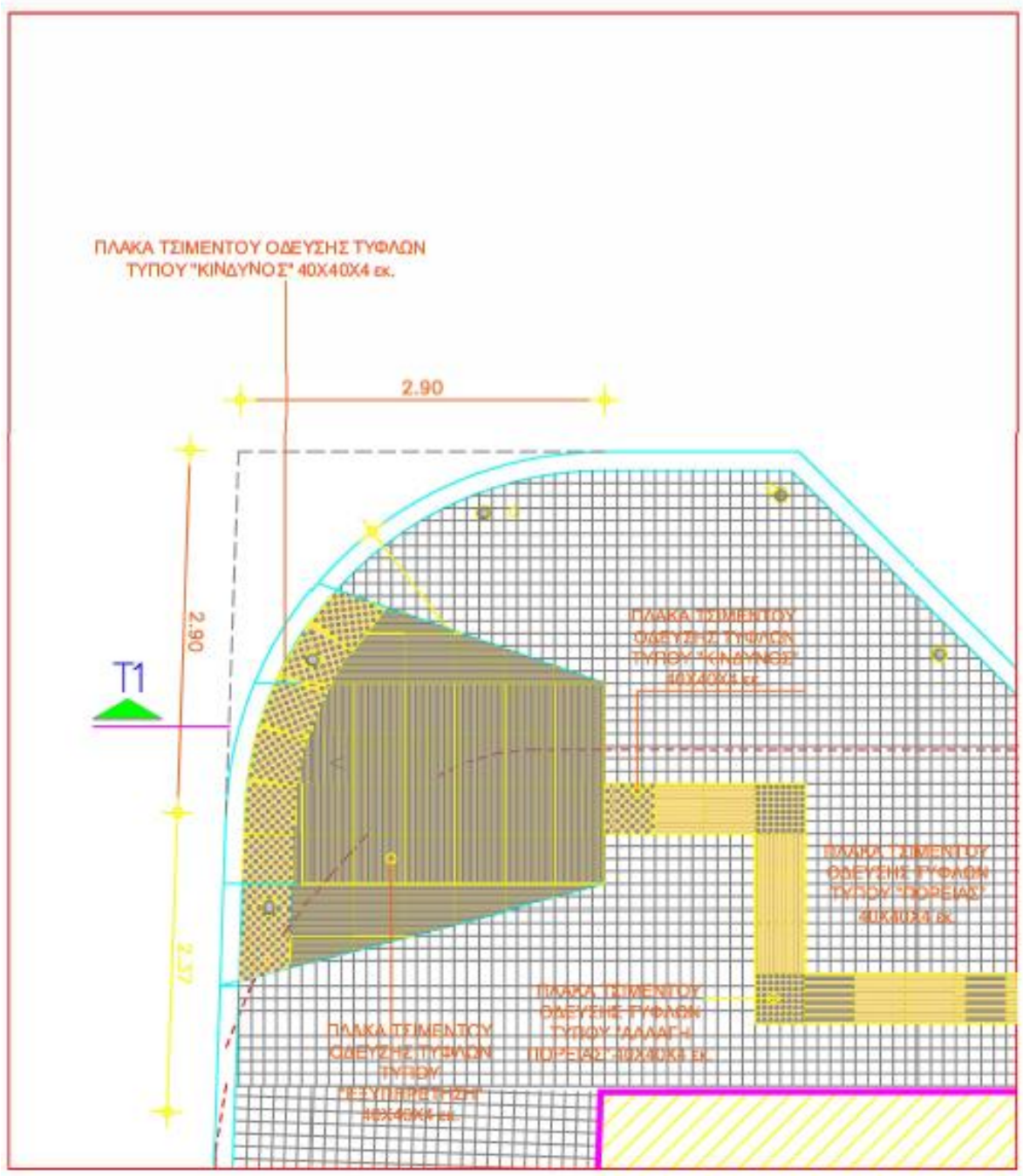


Figure 19 : Indicative ramp design

Figure 20 : Indicative ramp design

Pedestrian crossings – pedestrian crossing islands

Pedestrian crossings should be formed every 100m at least, vertically to the traffic flow. Minimum width is defined as 2.50m.

The crossing should also be marked with road markings, which indicate pedestrian priority and a STOP sign, at least 1m before the crossing. Where the crossings are regulated by traffic lights, it is proposed for them to be combined with audible signal. If the traffic lights are activated by pedestrians, the control mechanisms should be at a zone of heights of 0.90 to 1.20 m from the floor.

Kerb ramps should be at least 1,50m. wide and be marked with tactile indicators.

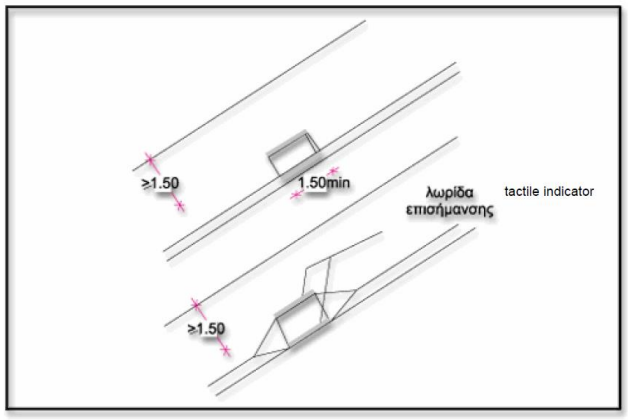


Figure 21 : Kerb ramps

At crossings longer than 12m., pedestrian crossing islands at least 1.5m. wide should be created. The beginning and end of the island must be marked with material detectable by white cane users.

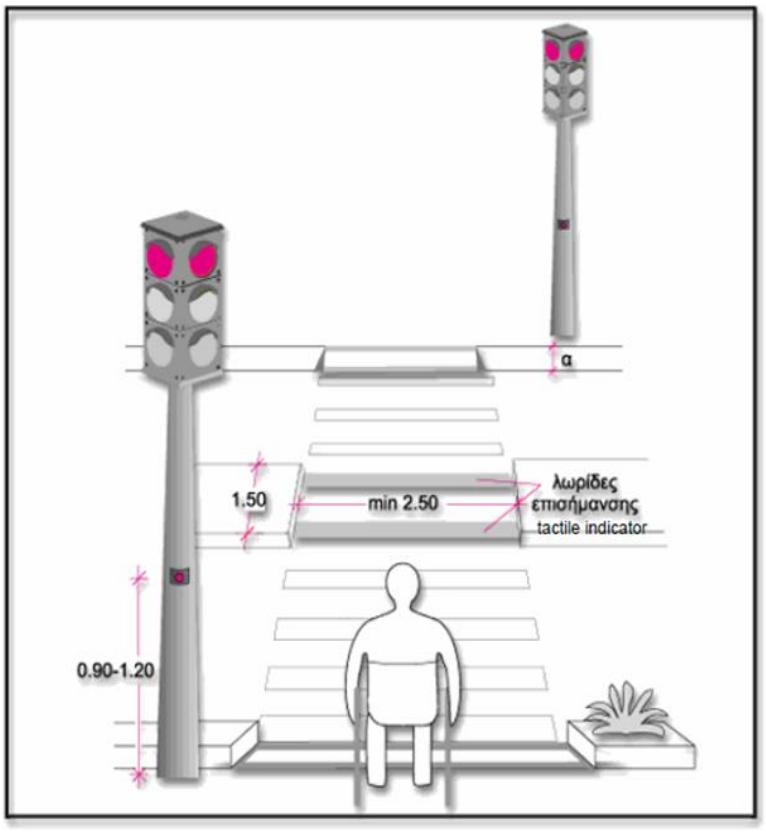


Figure 22 : Pedestrian crossing

Figure 23 : Implementation of tactile indicator at pedestrian crossing

Figure 24 : Implementation of tactile indicator at pedestrian crossing

Ramps with a width of at least 1.50 m, or equal to the width of the pedestrian crossing, should be created at pedestrian crossings, pedestrian crossing islands, car park recesses, transport stops, etc.

In cases of pavements of small width, lowering the whole corner at the intersection of the two streets is recommended.

Pavement height (m)	Ramp slope		Required length	
	Desired (%)	Minimum (%)	Desired (m)	Minimum (m)
0,00 – 0,07	5 (1:20)	8 (1:12)	1,40	0,84
0,071 – 0,10	5 (1:20)	8 (1:12)	2,00	1,20
0,101 – 0,12	5 (1:20)	8 (1:12)	2,40	1,42
0,121 – 0,15	5 (1:20)	8 (1:12)	3,00	2,20
0,151 and up	5 (1:20)	8 (1:12)		

Design of parking spaces

Accessible parking spaces ensure easy access through bigger than usual dimensions (about 3.50X5.00m).

Accessible parking spaces parallel to the pavement should be avoided. If this is not possible, then the length of these spaces should not be less than 6.00m so that it is possible for a person to pass between two parked -one behind the other - cars.

Parking spaces for disabled people should be at the shortest possible distance from building entrances - if possible less than 50m.

To connect the parking level to any adjacent pavement, ramps at least 1.50 m wide should be constructed.

When parking places serve a public building (banks, theaters, cinemas etc.), parking spaces for disabled people should be at the shortest possible distance from them - if possible less than 50m - and ensure their autonomous movement and transportation from the parking spaces to the accessible entrance of the building.

The proportion of car parks for people with disabilities is 5% of the total number of spaces foreseen (at least one position in small parking spaces). This space must be marked with the International Symbol of Access, at a prominent spot as well as on the floor.

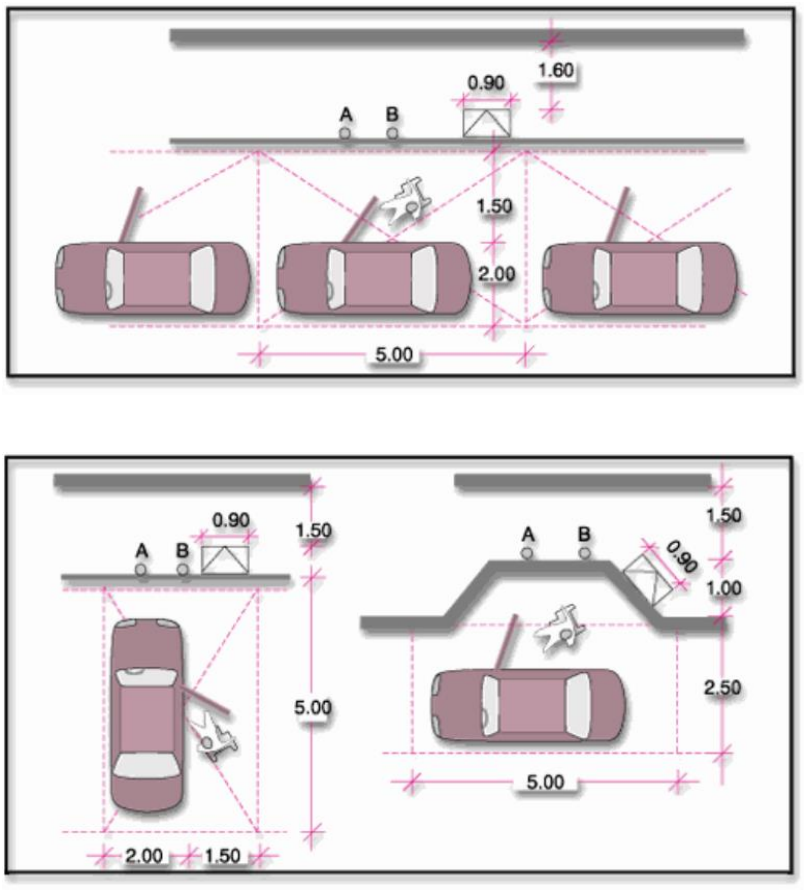


Figure 25 : Accessible parking space design

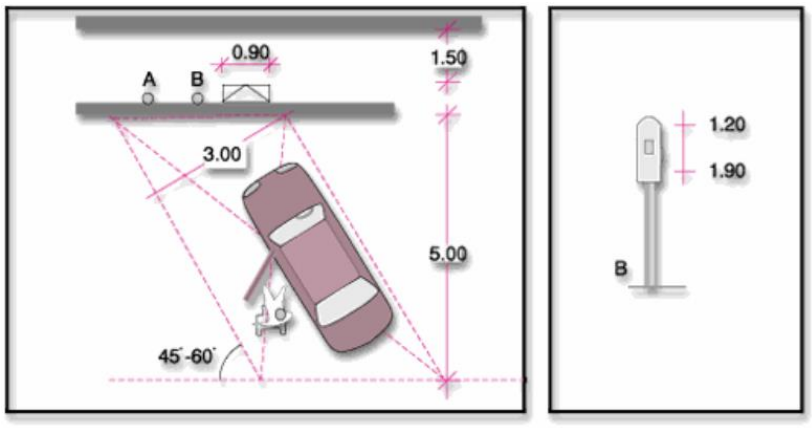


Figure 26 : Accessible parking space design. A = sign B = park meter

Figure 27 : Accessible parking implementation

2.2 Buildings' entrances

Every building should be accessible to people with disabilities, and more generally, to people with restricted mobility, from at least two entrances:

- the main entrance of the building;
- underground car parks.

Outdoor car parking places for people with restricted mobility - shaped and signed properly- should be provided near the main entrance, not more than 50 m away from it.

Access from the pavement to the building must be also at the same level.

In case of a level difference, this should be covered with a slope - "ramp", inclined 5%, or with a lift, constructed according to the accessibility guidelines.

