Questioning Accessibility of Disable People at Sea Front, Case Study: Kyrenia & Laguna Sea Fronts in North Cyprus

Mojdeh Nikoofam

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Approval of the Institute of Graduate Studies and Research

Prof. Dr. Elvan Yılmaz
Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Architecture.

Assoc. Prof. Dr. Özgür Dinçyürek
Chair, Department of Architecture

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Architecture.

Assoc. Prof. Dr. Mukaddes Faslı
Supervisor

Examining Committee

1. Assoc. Prof. Dr. Mukaddes Faslı
2. Assoc. Prof. Dr. Beser Oktay
3. Asst. Prof. Dr. Rafooneh M.Sani

ABSTRACT

In general, accessibility is one of the main problems that the ambulant disabled people face with especially in public open spaces. This problem has negative influence on the quality of their lives because they must have equal social right with the other people. Therefore, accessibility should be handled as a significant right for the disable people in public open spaces. Nowadays, the majority of world population is living in coastline settlements. All individuals desire to go to seafronts as a citizen or tourist. Because, seafronts as a type of public open space that provides a common land for people to have various activities. Therefore, they should be designed in a way to meet the requirements of all users regardless their abilities.

According to the literature review, disability may occur in the period of life or present from the birth. The study is considered the elder people, children, wheelchair users, persons with walking-aid users, prosthesis users, permanent and temporary disability as ambulant disabled people. Disable people also need to participate in public spaces for meeting, recreation and social experiences. Unfortunately, in general disable people are ignored to have equal access to public open spaces especially for people with mobility limitations. Thus, accessible design must be considered at public open spaces by all urban designers as a basic right. Seafront is a type of public open spaces to create various types of activities. One of the most important feature of seafront is accessibility to provide equal access for the disables.

Kyrenia and Famagusta are the most important coastal settlements in Northern Cyprus not only for citizens but also for tourists. The Sea Fronts have positive

effective in social and economic statements. Thus, the main aim of this study is to evaluate accessibility at these two Sea Fronts for physically disable people.

Base on the main aim, the present research has been organized in five chapters. In the first chapter, introduction is given; then the second chapter is defined public open spaces, accessibility and disability. The third one is considered the most important accessible standards and guidelines. Consequently, the specified Sea Fronts are analyzed in the fourth chapter and the last one includes conclusion and recommendations.

The findings are cleared that Laguna Sea Front is more accessible than the Kyrenia Sea Front because it is newly constructed and some disability standards are considered while designing. On the other hand, both of them create include many barriers and limitations for the disables. In order to improve accessibility at these Sea Fronts, accessibility standards should be applied to these spaces for increasing more livable environments to everybody.

Keywords: Public Open Space, Sea Front, Accessibility, Disability, Kyrenia Sea Front, Laguna Sea Front

ÖZ

Kamusal alanlarda erişilebilirlik engelli kişilerin karşılaştığı en önemli problemlerden biridir. Her bireyin kamusal açık alanlarda eşit sahip olduğu düşünülurse, ulaşılabilirlikte engellerde, bu kişilerin hayat kalitelerini olumsuz yönde etkiler. Buna bağlı olarak, kamusal alanlarda erişilebilirlik engelli kişiler için bir hak olarak ele alınmalı ve gerekli çözüler üretilmelidir.

Yapılan literatur çalışmasında, insanın doğuştan engelli olabildiği gibi sonradan da bazı dış etkenlere bağlı olarak da engelli olabileceğini ortaya konmuştur. Bu çalışmada fiziksel engelli olarak tanımlanan gurup yaşlılar, çocuklar, tekerlekli sandalyeye bağlı olanlar, bastonla yürüyenler veya protezi olanları kapsamaktadır. Her sağlıklı birey gibi engelli kişlerin de kamusal açık alanlarda buluşma, eğlence ve sosyal aktivite yapma haldarı vardır. Ama ne yazık ki, çoğu zaman engelliler için tasarın açık alanlarda göz ardı edilmektedir. Bunun herkes için bir hak olduğu düşünülürse, tüm açık alanların ve deniz kenarlarının da engelliler için de tasarlanması gerekmektedir.

Girne ve Gazimagusa Kuzey Kıbrıs'in en önemli liman kentlerinden ikisidir. Bu kentler yalnizca yerliler için değil turistler için de deniz kenarındaki kamusal açık alan düzenlemeleri ile çekim noktaları oluşturmaktadırlar. Deniz kenarlarındaki kamusal açık alanlar kente ve ülkeye sosyal ve ekonomik kazançlar da sunmaktadır. Bu çalışma kapsamında Girne (Kordonboyu) ve Laguna'daki kamusal açık alanların fiziksel engelliler için ulaşılabilirliği değerlendirilecektir.

Bu amaca bağlı olarak, çalışma beş ana bölümde kurgulanmıştır. ilk bölümde giriş kısmı yer almaktadır. İkinçi bölümde ise açık alanlar, ulaşılabilirlik ve engellilik konusuna yer verilmiştir. Ardında üçüncü bölümde engelliler için kurallar ve standarlar sunulmaktadır. Dördüncü bölümde ise seçilen iki deniz kenarında; Girne ve Lagunada yapılan fiziksel analiz sinrasında elde edilen tespitler yer almactedır. Son bölümde ise sonuçlar ve öneriler ortaya konmaktadır.

Elde edilen bulgular, Lagunadaki kamusal açık alanların, Girnedeki kamusal açık alanlara gore daha erişilebilir olduğunu göstermiştir. Bunun nedeni ise, Lagunadaki açık alanların yakın zamanda yenilendiği ve yapılan çalışmada engelliler için de bazı standartların uygulandıgı gerçeğini ortaya koymaktadır. Ancak her iki mekanda da engelliler için erişilebilirlikle ilgili problemler gözlemlenmiştir. Ancak, herkes için daha yaşanabilir kamusal alanlar yaratabilmek için ulaşılabilirlik standartları nin bu çevrelere uygulanması gerekmektedir.

Anahtar Kelimeler: Kamu Açık Alan, Deniz Kenarı, Erişilebilirlik, Engelli, Girne Deniz Kenarı, Laguna Deniz Kenarı

To My Lovely Family

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LIST OF SYMBOLS OR LIST OF ABBREVIATIONS

UD: Universal Design

UN: United Nations and Persons with Disabilities

BS: British Standard BS 8300

ADA: The Americans with Disabilities Act

ANSI A117.1: American National Standards Institute

ABA: Architectural Barriers Act

ATBCB: Architectural and Transportation Barriers Compliance Board

ISTEA: Intermodal Surface Transportation Efficiency Act

TEA-21: Transportation Equity Act for the 21st Century

ADAAG: Americans with Disabilities Act Accessibility Guidelines

POS: Public Open Space

KSF: Kyrenia Sea Front

LSF: Laguna Sea Front

SA: Street Analysis

SQ: Square Analysis

PG: Playground

P: Car Parking

Chapter 1

INTRODUCTION

1.1 Background and Significance

Public open spaces are the most popular spaces that give opportunities like getting together, relaxing, meeting, pleasure etc. There are various types of public open spaces such as streets, squares, common spaces, parks, water front and etc. As it is stated by urban theorists, public open spaces have a significant influence on determining unique perception of the city and public open spaces (POS) are able to distinguish one city from the other cities. Waterfronts briefly defined as "water`s edge". Sea front is a kind of water fronts that are the most curtail and attractive spaces in coastal settlements. Coast helps to create a dynamic environment with various functions.

Nowadays, there are many people in the world with permanent and temporary disabilities. There are many reasons to increase dramatically disable humans in all over the worlds because of war, increase the number of older people, raising the accidents and so on. According to, global population estimated at 2010, over one billion people are estimated to live with some form of disability that it means this number is about 15 percent of the world's population. Also, the number of disability is increasing due to ageing. The disable people have many difficulties because of their abilities while disable people have this certain right to take apart in public areas. Therefore, public open spaces should be accessible for everybody. Accessibility is

one of the most important concepts for urban design. When accessibility at public open spaces improved, people spent more times in these spaces that promote social activity. Public spaces should be accessible, safe and enjoyable for everybody including those with disabilities who have lack of ability relative to personal and physical situations.

Thus, it is crucial for the designers to consider these groups in their designs. Disable people is a person who has a group or one type of physical, sensory or mental impairments (URL 1). Disability may happen during the person's life or present from their births. Persons with disabilities generally have the same social needs and motivations as everyone else and are prevented from society only by the presence of barriers. Accessibility needs to be considered while designing sea fronts in such a way that all people able to act freely. "For instance, some people use wheelchair or some form of walking aid like leg braces, crutches, canes, prostheses and walkers for their mobility which may be limited due to paralysis resulting from spinal cord injuries, amputation of lower limbs, arthritis, polio, multiple sclerosis, or injuries to the legs or feet" (Davies, Beasley, 1994).

Unfortunately, today, it is understood that there are many disable people living in the world as well as in North Cyprus. However, due to the inappropriate or nonstandard design at public spaces, these people are not able to use these spaces safely and freely. Therefore, in this study it is aimed to evaluate two important sea fronts of North Cyprus; Kyrenia and Laguna Sea Fronts in terms of accessibility for ambulate disable people. Kyrenia Sea Front is one of the two important sea fronts of North Cyprus. It is not only used by the local people of Kyrenia but also the most of people living in Cyprus and almost all the visitors coming to the island. On the other, hand

the second significant sea front is Laguna Sea Front that is located in Famagusta. Famagusta is a coastal settlement that contains long golden beaches with physical and visual barriers. Also, almost all sea fronts are closed to the public. The Laguna is only the design seafront at Gazimagusa.

1.2 Problem Definition

The Kyrenia and Luguna sea fronts are two important public open spaces of North Cyprus. Kyrenia Sea Front is an attraction pole for not only for local people but also the visitors of Cyprus. Although, it is rich in term of historical values and facilities, recently, it is observed that it began to deteriorate in terms of physical qualities and attractiveness. In order to improve the number of users at seafronts regardless their abilities, the places should reflect accessibility. Considering accessibility of the disable people is important to decrease their restrictions in using sea fronts as an important type of public open space.

On the other hand, the Laguna Sea front is one of the important public open spaces of the Famagusta that can be used by the citizens. In the past, it was poor in terms of physical qualities and activities. In 2009, a new improvement project adapted to the Laguna Sea Front in order to increase it's attractiveness and uses. However, as it is observed there are some problems in terms of the accessibility for the disable people. Having observed the problems for disable people in both of the sea fronts, it is decided to make this research.

1.3 Aims and Research Questions

The aim of this study is to evaluate Kyrenia and Laguna Sea Fronts in terms of accessibility for ambulant disabled people.

In this research, Kyrenia and Laguna Sea Front will be questioned in terms of accessibility with respect to disable users who has physical impairment. Accordingly, the main and sub research questions are raised as such.

The main question;

1. How is the accessibility at Kyrenia and Laguna Sea Fronts for ambulate disable people?

The sub questions;

2. What is accessibility?
3. What is disability?
4. What are the anthropometric principles for the disable?
5. Which physical factors have effects on the development of accessible design at seafront?
6. How these physical factors effect accessibility at seafront?

These questions outline the scope of this study, which was to determine standards and factors that improve accessibility of sea fronts.

The objective of this research, therefore, listed as follows:

- To understand the concept of accessibility in sea front;
- To understand the concept of disability and its types;
- To explore the factors and standards that have deep effects on accessibility ;

- To determine the quantity and quality factors of accessibility at Laguna and Kyrenia Sea Fronts.

1.4 Limitations

This research is limited with the two important sea Fronts of North Cyprus. The first one is Kyrenia and the second is Laguna Sea Fronts. Kyrenia Sea Fronts (Kordonboyu) is included the area between the Kyrenia Castle and Rocks Hotel. Also, the Laguna sea front is located on Havva Senturk Avenue between the military area and Palm Beach Hotel.

The second limitation is related with disabilities of the people. There are various types of disability for human being. In this research, ambulant disabled people considered while questioning the accessibility of the disable people.

Various standards are existed for ambulant disabled people. In this research, mainly the United Nation standard (UN) is considered. Besides, British standards (BS), Americans with Disabilities Act (ADA) and Americans with Disabilities Act Accessibility Guidelines (ADAAG) are used as well.

1.5 Methodology

This study is a basically qualitative research. In this research, two different analysis methods are utilized as well as theoretical review. The methodology of the study includes physical analysis, data collection and data analysis.

For the physical analysis, existing maps of Kyrenia and Famagusta are collected and then new maps are developed from these. Besides, necessary inventory forms are

developed. With the physical analysis, accessibility for disable people at the Kyrenia and Laguna Sea Front are determined. Then, observation and visualization by photographs is considered to evaluate the accessibility of ambulant disabled people.

This thesis composed of five chapters. Chapter 1 is the introduction to the subject and reason for selecting Laguna and Kyrenia Sea Fronts. Chapter 2 is included overview of public open space and accessibility at public open space and it is introduced disability and right of them. In addition, chapter 2 is included the importance of accessible design and the history of accessible design.

Chapter 3 is indicated the standards and factors that have significant influence on accessibility of public open spaces for ambulant disabled people. Chapter 4 is analyzed and evaluated the accessibility of two case study; Kyrenia and Laguna Sea Fronts.

Finally, the chapter 5 puts forward the conclusion of the findings as well as recommendations for improving the qualities at sea front for ambulant disabled people.