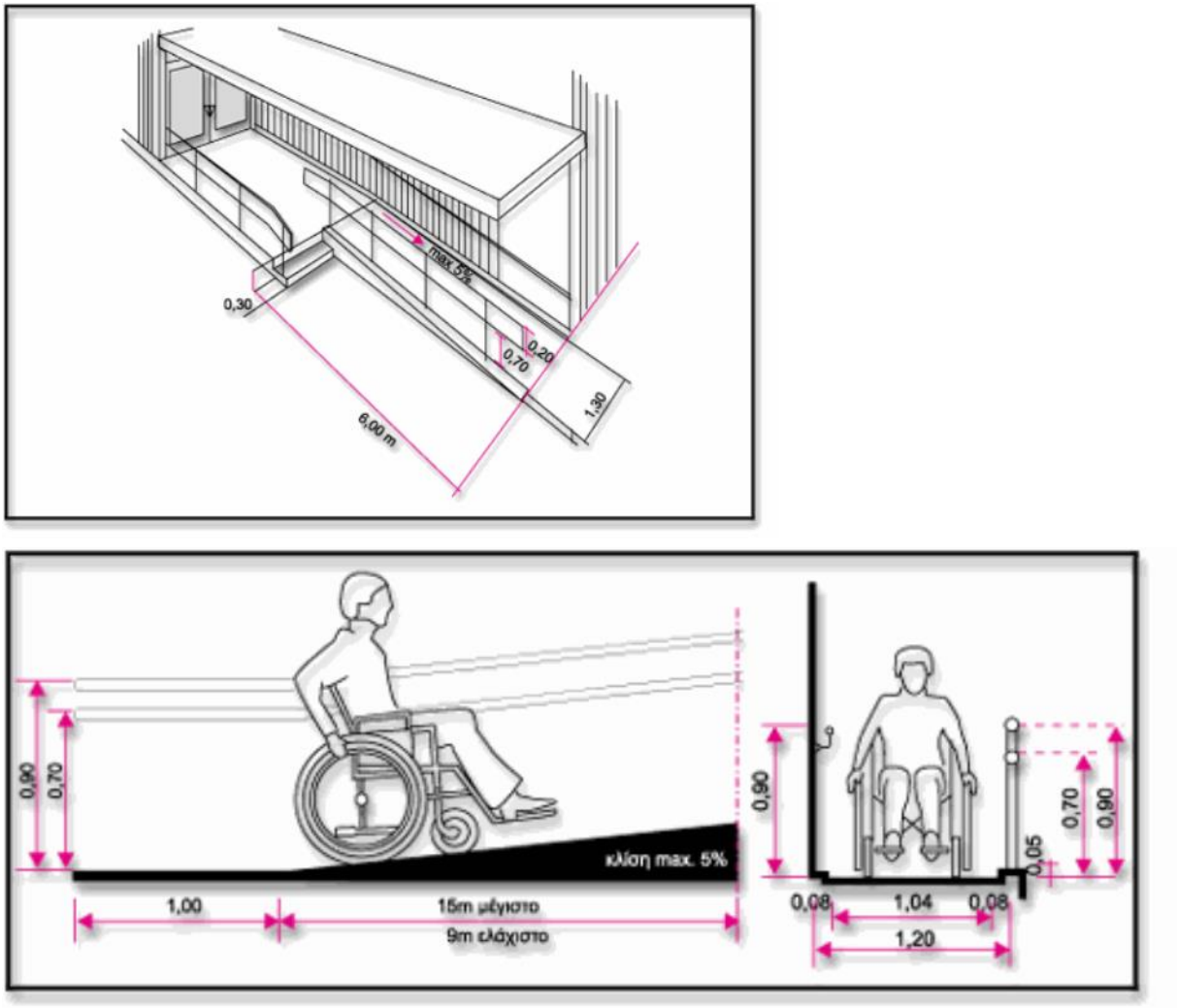


Figure 28: Entrance ramps

Entrance doors

Entrance to the building must be made through an automatic sliding door (with photocells and speed of 0.50m / s) or a manual sliding door (the maximum force required to open the door should be 15 Newtons). Simple opening doors 1.20m wide can also be used.

Rotating doors should be avoided. In case these exist, opening doors, 1.20m wide, for service of disabled people should be installed next to them.

Thresholds should be avoided, as well as any other element that protrudes or sinks to the floor more than 2cm.

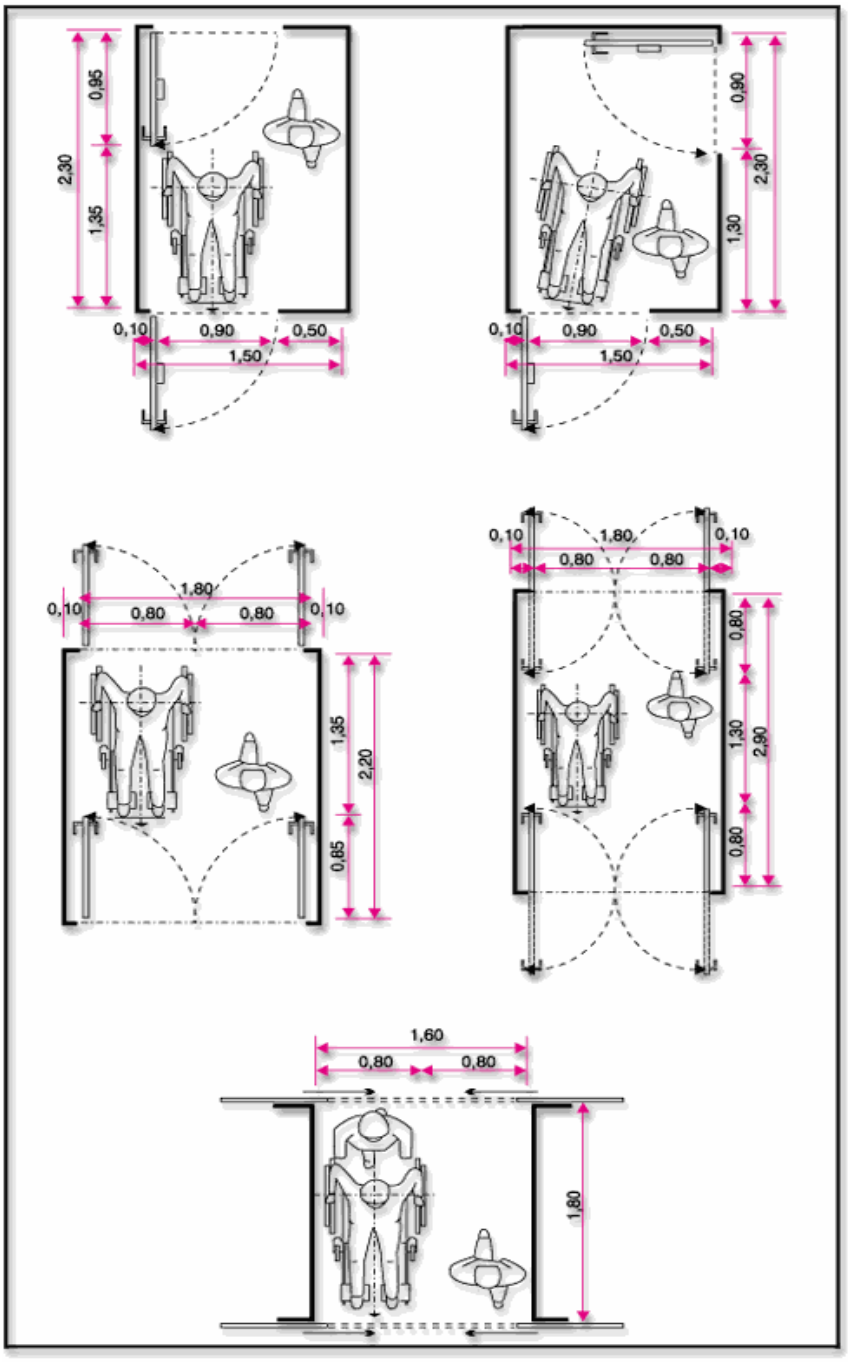


Figure 29: Vestibules

a) Door equipment

All equipment (door handle, lock, door bell, light switches, automatic door switch etc.) should be placed at a height of 0.90-1.20 m from the floor and always at the same side.

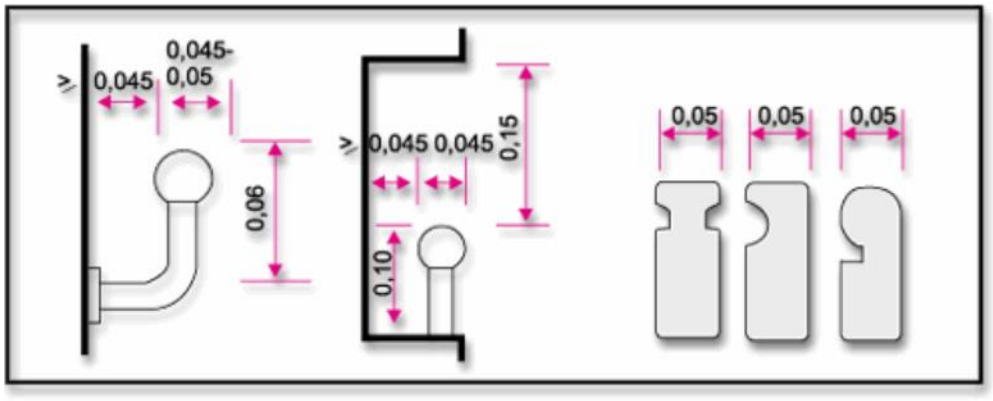


Figure 30: Handrails

b) Signage

Doors and their frames should have strong colour contrast with the surrounding walls. Equally intense colour contrast should be provided between the door leaf and the handle.

In case of glass panels, signs, at a height of 1.40-1.60 m from the floor and in bright colours, should be placed to help people with vision problems.

Informative signs (number, hall use etc.) should be placed at a height of 1.50 m from the floor, always at the same side of the door leaf. All the information on them should be also displayed in Braille.

Figure 31: Building entrance without sufficient colour contrast

Figure 32: Application of colour contrast at building entrance

Access to underground car parks

Where underground parking spaces are provided, they should include accessible parking spaces - appropriately shaped and labelled - at a rate of 5% of all parking spaces and as close as possible to ground level.

Parking control systems should not prevent people with disabilities from accessing the premises.

Parking spaces reserved for people with disabilities should have the International Symbol of Access (ISA) imprinted on the ground and suspended above the corresponding position, at a height of at least 2.20 m from the floor, or on a wall.

The routes that people with disabilities follow towards an accessible lift should be marked with the ISA, followed by an arrow on the floor and at the same time placed on the walls or, if that is not possible, suspended from the ceiling at 2.20m from the floor, in intense colour contrast to the rest of the room so that it can be easily seen by people with vision problems.

These routes, as well as the accessible parking spaces, must be illuminated with ample lighting be equipped with safety lighting throughout their length.

The ISA should also be placed on the elevator's door, which leads to parking lots, on all floors.

As the only way people with disabilities move from and to underground parking spaces is through a lift, which they will also use as escape route in case of emergency, it is important to have a fire protection study of both the lift shaft and the landings.

Entrances – Reception halls

At least the main entrance of the buildings used by the public as well as the entrances used by the public to enter the buildings from underground car parks – if provided - should be

accessible by disabled persons and in particular by wheelchair users. These entrances must be constructed in accordance with the accessibility guidelines.

At strategic areas close to the main entrance, at the same level, ramps, elevators or any other means cover height differences should be provided in accordance with the relevant guidelines: "Ramps of persons and wheelchairs" and "Mechanical means of covering height differences".

Where reception or transaction counters are provided, a part of them at least 1.00 meters in length must be made at a height 0.80m from the floor, while, where telephone booths are provided, they should be manufactured with the device and controls at a height of 0.90-1.20 m from the floor.

Signage

For buildings where many services are housed, right after the entrance, a simplified diagram of the services offered as well as a notice board should be installed at a suitable space. Special care must be taken to ensure that the services diagram is embossed or in BRAILLE writing and is located at a position and height accessible for people with vision disabilities.

Figure 33: Diagram of services provided

Figure 34 : Use of colour contrast at building' s internal doors

Figure 35 : Tactile surface indicators at a hospital' s entrance

2.3 Shared spaces - Horizontal and vertical circulation

All public areas must be accessible to all users, and disabled people in particular.

Necessary conditions for this are:

- the existence of corridors of net width of at least 1.50 m
- the presence of 0.90m clear width doors, opening – with the maximum force required to open them being 15 Newton- or sliding, that will carry a vertical skylight - where it is allowed from their use - to control the movement from the other side of the door and have a handle of L or D shape,

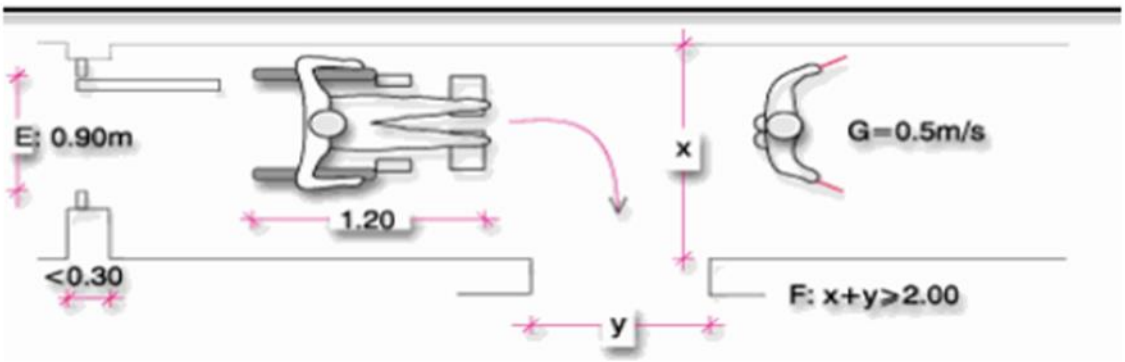
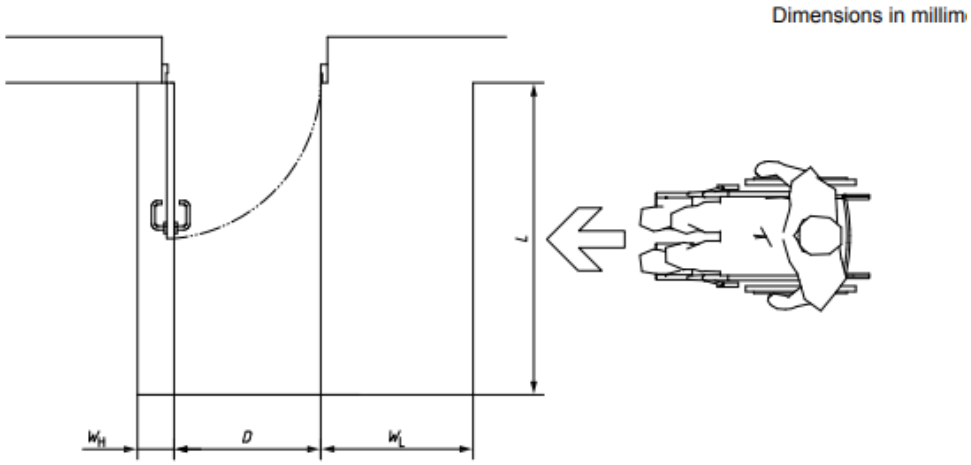


Figure 36 : Minimum dimensions for horizontal circulation

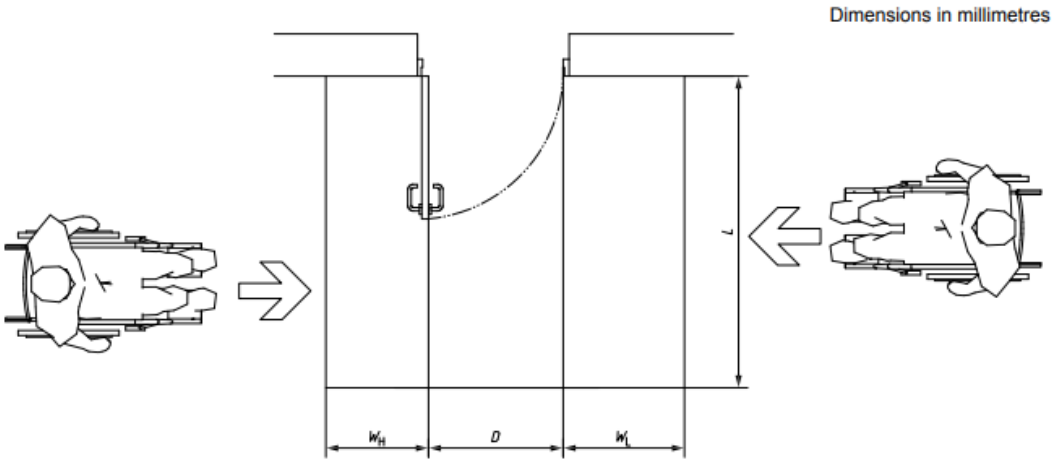
- the existence of obstacle free spaces, 1.50m in diameter, for rotation of wheelchair users;
- provision of free spaces, each of dimensions of 0.80 * 1.30m, for wheelchair users - where appropriate seating is available for visitors - but also special seats with hard cushions with a depth of 0.40m and height 0.55-0.60m with armrests for people with mobility impairments. In cases of amphitheatre rooms, places for wheelchair users should be provided at the first row of flat sections or in the last row next to corridors leading to emergency exits, by making folding or removing seats so that the wheelchair user can have sufficient space. In this case the required dimensions of the space is 0.80 * 1.30m minimum.
- avoidance of height differences at any level or covering of them - where they can not be avoided - with ramps with a maximum 5% gradient or a mechanical device
- the construction of stairs - where required - with at least two steps, constructed in accordance with accessibility guidelines
- the construction of anti-slip, homogeneous, stable floors easy to clean and maintain with little reflex, without floor joints that can create vibrations in the movement of wheelchair users, without thresholds, or any other element that can protrude or sink to the floor more than 2cm
- the existence of at least one toilet per floor to serve wheelchair users which will also act as a "family type" toilet and will be designed in accordance with the "Public sanitary facilities" guidelines.

Figure 37: Various obstacles may restrict the free width available



Dimension (mm) D	**Dimension** (mm) L	**Dimension** (mm) W_H	**Dimension** (mm) W_L
800	1 670	110	900
850	1 670	110	900
900	1 670	110	900
950	1 670	110	900
1 000	1 670	110	900

Figure 38: Appropriate dimensions – latch side approach. Door opens towards user.



Dimension (mm) D	Dimension (mm) L	Dimension (mm) W_H	Dimension (mm) W_L
800	1 670	710	900
850	1 670	660	900
900	1 670	610	900
950	1 670	560	900
1 000	1 670	510	900

Figure 39: Appropriate dimensions – either side approach. Door opens towards user.

Seating

According to ISO 21542, a range of different types of seating should be provided complying with:

- seat height 400 mm to 450 mm,
- back support height 750 mm to 790 mm,
- seat depth 400 mm to 450 mm,
- angle of seat to backrest 100° to 105°,
- armrest height 220 mm to 300 mm above seat,
- armrest set back from front of seat · 75 mm,
- a minimum 150 mm set back under the seat for feet when standing up.

Armrests should be omitted on some benches to allow lateral transfer.

Figure 40: Priority seating at public transport station

2.4 Ramps

The main features of a ramp are its slope and width which determine the degree of comfort in its use. The width of a ramp also determines the possibility of simultaneous use by one or more people with or without a wheelchair.

Operating Elements

The functional elements of a ramp are:

- the slope
- the length
- the width
- landings
- shape
- flooring
- user protection and safety features.

The slope of the ramp is the main feature of the ramp and determines its comfortable and safe use. It ranges from 0% - the ideal one - and can reach 10% depending on its length and its use.

	Height difference	Way of bridging difference	Max slope	Minimum length
1.	0.00-0.02	small ramp	1:1 or 100%	0.02
2.	0.02-0.04	small ramp	1:2 or 50%	0.04
3.	0.04-0.10	ramp	1:10 or 10%	1.00
4.	0.10-0.25	ramp	1:12 or 8%	3.00

5.	0.25-0.50	ramp	1:16 or 6%	8.00
6.	0.50m& more	ramp or mechanical means (lift, elevator etc.)	1:20 or 5%	10.00 above 10 m. a 1,5m. landing should be created

The length of a ramp is related to its slope, so that the combination of these two features ensure the greatest possible safety and comfort for the user. When the length of the ramp is over 10.00m, the construction of a horizontal section is required (landing) of a minimum length of 1.50 m and a width that will not be less than the width of the ramp itself.

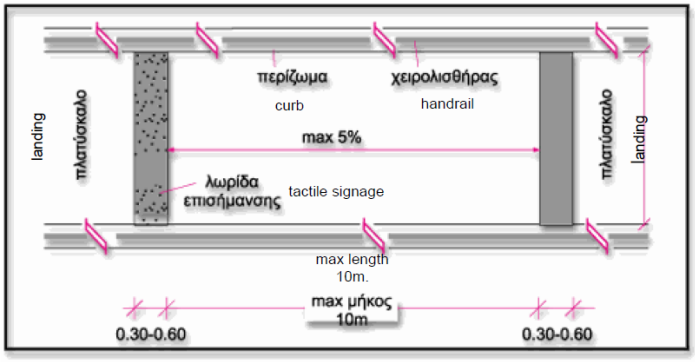


Figure 41 : Ramp

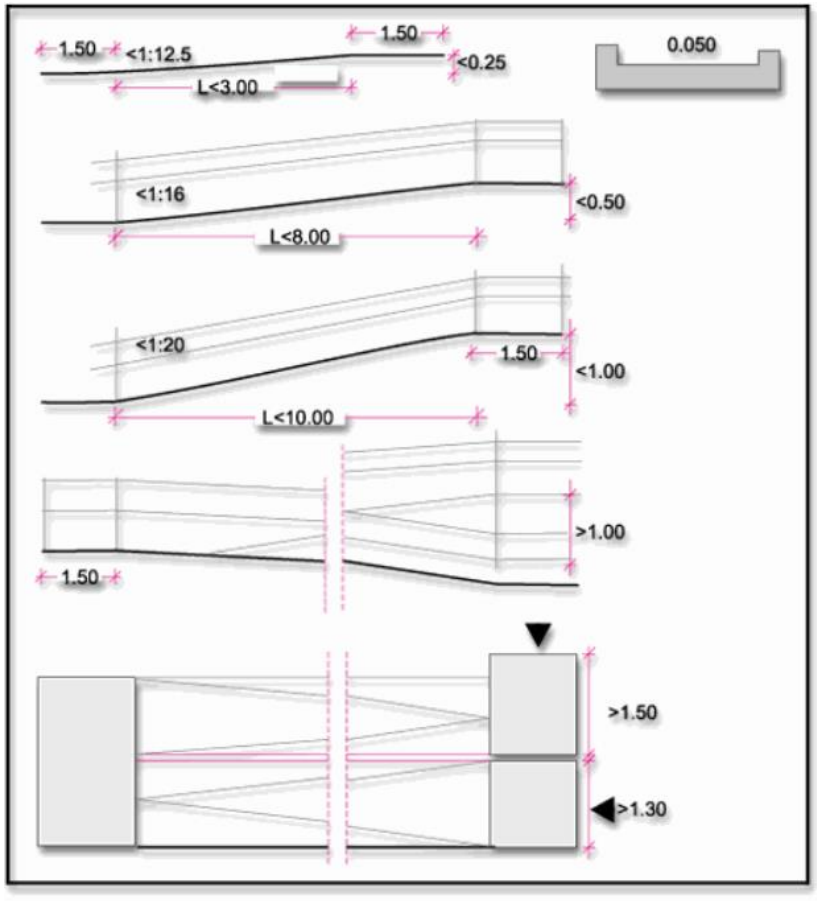


Figure 42 : Ramp design

The width of the ramp must ensure safe and comfortable movement of its user. The recommended free ramp width generally is 1.30m. This width does not allow intersection of two wheelchair users. In this case the minimum required width is 1.70m.

In addition to the landings mentioned in paragraph 2.2, landings must be constructed both at the beginning and at the end of a ramp as well as at every change of direction. The landings at changes of direction are called manoeuvring landings and must ensure that wheelchair users are able to make a full turn, which requires free space of 1.50m in diameter.

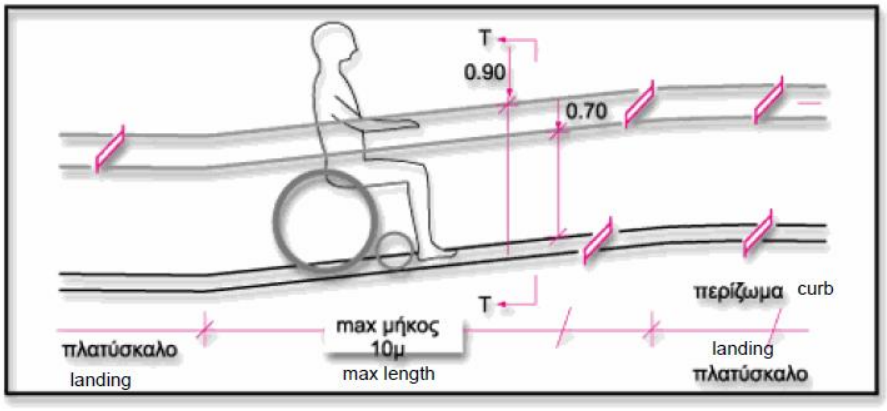


Figure 43 : Ramp

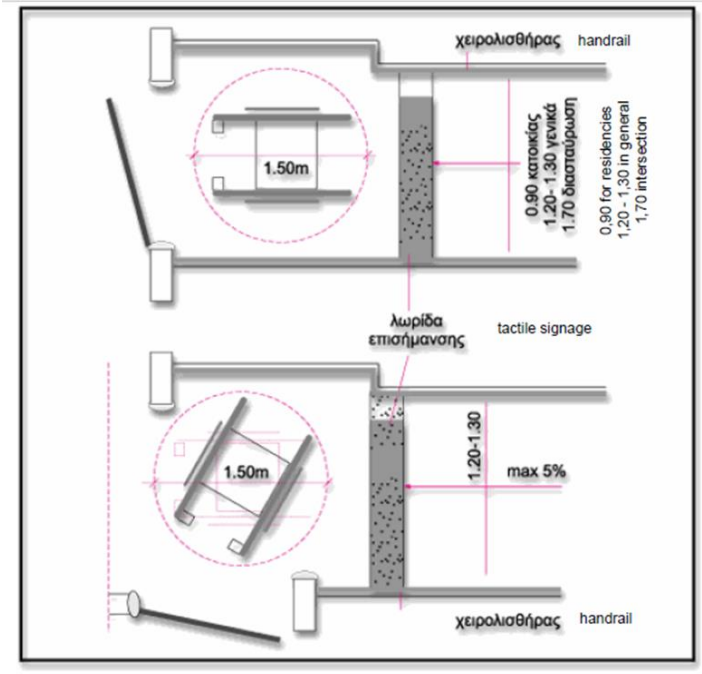


Figure 44 : Landing design

Ramp floor is the surface of the ramp used by its users. This surface must be non-slip, homogeneous, stable, wear-resistant and weather conditions' resistant - for outdoor ramps – non- reflective and easy to clean and maintain.

User Protection and Safety

This includes railings, handrails, skirting.

- Railings

Their main features are their height and construction, which must safeguard the user from a possible fall or injury, while providing the ability to safely place handrails at a suitable height. The most appropriate overall height of rail is considered to be 0,90 m.

- Handrails

The material, its shape and its anchorage must ensure the user's restraint, without at the same time interrupting the movement of the palm of the user's hand over it. The surface of the handrail should be smooth. Its shape must allow for a safe and comfortable grip by palm of the user. One such form is that of a round or a rounded cross-section, at least 4-5 cm in diameter.

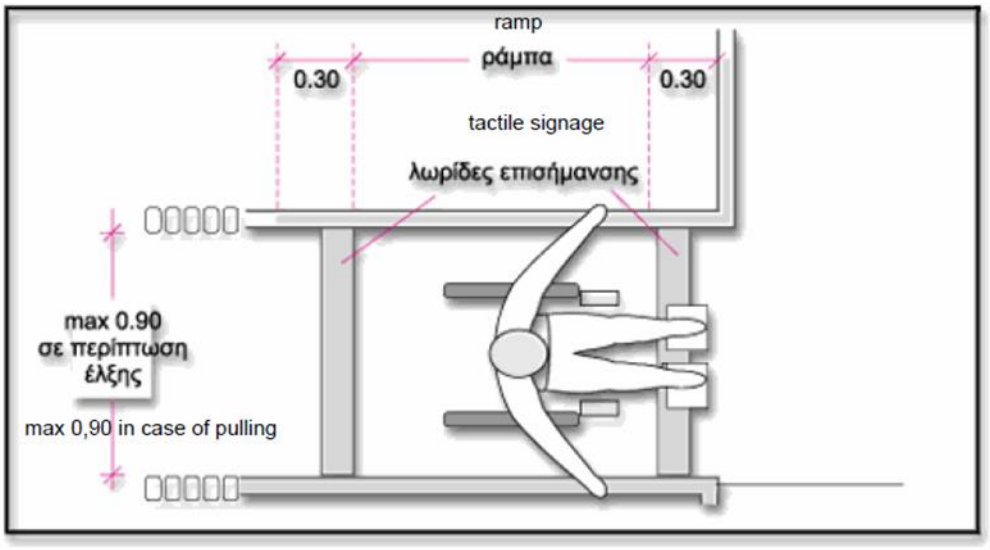


Figure 45 : Ramp design

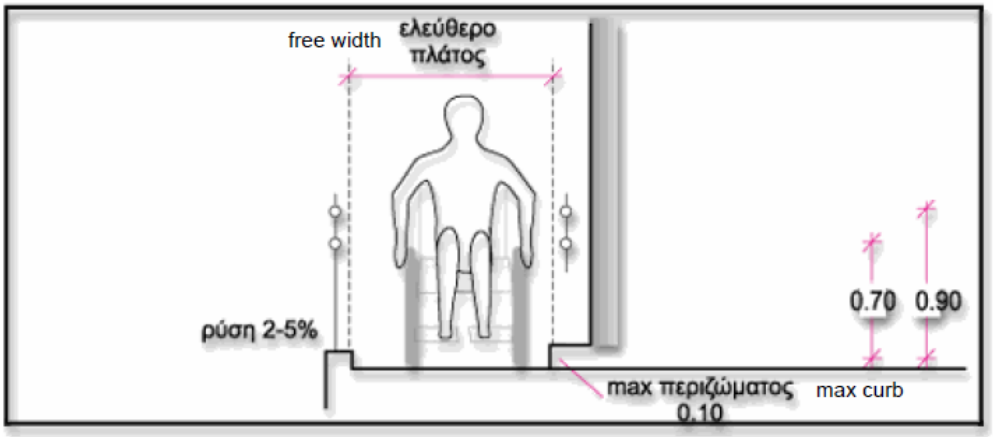


Figure 46 : Ramp equipment

The anchorage of the handrail can be made on the railings or on the wall. The free handrail distance from the final surface of the railing or wall must be 4.5-5cm. This surface must be smooth to prevent injury to the joints of the user's fingers.