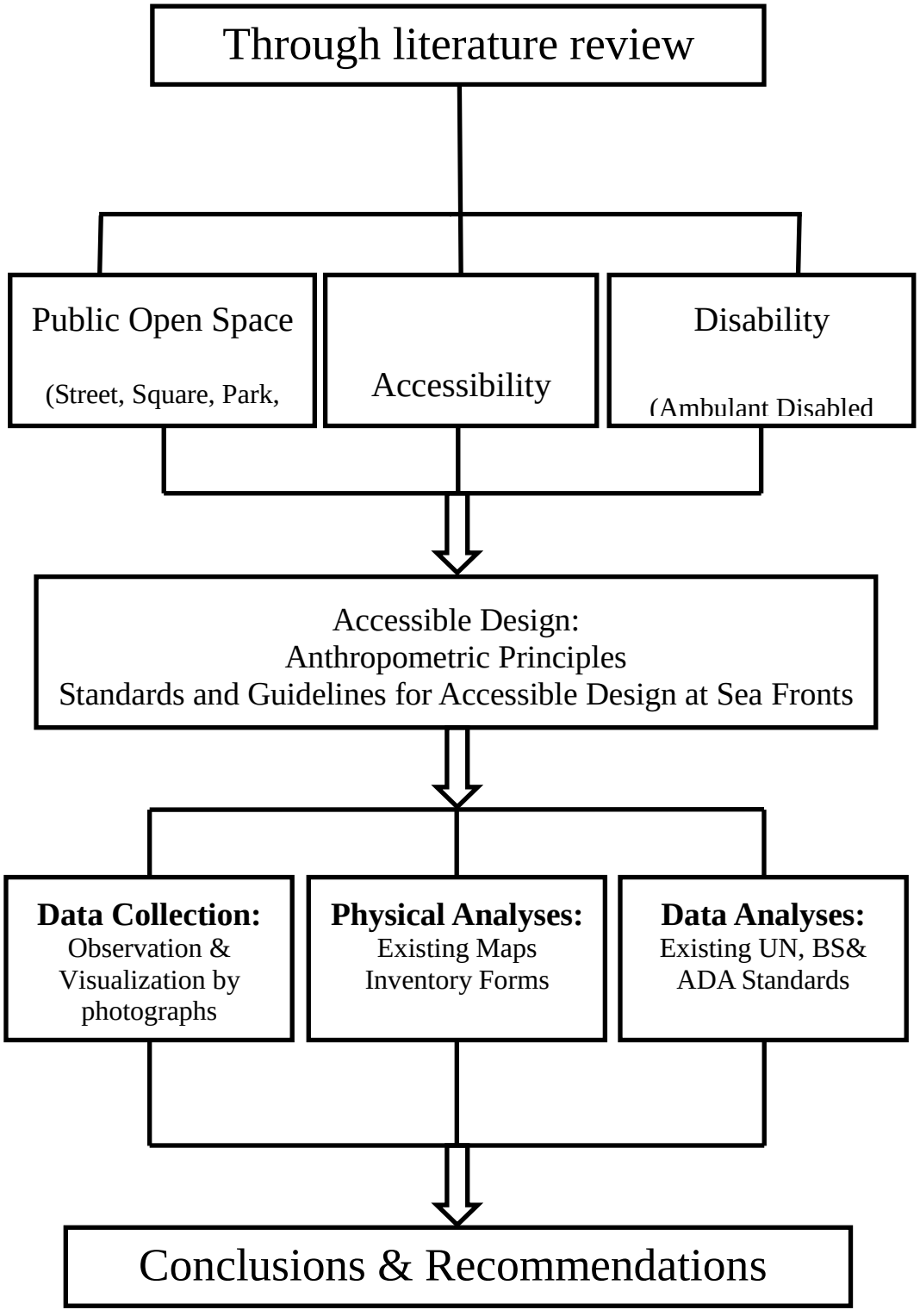


Figure 1.1: Methodology of Research

Chapter 2

LITERATURE REVIEW: PUBLIC OPEN SPACE, ACCESSIBILITY, DISABILITY & ACCESSIBLE DESIGN

2.1 Overview of Public Open Space

Public open spaces (POS) give the opportunities for people to have social activities like doing relaxation or resting, leisured activities, meeting, fun, communication together and etc. These spaces create appropriate area for variety of activities as well like walking for breathing fresh air, playing, sitting, and sun bathing. As it is mentioned by Carr et al., (1992), responsive, democratic and meaningful are the significant characteristics of good public space. Also, Tankel (1963) has stated that, "the public open spaces is the common ground or the water on the ground around an urban areas where are not covered by constructions". Vacant lands, green areas, and parks are the classification of open spaces where have influence on improving the social and cultural feelings and increase social activities.

On the other hand, as is mentioned by Carr, et al., (1992), ceremonial and functional activities can be met in public open space that improve vitality of communities, not only in the usual routines of daily life but also in periodic celebrations. Also, as is stated by Madanipour (1992), social interaction and the daily urban life can experience public spaces during a day.

Sense of place and community serve in parks and community centers as the symbols of public spaces. Also, paying attention to proper design and placement of public space will improve sense of place in public open spaces (Duany and Platter-Zyberck, 1991). According to Council of Europe (1986) and Woolley (2001), POS is the strongest element as the crucial part of urban heritage in urban areas to create social and cultural interactions and improving communications. Public is the opposite of private and the definition includes "pertaining to the people as a whole; that belongs to, affects, or communities of people and been given as "concerning the people as a whole" and "open and shared by all people"" (Madanipour, 1996, Concise Dictionary). As it is stated by Poppink cited in Cooper-Marcus and Francis (1998), it is believed that for fundamental necessities, the modern communities don't depend on the square or the piazza any longer, in contemporary urban societies; POS should accommodate the social and psychological health. According to crucial needs of people like watching daily life play, walking, resting and etc., they mostly like to keep in touch with Public open spaces to provide opportunities to meet their friends as well. As Carr et al. (1992) point out street, square/plaza, park and waterfront have the potential to appear communal life for all people.

In addition, Lefebvre (1991) argues that social space characteristic has shaped in the history of every society, which meets the requirements of social and economic activities. Furthermore, Madanipour (2000) states that market places and urban squares as a part of public spaces played the role of arenas for public statement in pre-modern urban settings. These situations were happen where huge number of individuals with the combination of some form of social interaction was made possible. Moreover, open spaces can help to build somehow a sense of self-reliance and increase unity of people in a society. Braza (2003) mentioned that public open

spaces are not only a place for leisure but also they play an important role in improving the quality of urban environment with the help of greeneries. On the other hand, as it is stated by Goodmann (1968), POS are flexible elements in people surroundings that perform essential and positive activities provide entertaining opportunities, protect physical resources, and have positive influence on economic development decisions.

Additionally, Rogers (2003) argues that well-known public spaces are key elements for distinguishing a city from other cities. A successful POS should be able to increase tourism and economic investments, social health and quality of life, civic pride, and dividends for cities. Also, public spaces create an important role in urban planning and social communication. In addition, public spaces with the variety of activities and functions create an arena for public circulation. The public spaces as the vital part of each city or town depends on the squares and parks that provide the shape of the spaces with extension of buildings (Madanipour, 1996 & Oktay, 2001) stated that the provision and use of public open spaces in a city is a vital factor in promoting social cohesion and urban revival. Furthermore, outdoor activities in public spaces can be divided into three categories, each of which places very different demands on the physical environment: 1) Essential activities such as; going to work or school, shopping, and etc., 2) Optional activities like taking a walk to get fresh breath, sitting or sunbathing and so on, 3) Social activities include greeting and conversation, playing, and passive contacts like seeing and hearing other persons (Gehl, 1986).

The people with various employment, sexes and ages using public open spaces aimed to improve the quality and quantities of POS, make the urban life meaningful and

more attractive which cause upgrading user's quality of life as well by providing livable and attractive environment. Another way to attract the users into public open space is to have designed environment, which are used by citizens. A successful public space is used by the huge number of people and they can sustain the identity of cities. Therefore, outdoor spaces should be designed in a way to provide safety, social connections, simplicity of activity and accessibility (Harrison, 1997). The quality of life and number of people will decrease if accessible design in POS does not have priority during the design process. Therefore, the importance of accessibility in public open spaces is definitely obvious when the ambulant disabled people use these areas. Because, the disable people have equal right to use of public open spaces like other people. In spite of this, these spaces should be updated according to standards of accessible design because the spaces lose their perception if the accessibility is ignored.

2.2 Types of Public Open Spaces

Carr, et al., (1992) categorized POS as streets, squares/ plaza, parks, and waterfronts. In the following section brief information will be given about these spaces.

2.2.1 Street

Street is a type of open public spaces in cities. Besides, they are the vital types of POS to connect all paths. According to many urban planning, the outdoor is represented by these spaces (Jacobs, 1993). Social and leisure activities, shopping, going to works and meeting with other people is provided by streets (Jacobs, 1961; Appleyard, 1981; Gehl, 1987; Vernez- Moudon, 1991; Carr et al., 1992; Jacobs, 1993; Southworth and Ben-Joseph, 1996; Lofland, 1998; Hass-Klau et al., 1999;

Carmona et al., 2003). Streets can also be used for different activities. Also, as is mentioned by Kostof (2005), social communications that is the most significant life activities take place in streets.

Moughtin (2003) considered streets in terms of form and function:

There are various qualities of streets that affect their characteristics. Streets are considered in four categories according to the functional issues. The first one is *Civic Streets* that are included civic buildings such as theatre, concert hall, museum and governmental offices. *Commercial Streets* is the second function of street where are consisted of commercial facilities. Commercial Streets have significant impact on identifying the cities. *Residential Streets* are included residential constructions. And the last function of street is called *Multi-function Street* where are consisted more than one function.

Figure 2.1: The Rajpath Is a Long Civic Street in New Delhi
(URL 2)

Figure 2.2: Regent Street Is a Commercial Street in London.
(Moughtin , 2003, p.164)

Figure 2.3: A Residential Street Is Located in Prague (Moughtin, 1999, p.38)

The form of the street are categorized to; *straight* or *curved*, *long* or *short*, *wide* or *narrow*, *enclosed* or *open*, *formal* or *informal*. Street form is able to analyze according to scale, proportion, contrast, rhythm or connections to other streets.

Figure 2.4: Champs-Élysées Is a Straight, Wide and Enclosed Street (URL 2)

Figure 2.5: A Narrow and Enclosed Street in Yazd Because of the Weather. This Form Creates Shading in Very Hot Climate. (URL 3)

On the other hand, Moghtin (1999) provided the street typology under three categories:

1. Angular Street corner;

2. Curved street corners;
3. Towered street corner.

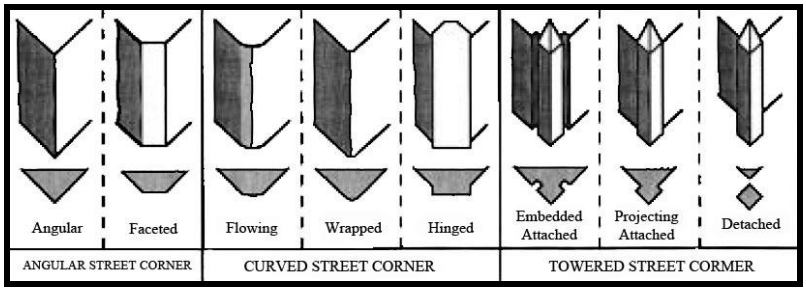


Figure 2.6: Street Corner Typology (Moughtin, 1999, p.52)

Furthermore, there are some two and three dimensional features that have a deep impact on the quality of street like accessible design, inclusive furnishing, and adequate landscaping and so on. Accessible design is the most important feature of street for all pedestrian especially for disabled people because they should have independence and safety at outside. The inaccessible street restricts participation in city life and is disrespect to all persons who have physically limitation. If a street is designed inaccessible way, it could be caused many difficulties for the disable people who have right to participate in social communities. Streets are the vital type of POS for performing some activity like social and leisure activities, shopping and going to occupation which are the most essential activities in our daily life. As a whole designing accessible streets is a basic human right and crucial regardless the ability of users.

Shopping

Going to work

Social activity

Leisure activity

Figure 2.7: Essential Activity Shows Streets Should be Accessible for Everybody (URL 4)

2.2.2 Square

The square is the most distinguished element of the urban structures and the second type of public open space (POS). Squares are utilized to provide various activities. As considered by Paul Zucker (1959), these spaces provide psychological standing with a civic landscape. The square is determined by the same formal factors as the street.

These spaces provide social communities and various activities to the users in order to maintain vitality of urban setting. Different number of activities such as; festivals, looking to special events, having a seat and social activities are the opportunities that, squares can provide for all individuals (Carr, 1992). Also these activities keep these spaces alive. In fact, squares have significant role in designing a city or urban spaces, these spaces make a city distinguishable from other cities as a landmark.

According to Moughtin (2003), function and forms are two affective considerations for squares as well as street. This type of POS is classified to *Commercial, Residential, Religious, Administrative, Quay and Educational* square that are related with the function of squares.

Figure 2.8: St Peter's Square Is a Religious Square (Moughtin, 1999, p.96)

Figure 2.9: Federation Square Is a Commercial and Cultural Square (URL 5)

Figure 2.10: CL Square Is an Educational Square In Eastern Mediterranean University.(URL 6)

Figure 2.11: Azadi Square Is a Civic Square In Iran. (URL 2)

On the other hand, in terms of form, they are categorized to *Enclosed Square, Dominate Square and Linked* Square. The degree of enclosure, roof-line property and height of the enclosing buildings are important and effective on Enclosed Square. If a square is dominated by a structure, it is called as a Dominate Square. Linked Square is linked between two structures and squares.

Figure 2.12: Imam Square, Isfahan, Iran Is Enclosed by Two-storey Building. (URL 7)

Figure 2.13: Piazza Navona Is a Dominate Square in Rome. (Moughtin, 2003, p.107)

Figure 2.14: St Mark's Square Is a Linked Square in Venice (Moughtin, 2003, P.82)

Moreover, Moughtin (2003) and Zucker (1959) also categorized squares according to the following classifications:

1. Dominated Square is enclosed between one and some constructions;
2. Group Squares are combined two or more than two square and special unites;
3. Nuclear Square that is defined around a basic center;
4. Amorphous Square where is not restricted and the square doesn't have a regular or usual shape.

This type of POS should be accessible because creating a square without any barrier is a civil right for disable people. Therefore, good and accessible design of squares is necessary in order to provide this basic right. Everyone should achieve the opportunity to enjoy POS and outdoor spaces however, for majority of people this feature is impossible.

2.2.3 Park

Public parks are important features that provide livable and pleasurable environments. Playground is provided for recreational experiences which are located in neighborhoods. There are different traditional equipment and facilities such as rocking, swinging, climbing, spinning, and sliding. Besides, public parks with high quality bring people together and lead to more inclusive environments for recreational communications (Calthorpe, 1993). This type of public open space increase social and recreational communication and there are as a symbol of civil right. For this reason recreational activities in the parks can be categorized to active and passive recreational experiences.

According to the physical characteristics, Carr (1992) categorized park to be considered in the following issues:

a. *Central Parks* where is formed as an open space of the city.
b. *Downtown Parks* where typically is covered by grass, greenery and trees in downtown spaces.
c. *Neighborhood Parks* where is developed in residential environment.
d. *Community Parks* where are designed in neighborhood areas, or vacant lands is managed by local inhabitants.
e. *Mini/vest-pocket Parks* where are defined by buildings.
f. *Playground and Recreational Parks* are dynamic areas dynamic which, are situated in neighborhoods. Frequently, these spaces are included traditional play components like slides, swings, spinning and jungle gym.

Parks should be design in a way to meet the requirements of all users. It therefore covers all persons need regardless of their age and those who have any particular

physical disability. Accessible playgrounds are able to create sustainable and inclusive developed communications for all children.

2.2.4 Water Front

Another type of POS is a water front. Water front can be defined as a lake, river, ocean, bay, creek, and channel, in urban or towns in various scales (Sairinen & Kumpulainen, 2006). The sea fronts in some cities are like a border that is distinguished uncontrolled natural environment from the controlled civil structure (Sairinen & Kumpulainen, 2006).

According to Moughtin (2003), water is a significant basic to develop a city and water feature can be classified into types in urban structure. The first type is defined as a fountain or a water point. The fountain is located in a part of a city where, may happen a center of activity or a social gathering. The second type is a pool where reflect a place for recreation or meditation. The third type is a river or canal is crossing like a straight or curved line through cities. The last type of water feature is the coast. A river, sea or ocean is located at the edge of urban setting.