Figure 47 : Lack of proper equipment can prove dangerous for ramp users

The gap between the handrail and the top of the railing should be between 5 and 15cm. It is recommended to always place two continuous handrails on both sides of the ramp at 0.90 and 0.70m heights from the floor to make it easy to use for all users as well children and wheelchair users. If the handrails are to be used as auxiliary means for traction of the user, the free distance between them should not exceed 0,90 m. Finally, the handrails should always protrude at least 30 cm horizontally at the beginning and end of a ramp and continue on its landing.

- Curb (Skirting)

It is necessary to prevent the wheels of the wheelchair to approach the vertical elements of the railing, causing a risk of injury to the user and the diversion of the wheelchair. The height of the skirting should range from 5 to 10cm. If there is no curb on either side of the ramp, and if a railing is installed, a horizontal bar should be placed 10cm from the floor.

- Signage

It is essential, wherever there is a ramp, to be properly marked, especially if its users are also people with visual disabilities. So in the beginning, the end and the points of change of the ramp direction, signage should be installed, vertical to the axis of the users' movement, with a width of 0.30-0.60m, of different texture and colour than the floor of the ramp.

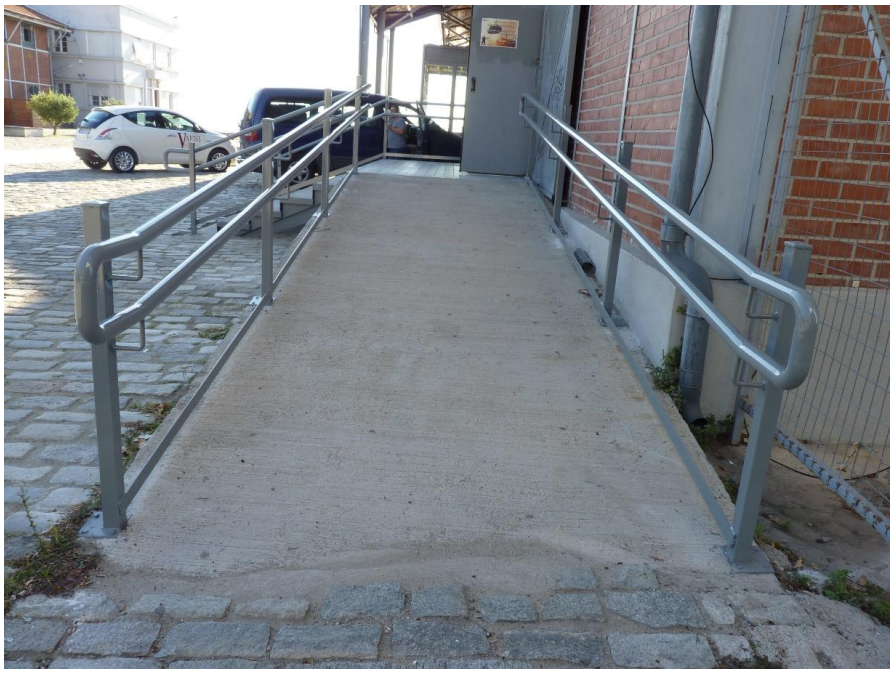


Figure 48: Ramp with proper handrail installation

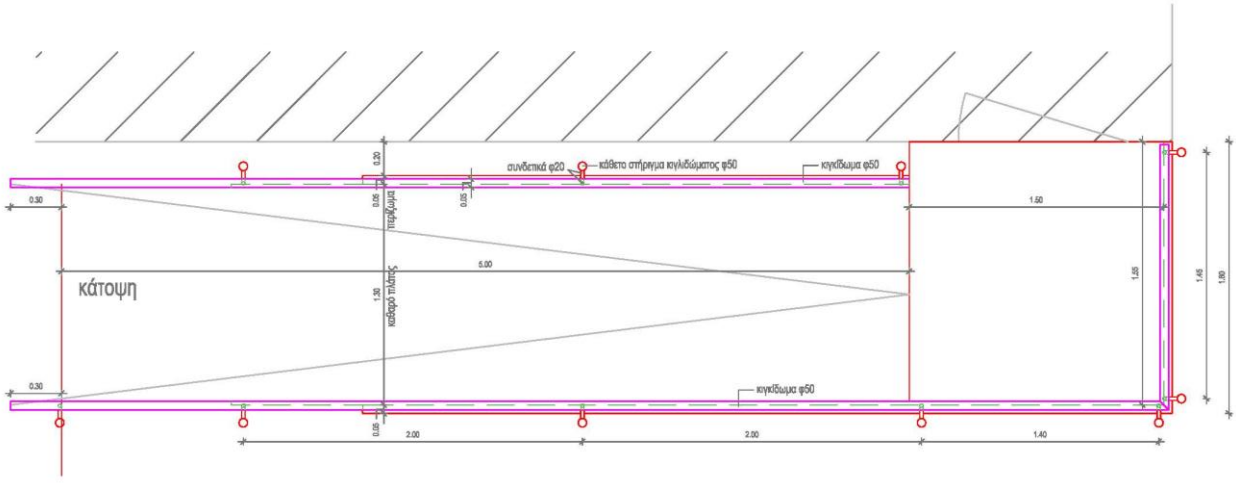


Figure 49: Indicative ramp design

2.5 Stairs and staircases

Steps consist of two intersecting levels: - a horizontal, the tread, and a vertical or inclined, real or imaginary, the riser. The intersection of these two levels is called the edge of the step.

The main features of a staircase are height and width of its steps, which ultimately determine its slope and by extension the degree of comfort in use. Also the width of the staircase which is determined by the distance between the vertical elements (walls, railings), existing or conceivable.

Slope

The slope of the staircase determines its comfortable and safe use. The slope is essentially the gradient of the staircase and depends on the arithmetic relation between the height and width of its step, in the position of the conceivable ascending line of the scale. This relationship is determined empirically from the following equation:

2h + w = 63cm, where

h = height of the riser in centimeters,

w = width of step in centimeters and projection from above.

The dimension 63cm results from the average walking pace of an adult user.

The following also apply

w - h = 12cm (for comfort)

w + h = 46 ± 1cm (for safety)

The recommended dimensions of riser and tread width, so that their comfortable and safe use is ensured, are 15cm and 33cm respectively.

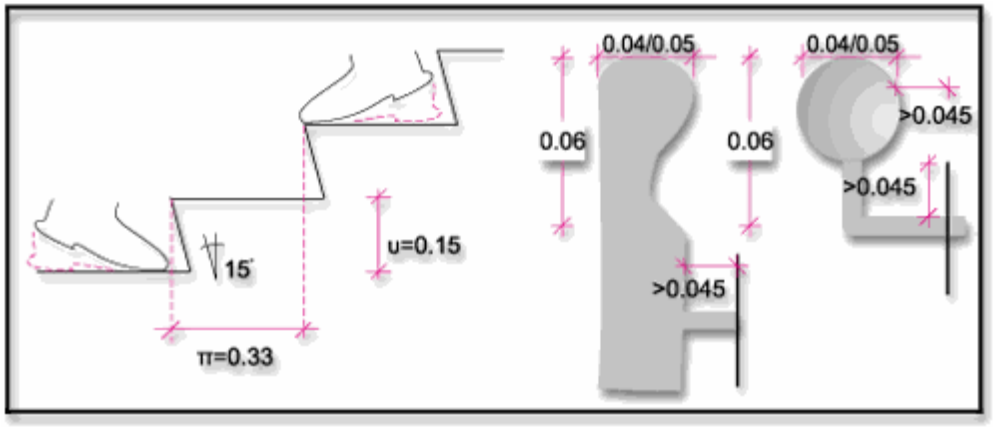


Figure 50 : Recommended design, recommended handrails

Landings

Landings are the steps whose width is greater than that of the treads. They serve mainly for temporary and safe rest of the user, or for change of direction or to mark the end or the beginning of a staircase. Their width should be at least 1,20m. Landings should be placed every 10 or 12 risers, even when there is no change of direction. Single risers should not be created, these small height differences should be bridged by ramps of 5% slope.

Staircase surface

This surface must be non-slip, homogeneous, stable, wear-resistant and weather conditions' resistant - for outdoor ramps – non- reflective and easy to clean and maintain.

User protection and safety features

This includes railings, handrails and skirting with characteristics similar to the ones installed at ramps.

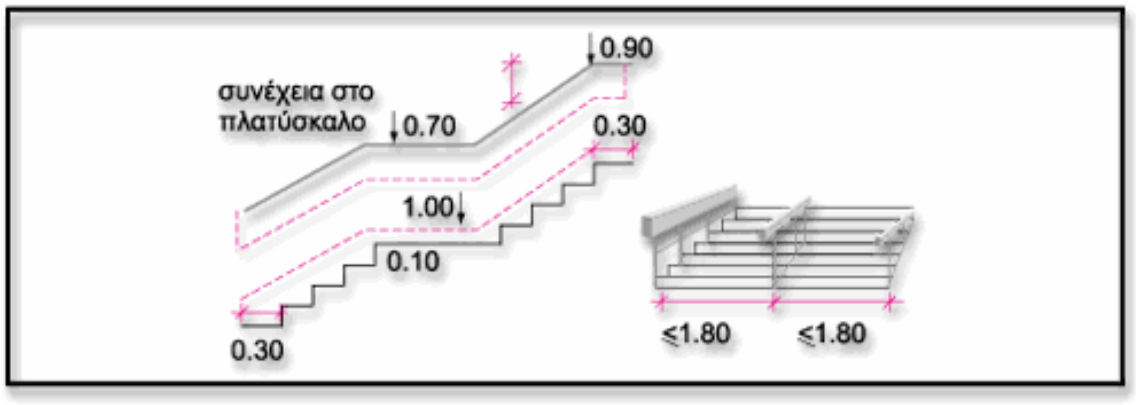


Figure 51 : Recommended handrail design

- Railings

Their main feature is their height and construction, which must safeguard the user from a possible fall or injury, while providing the ability to safely place handrails at a suitable height. The most appropriate overall height of rail is considered to be 0,90 m.

- Handrails

The material, its shape and its anchorage must ensure the user's restraint, without at the same time interrupting the movement of the palm of the user's hand over it. The surface of the handrail should be smooth. Its shape must allow for a safe and comfortable grip by palm of the user. One such form is that of a round or a rounded cross-section, at least 4-5 cm in diameter.

The anchorage of the handrail can be made on the railings or on the wall. The free handrail distance from the final surface of the railing or wall must be 4.5-5cm. This surface must be smooth to prevent injury to the joints of the user's fingers.

The gap between the handrail and the top of the railing should be between 5 - 15cm. It is recommended to always place two continuous handrails on both sides of the staircase at 0.90 and 0.70m heights from the floor to make it easy to use for all users, including children and wheelchair users. If the handrails are to be used as auxiliary means for traction of the user, the free distance between them should not exceed 0,90 m. In large width staircases, the presence of an additional handrail in the middle of the available width is recommended. Finally, the handrails should always protrude at least 30 cm horizontally at the beginning and end of a staircase and continue on its landing.

- Curb (Skirting)

It is necessary to prevent the risk of injury to the user. The height of the skirting should range from 5 to 10cm. If there is no curb on either side of the staircase, and if a railing is installed, a horizontal bar should be placed 10cm from the floor.

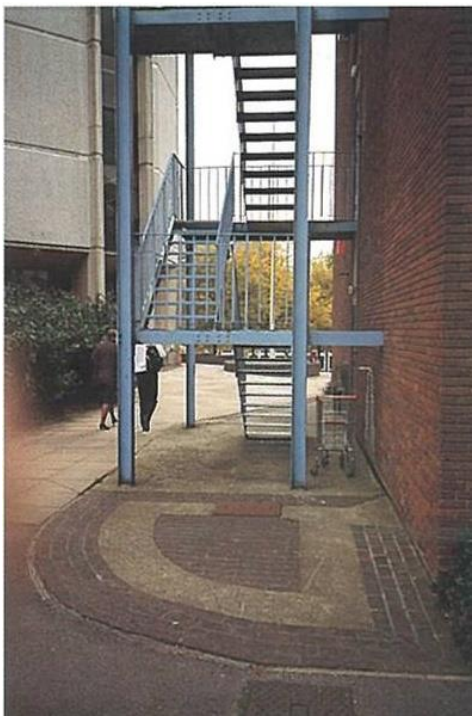


Figure 52 : "Open type" staircase which may be dangerous for white cane users

Signage

It is essential, wherever there is a staircase, to be properly marked, especially if its users are also people with visual disabilities. So in the beginning, the end and the points of change of direction signage should be installed, vertical to the axis of the users' movement, with a width of 0.60m, of different texture and colour than the floor of the staircase. Furthermore, the treads' edges should be marked with colour contrasting material.

Figure 53 : Tactile indicators at external staircase

2.6 Mechanical means for connecting different levels

Level differences at buildings and outdoor spaces should be avoided.

Inevitable level differences in new buildings and outdoor public areas, must be covered by ramps with a maximum gradient of 5%. In existing buildings and outdoor public spaces, if level differences exist, they should be covered preferably with ramps of 5% to 8% slope. If this is not possible, one of the following mechanical systems must be selected

- Elevator
- Vertical lift
- Stair lift

Escalators and conveyor belts are not included in the above category of mechanical media, since they cannot be used by all people.

Elevators

Elevators must be placed in strategic locations of the buildings, near the main entrance and the stairway. Their existence must be properly marked. Accessing them from the level the pavement or the parking space must be level or made through ramps of 5% maximum inclination. In buildings with more than one lifts, at least one must be accessible. This lift should be able to be called independently of the others, especially when the lifts are automatic and there is only one switch for all.