Coastline settlements are the most important public spaces where attract a lot of citizens and visitors. Meanwhile, it is estimated more than 1.7 billion of population (more than 38 percent of people) are living within 50 km of the coast. And it is assessed about 45 percent of universal number of people to live within 150 km of the Sea, Ocean or River (Key & Alder, 2005).

Coastlines are the most crucial part of waterfront where have important effective for social and economic properties for societies. This is a great importance that directs special attention to the designing for hospitality and management of waterfronts and

coastlines. Kostof (2005) stated that many large cities are located at the edge of lake, sea, ocean and a river. And typically some towns are positioned along a river or at the intersection of two or more rivers.

Furthermore, Rigby (1996) mentioned that waterfront can be classified in terms of their major and basic utilizations as follows:

a) *Commercial waterfront* where have been located different commercial facilities and constructions.
b) *Residential waterfront* is formed around or throughout residential areas.
c) *Historic waterfront* is defined by historical environments or construction as a landmark or significant point to maintain these spaces live.
d) *Recreational waterfront* where, create recreational facilities and entertaining experiences like parks, playground and so on.
e) *Working waterfront* that, include official buildings to give opportunity for occupation.
f) *Cultural, educational and environment waterfront* is distinguished by their educational and cultural facilities.

Figure 2.15: Commercial Waterfront Is Placed in New York. (Moghtin, 2003, p.181)

Figure 2.16: The Albert Dock Is a Recreational Waterfront in Liverpool. (Moghtin, 2003, p.182)

Figure 2.17: Birmingham Canal as Residential Waterfront (Moghtin, 2003,p.176)

Figure 2.18: Canal Scene, Bruges as Historical Waterfront (URL 2)

On the hand, in terms of geographical feature, waterfronts can be categorized to three different types: the first *straight coast* which is shallow and weak in definition as a bay, the second one is called *bays, gulfs or strait*. And the last one is surrounded with water in all dimensions that is named island (Aslan, 2005, Hudson, 1996).

Furthermore; Moughtin (2003) categorizes form of waterfronts such as below:

i. Vertical cliff edge; it includes buildings rising that are located at the water`s edge.
ii. Perforated water edge; derived from fishing village where the development is sheltered from the driving coastal winds.
iii. The bank or beach; where the water is finished by a soft, sandy beach, natural or gentle hill.
iv. The dockside quay; where the water meets hard natural constructed edge.
v. The bay or open square; the water edge encloses the water in the form of a bay or open square.
vi. The pier; extending into the water at right angles to the coastline.
vii. Concrete culver; the convenient tradition of turning a back to the water, this form of waterfront is a prevalent reason for developing much city in several parts of the world.

As pointed out by Fasli & Pakdel (2010); seafronts give breathing points for inhabitants far from air and sound pollutions. The public spaces not only give opportunities for gathering, meeting and special recreational facilities but also these spaces have great potential to make their users satisfy. The sea front is considered as a type of POS that may have commercial opportunities, recreational activities and cultural activities. It is so obvious that all mentioned activities have benefits to increase the economic and social assets in a city. Seafronts are the most significant attraction poles for coastal settlements that provide many opportunities and activities like physical and social contributions for a city. It is so clear that the most important characteristics of a shoreline settlement which makes it unique, memorable and distinguishable from other spaces. As is stated by Ozkan (2007), seafronts are the coastal zones which provide many positive benefits as cultural activities, taking part of society, achieving technical development, sustaining local architecture, improvement of traditional handcrafts, increasing the quality of life, social and civil structure. As is stated by Fasli and Pakdel (2010) that coast provide a dynamic environment with different aspects; gathering and communication area, tourist attraction, financial benefits and global transportation. Also they have a potential for supporting the users a pleasurable experience.

One of the most important features should be considered in sea fronts is accessibility. People are different in their age, sex and people vary in their functional abilities. Disability (temporary or permanent) can also affect characteristics such as people's mobility, balance, strength, sight, hearing, speech, touch, memory, or sense of direction. Differences in human's capacity should be guide design of outdoor places like sea fronts.

2.3 Accessibility

2.3.1 Definition of Accessibility

Accessibility is a significant concept for urban planners because it reflects the opportunities to possible all essential activities and equality, like going to occupations, shopping, available to residents of a neighborhood, a city, or urban areas. Accessibility can be defined in terms of pedestrian and vehicle travelling paths. In general, an accessible design is a design that is adjusted to a standard that makes it proper for all people with different impairment. Accessibility has different concepts like web accessibility, public transport accessibility and the last one is related to design of spaces which is named accessible design.

As is defined by Lau and Chiu (2003), Accessibility is the ability and capability of people to meet different opportunities for achieving all vital experiences and significant activities. In fact, it is able to be defined from two different viewpoints, ‘‘having access’’ that mentions to availability of facilities and ‘‘gaining access’’ that is related with the ability of individuals to utilize the available services. Indeed, accessibility is defined as; in order to improve the quality of life, all individuals are able to gain their vital requirements or important needs. Typically accessibility is utilized to emphasis on persons who have disability or special need. Also, accessibility defenses the right of the persons.

Nowadays, many people have temporary or permanent functional impairments requiring that their environments must be designed to support them in doing basic or essential activities. Therefore, accessible design can play an important role in making activities easier, satisfying everyone and providing safety at POS. accessible design

have the most important role in providing a practical, cost-effective, and during alternative at POS in compare with temporary qualities referred to design. Meanwhile, a successful accessible design must respect and support all the needs of person with various abilities. It should be attention that accessibility is not to be confused with usability because they are different. Accessibility is used to succeed specified aims with efficiency, effectiveness and satisfaction of all users. On the other hand, accessibility is strongly linked to universal design.

Universal design (UD) is identified also as “Design for all” and “Inclusive Design” in many countries (Kennig and Ryhl, 2002). Trachtman, et al., (2000) explained the universal design as inclusive design eliminates discrimination between disable persons and the rest of society. Kadir, et, al., (2012) stated that seven principles of UD are: 1) *Equitable use* means the design should be useful for all individuals with various abilities; 2) *Flexibility in use* defines the design accommodates a wide range of individual abilities and needs; 3) *Simple and intuitive use*: the design should understand easily, regardless of literacy, experience, or language skills of people; 4) *Perceptible information* means necessary information should be designed for the user; 5) *Tolerance for Error* means use of the design to minimize hazards and the adverse consequences of accident or unpredictable actions; 6) *Low physical effort* means the design can be used comfortably; and 7) *Size and Space for Approach and Use:* appropriate size and space is created for approach, reach, and utilize regardless of user’s body size, situation, or mobility. Accessible design eliminates all the limitations and restriction of disable people. Universal design not only eliminates all limitations but also forbid discrimination for all people.

As Lau and Chiu (2003) put forwards, in order to sustain the quality of individual's lives, accessible design is used at POS. Therefore, all people with different ability can achieve their fundamental needs and have successful social life. As it is mentioned accessibility is a right for all individuals so it is tried to establish many organization for considering accessible design in all spaces. Accessible design must be taken into consideration for all groups of persons especially for disable people at POS. Because, whenever people want to have resting, have a walk, participating to social events, or getting recreational opportunities, they clearly prefer to choose the more accessible POS. For making appropriate spaces should be designed accessible spaces that the accessible spaces attract more people to visit and take apart in the activities, and more individuals make the public space more alive and attractive.

As it is mentioned in limitation part of chapter 1, this research is chosen United Nation Standards (UN), British Standards (BS), American Standards (ADA), and Americans with Disabilities Act Accessibility Guidelines (ADAAG). In the following sections the history of selected accessible design will be considered.

2.3.2 History of Accessible Design

As it is mentioned in the limitations part of this research, three main standards; United Nations Standard, British standard, and American Standard are selected to evaluate the accessibility of the case studies. Accordingly, in the following sections, firstly the history and after that the rules of these three standards will be mentioned to be considered in chapter 4.

2.3.2.1 History of United Nations and Persons with Disabilities

United Nation made effort to indicate the requirements and limitation of person with disabilities. United Nation asserted to distinguish abilities and capabilities of

ambulant disabled people to lead autonomous and independent lives in the first half century of its creation. United Nations is considered all the standards and guidelines that are able to support accessibility for the disable. The United Nation (UN) is tried to find all significant principles to achieve the equality for all. History of the United Nation is divided to two eras; the first one is lasted from 1945 to 1980 when the United Nation started to establish the foundation for the development and protection of human rights and the second one is form 1980 to present. The UN focus on disability issues with improving the rights of people with physical impairments between 1945-1955. Also the UN is tried to accomplish social welfare perspective for disable people from 1955 till 1970. And in the last period of fist era, UN is detected a new approach to disability. Human rights for disable persons are recognized and this significant concept becomes more accepted internationally. And in the second era (from 1980 to present) is started to distinguish all requirements of disable people fundamentally and the UN is established many organization to develop the quality of lives for disable persons (URL 8).

2.3.2.2 British Standard BS 8300

BS 8300 is a standard that tries to show how construction areas should be designed to help disabled people using their environment and premises completely. Department of the Environment, Transport and the Regions designed many recommendations in BS for the first time related to ergonomic researched commissioned in 1997 and 2001. BS 8300 includes commentary, which provides a context and rationale for the design guidance. Maintenance and management are the key word of BS standard that play important role in certifying the accessibility of services and facilities to disabled people. The emphasizes of the standard are on public spaces, buildings and all access routes, garaging, setting down points and car parking around them. These

recommendations and emphasizes are used as a basis for improvement of usability and accessibility of existing public spaces and buildings. (BSI British Standards: Design of buildings and their approaches to meet the needs of disabled people – Code of practice available at URL 9).

2.3.2.3 Disability Rights, Guideline and Standards of Accessibility in the USA

The Americans with Disabilities Act of 1990 (ADA) is a source with variety of laws that categorized prejudice on disability and its needs. The governments and authorities confirmed programs related to the standard that prohibits prejudice in transportation, occupation, telecommunication and access to the facilities, goods and services provided by places of public accommodation, health, leisure facilities and public spaces. Architects, urban designers and planners should design under the ADA to consider accessibility to help disable persons use public areas (URL 10).

2.3.2.3.1 Accessibility Legislation & Access Design Standards Prior to the ADA

Although, the rights of disabled people is protected by ADA which is the most comprehensive Federal Law, lots of important sections of accessible design standards and rules assisted pave the way for route of the ADA (Table 2.1). The important ones are considered below:

- **American National Standards Institute (ANSI) A117.1:**

The ANSI A117.1 includes the accessible standards to design new constructions and removing outdoor barriers which cause restriction for disable people (ANSI A117.1, Council of American Building Officials, 1992). The guidelines reflects what feature is accessible and where is required to change according to accessible standards. Firstly, the guidelines was published in 1961 and republished in 1971 (Martin, 1987).

The latest version of these laws and regulations were reaffirmed four times between 1980-1998. Although the standards are a voluntary standard, it has been used by many State and local agencies that are related with facilities, construction, and design. According to Axelson, et al. (1997), many organization that work on the accessibility use ANSI A117.1 that has the list: 1) Building Officials and Code Administrators International; 2) International Conference of Building Officials; 3) Southern Building Code Congress International.

- **The Architectural Barriers Act (ABA):**

In 1968, the Architectural Barriers Act (ABA) (official title: Public Buildings-Handicapped Persons Act of 1968) was started to use and accept by the U.S. Congress. The U.S. Department of Defense, the U.S. Department of Housing and Urban Development, the U.S. General Services Administration, and the U.S. Postal Service are the four federal agencies, improved accessibility standards to be executed in any construction leased or altered, according to the provisions of ABA, by these agencies after 1969, with restricted exceptions. Every agency improve and updated its own standard according to 1961 ANSI standards, and all four agencies adopted the 1971 ANSI standards revision (Martin, 1987).

- **The Rehabilitation Act:**

In 1973, as a part of the Rehabilitation Act of 1973, the Architectural and Transportation Barriers Compliance Board (ATBCB) was established. The Act demonstrated a deep change in Federal public policy for disabled individuals (Axelson, et al., 1997).

Golden, Kilb, and Mayerson (1993) mentioned that the Act accepted that disable people face with unavoidable objectives such as unemployment, poverty, and lack of

education. Moreover, many source of these Act tried to consider inaccessible design in individuals' environment and social prejudice as the important problems. Also, disable people were defined as a unified group rather than a different or special group. The act recognized that disable persons face with discrimination in education, employment and access to outdoor spaces and communities however, they should have essential civil rights as the others.

- **The Americans with Disabilities Act (ADA):**

The ADA defines a person with a disability is an individual who a) has a group or a mobility, sensory or mental impairment, b) Has a background of an impairment, or c) Has an impairment in the other point of view (URL 10). The ADA is divided into five titles, which forbid discrimination on the basis of disability: Title I Employment, Title II Public Services, Title III Public Accommodations and Commercial Facilities, Title IV Telecommunications, Title V Miscellaneous (Kirschbaum, Axelson, Longmuir, Mispagel, Stein, Yamada, 2001).

ADA standards reflect accessibility in public spaces for disable people. Title II of the ADA provides program access to design new accessible constructions and improve accessibility in public spaces. Title III of the ADA includes standards for accessible design to create an accessible environment without barriers where all individuals can meet their needs. And, Title III emphasis that urban designers and planners should employ good design principles, which reflect standards for accessible design. During the 1990s, several key pieces of legislation were passed that impacted public planning. The Americans with Disabilities Act (ADA) of 1990 which protects the civil rights of people with disabilities was pioneer for detecting standards of public space that even affect in revising all previous legislations to adopt themselves for

public areas. Secondly, the 1991 the Federal transportation policy and the Intermodal Surface Transportation Efficiency Act (ISTEA) make possible travelling with transportation system for all. They tried to increase funding to plan accessible transportation, accessible public open spaces and facilities for all pedestrians. In 1998, the Transportation Equity Act for the 21st Century (TEA-21) extended the opportunities established in ISTEA for public spaces (Axelson, et al., 1997).

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG):**

ADAAG has different sections which every section is related to special subjects. The first ten sections were accomplished by the U.S. Access Board in 1991 and were published by the DOJ and DOT as the ADA Standards. The act is based on UFAS and ANSI standards. The U.S. Access Board published final guidelines from Section 11 until Section 14 in 1998 that is about Public Rights of Way, which has been published for future rulemaking. Section 14 was reserved to make possible equality for public ways in the future by developing accessibility guidelines. Outdoor spaces should be accessible that disable persons meet their essential requirements and have same recreational opportunities. Also, the committee published the U.S. Access Board which includes recommendations to design accessible play areas for all.

Table 2.1: Developments in Disability Rights Legislation and Accessibility Standards from 1961 to 1998
(Axelson, Chesney, Kelley, Longmuir, Pasternak, Wong, Wright, 1997, p. 2)

1961	ANSI publishes ANSI A117.1, Making Buildings Accessible to and Usable by the Physically Handicapped.
1965	Congress passes the Vocational Rehabilitation Amendment Act (P.L. 89-333).
1968	Congress passes the Architectural Barriers Act (ABA) (P.L. 90-480).
1973	Congress passes the Rehabilitation Act (P.L. 93-112).
1978	Sections 502 and 504 of the Rehabilitation Act of 1973 (P.L. 93-112) are amended.
1980	ANSI publishes a revised version of ANSI A117.1, designated ANSI A117.1-1980.
1982	U.S. Access Board publishes Minimum Guidelines and Requirements for Accessible Design (MGRAD).
1984	Federal ABA rule-making agencies publish Uniform Federal Accessibility Standard (UFAS).
1986	ANSI publishes revised version of ANSI A117.1, designated ANSI A117.1-1986.
1988	Congress passes the Fair Housing Amendments Act (P.L. 100-430).
1990	Congress passes the Americans with Disabilities Act (P.L. 101-336).
1991	U.S. Access Board publishes Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG).
1991	U.S. Departments of Justice and Transportation publish the ADA Standards for Accessible Design.
1992	ANSI publishes a revised version of ANSI A117.1, designated CABO/ANSI A117.1-1992.
1995	Congress passes the Congressional Accountability Act.
1998	ANSI publishes a revised version of ANSI A117.1, designated CABO/ANSI A117.1-1998.
1998	Congress reauthorizes the Rehabilitation Act.

2.3.3 Accessibility in Public Open Space

Public spaces are the places where special and usual demands are appeared because all individuals achieve satisfaction in order to have public life in cities also these are effective to increase social, economic and cultural opportunities (Turel, Yigit, Altug, 2007). Participation in societies and going to urban spaces are an essential and instinctive importance for all people. Therefore, accessibility is a significant concept for urban design/planning because it give the opportunities for activities, such as working or shopping, taking a walk to get a breath of fresh air. Also, Bertolini and Djist (2003) states that an urban spaces with accessible design not only achieving hospitality and all people are able to come, but also allow all individuals with various ability can accomplish different activities. Goodmann (1968) stated that the most important consideration for all public open spaces is to have physical and psychological access. Design of these urban spaces must be accessible and improve the quality of life for all persons.

As is stated by Talen (2000), with indicating the degree of dispersion in urban spaces can be measured accessibility in all types of POS. The dispersed spaces are more acceptable than the spaces are focused. There is a direct relationship between measuring the accessibility of public spaces and dispersion. Also Calthorpe (1993) is mentioned that, location and design of POS have an important role in gathering people together. Moreover, Levinson (1998) measured accessibility of urban space in two different sections: the first one is temporal section that reflects travel time between two specific points and the second one is named spatial section that refers to the distribution of the activities. Connections to the surrounding of urban spaces and travelling without any restrictions as visual and physical aspects can be the other measurement of accessibility (Whyte, 2000).

On the other hand, as it is considered by Harnik (2003), a public open space should be designed accessible for all regardless their settlements and physical abilities. These spaces should be designed in a way to reflect justice and equality for everyone. Also, an accessible design should be considered not only, for disable and older people but also a mother with a carriage, a woman with high heel shoes and a child riding a bike.

Accessibility of POS and the degree utilization of them have direct effect on each other. As it is emphasized by many urban designers, poor accessibility can be caused basic limitations and have important influence on the use of POS. When a public open space is schemed accessible, this design can be affected and determined the quality of public open spaces which increase its use by inhabitants and even visitors. According to Whyte (2000), achieving a successful and effective POS should reflect four critical properties or potentials: firstly, the spaces are accessible design; secondly, they should be designed comfortable and considered aesthetical features; the third one is that all users are able to utilize facilities and activities; and the last one refers to provide familiar areas to improve the social communications.

According to Erkip (1997), in order to achieve user's pleasure, public spaces should be accessible. Accessibility is the most effective factor that can have direct influence on the utilization and the number of people. Improving welfare and quality of spaces, removing all restrictions, providing different activities and facilities, indicators of safety and maintenance can achieve accessibility in public spaces (Hatry and Dunn, 1971; Massam, 1975).

Meanwhile, Hines (2003) mentioned that a place with good appearance must be comfortable space to reflect itself well-being. Safety, cleanliness, inclusive furniture and the access to all spaces can present comfort of a POS. Also, the most significant factor to achieve successful urban spaces, provide safety and comfort and attract residents or visitors. And the most important feature of POS is accessibility and inclusive environment for everybody. In the course of this, the POS should serve all inhabitants and various groups of people with different activities (Duffy, 2003). Public spaces have an important character in an urban setting and they play a fundamental role in urban design/planning and in improving social interaction. The use of POS is extremely dependent on accessibility as the primary concern for everybody.

2.4 Disability

In the following sections, the research is considered all the considerations related to disability. The first section is explained the definition of disability and the effect of environment on disables. Then the types of disability are mentioned. After that, in the last section, the convention of human right for disable people is considered.

2.4.1 The Definition of Disability

Disability is a lack of someone's ability to perform an activity like normal people. Also, handicap is a disadvantage than is given individual; this shortage causes an impairment or disability. This kind of disability prevents the performance of normal roles which are social and cultural factors depending on age and sex for individual (URL 1). Disability can occur during the whole life permanently or temporary,

because of accident, genetic problem or aging, or it can happen at the beginning of the birth.

Moreover, the UNION OF THE PHYSICALLY IMPAIRED AGAINST defined impairment is lacking a part or all of member also having a defective in organism or mechanism of their body. People have physical impairments thus they are ignored from regularly social communication. The social limitations are created because of many reasons that one of them is the physical barrier. Disability is a part of human condition. Almost at some point of life everyone will be faced with temporary or permanently impairment. Also, old people who likely experience many difficulties in their physical function. And all families have a disable member who require to their relatives of friends to support them (Mishra, Gupta, 2006).

The idea of supporting disable people to be included in the society is a controversial issue in every era. Changing in the population of disable people because of different reasons will make this issue more crucial. Since 1970s, responding to the necessities and right of disable people changed when the association of people with disability generally develops. This subject started to grow up in the meaning fundamentally as human right. Environmental barriers are separated disables from society because of their special condition of the body and disability. The focus of policies is shifted the ways on improving the quality of disables life by increasing education for solving their problems and recognition disable people. Many international, national and international administrations tried to keep and improve rights and opportunities for disable people therefore combination of human rights and disable people with national standards and rules are created. These activities culminated at 2006 with updating the United Nation Convention on the Rights of Person with Disabilities that

is briefed to (CRPD). Definite rights of human being are provided by variety of policies for making facilities and opportunities are motivated by CRPD (WORLD REPORT ON DISABILITY; available at: URL 1).

Thus, social participation, education and employment are the main factors that all organizations try to adopt their standards and rules accordingly to support disabled people. Social participation is the most important issues because they can improve employment and education as well. On the other hand, accessible design is the result of social participation which will remove environmental barrier

In response to equal rights disable people are ignored in the society if they do not have significant effect on social connections. Additionally, according to the World Health Organization (WHO), Dimensions of disability are defined in three categories that one of the related to health and the other two are related to environmental characteristics. Also, other restrictions are created in people environment that it presents activities of individual in society. The quality of disables' life is depends on removing these limitations and improve environmental phenomenon and health (URL 1). Besides, according to the WHO organization, disability is a struggle between opportunities that the society called significant rights and functional problem. Meanwhile all these problems depend on individual, environmental and social factors (URL 1).

Nowadays, temporary and permanent disability is common around the world. Raising the accidents, war and increasing the number of older people are the dramatically reasons of increasing the number of disable people. According, to global population estimated at 2010, more than one billion of the people around the

world, which included 15 percentage of the world population, are living in the same form of disability. Also, more than 20 percent of the disable people are living with physically limitations (URL 1). Also, ageing is another factor of increasing the number of disability. Disable people have all rights like normal people that are right to accessibility, education and training, work and employment, health and equality and prohibition of discrimination.

2.4.1.1 Influence of Built Environment on Disability

Built environment has significant influence on the quality of life of disables. Built environments should be accessible otherwise an inaccessible environment provides many problems and obstacles to participate in society for disable people. Design of them should be changed to decrease barriers and improve accessibility in individual's surrounding. As such:

- Improving accessible design for constructing built environment and building
- Enhancing education of accessible design and support services
- Providing accessible design for more opportunities for employments and occupations for disable people (Scheer, et al. 2003).

The aim of accessible design is much broader than just physical and information access. All organizations require promoting the quality of environments to provide excluding disable people in society. Many organizations in the world tried to lead public sectors to improve equal opportunity for persons with disability on society. One of the most important point for increasing the quality of life and creating equality is bringing the accessible design in public sectors. It should be paid attention that raising awareness and knowledge are often the primary steps toward creating more accessible environment for the disable people.

2.4.2 Types of Ambulant Disabled People

Disability is an inability and incapability like elder adults, children, and some people have deficiency in their structure of bodies or in operation of their brains and permanent and temporary disability. United Kingdom and America divided the disable people to three categories.

2.4.2.1. Elder Adults

It is estimated in by the year 2020 that 17 percent or more will be elder than sixty-five year (Staplin, Lococo and Byington, 1998). Aging will happened for everyone. Although, aging itself is not a disability, it likely can decrease the ability. In 1990, it is estimated that most of people who aged 75 or elder have a disability (U.S. Department of Commerce, 1994). The statistical portion illustrated mostly of aged people have restricted in their motilities. Therefore, the restrictions of elder persons are prohibited them to drive, and they must use public transits or walking at public spaces. Finally accessible design is essential for older adults (Woo, Ho, Lau, Chan & Yuen, 1995).

2.4.2.2. Children

Because of lack of brain development and deficiency of their experiences, children have less abilities and capabilities than adults. Also, because of developmental immaturity and lack of experience, children have less capability than adults. According to valid research of Ashmead at (1998), have notified that:

- Sight of persons is one-third of adults
- Less attention in advising about speed and distances
- Have more difficulties in detecting the direction of sound

- Inquire more security in their surrounding because of their over-confidence and less experience in self-protections
- Inability and incapability to read and distinguish the warning signs and dangerous places
- Doing unpredictable actions that make force our environment is more secure.

According to the above mentioned points, accessible design should be considered for children because of their incapability. Children have more limitations in their physical stature, strength and power in contrast of adults. Thus accessible design gives more opportunities to children.

2.4.2.3. People with Disabilities

One in every seven people has a type of disability that is estimated at 1994 (Bureau of the Census, 1994). On the other hand, according to global population at 2010, it is estimated that over one billion people are living with a form of disability. Also, this number is about 15 percent of the world's population. The disability can happen for everyone temporarily or permanently at any period of time because of accident, sickness, or war. People with disabilities are also likely to have social communications. In addition, they can make driving difficult due to some physical limitations should utilize public transportations and they experience economic difficulty at a higher degree (Golden, Kilb, and Mayerson, 1993). The disability is divided to three categories: first one is *mobility* that refers to people with physical disability. The second one is named *sensory* that consider persons have vision or hearing impairment. The last one is called *cognitive* that refer to people with intellectual difficulties. The present study just is considered people have physical impairment (Gant, 2002).

2.4.2.3.1. People with Mobility Impairments

People should utilize different type of wheelchairs, walking assistants like canes, crutches, walkers and prosthesis members for their movements; they are people with mobility impairments. These type of disable people prefer to select a more accessible place where doesn't have soft material on surfaces, steep slopes, or barriers (Axelson, Chesney, Kelley, Longmuir, Pasternak, Wong, Wright, 1997, p. 17).

a) People with Wheelchair and Scooter:

Wheelchair and scooter users can cross some areas much faster than other persons especially, when they are travelling slopes toward down. However, they have to use more energy when crossing grades toward up. Moreover, vertical change in levels, material of surfaces and other physical characteristics of spaces can have great impact on their stability and control. Wheelchair and scooter users need wider routes for traveling and maneuvering (Axelson, Chesney, Minkel, Perr, 1998).

b) People with Walking-aid:

People who use of walking assistants include those who use crutches, walkers or canes to be able to move easily. Axelson (1999) mentioned; U.S. census is estimated that, about four million of American adults are living with walking aids for longer than 6 months.

The restrictions of walking-aid users are:

- Have problem in negotiating grades;
- Their stability is decreased;
- Their speeds are slower than others;
- Their tolerance and strength is much less;

- They have inability to do quickly reaction in dangerous situations (Sandra, 1996).

c) Prosthesis Users:

Some people often have lack of one or more members (hands, feet) thus they should use of some metal or plastic members to help them walk. Prosthesis users who miss their limbs because of some disease like diabetes or some happens like accident. Although people using of prosthesis can travel levels, their speeds are much slower than individuals without disabilities also they require more energy in moving in contrast of other people. Accessibility should be provided to walk all people easily and is a right for all without attention to their different abilities.

2.4.2.3.2. Temporary and Permanent Disability

Wilson, et al., (1995) stated that disability is a permanent or temporary impairment of physical function, mental function or long time hospital stay. Many people face with permanent or temporary injury in a period of his/her lifetime such as childhood, pregnancy, physical problems and, etc. According to Mitra (2009), restrictions in the ability to organize an activity may be permanent or temporary, regressive or progressive, continuous or intermittent, and the permanent or temporary impairment may lead to inability. Therefore the impairments influence on the individual's participation for a short-time or entire of their lifetimes.

Permanent disability is one which will remain with individuals throughout their lifetimes or the disability will continue forever or its recovery is impossible. Permanent disability is an injury which impairs different ability of a person related to physical or mental abilities to the extent that they aren't able to accomplish their normal work or the other non-occupational activities along their entire lifetimes

(Walsh, Solomon, 1994). In addition, Yates in 1991 defined that temporary disability is a physical or mental disability that create limitations or discharging of responsibilities for a short period of time. Temporary disability will be recovered in twelve mounts or more. When a person have a curable impairment of mental or physical function because of accident, pregnancy and so on for a short amount of time, temporary disability will take over.

2.4.3. Disability and Human Rights

Many people with disabilities are ignored to have equality for accessing to health care, education, employment opportunities and social cohesion. Also, they don't receive the essential services related to disability that they require, and have many limitations to perform daily activities. The United Nations Convention on the Rights of Persons with Disabilities (CRPD) mentioned that disability is increasingly investigated as a human rights issue.

Disability is a human rights issue because people with disabilities are ignored to have similar access to their jobs, health care, educational space and social participations due to their disability. Also, People with disabilities are ignored in the social activities and they have many essential restrictions; for example, when they are adjudged to disrespect because of their disability. And the last problem is that some people with disability are not able to gain their independence on the societies.