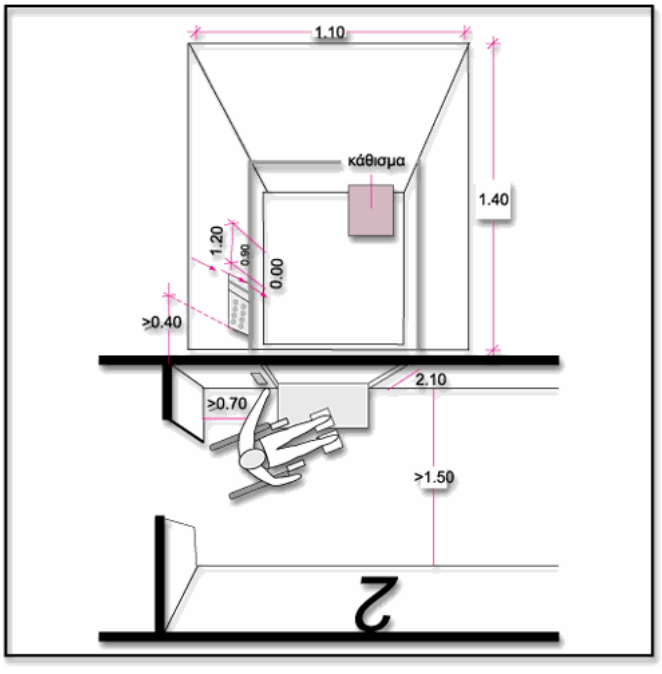


Figure 54 : Design of typical lift

- Elevator chambers

Minimum (internal) chamber dimensions: 1.10x1.40m. Entrance must be made from the smallest side (1.10m) of the chamber. These dimensions do not allow a wheelchair to rotate 180 °, if there is such a requirement then the chamber must be dimensioned 1.50x1.50m. If

the entrance and exit are made at an angle of 45 ° and through two doors, then the minimum dimensions are 1.40x1.40m. In buildings with four floors and more, it is preferable for the elevator to be dimensioned 1.10 * 2.20m to be able to serve a stretcher. The inner walls must be of high strength and from non-reflective material. They must have colour contrast with the floor. The floor must be slip-resistant, smooth and facilitate wheelchair manoeuvring. It is necessary to have a handrail at a height of 0.90m. from the floor as well as a folding seat.

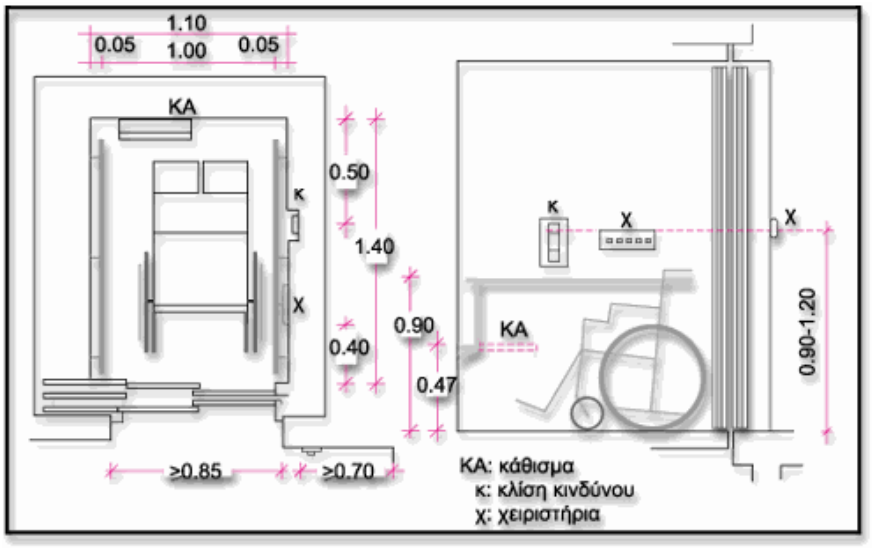


Figure 55: Design of typical lift. KA = seat, κ = alarm button, x = buttons

- Doors

The minimum clear opening of the door must be 0.85 m. Buildings used by the public must have automatic sliding doors. The speed at which an automatic door is opening is a decisive factor of safe and autonomous use by people with disabilities. This speed should not exceed 0.30 m / s and the waiting time must be not less than 6 sec. Furthermore, doors must have a photocell and a mechanism which opens them again if they encounter any resistance.

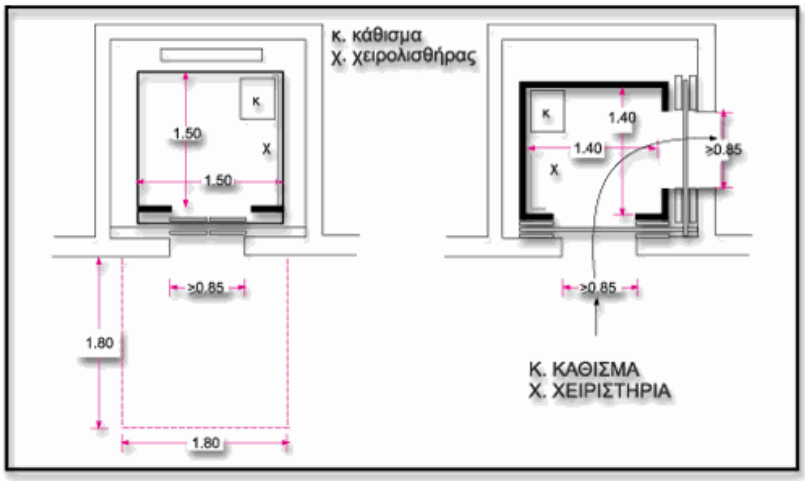


Figure 56: Chambers K = seat, X = buttons

The distance between the elevator door and the opposite wall, staircase or obstacle, must be at least 1.50m. Enough space to move and manoeuvre a wheelchair on the right and / or left of the door should be available. The door and / or its frame must have a strong colour contrast to the wall. On the floor, in front of entrance of the lift, there must be a tactile, in bright colour, warning for blind and visually impaired people. The entrance must be marked with the symbol of the lift and, if it also serves people with disabilities, with the international symbol of access. The number of the floor must be stated on the wall next to or above the elevator buttons as well as opposite the door (on the wall) using bright coloured tactile numbers or letters.

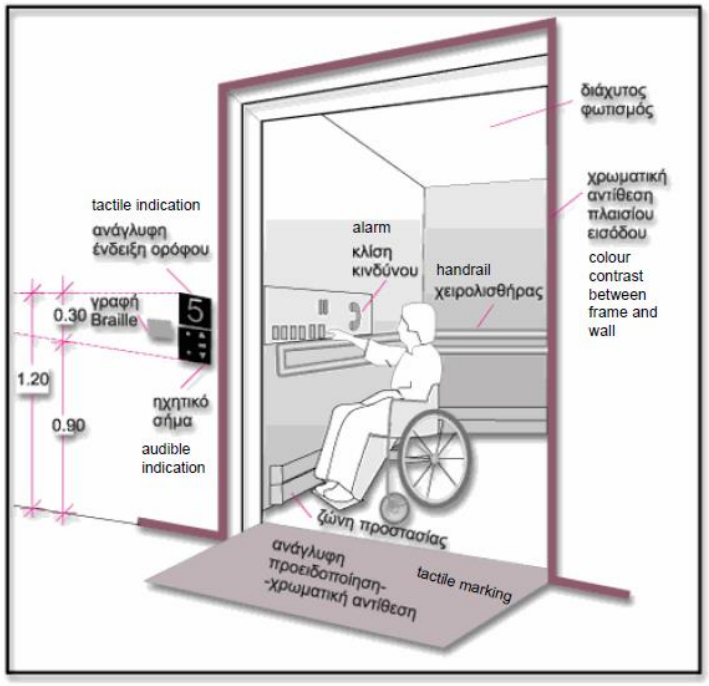


Figure 57: Equipment

- Control buttons

All controls must be placed at a height of 0.90-1.20 m from the floor. Must have colour contrast with their background and be positioned in a reasonable, standardized manner. The switches must have width or diameter of at least 25 mm, be spaced at least 10mm apart, be lighted and have embossed their function symbol. It is desirable for them to be placed at an angle to the wall.

An alarm system must be available, preferably a phone, in colour contrast to the wall on it is mounted. Its instructions for use must be short and simple, written with distinctly embossed characters and repeated in Braille.

The control buttons outside the lift should be placed near the door and be accompanied by instructions in Braille.

Figure 58: Control buttons in Braille

- Motion and position indicators

When lifts are installed in buildings used by the general public, the following indications relating to the lift's movements must be provided:

Outside the cabin

- Elevator comes.
- Ascending and descending arrows
- Cabin arrival sound signals (different for ascending and descending).

Inside the cabin

- Floor indication
- Audible indication of floor
- Ascending and descending arrows
- Cabin arrival sound signals (different for ascending and descending).

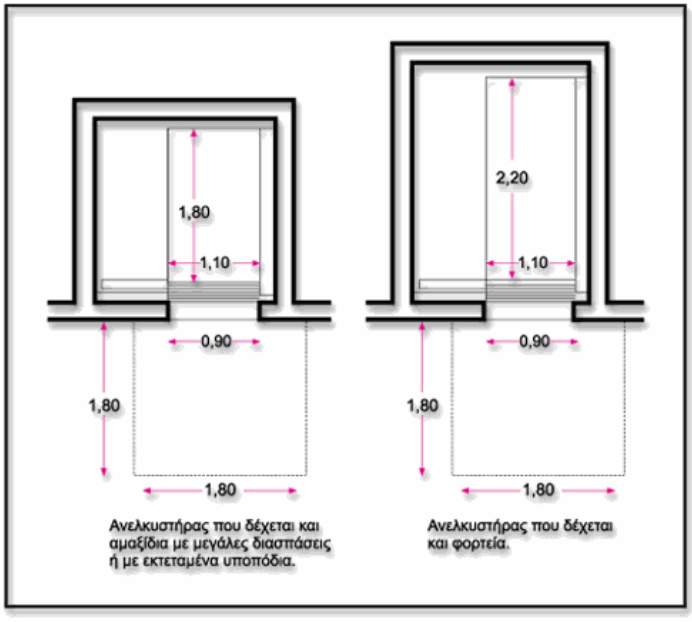


Figure 59: Lift dimensions for large wheelchairs and for stretchers

Figure 60: Lift with folding seat

Platform Lifts

When it is not possible to bridge a height difference at an already formed interior or outdoor space with a ramp, a vertical or stair lift should be installed. This installation must be properly marked.

- Vertical movement platform lifts

Usually cover minor height differences. Where possible, it should be preferred compared to a stair lift. Must safely transport a wheelchair user. Minimum Platform Dimensions 0.90x1.20m. Lifting capacity 250 kg. The movement of the lifts must be controlled by controls on the platform and at the beginning and end of the route (fixed points). Entry-exit points must be provided with adequate space for comfortable approach and wheelchair manoeuvre, of minimal dimensions 1.50x1.50m.

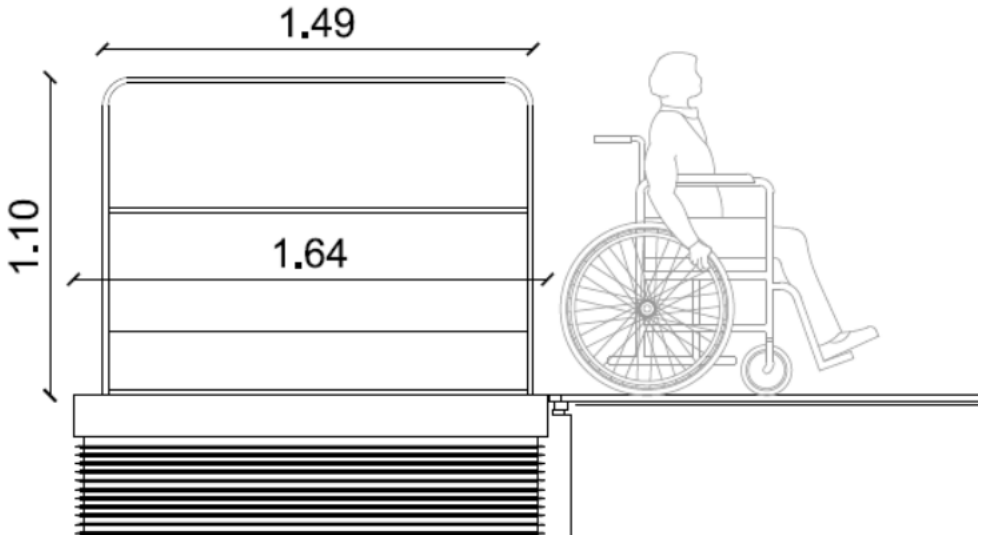


Figure 61: Design of vertical lift.

Figure 62: Photo of vertical lift.

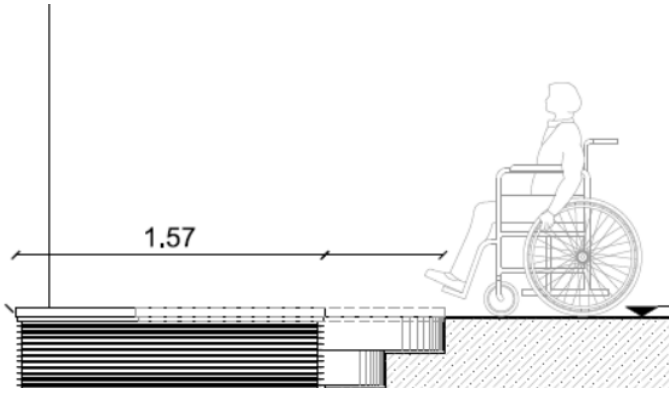


Figure 63: Design of vertical platform lift with moving surface

- Stair lifts

They are mounted on the stairs and cover small and large height differences, especially where it is impossible to install a vertical lift. The carrier is a platform that connects through an assembly system with the wall and moves parallel to the steps of the ladder. When the lift does not work, it folds. Minimum dimensions 0.80x1.00m, preferred 0.90x1.20m. The platform may also have a folding seat; in this case its width must be increased by the thickness of the seat. The lifting capacity of the system must be 250Kg. Entry-exit points must be provided with adequate space for approach and manoeuvre of a wheelchair, with minimal dimensions 1.50x1.50m.

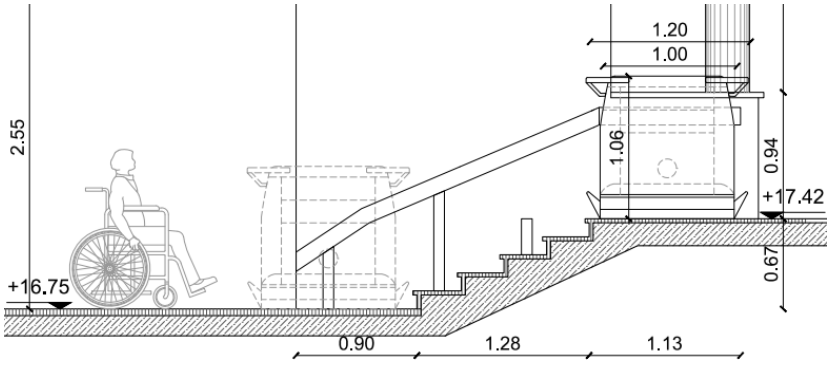


Figure 64: Design for the implementation of stairlift

2.7 Public toilets

A prerequisite for considering a public building or a public space accessible, is a toilet properly configured with the necessary equipment to serve every category of users, including persons with restricted mobility.