According to WHO organization, more than 40 nations adopted disability discrimination legislation during the 1990s. The Convention on the Rights of Persons with Disabilities (CRPD) is the latest and the most extensive recognition of the human rights of persons with disabilities and this organization is considered the civil,

cultural, political, social, and economic rights of persons with disabilities. Its purpose is to improve, protect, support and ensure the full and equal enjoyment of all human rights and fundamental independences by people with disabilities and to promote respect on the society.

Article 3 of the CRPD summaries the following general principles:

1. Achieving their respect and independency of disable persons on society;
2. Removing the view of discrimination;
3. Provide equal participation in society;
4. Acceptance disable people as part of human being and respect to them;
5. Giving equal opportunity;
6. Accessibility;
7. Equal opportunity between males and females;
8. Paying attention to children because of less abilities and capabilities rather than adults and respect to the basic needs of disable children to achieve self-assurance and independence (URL 1).

2.5 Summary of the Chapter

The first part of the theoretical framework through literature review was considered in chapter 2. This chapter was divided into four sections. In the first and second section, were defined all type of public open spaces (street, square, park and waterfront). As it was mentioned at the end of the sections (2.2.1, 2.2.2, 2.2.3 and 2.2.4) accessibility is the most important feature for all type of P.O.S. Moreover, in the third ones (section 2.3), the concept of accessibility was considered that the most important one refer to accessible design. The research is limited to the most effective

accessible design that they are United Nation standard (UN), British standards (BS) and Americans with Disabilities Act (ADA). In section 2.3.2 is tried to detect a brief history of specified accessible standards. Also, the importance of accessible design in public open spaces is considered.

Finally, in section 2.4, the definition of disability was given and after the type of disable people was considered. Also, in this chapter human right of disable people was defined.

Consequently, accessibility is a human right for the disable and all P.O.S should possess accessible design. Seafronts as a type of P.O.S. are the most significant attraction poles for coastal settlements that provide many opportunities and activities. As is stated by Ozkan (2007), seafronts are the coastal zones which provide many positive benefits such as cultural and social activities, achieving technical development, sustaining local architecture, and increasing the quality of life. Also, as it is mentioned, a successful seafront should design in a way to make activities easier, satisfying everyone and providing safety regardless the user's ability which is reflected by accessible design at seafront. Therefore, law, regulation and guidelines of accessible design at seafronts will be explained in the following chapter.

Chapter 3

LITERATURE REVIEW: LAWS, REGULATION AND GUIDELINES OF ACCESSIBLE DESIGN

3.1 The Importance of Accessible Design at Seafront

Disability is a condition that every person goes through over the course of their life (as a child, in old age and in various other situations) and which belongs to the entire human race. Disability is an evolving concept that needs to be considered in connection with the cultural and material conditions of every region. Furthermore, People with disabilities are people whose effective participation in society cannot be provided equally due to long-term physical, mental, spiritual or psychological disabilities. Disability is not a subjective condition of people, but depends on environmental, social and individual factors.

One of the most important places where have a depth influences on social participation is sea fronts. Sea fronts provide a wide variety of recreational and social experiences for relaxing and resting. Therefore, the design of these areas must always include provisions for accessibility.

Every individual has unique abilities and interests, there should be designed to meet every users' desired experiences. One of the most important reason for considering accessible design is because of anthropometric principles.

3.1.1 Anthropometric Principles

Anthropometric has been used for identification, for the purposes of understanding human physical variation because dimensional data varies from one person to another, and the average dimensions vary from one country to another. The given measurements take into consideration size variation between males and females as well as between different persons of the same sex (Junge-Reyer, 2007). Original units of measurement (foot, cubit, and pace) were directly connected to the human body (based on Leonardo da Vinci's study of human proportion) (Fig 3.1).

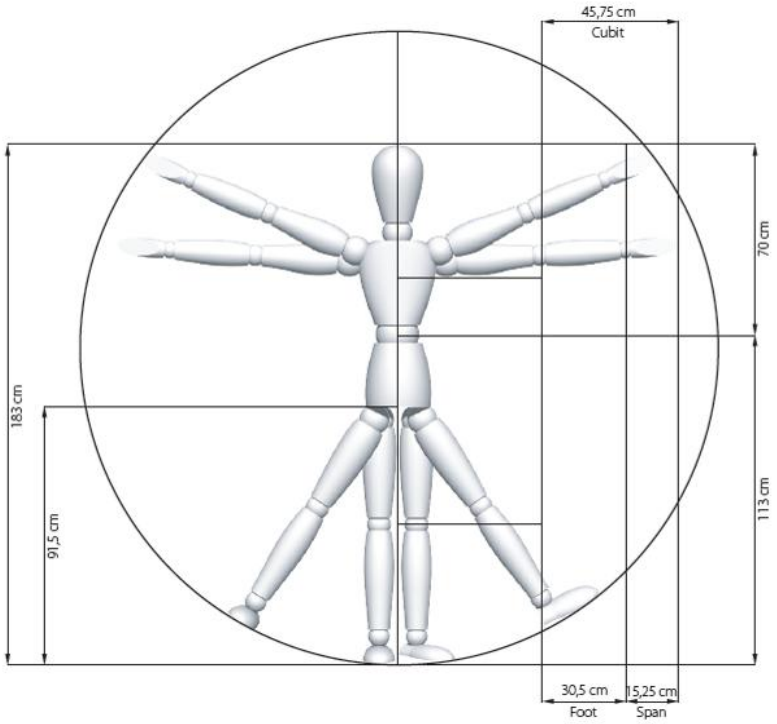


Figure 3.1: Cubit = From the elbow to the tip of the middle finger, Foot = From heel to toe, Span = Distance between the tip of the thumb and the tip of the middle finger ,Based on Leonardo da Vinci's drawing of the "Proportions of Man", Body measurements + metric system, Idealized proportions assuming a height of 183 cm (Junge-Reyer, 2007, p.7).

Anthropometry is the science of measuring the individual variation of human body's height, weight, and size of component parts (Simko, Cowell, Gilbride, 1995).It refers to body measurements can be used to describe the size, shape (form or structure), and

composition of individuals (Kippers, 1996). Moreover, Simko, et al., (1995) stated that anthropometric is the study to measure human body and to be used in anthropological classification and comparison. Anthropometry considers the dimension of human body and the vital factors affecting to the measurement of body dimension. Variations in styles of life, nutrition, nationality and ethnic composition of populations lead to changes in measuring human body (for example the obesity epidemic). Also, anthropometric data needs regular updating because the data is changing in different ages. Anthropometry plays an important role in industrial design, clothing design, ergonomics and architecture. Anthropometric data should reflect ergonomic design to improve the quality of design and users' satisfy with applying the physical dimensions.

In order to support comfort, health, and safety design, Ergonomics is applied for understanding human factors which have deep impact on designing. Ergonomics is a science to apply theoretical principles, data and methods to design in order to improve human welfare and their performance. Also, physical, cognitive, social and environmental aspects of human activities are the comprehensive approaches which can be considered in ergonomics. Physical ergonomic is related to physical activities in relation with safety and health. Cognitive ergonomics affect interactions among humans and other elements of a system. Social or organizational ergonomics is in relation with community activities. Environmental ergonomics are related to human metrics affected by climate, temperature, and light; visual ergonomics, and others (Cañas. et, al., 2011). Interaction between ergonomics with planning or design of environments and public spaces is important for making them suitable with the requirements, abilities and restrictions of people. To ensure that public open spaces being designed are ergonomically suitable for the disable, the present study is

considered anthropometric principles of wheelchair users. Because, if the space have suitable design for wheelchair users, they are certainly suitable for all type of the ambulant disabled people.

People with mobility impairments are the persons who should use wheelchair, walking aids and prosthesis for movement. Generally the people with mobility limitations have difficulty in moving soft surfaces, and difficulty transferring surfaces that are not level. Wheelchair and scooter users are much faster than others when travelling a surface toward downgrade. However, they should lose more energy for travelling uphill and a surface with soft pavements. In addition, they may lose their stability when they want to cross a surface with perpendicular grade (cross-slope). The disables need a wider trail than other pedestrians. Figure 3.2 gives the standards for physically disable people.

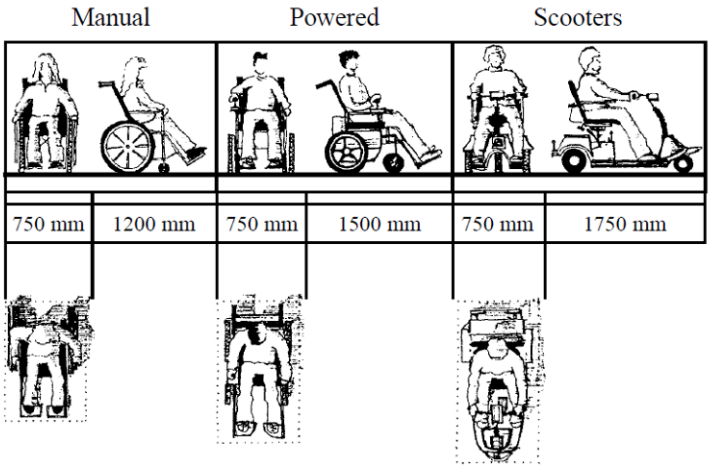


Figure 3.2: Wheelchair and scooter dimensions (in mm) (Axelson, Chesney, Kelley, Longmuir, Pasternak, Wong, Wright, 1997, p. 17)

Dimensions shown in the Figure 3.3 are of a conventional manual wheelchair. The larger, encircled dimensions refer to electric wheelchairs.

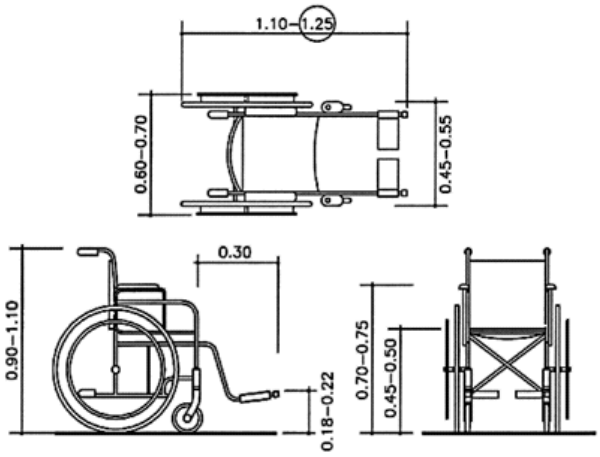


Fig 3.3: dimension of manual & electronic wheelchair (URL 8)

Dimension data of a normal human is shown in table 3.1 and Figure 3.4. However dimension of a wheelchair user is completely different that is observed in Figure 3.5.

Table 3.1: Dimension Data of a Normal Human (URL 8)

Height	1.50 m - 1.90 m
Eye	1.40 m - 1.75 m
Shoulder	1.20 m - 1.55 m

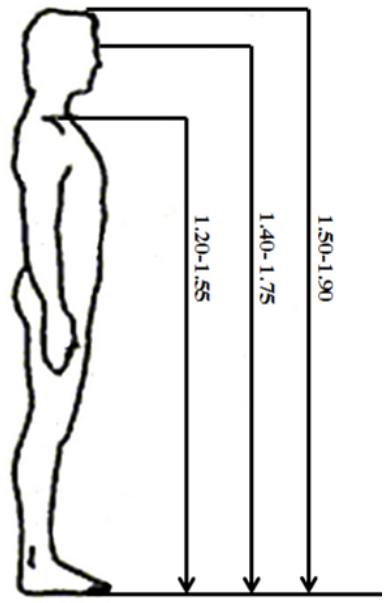


Figure 3.4: Dimension Data of a Normal Human (URL 11)

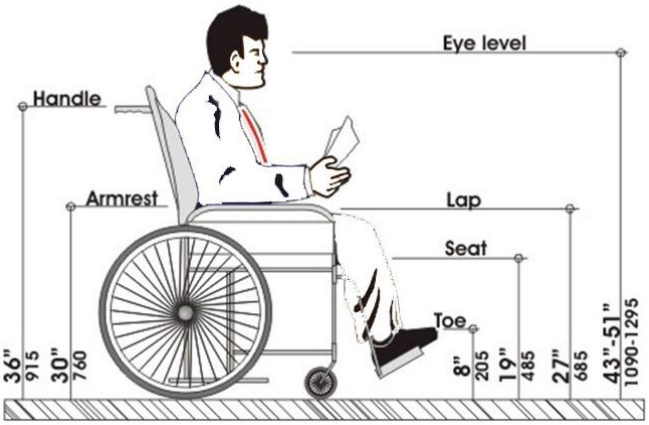


Figure 3.5: Dimension Data of a Wheelchair User (URL 12)

Zone of normal person and the disables is completely distinguishable in measurements. The highest reaching zone of a normal people is exposed in Table 3.2 and Figure 3.6; on the other hand the horizontal and vertical reaching zones are shown in Table 3.3 and Figure 3.7, 3.8.

Table 3.2: Reaching Zones of a Normal Person (URL 8)

Max. Reach Up	1.85 m - 2.10 m
Oblique Reach Up	1.65 m - 2.00 m
Forward Reach	1.30 m - 1.45 m

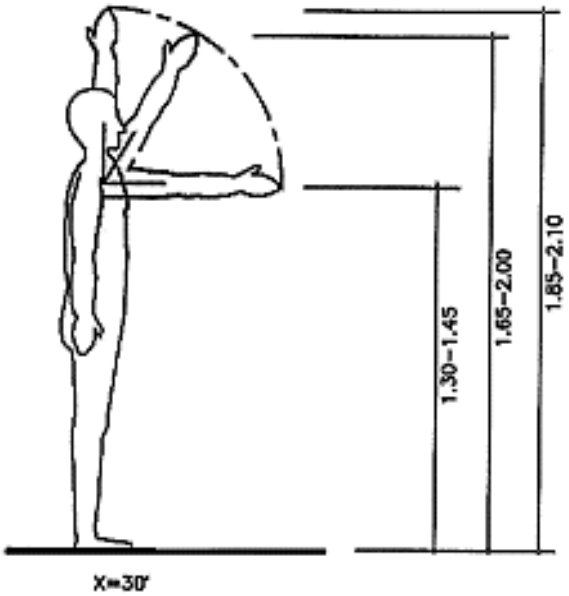


Figure 3.6: Reaching Zones of a Normal Person (URL 8)

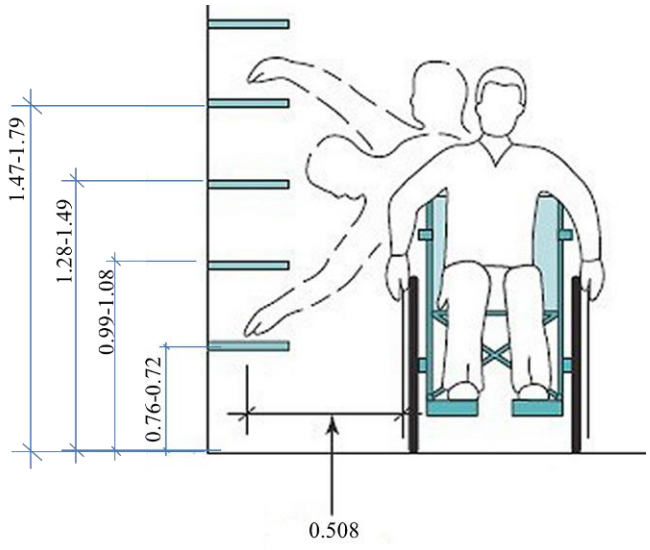


Figure 3.7: Vertical Reaching Zones of a Wheelchair User

(URL 13)

Table 3.3: Horizontal Forward Reach of a Wheelchair User (URL 8)

Eye	1.16 m - 1.33 m
Shoulder	0.99 m - 1.14 m

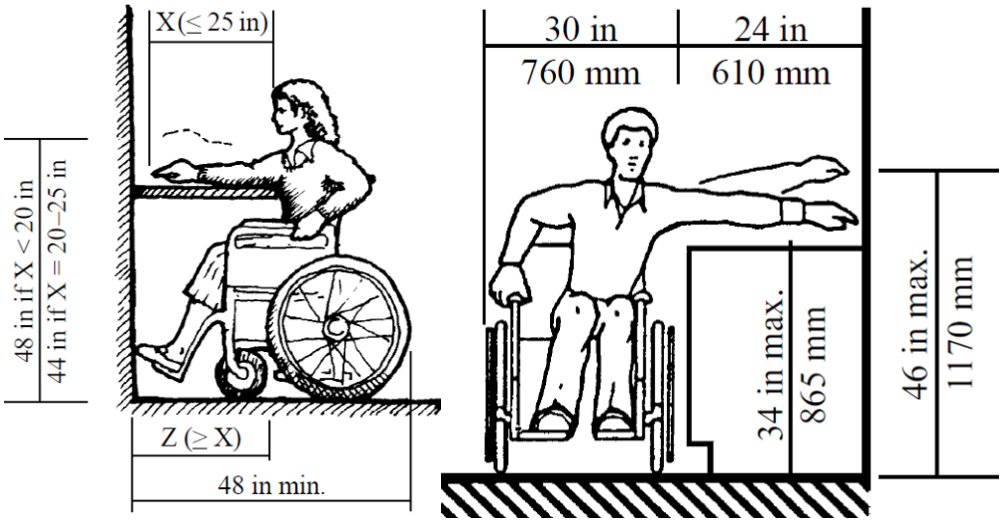


Figure 3.8: Maximum Forward-Reach over an Obstruction, Maximum Side-Reach over an Obstruction (Axelson, et al., 1997, p.19)

Figure 3.9 is clearly illustrated the zone which is comfortable for the disable and normal people.

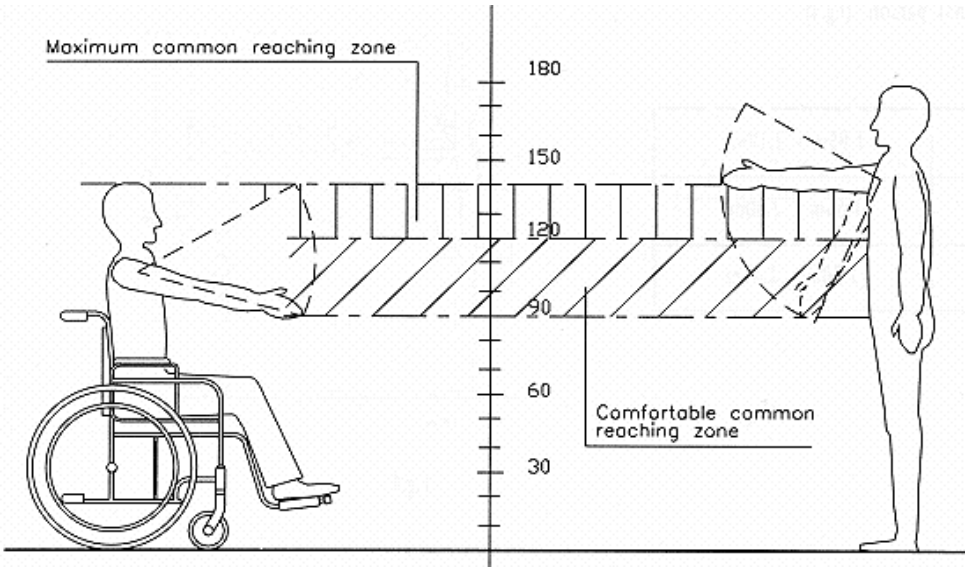
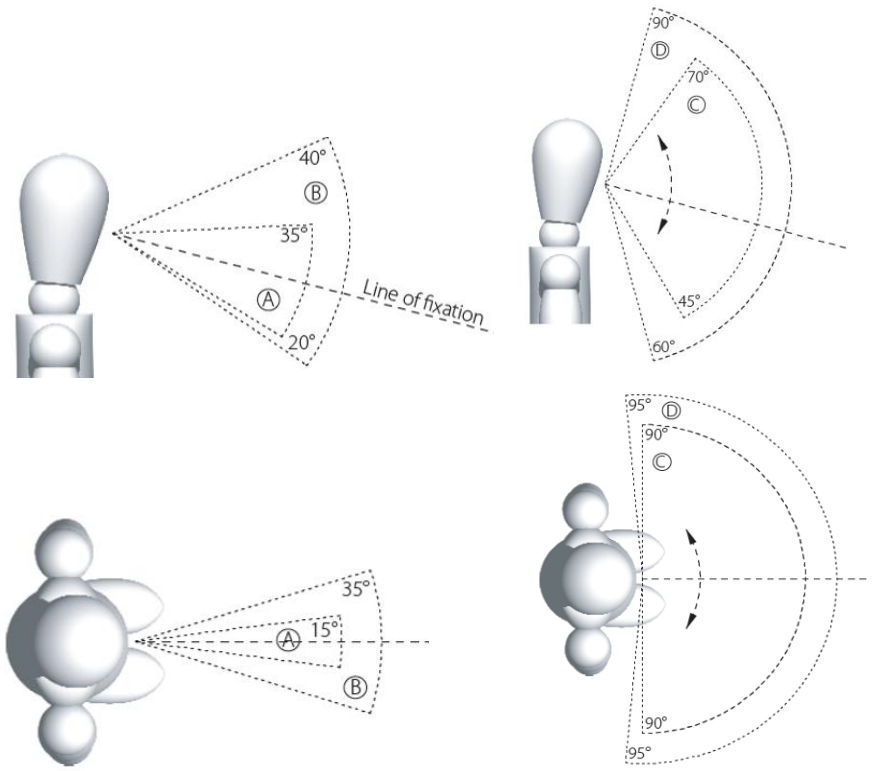


Figure 3.9: Common Reaching Zone (URL 8)

Horizontal and vertical range of vision for people has impact on design (Junge-Reyer, I., 2007):



Range of vision:

A Optimal range of vision

B Maximum range of vision

Field of vision:

C Maximum field of vision

D Extended field of vision

3.2 Standards and Guidelines for Accessible Design at Sea Fronts

According to the anthropometric principles that are mentioned above, accessible design should be considered in all places especially in public open space. Older travelers and people with functional impairments include active and affluent groups in society. Thus, providing comfortable physical environment that supports their activities, designers must understand the need of all human.

Meanwhile, it is estimated more than 1.7 billion of world population (more than 38 percent of people) are living within 50 km of the coast. And it is assessed about 45 percent of universal number of people to live within 150 km of the Sea, Ocean or River (Key and Alder, 2005). Seafronts are the most significant attraction spaces for coastal settlements that create many opportunities and activities for a city. Also, they are the common P.O.S for majority of coastal settlements or visitors that they provide opportunity for different activities. One of the most important features of seafronts is accessibility to satisfy all users and make their activities easier. Therefore, the research is considered seafronts to have accessible design regardless users' abilities. More than 2000 standards and guidelines are available for ambulant disabled people. According to theoretical framework, this study considers all priorities affecting the accessibility that provide the needs and satisfaction of the disables at seafronts.

The most of the standards and guide lines refer to The United Nation, British standards (BS) and American with Disability Act (ADA). In addition, not only these standards help to create safer environment for the disables but also, they are necessary for all people like some person with temporary injured, such as broken

legs, or for a person pushing baby strollers or carrying luggage which essentially need to a wide sidewalk (Fig 3.10) or ramp for travelling between different levels.

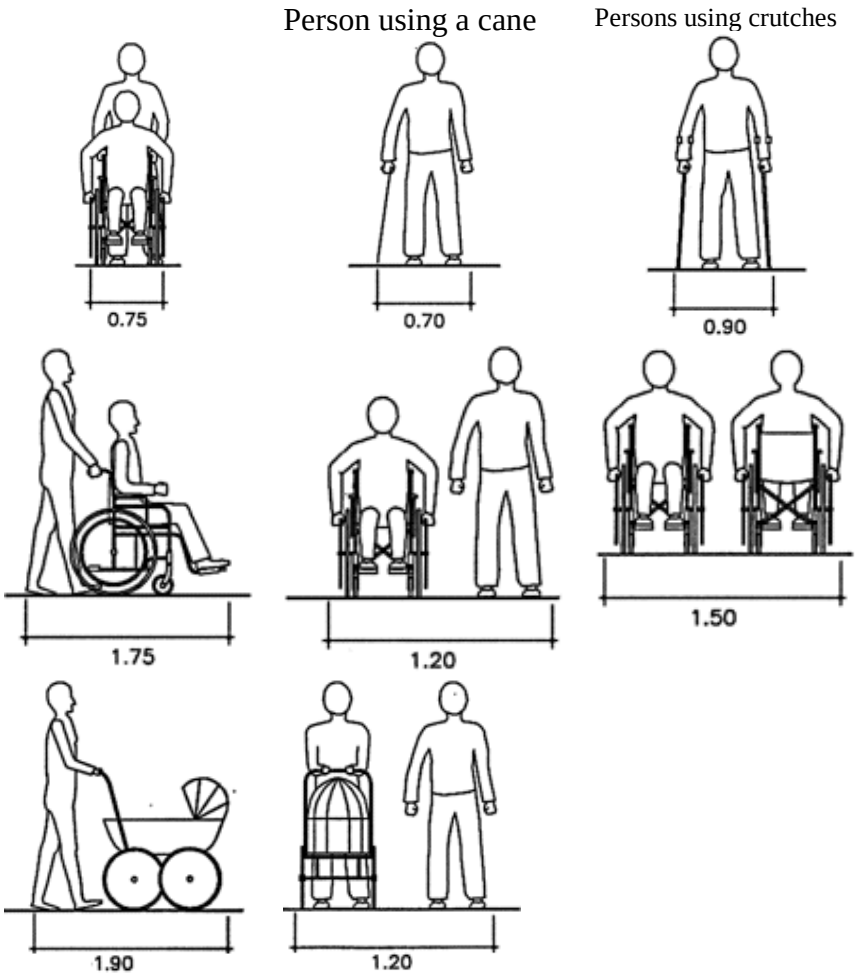


Figure 3.10: Wide Routes Are Essential for All People (URL 8)

Sea fronts may include urban spaces like street, square and playgrounds where should be designed accessible. These accessible standards and guidelines are summarized in Table 3.4, 3.5 and 3.6 which will be explained with details in the following discussion. Also, there should be installed parking spaces for accessible design (Table 3.7).

Table 3.5: Laws, Standard and Guidelines for Accessible Street According To UN, BS and ADA

Street	**Accessible Routes**	**Standards**			
		Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		
		Obstacles	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		
		Grade & Cross-slopes	• 2% ≤ Gradients on access routes ≤ 5%		
			• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		
	Accessible Surfaces	**Surface Material**	• An access route should have a firm, slip‑resistant and reasonably smooth surface.		
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm and deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm and deep of joint ≤ 5mm		
		Gaps & Grates	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		
		Change in Level	• The change in level should between 9mm and 13mm.	Curb ramp	Perpendicular curb ramps
					Diagonal curb ramps
					Parallel curb ramps
					Build-up curb ramps
				Ramp	• Maximum rise is 230 mm • Maximum slope of ramp in paly ground is 1:13 • The minimum width is 0.90 m and 1.525 m for providing turning and passing places • Landings are the level surfaces at the top and bottom of each ramp run. • A minimum length of landing is 60-inches (1525 mm) • If ramps change direction, the minimum landing size must be 60 inches (1525 mm) wide to accommodate a turn
				Stair or steps	• The minimum width of a stairway should be 0.90 m and 1.50 m for two-way • Minimum 1,525 mm deep • Handrails put between 0.30 m and 0.45 m at the top of the stairs. • The maximum riser should be 0.15 m
	Comfort Facility	**Inclusive Furniture**	• Resting facilities should be provided between 100.00 m and 200.00 m. • Seats should be set back from the main route at least 900mm. • At least 1200 mm square should be provided for wheelchair users • Seats should be 450-520mm high and perches should be 500-750mm high. Children may also benefit from seats at around 350mm above ground. • The height of a table should be between 0.75 m and 0.90 m and the minimum depth under the table should be 0.60 m.		
		Lighting	• Illumination levels on the sign surface shall be in the 100 to 300 lux range • A minimum illuminance of 20 lux for accessible parking spaces • A minimum illuminance of 100 lux on ramps or steps		
		Information Signage	• Providing international symbols • The commonly used colors are white, black, yellow, red, blue and green. The color combinations red/green and yellow/blue should not be used. • Maps and information panels should be placed at a height between 0.90 m and 1.80 m • Width-to-height ratio should be between 1:5 and 1:10 • Signage that provides information about potential obstacles, surface type, grade, cross-slope, and other trail features		
	Maintenance	Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making. • Checking the structural features of routes, such as bridges, steps, and railings, and fixing damages. • Be careful about the surface free of obstacles, such as Obstacles commonly include bins, parked cars and signs. • For decreasing most of damaging, these methods include clearing drainage channels, and maintaining slopes on paths bed. • Cutting vegetation to create problems for the surfaces • Maintaining the covering of surface and joints to create problems by grates.			
	Accessible Built-facility	**Parking**	This section is mentioned in Table 3.7		
		Access to Building	• Use of ramp with 2% gradient for entrancing to building due to difference between indoor and outdoor levels. • Doors shouldn't open to outside. If they open outside should have about 1200 mm space for maneuvering the disable. • Minimum wide of door: 820 just for crossing one person & 1220mm for two person		

Table 3.5: Laws, Standard and Guidelines for Accessible Square According To UN, BS and ADA

Square	**Accessible Route & Standard Orientation**	**Standards**			
		Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		
		Obstacles	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		
		Grade & Cross-slopes	• 2% ≤ Gradients on access routes ≤ 5%		
			• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		
	Accessible Surfaces	**Surface Material**	• An access route should have a firm, slip‑resistant and reasonably smooth surface.		
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm and deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm and deep of joint ≤ 5mm		
		Gaps & Grates	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		
		Change in Level	• The change in level should between 9mm and 13mm.	Curb ramp	Perpendicular curb ramps
					Diagonal curb ramps
					Parallel curb ramps
					Build-up curb ramps
				Ramp	• Maximum rise is 230 mm • Maximum slope of ramp in paly ground is 1:13 • The minimum width is 0.90 m and 1.525 m for providing turning and passing places • Landings are the level surfaces at the top and bottom of each ramp run. • A minimum length of landing is 60-inches (1525 mm) • If ramps change direction, the minimum landing size must be 60 inches (1525 mm) wide to accommodate a turn
				Stair or steps	• The minimum width of a stairway should be 0.90 m and 1.50 m for two-way • Handrails put between 0.30 m and 0.45 m at the top of the stairs • The maximum riser should be 0.15 m • Minimum 1,525 mm deep
	Comfort Facility	**Inclusive Furniture**	• Resting facilities should be provided between 100.00 m and 200.00 m. • Seating elements should be set back from the main route at least 900mm. • at least 900 mm square should be provided for wheelchair users • Seats should be 450-520mm high and perches should be 500-750mm high. Children may also benefit from seats at around 350mm above ground. • The height of a table should be between 0.75 m and 0.90 m and the minimum depth under the table should be 0.60 m.		
		Lighting	• Illumination levels on the sign surface shall be in the 100 to 300 lux range • Providing at least illuminance of 100 lux on ramps or steps		
		Information Signage	• Providing international symbols • The commonly used colors are white, black, yellow, red, blue and green. The color combinations red/green and yellow/blue should not be used. • Maps and information panels should be placed at a height between 0.90 m and 1.80 m • Width-to-height ratio should be between 1:5 and 1:10 • Signage that provides information about potential obstacles, surface type, grade, cross-slope, and other trail features		
	Maintenance	Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making. • Checking the structural features of routes, such as bridges, steps, and railings, and fixing damages. • Be careful about the surface free of obstacles, such as Obstacles commonly include bins, parked cars and signs. • For decreasing most of damaging, these methods include clearing drainage channels, and maintaining slopes on paths bed. • Cutting vegetation to create problems for the surfaces • Maintaining the covering of surface and joints to create problems by grates.			