"Sanitary areas" are facilities containing washbasins, urinals and W.Cs. Any building or outdoor space used by the public must provide, depending on the frequency of use, a certain number of sanitary facilities. Buildings must provide at least one sanitary space per floor designed for wheelchair users.

Wherever groups of sanitary spaces is envisaged, it is preferable to create separate accessible toilets for male and female users. In any case, at least one shared accessible space for both men and women users should be available. Wherever possible, it is recommended that accessible toilets should have independent entrances without a common entrance hall with the rest of the sanitary facilities.

In existing buildings, where construction of a separate accessible toilet is not possible, the available sanitary facilities should have sufficient space and equipment to serve all user categories, including wheelchair users.

Public sanitary spaces for persons with restricted mobility

These spaces serve all categories of disabled people and also serve as "family-type" sanitary facilities, that is to say, for care of infants and young children accompanied by a parent. Must be placed in readily identifiable positions near the entrances and the vertical circulation areas. Inside the public sanitary facilities, free space for rotation, 1.50m in diameter must be provided.

- Signage

The existence of hygienic spaces for disabled persons should be marked correctly and clearly with the use of the International Symbol of Access (ISA) and the symbol "W.C.".

- Accessibility

Access to sanitary facilities must be level. If a height difference exists, this should be covered with ramps of 5% maximum inclination according to the "ramps" guidelines. The free width corridor or ramp must be 1.20m. - 1.30m

- Entrance

The door should be 0.90 m wide, opening towards the outside of the toilet or sliding. A maximum force of 15 Newtons should be required to open the door. The door handle should be of type α, β, or γ according to image. The locking mechanism of the door leaf must allow opening from the outside in case of emergency and also have an indication of occupation.

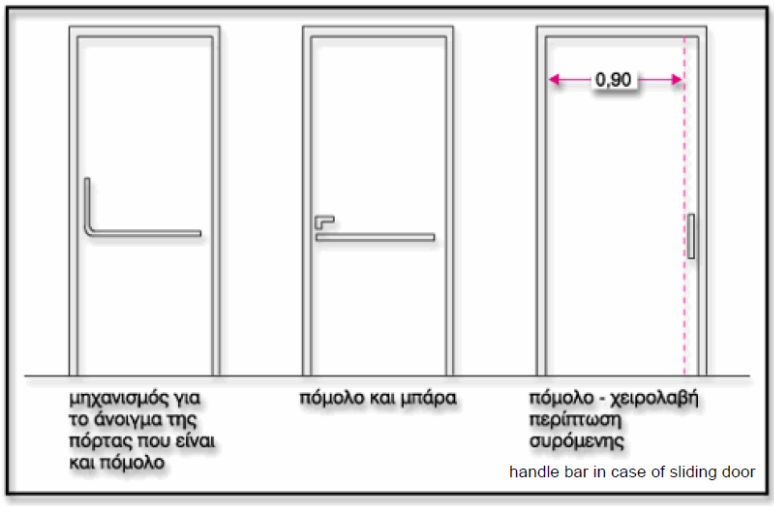


Figure 65: Door types

- Equipment
  - Washbasin

The height of the washbasin should be 0.85m. from the floor to the top of it and 0.70m from the floor to the bottom of it. It is accompanied by a shelf at the same height.

The 0.70m. free space under the washbasin must be secured in any case, and the drainage of the sink must not annoy a wheelchair user's knees.

The washbasin is placed next to the WC with its front end in line with the inner edge of the WC. The distance between the edge of the WC and the washbasin must be about 0.10m. and never exceed 0.25 m, so that the use of the washbasin by a person sitting at the WC can be possible.

Alternatively, in the case of existing buildings, if the above mentioned arrangement is not possible, the WC is placed in parallel with the washbasin (on the same wall) and the distance between them must be 0.25m. The sink installation should be specially designed so that it can withstand a vertical load of 100Kg.

The washbasin should have a mixer tap with lever-type controls (not spherical) and an extendable "shower" head. At cases of external, non - built - in water pipes, these must be insulated in order to avoid possible accidents or injuries.

- Mirror

The mirror is placed over the washbasin with a slight slope. The bottom of it should be at a height of 1.00m. from the floor and the top of it at 2.00m.

- Basin

In front of and next to one side of the WC, there must be enough space for frontal or lateral approach to a wheelchair. As mentioned above, the appropriate provision with regard to placing the WC and the sink is putting them in perpendicular walls. The height of the WC must be 0.45 m. to facilitate movement of wheelchair users. It must have a back of at least

0.30m. from the top surface of it. An easy to handle low pressure cistern (for example with a side handle) can act as a substitute for it.

Next to the WC is a slip resistant hinged rail of about 0.75m. with its upper part at a height of 0.70m. from the floor. The diameter of such a handle is 30mm. - 40 mm (about 1½).

Particular attention should be paid to the installation of handrails and equipment in order to withstand a vertical load of 100Kg. The toilet paper dispenser should be easy to reach.

- Emergency alarm

An emergency alarm cord should be provided. It should be installed parallel to the floor at a height of 0.15 – 0.20 above floor level.

- Floor

The floor should be slip resistant, non-reflective and easy to clean. Colour contrast between the floor, doors and equipment can assist users with reduced vision.

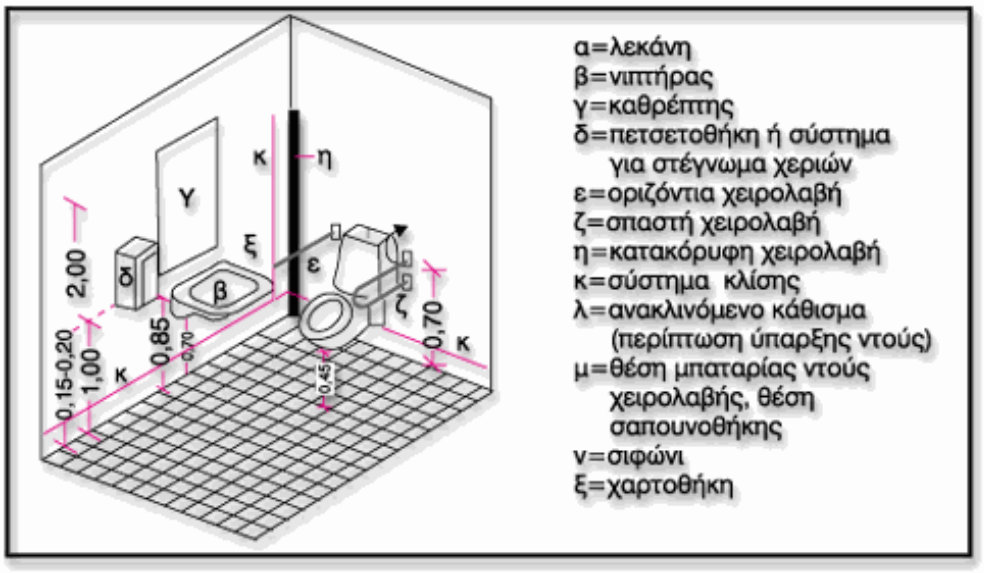


Figure 66: Equipment

α = WC, β = washbasin, γ = mirror, δ = hand dryer, ε = horizontal handrail, ζ = hinged handrail, η = vertical handrail, κ = alarm cord, λ = reclining seat (in case a shower is provided)

In case of existing buildings, an accessible toilet can be designed with smaller dimensions.

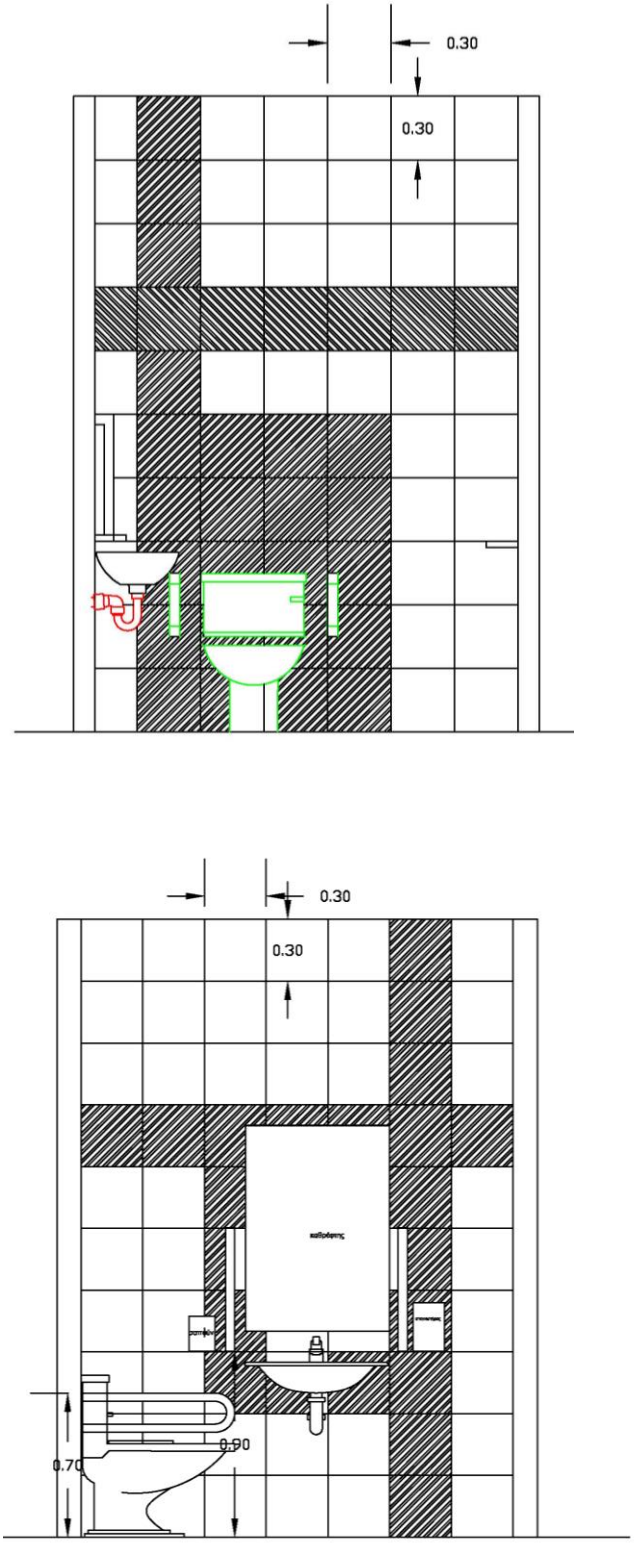


Figure 67: Suggestion for the creation of accessible toilet.

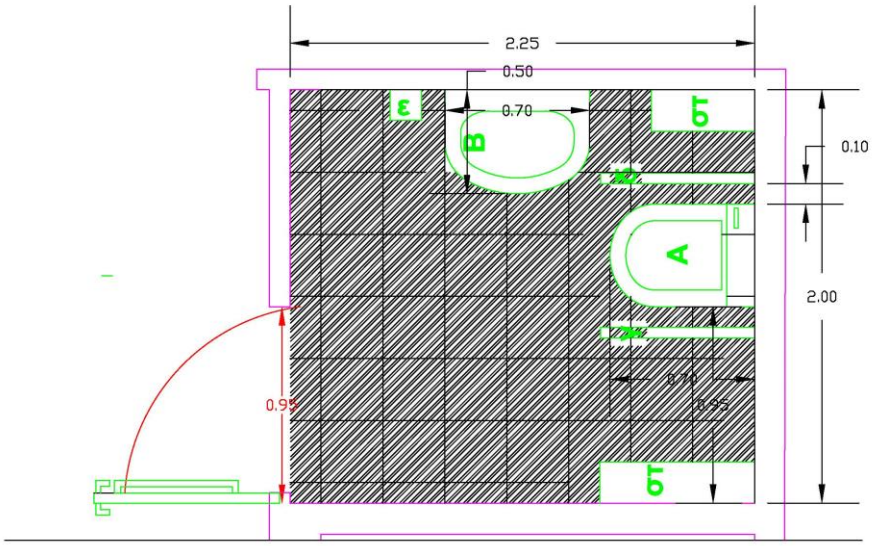


Figure 68: Suggestion for the creation of accessible toilet.

α = WC, β = washbasin, γ = mirror, ε = hand dryer,

Figure 69: Example of accessible toilet created at existing building

At existing buildings, Greek guidelines allow the creation of an accessible toilet of minimum dimensions 1,5X2,1m, as per the following figure.

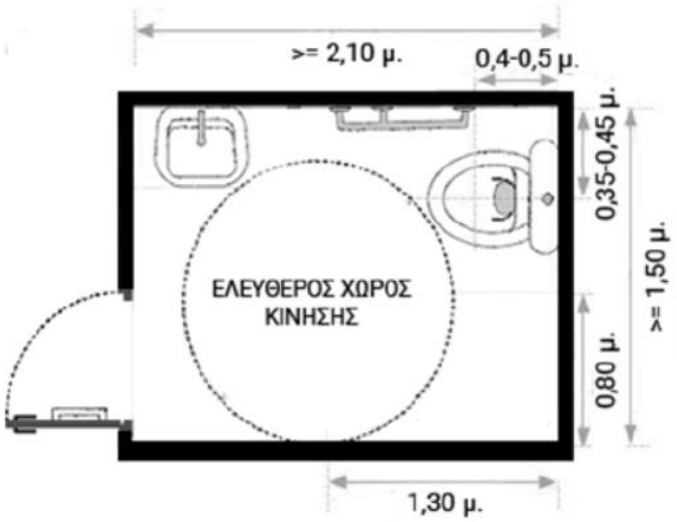


Figure 70: Minimum dimensions for existing building

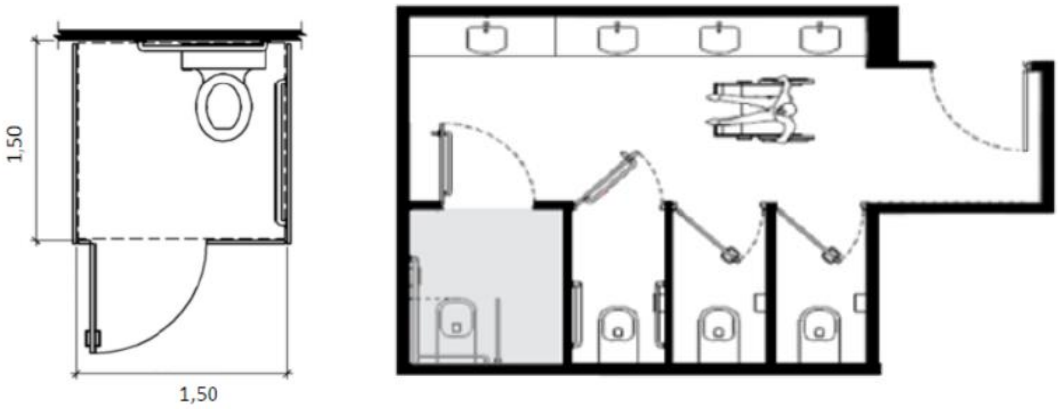


Figure 71: Configuration for existing buildings with common washbasin

Public sanitary spaces with showers for persons with restricted mobility

In cases where use of showers is foreseen, care must be taken to ensure that the dimensions of the spaces are adequate so that a bench can be installed to serve the user, ensuring always free manoeuvring space of 1.50m in diameter.