Table 3.6: Laws, Standard and Guidelines for Accessible Playgrounds According To UN, BS and ADA

Playground	**Accessible Routes**	**Standards**			
		Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		
		Grade & Cross-slopes	• 1% ≤ Gradients on access routes ≤ 2%		
			• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		
	Accessible Surfaces	**Surface Material**	• Suitable combination of soft and firm material • All access routes should have a firm, slip‑resistant and reasonably smooth surface. • On the other hand usage of soft material like plastic, grass covered and etc. for play area where there are the risk of falling like the end of a slide.		
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm and deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm and deep of joint ≤ 5mm		
		Gaps & Grates	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		
		Change in Level	• The change in level should between 9mm and 13mm.	**Curb ramp**	Perpendicular curb ramps
					Diagonal curb ramps
					Parallel curb ramps
					Build-up curb ramps
				Ramp	• Maximum rise is 12-inch (305 mm) • Maximum slope of ramp in paly ground is 1:12 • The minimum width is 0.90 m and 1.525 m for providing turning and passing places • Landings are the level surfaces at the top and bottom of each ramp run. • A minimum length of landing is 60-inches (1525 mm) • If ramps change direction, the minimum landing size must be 60 inches (1525 mm) wide to accommodate a turn
				Stair or steps	• The minimum width of a stairway should be 0.90 m and 1.50 m for two-way. • Minimum 1,525 mm deep • Handrails put between 0.30 m and 0.45 m at the top of the stairs. • The minimum clearance between handrail gripping surfaces is 1 ½ (38mm) minimum. • The maximum riser should be 0.15 m
	Comfort Facility & Activity	**Inclusive Furniture**	• Resting facilities should be provided between 100.00 m and 200.00 m. • Seats should be set back from the main route at least 900mm. • at least 1200 mm square should be provided for wheelchair users • A surfaced resting place, at least 900mm square should be provided next to seats to enable wheelchair users to sit beside your friends or families • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground. • The height of a table should be between 0.75 m and 0.90 m and the minimum depth under the table should be 0.60 m.		
		Lighting	• Illumination levels on the sign surface shall be in the 100 to 300 lux range • A minimum illuminance of 100 lux on ramps or steps		
		Information Signage	• Providing international symbols • Maps and information panels should be placed at a height between 0.90 m and 1.80 m • Width-to-height ratio should be between 1:5 and 1:10 • Signage that provides information about potential obstacles, surface type, grade, cross-slope, and other trail features		
		Play Component	• Use of Ground-Level Play Components, Elevated Play Components that are accessible for children who have mobility impairment. • Play facility with seating should be have the maximum 350 mm height • Play tables is recommended: 24 inches (610 mm) high minimum, 30 inches (760 mm) wide minimum, 17 inches (430 mm) deep minimum		
	Maintenance	Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making. • Checking the structural features of routes, such as bridges, steps, and railings, and fixing damages. • Be careful about the surface free of obstacles, such as Obstacles commonly include bins, parked cars and signs. • For decreasing most of damaging, these methods include clearing drainage channels, and maintaining slopes on paths bed. • Cutting vegetation to create problems for the surfaces • Maintaining the covering of surface and joints to create problems by grates.			
	Suggestion	• To reduce the risk of injury, safety guidelines recommend separate play areas for different age groups. • A play area designed for 2 to 5 year-olds is considered separate from one for 5 to 12 year-olds. • Designs that result in products or technologies as alternatives to those provided substantially equivalent or greater accessibility and usability.			

Table 3.7: Laws, Standard and Guidelines for Accessible Parking According To UN, BS and ADA

Built Facility along Sea front	Parking	The Number of Parking		According to UN & ADA: • If parking space is less than 50 at least one accessible parking space should be provided • If parking space is 400 at least be provided one accessible space for every 50 spaces • If parking space is more than 400 at least 8 accessible parking spaces should be provided plus 1 space According to BS: • For workplaces, the minimum number of designated spaces should be one space for each disable worker plus 5% of visiting persons • For shopping, recreation and leisure facilities, the minimum number of designated spaces should be one space for each physical disable employee plus 6% of visiting people
		Type of Parking	On-street Parking	• The standard space for the parking is 3600 mm × 6600 mm • Use of curb ramp with 2 percent gradient for accessing from a parking space to the sidewalk
			Off- street Parking	• Standard designed parking is 2400 mm × 4800 mm • Creating 1200 mm corridor around of parking spaces for enough space for maneuvering
			Angled Parking	• Standard designed parking space is 3600 mm × 6000 mm • Creating 1200 mm corridor around of parking spaces for enough space for maneuvering
		Accessible Surfaces	Surface Material	• An access route should have a firm, slip‑resistant and reasonably smooth surface.
				Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm and deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm and deep of joint ≤ 5mm
			Gaps & Grates	• A vertical displacement should be ≤ 13mm • Cracked concrete ≤ 25 mm (1 in) • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)
			Change in Level	• The change in level should between 9mm and 13mm. • If the change in level is more than 13 mm there should be provided a curb ramp. The gradient of curb ramp should not be more than 2 % and the width of ramp should be more than 0.90 mm. • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)
		Comfort Facility	Lighting	• Illumination levels on the sign surface should be in the 100 to 300 lux range • A minimum illuminance of 20 lux for accessible parking spaces
			Information Signage	• Providing international symbols should be fixed 1000 mm above the ground, to identify parking space when road markings hidden by snow or fallen leaves. • Showing the accessible design with a drawing the symbol on the ground with 1400 mm high
		Maintenance		Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making. • Checking the structural features of routes, such as bridges, steps, and railings, and fixing damages. • Be careful about the surface free of obstacles, such as Obstacles commonly include bins, parked cars and signs. • For decreasing most of damaging, these methods include clearing drainage channels, and maintaining slopes on paths bed. • Cutting vegetation to create problems for the surfaces • Maintaining the covering of surface and joints to create problems by grates.

3.2.1 Accessible Routes

Routs, trails or sidewalks are the backbone of the pedestrian transportation considerations. Streets, square, playground and all built facilities at seafront have route or sidewalk for walking, accessing to other areas, and so on. For example if a street doesn't have any sidewalk or pedestrian route, people are forced to use the vehicular ways and it is not safe and secure for all. A route, trail or sidewalk should provide comfortable travelling or maneuvering for the disable. Accessible pedestrian facilities should be considered while designing public project. It is significant to consider various characteristics of accessible routes that are related to width, obstacle and the routes with gradient because of topography or crossing curb ramps.

3.2.1.1 Width

The disable should have comfortable travelling and have enough space for their maneuvering. Therefore, routes and sidewalks at seafront should be wide enough to provide access to all facilities at streets, squares, playgrounds and other places.

UN, BS and ADA standards consider the width of trails as follows; the minimum width of a pedestrian route is 1,200 mm if the way doesn't have any barriers or obstacles. But, turning and passing others is difficult for the disables especially wheelchair users when the route is 1,200 mm. therefore, the width of routes should be at least 1,500 mm to provide a two-way route for the disables. However, general routes or sidewalk with different functions (like shopping, official building and so on) should be 1,800 mm at least.

In addition, most corridors should be designed to at least 1,525 mm wide. Because, the routes even narrow corridors should be have enough wide to improve access. As

it is mentioned to Figure 3.11, when two wheelchair users want to pass another pedestrian and turn in a complete circle, the space should be have enough wide (more than 1,525 mm x 1,525 mm).

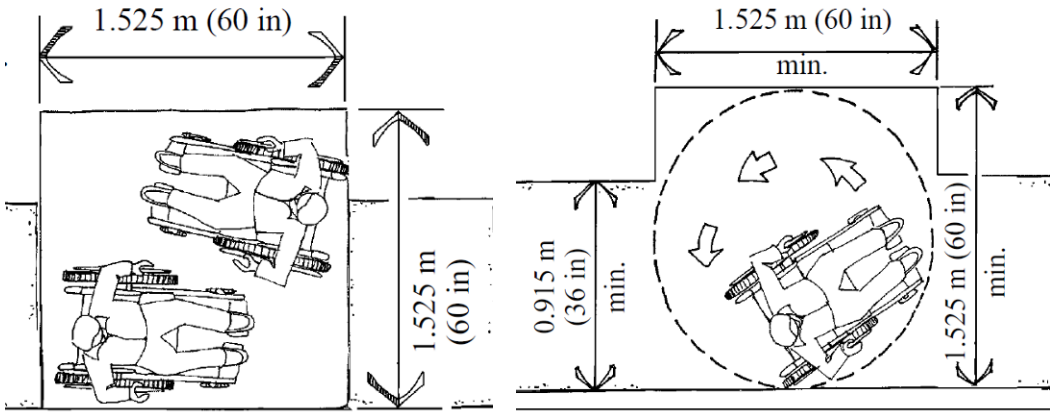


Figure 3.11: Passing Spaces on Narrow Sidewalks and Turning in a Complete Circle (Axelson, et al., 1997)

On the other hand, this study considers width of sidewalk in the other point of view. Sanford & Steinfeld (1985) stated the corridors of sidewalks are divided to four zones that are:

- Curb zone
- Planter or furniture zone
- Pedestrian zone
- Frontage zone (Fig. 3.12)

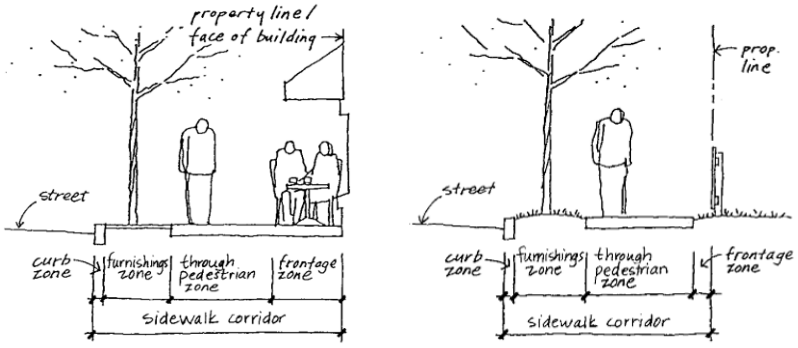


Figure 3.12: The zones of sidewalks
(Portland Pedestrian Design Guide, 1998, p.A-5).

Table 3.8 includes the recommendations for the minimum widths of each zone (Kirschbaum, Axelson, Longmuir, Mispagel, Stein, Yamada, 2001).

Table 3.8: Minimum Width of Each Zone (Kirschbaum, Axelson, Longmuir, Mispagel, Stein, Yamada, 2001, p.4-4)

Zone	Minimum Width
Curb Zone	152 mm
Greenery/Furniture Zone	610 mm 1,220 m if planting trees
Pedestrian Zone	1525 mm
Frontage Zone	760 mm
Total Sidewalk Corridor	3,100 mm

The importance of routes or sidewalks in new construction, the commitment to create sidewalk corridors that meet the needs of people with disabilities should be made during the planning stage of the improvement process. Moreover, old construction should be adapted until they become inclusive and accessible for all people. The width of sidewalk corridor is one of the most significant factors in determining the type of pedestrian experience that the sidewalk provides. The width of routes often depends on the type of spaces. For instance, residential spaces need narrower route than urban areas. The present study is determined the width of route at seafronts according to the width of the greenery /furniture, pedestrian, and frontage zones. Because, the route of POS should be designed to accommodate additional space or items like visitor travelling and crossing, cafés, furniture, signs and other facilities.

3.2.1.2 Obstacles

Mostly, the pathways should be designed a barrier-free path for the safety and independence of disabled people. Obstructions include street furniture, traffic signs,

direction signs, street plans, bollards, plants, trees, shop awnings and advertising signs, etc. they should be located outside of the travelling paths. Furthermore, these barriers can decrease the width of routes and provide limitation especially for wheelchair users (Fig. 3.13).

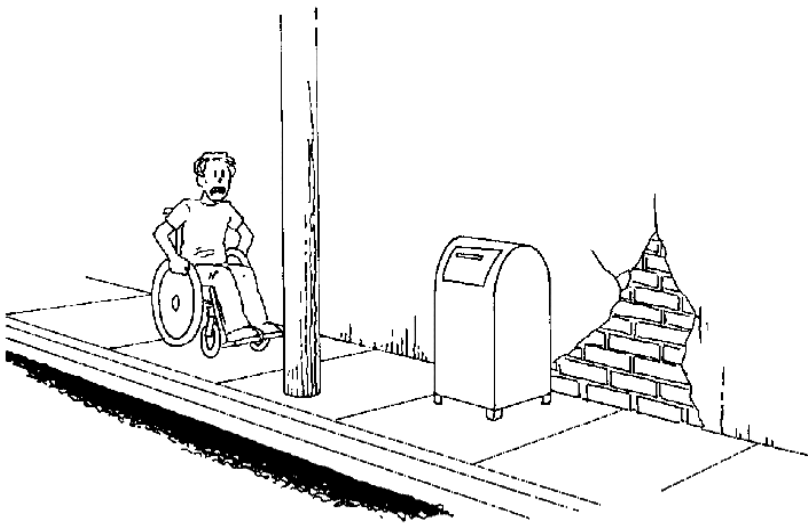


Figure 3.13: Obstacles Decrease the Width of the Sidewalk
(Kirschbaum, et al., 2001, p.4-12)

The obstacles also create dangerous area for the people who have poor vision or blind. Kirschbaum mentioned (2001) that these objects should have distance between 700 mm and 2,000 mm from wall if these elements should be placed at route or sidewalks according to ADA standards.