At the shower area the creation of any curb or other height difference is prohibited. The shower area should be flush with the rest of the floor, smooth drainage of water should be ensured by the formation of slopes leading to a siphon.

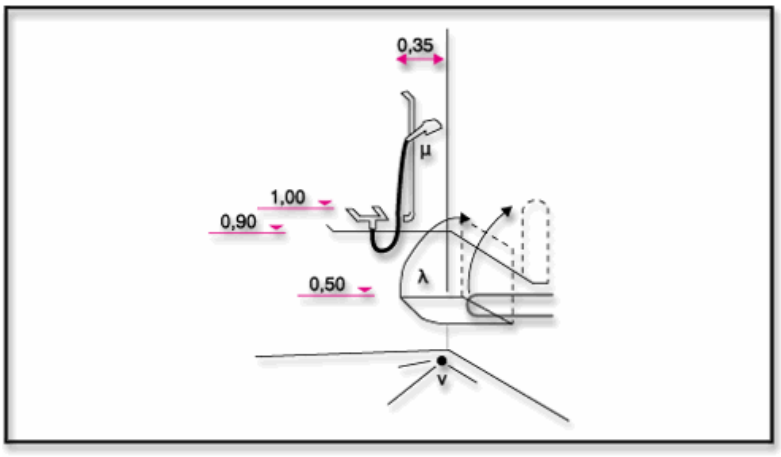


Figure 72: Design of shower

- Equipment
  - Seat

A foldable seat at a height of 0.50m. from the floor should be provided inside the shower.

- Handles

At the shower area suitable stainless steel handrails should provided, well anchored. These handles are placed horizontally and vertically at a height of 0.90m. from the floor. The maximum height for the top vertical handle is 1.80m. from the floor.

- Adjustable height shower head

The user should be able to adjust the height of the shower head at a lower point height of 1.10m. from the floor and maximum height of 2.20m. from the floor.

- Soap tray

The soap bar is placed in an appropriate position at a height of 0.90 m. - 1.10m. from the floor. Handles must withstand a load of 100Kg.

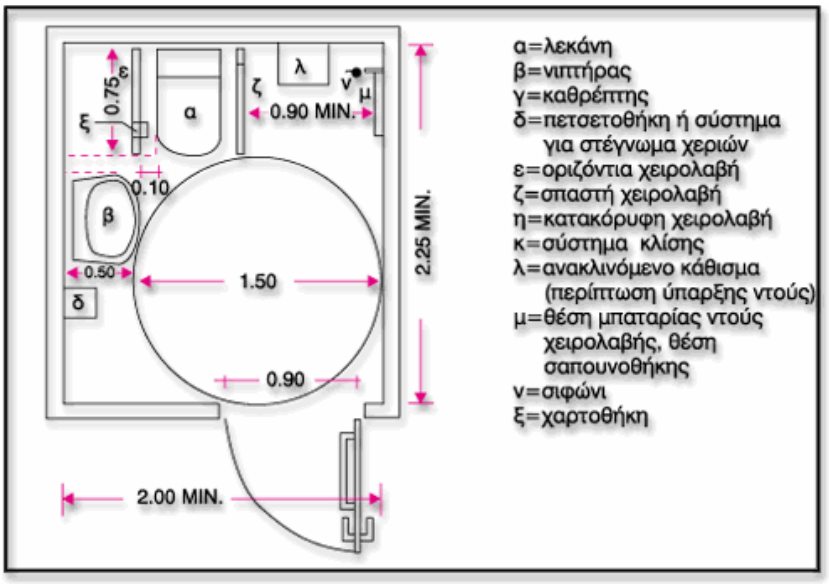


Figure 73: Equipment

α = WC, β = washbasin, γ = mirror, δ = hand dryer, ε = horizontal handrail, ζ = hinged handrail, η = vertical handrail, κ = alarm cord, λ = reclining seat (in case a shower is provided), μ = shower head position, ν = siphon, ξ = paper dispenser

2.8 Signage

Signage is the set of symbols and texts that facilitate the orientation and movement of all people in structured environment. Signage is also considered any other means that facilitate safe movement and information, such as sound signals, material variations through colour and / or texture, drawings, patterns, etc.

Strategic points of public buildings must have a simplified floor plan with marked parking spaces, entrances, information desk, vertical circulation, sanitary spaces, points of interest, etc. The presence of proper signage is particularly important in case of emergency, for easily identifying escape routes.

The symbols, pictograms, drawings, texts etc. that make up the signage must be standard, plain, distinct, placed in positions according to their size and their operation. In places accessible by people with vision problems, they must be embossed and accompanied by text in Braille. They must be repeated where there is a change of direction or where there may be doubt in selecting the desired route or escape route.

Providing information only with colour code should be avoided. People with colour blindness can have difficulty understanding it. Signage pertaining one specific information should always appear in the same format, so that it is easily identifiable.

Extensive texts and the combination of advertisement signs and information signage should be avoided since they cause confusion. Also, signs must be non-reflective (matte) and colour contrasting to the surrounding area.

The simple and clean design is important for good perception of the environment, including easily identifiable orientation points. The choice of materials can differentiate spaces and functions but and to improve their sound status.

The use of audio-visual and electronic signage should follow the same principles as the rest of the signage.

Figure 74: International Symbol of Access (white on black or blue)

Depending on its location and form, signage includes signs, floor mounted signs, audible or light signs, street furniture and building components (through colour and shape).

Signs

Can be divided into two major categories:

- Road signs
- Signs for building and outdoor signage.

The function, shape, shape, etc. of the road signs is prescribed by the New Road Traffic Code (Law 2094 182 / A / 25.11.92). The plates P-71 and P-72 are regulating car parking for people with reduced mobility. P-60 and P-71 are informative whereas Pr-4d and Pr-4e are additional and are always combined with other main signposts.

The above signs contain the International Symbol of Access with its design slightly modified. The P-60 sign must be accompanied by an explanatory text or other plan relating to the reason for its placement.

Figure 75: Road sign examples

Signs should follow the international (ISO 3864/84E), European and national guidelines.

- Shape

Rectangular: information/ Triangular: warning/ Circular: ban

- Colour

Green: safe/ Yellow: danger/ Red: emergency situation

These colours refer to background colouring. Yellow is sometimes a sign of service and appears on information boards. White and blue are also used. The combinations of the colours of the symbols and its corresponding background are presented below.

Background	Characters and symbols	Function
Blue	White	General Information /regulation
Green	White	Safe moving
Yellow	Black	Warning / Indication of provided services
White	Black	Information – provided services
Red	White	Danger / prohibition
Black	White	Information – provided services

People with vision impairments identify more easily chromatic / tonal contrasts. If no other guideline is provided, it is best to use black lettering in white background.

There must also be a contrast between the sign and its background according to the following table:

Background	Sign	Text or/and Drawing
Dark Wall or Wall material (black, red, dark gray, green etc.)	White	Black or dark colour
Wall of light colour or material (beige, or light grey)	White	Black or dark colour
Wall white or too light (washed) coloured	Black or dark colour	White
Green leaves	White	Black or dark colour

- Position of signs

When placed in contact and parallel to the walls, signs must be at a height of 1.40m - 1.60m. When they indicate a service (e.g. WC, office, waiting area, etc.) should be placed next to and not on the door, on the side its handle is located. The same applies to the numbering of spaces.

When placed inside the buildings suspended from the ceiling or fixed vertically to the walls, their lower edge should be 2.20m. from the floor. Generally, signs must be positioned so that they do not prevent movement and do not cause accidents.

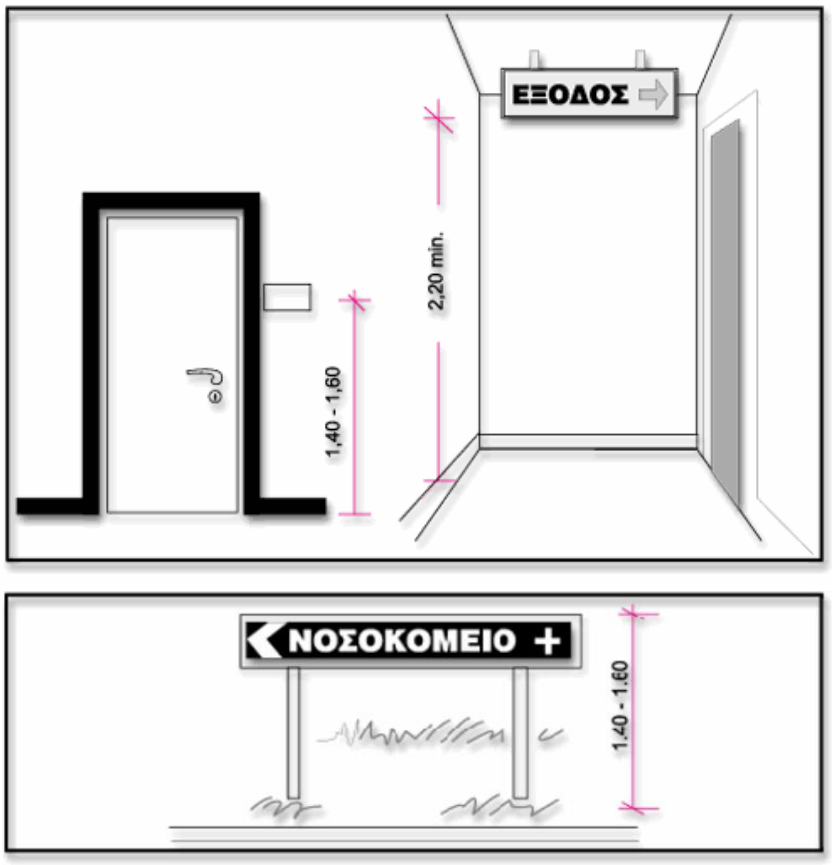


Figure 76: Signage examples

Figure 77: Sign using combination of numbers and pictograms

The following figure depicts sign placement according to ISO 21542

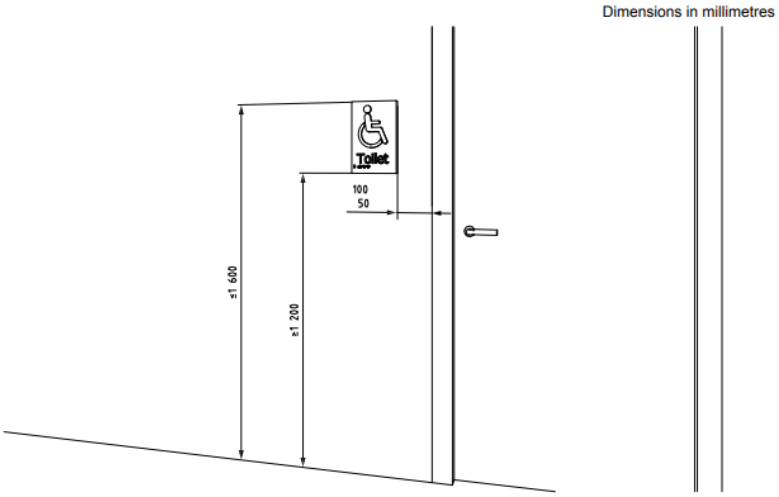


Figure 78: Location of signs on the latch side of the door

- Letters and symbols of signs

The text must be brief and comprehensible. The letters should be Helvetica Sans Serif, normal and medium, small and / or capitals (depending on the size of the text and the distance to from which they are read). The height of the letters must not be less than 15 mm. In outdoor signs the height of the letters must not be less than 100mm (3 meters distance reading). Generally, the size of letters and symbols is determined by the distance required for them to be readable and comprehensible.

The International Symbol of Access is standardized. It must be accompanied by an explanatory text or other design or symbol.

The signs located at 1.40m - 1.60m height must have embossed characters and symbols, with bouts of 1.00 - 1.50mm to be perceived by people with reduced vision. They must be accompanied by writing in Braille.

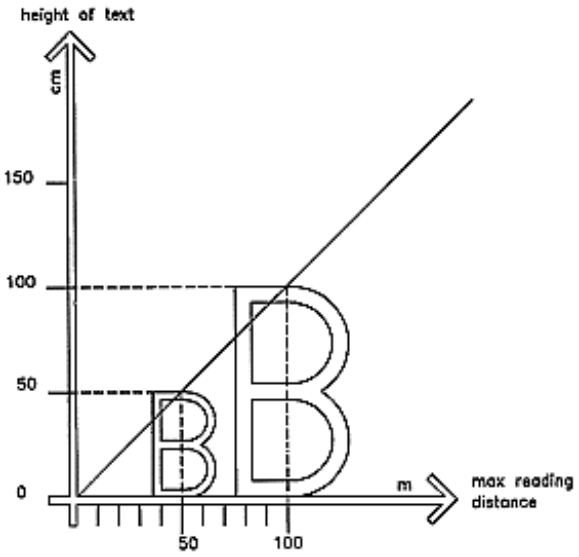


Figure 79: Height of text for signs compared to max reading distance

Figure 80: International signs

- Construction material – Lighting

The signs shall be adequately illuminated. Their surfaces should be matte and not cause reflections. Also they should not be placed behind glass or similar material. They must be made out of durable materials and be easy to change, clean and repair.

Figure 81: Pictogram use

Floor indicators

They are essential for visually impaired people; include changes in the texture of the floor and use of intense colour contrast.

Figure 82: Internal tactile floor indicators and use of pictograms

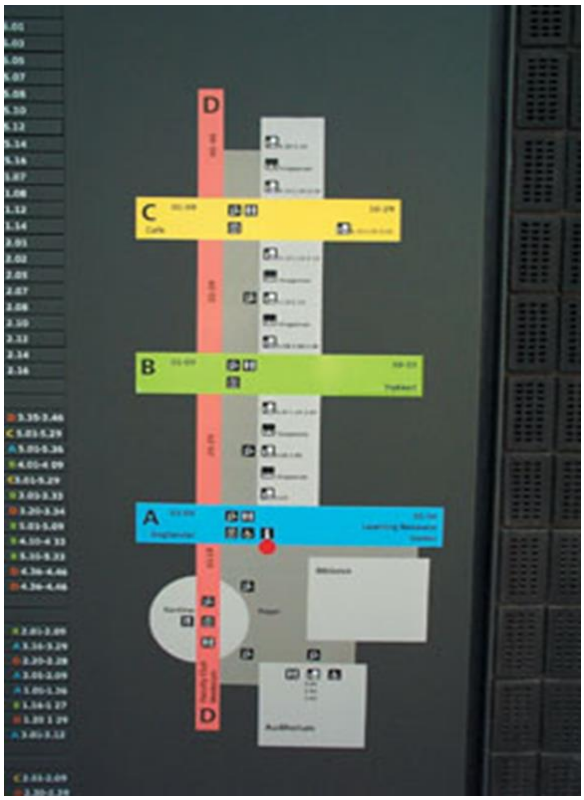


Figure 83: Use of pictograms and colour coding

Visual – audible signage

Visual and audible signals are placed at pedestrian crossings. They must provide sufficient time for the persons with reduced mobility. The sound they emit should be easily distinguishable from the sounds of road traffic, using three standard frequencies (stop, movement, warning) for identification by blind pedestrians.

In buildings, visual information must be combined with audible one (e.g. at train stations, bus stations, airports etc.).

Figure 84: Help point at public transport station

Signing of urban equipment and buildings through colour and shape

Urban equipment elements must always be displayed with the same colour and shape (i.e. be standardized) and have the same way of placement (e.g. mailboxes, waste baskets, benches etc.).

Colour markers at eye level help people with reduced vision to move safely in the built environment and to use the urban equipment properly. At buildings, the identification of doors and windows is made using intense colour / tonic contrast to the wall (preferably light colour) and frame (preferably dark colour).

2.9 Accessible examination rooms

An accessible examination room has features that allow patients with mobility impairments to receive healthcare. These include:

- Accessible route to and through the room
- Entry door with adequate width and accessible hardware

- Appropriate equipment
- Adequate floor space

Guidelines for widths and hardware of doors have already been introduced. As far as turning space is concerned, an individual with mobility impairment should be able to approach the exam table and all other elements of the room. Thus, the exam table should have sufficient clear floor space next to it so that a wheelchair user can approach the side of the table for transfer onto it.

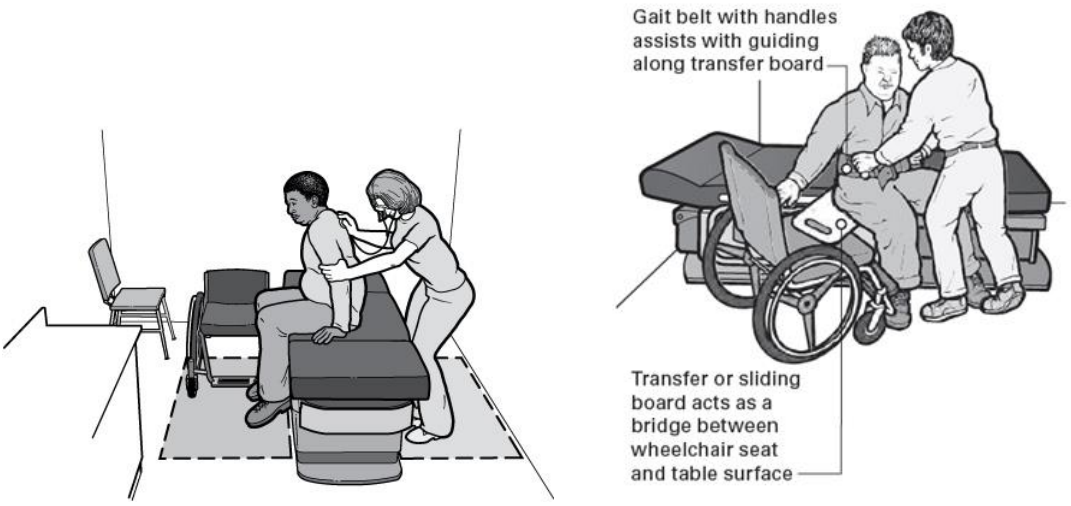


Figure 85: Patient transfer at examination table

A clear space at least 80cm. wide and 1,2m. long should be available. Since some individuals can transfer only from one side, clear space on both sides should be provided. If that is not possible, a reverse layout in another examination room should be available.

The room should also have enough turning space for individuals using wheelchairs, that is clear space of 1,5m. diameter or a T-shaped 1,5 X 1,5m. Movable furniture should be set aside, if necessary. When a portable patient lift is used, additional clear space will be needed.

According to the guidelines "Access To Medical Care For Individuals With Mobility Disabilities" published by the U.S. Department of Justice and the U.S. Department of Health and Human Services, the following provisions should be made in room configuration:

1. A clear floor space, 80cm. X 120cm. minimum, adjacent to the exam table and adjoining accessible route make it possible to do a side transfer.
2. Adjustable height accessible exam table lowers for transfers.
3. Providing space between table and wall allows staff to assist with patient transfers and positioning. When additional space is provided, transfers may be made from both sides.
4. Amount of floor space needed beside and at end of exam table will vary depending on method of patient transfer and lift equipment size.
5. Accessible route connects to other accessible public and common use spaces.

6. Accessible entry door has 80cm. minimum clear opening width with door open 90 degrees.
7. Manoeuvring clearances are needed at the door to the room.

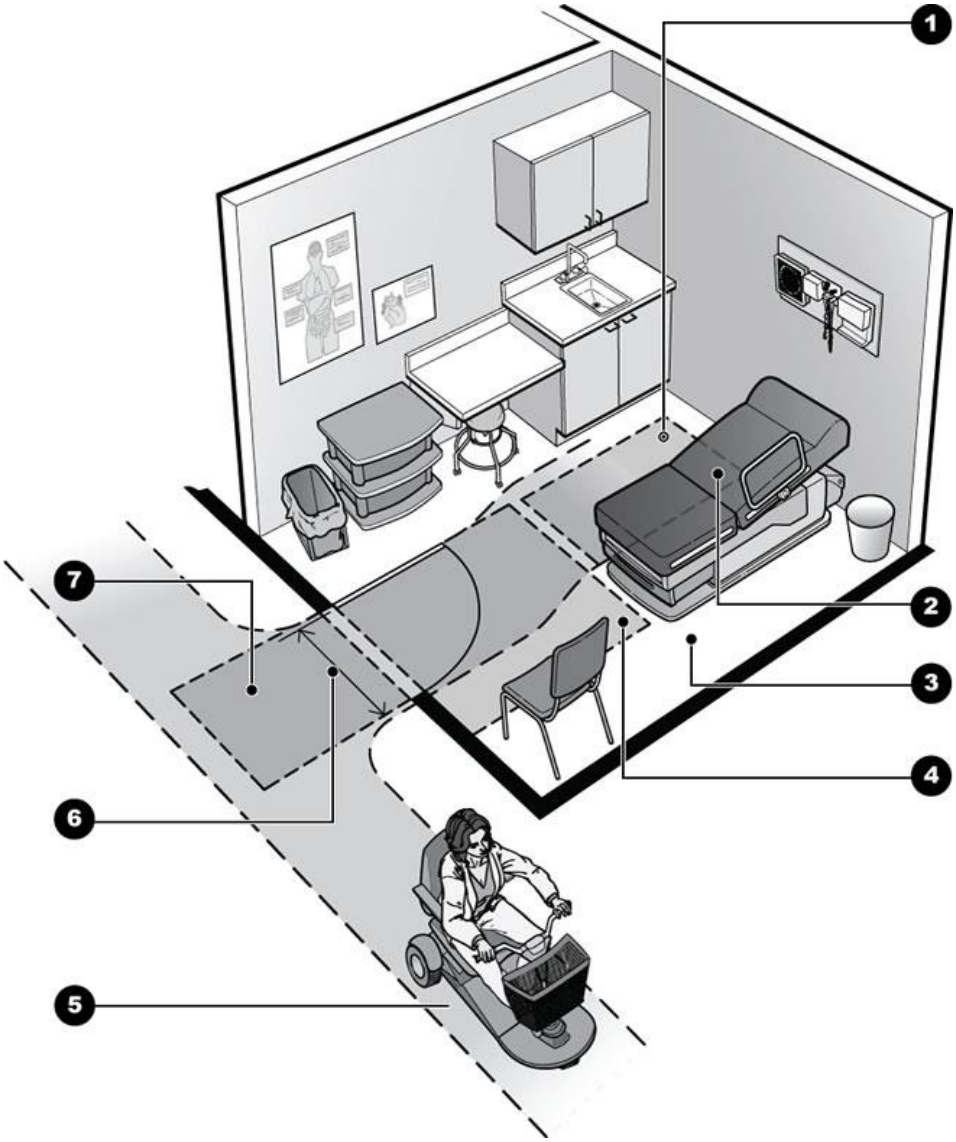


Figure 86: Room configuration example

3. Annex – Greek Legislation concerning accessibility

1. Law 4067 - New Building Regulations Article 26 Special arrangements to serve persons with disability or restricted mobility and Article 27

Analytical description is made of the accessibility provisions required for building of public interest

2. Technical instructions for the adaptation of existing buildings and infrastructure for their accessibility to persons with disabilities and persons with disabilities in accordance with current legislation/ 7-7-2020

3. Law 2621 Special arrangements for serving disabled people in public areas of settlements intended for pedestrian movement. Article 3 Tactile indicators for the blind

Analytical description of the design and implementation of tactile ground indicators

4. Law 4759/20
   Requirement for the improvement of accessibility provisions of existing buildings of public interest by the end of 2022

5. Official Governmental Gazette (OGG) 5045/01.11.2021 Technical Specifications of Accessibility Study.

6. Official Governmental Gazette (OGG) 1384B/03.08.2007 Supplement and amendment of provision "On health check and licensing of the establishment and operation of food premises and special conditions for the establishment and operation of food and / or beverage laboratories and shops"

The Government Gazette refers to the need to ensure accessibility to cafes, restaurants etc. with an area of more than 100 square meters. It includes the creation of accessible sanitary facilities and the possibility of guide dogs to enter such facilities, provided that they do not pose a threat to public health and their owner has all the necessary documents.

7. OGG 18A15.01.2002 "Special provisions for the service of disabled persons at public buildings" and "Special provisions for the service of disabled persons at public spaces reserved for pedestrians"

Demands of the Building Regulations concerning access to public buildings and public spaces. They include the dimensions of pedestrian zones etc.

8. General building regulations OGG 140A13.06.00

Article 28 sets out conditions for the provision of horizontal and vertical access by persons with disabilities to buildings used by public services, legal entities of public law, legal entities of private law of the wider public sector, charities, municipalities, education, health, office and commerce. The conditions apply to existing buildings as well.

9. Ministerial Decision 3046/3068

Additions to the building regulations concerning elevators, staircases and open spaces.

10. OGG 815/B/1997

"Elevators should have characteristics that allow their use by disabled persons according to EN. 81.70".

11. Circular letter 27.03.1991 "Checking of special buildings for the autonomous movement of people with special needs"

It defines buildings (excluding residencies) that should follow the principles of accessibility for disabled persons.

12. Circular letter 26534/ 2.12.1996 "Ensuring access for persons with restricted mobility to public services".

Refers to legislation and guidelines that should be followed in the design of public buildings

13. Circular letter 8303/08.02.2008 "Accessibility network for disable persons"

The obligation of local authorities for the creation of an accessible network is defined.

14. Circular letter 8298/26/3-3-04 "Tactile Surface Indicators"

The dimensions and surface of tactile indicators are defined. Contains useful sketches for the installation of different types of tiles.

15. OGG 4030/ 2011 "New process of building permit issuing"

The need for the creation of an accessibility study for the issuing of a building permit is defined.

16. OGG 4074/2012 "Adoption of the Convention on the Rights of Persons with Disabilities (CRPD) and its optional protocol"

17. OGG 2605/15.10.2013) "Approval procedure and required supporting documents for works requiring Small Scale Approval".

In article 2, paragraph 6, the necessary documents for the creation of an accessible lift in existing buildings are described.

18. Circular letter 42382/ 2013 "Clarifications on the application of Article 26 of the New Building Regulation (Law 4067 / 2012) concerning special arrangements for the accessibility of disabled persons / persons with restricted mobility"

Includes clarifications for the accessibility provisions of the new building regulations. It clarifies that building design should take into account the New Building Regulations and the OGG 18A15.01.2002 (No 2 in this list), supported by the accessibility guidelines.

19. Circular letter 29467/ 2012 "Clarifications for the submission of an accessibility study for people with disabilities, which is required to be included in the studies to be submitted during the implementation of the new Building Regulation N.4067 (OGG 79 / A / 2012)"

It describes the contents of the accessibility study including the regulations, guidelines, standards, etc. used.

20. Law 3304/2005 (OGG 16A / 27.01.2005) "Application of the principle of equal treatment"

In Article 10 the concept of 'reasonable adjustments' is introduced. Specifically, in order to comply with the principle of equal treatment against persons with disabilities, the employer is obliged to take all appropriate measures on a case - by - case basis so that these people have access to a job, practice it and have the possibility of taking part in vocational training if these measures do not entail a disproportionate burden for the employer. The burden is not considered disproportionate, when it is compensated by protection measures taken at policy level".

21. Safety rules for the construction and installations of lifts. Particular applications for passenger and good passengers lifts - Part 70: Accessibility to lifts for persons including persons with disability

The European standards adopted by the Greek ELOT standard organization.

Bibliography

Circular letter 42382/ 2013 "Clarifications on the application of Article 26 of the New Building Regulation (Law 4067 / 2012) concerning special arrangements for the accessibility of disabled persons / persons with restricted mobility"

Circular letter 29467/ 2012 "Clarifications for the submission of an accessibility study for people with disabilities, which is required to be included in the studies to be submitted during the implementation of the new Building Regulation N.4067 (OGG 79 / A / 2012)"

Department for Transport. 2002. «Inclusive mobility», London, DfT

Department for Transport. 2007. «Manual for streets» London, DfT

Greek Accessibility Guidelines. Available at: http://www.ypeka.gr/Default.aspx?tabid=380 (accessed 4th of September 2019)

Greek Law 2621: Special arrangements for serving disabled people in public areas of settlements intended for pedestrian movement. Article 3 - Tactile indicators for the blind

Greek Official Governmental Gazette 79A/09.04.2012 – New Building Regulations

ISO 21542-2011 "Building construction — Accessibility and usability of the built environment"

Law 4067 - New Building Regulations Article 26 Special arrangements to serve persons with disability or restricted mobility and Article 27

Manley, S. (2001), «Creating an accessible public realm» Universal Design Handbook, McGraw – Hill

Official Governmental Gazette 18A15.01.2002 "Special provisions for the service of disabled persons at public buildings" and "Special provisions for the service of disabled persons at public spaces reserved for pedestrians"

United Nations' "Accessibility for the Disabled - A Design Manual for a Barrier Free Environment" Available at: http://www.un.org/esa/socdev/enable/designm/intro.htm (accessed 4th of September 2019)

U.S. Department of Justice – U.S. Department of Health (2010): Americans with Disabilities Act - Access To Medical Care For Individuals With Mobility Disabilities. Available at https://www.ada.gov/medcare_mobility_ta/medcare_ta.htm (accessed 4th of September 2019)