3.2.1.3 Grade and Cross Slopes

In general urban spaces at seafronts might have routes with gradient because of topography or embedded ramps in kerbs. For instance, in some routes and sidewalks is installed curb ramps without landing because of inappropriate width of routes so pedestrians must cross the curb ramps. Therefore, grades and cross slopes are very difficult and dangerous to negotiate because it is harder to travel sloped surfaces than

horizontal surfaces for the disables especially wheelchair users. People with manual wheelchairs must utilize more energy than other pedestrians to cross sloped surfaces. All wheelchair users have difficulty to control themselves on slopes so the effect of grades should be minimized to improve access for people with mobility impairments.

- **Grade:**

The slope that is parallel to the direction of pedestrian routes is named grade. And the percent of them is calculated by dividing the vertical change in elevation by the horizontal distance covered. As it is stated by Axelson, et al., (1997), standards grades of routes should not exceed 5.0 percent, and change during the route at all times. Also if that is greater than 5 percent it is essential to provide handrails and level landing (Fig. 3.14).

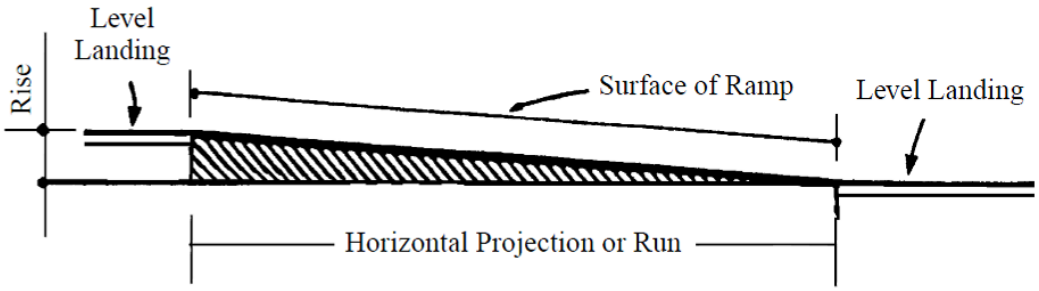


Figure 3.14: Ramps Must Have Level Landings (Axelson, et al., 1997, p.42).

The landing areas at POS should be have slope to simplify drainage and to prevent collecting of water on the landing surface especially in cities with extreme climate. According to ADA standards landing areas should be have a slope less than 2 percent and the landing should be installed at the top and bottom of steep slope with at least 1,525mm x 1,525mm (Fig. 3.15).

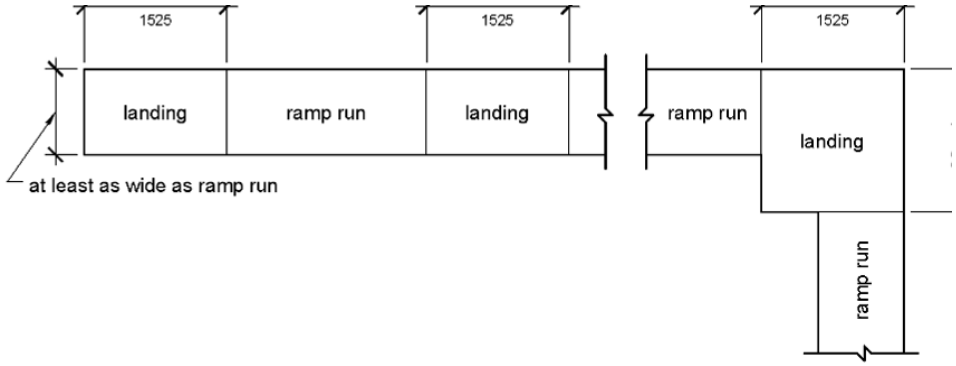


Figure 3.15: Standard Ramp Landings in Straight and Change in Direction (URL 10)

As it is stated by Axelson, et al. (2001), the accessible route with a slope more than 5.0 should have handrails to provide safety travelling for all. And providing signs is essential that inform the grade of route and give information about other trails with lesser grades. Also, other crucial point which create problem for wheelchair users is rapid changes in grade. Change of grade at public areas cause a wheelchair user fall with speed backward or forward, as shown in Figure 3.16.

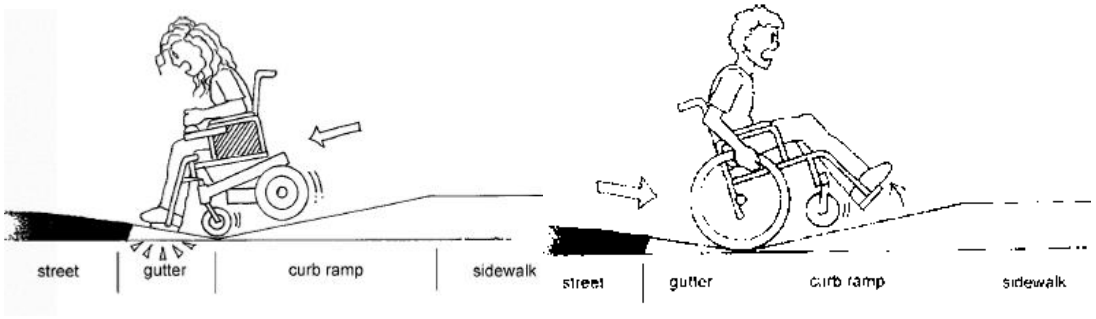


Figure 3.16: Extreme Slope Differences Can Cause Dangerous (Kirschbaum, et al., 2001, p.7-31)

As it is shown in Figure 3.17, when pedestrian route needs to change of grade should be provide a flat space more than 24 inches or 610mm. This flat area can support people with assistive devices (Axelson, et al., 2001).

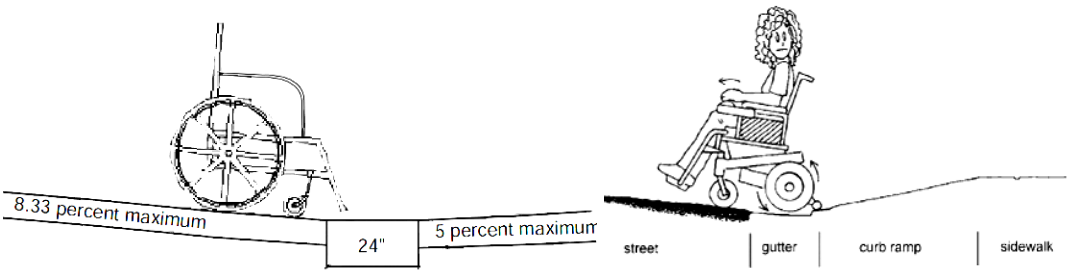


Figure 3.17: Provide 24 Inches between Close Interval Grades (Kirschbaum, et al., 2001, p.7-32)

- **Cross-Slope:**

Grade is defined a slope parallel to the direction of travel however cross-slope is perpendicular to the direction of travel. Steep cross-slopes can make cause problem or danger for the disables to control their stability because they should be travel against the force of gravity. Also, cross-slopes can cause wheelchairs to drag downhill or into the street. The specified distance should be about 610 mm to provide enough space for the wheelbase of a wheelchair (Axelson, et al., 2001). And, ADA does not let the slope to exceed 2 percent (Fig. 3.18)

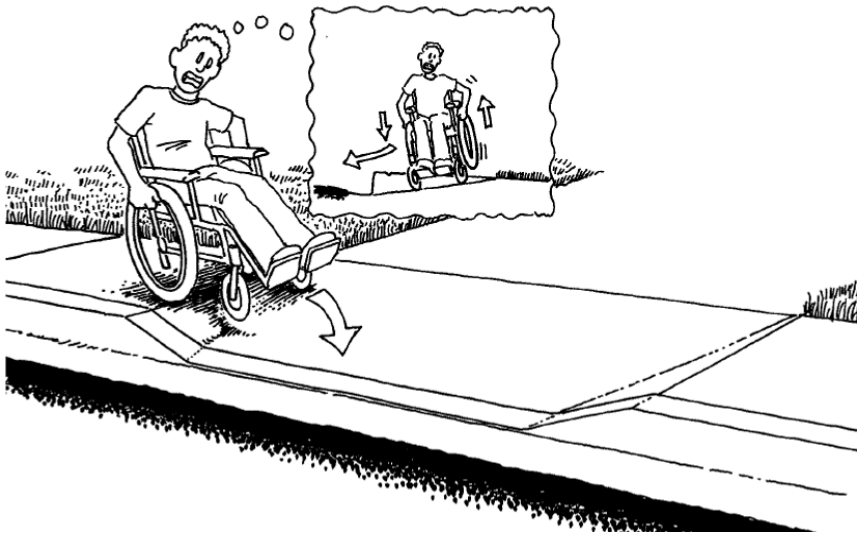


Figure 3.18: Cross-Slopes and Short Distance (Axelson, et al., 2001, p.4-20)

3.2.2 Accessible Surfaces

The most important factors that have significant effect on the accessibility at seafronts are related to the surfaces of sidewalks. As it is mentioned in Table 3.4, 3.5 and 3.6, the surface is divided to three categories: The first one is related to the material of surfaces. The second one is gaps, grate and opening and the last one is related to change in levels. Because, the elements have great impact to make accessible surfaces. Each of these surface factors has significant impact to define how easily pedestrians can use the route at seafronts, constructed outdoor space and sidewalks.

3.2.2.1 Surface Material

Different places at seafront might be covered by various materials. As is considered by Chesney, et al. (1997) accessible surfaces should have a firm and stable, slip‑resistant and practically smooth. However, ADA standards suggest playground and parks should be covered by soft material such as grass, plastic and soft sand at play areas. Play areas is using for their play components where should be safe for children.

- **Firm and Stable Surface:**

A firm surface would not deform when a person walk or wheel on it. Moreover, when the surface remains unchanged by received force, certainly the surface has firm and stable material (Chesney, et al., 1997). The firm and stable surface doesn't change when an individual is walking or a wheelchair users is maneuvering. This type of material is able to support the physically disable people is travelling comfortably. If the base is not paved by a firm and stable material, the disables

should lose more energy for travelling. On the other hand, all firm and stable base are slip-resistance when they are dry. So, all public space should be paved by hard materials that are not sleepy under wet conditions.

- **Slip-resistant:**

Most of surface materials are slip-resistant under dry condition such as asphalt, concrete and so on. Slip-resistance is defined a material without slipping when people are walking or wheeling on the surface. Asphalt and concrete are the most common surfaces for urban spaces. However, some surfaces are paved with decorative materials, such as brick or cobblestone according to aesthetical consideration. These materials can cause difficult travelling for the disables. British Standards is mentioned that the joints between adjacent paving units are effective in accessibility, the following issued should be considered as such:

- If the joints are filled to the base, the difference in level between adjacent units should be no more than twice the joint width, subject to a maximum difference in level of 5 mm.
- If the joints are filled with recessed below the base, the difference in level between adjacent units should be no greater than 2 mm, with the joints no wider than 10 mm and the recess no deeper than 5 mm.
- If the joints are unfilled, the difference in level between adjacent units should be not greater than 2 mm, with the joints no wider than 5 mm (URL 8).

On the other hand, as is considered by Kirschbaum, et al. (2001), although the decorative surfaces can increase aesthetic, they may also create an uncomfortable walking for the disables and painful for wheelchair users. The joints between tiles of

decorative materials should be less than 15 mm otherwise; tires of wheelchair are caught between the joints of tiles (Figure 3.19).

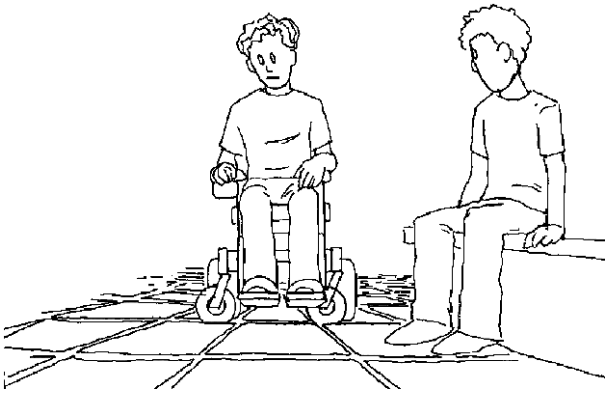


Figure 3.19: Decorative Surface Is Creating Difficulty (Kirschbaum, et al., 2001, p.4-27)

Some places like beaches have specialized places where are paved by sand. Sand surfaces make impossible the movement and stability for the physically disable people. The disable requires more energy for moving on this different type of paving. Therefore, these areas should be installed temporary or fixed paths with hard surfaces and providing beach wheelchairs is essential for the disables as it is clear in Figure 3.20 (Longmui, et al., 2001). Also these paths should be accessible that is mentioned in section 3.2.1.

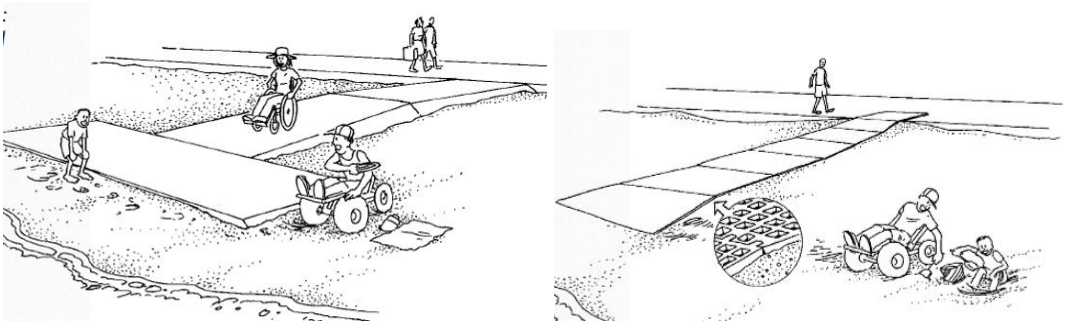


Figure 3.20: Beach paths should be firm and stable to allow the disable to enjoy the beach environment (Longmui, et al., 2001, p.17-6).

3.2.2.2 Gaps, Grates and Opening

Opening permits water rain and some trash to drop through the holes. Typically, these elements are covered by net-like or parallel metal pieces that avoid large things from falling through in them (Figure 3.21). Gratings can be hazardous to wheelchair users, cane and crutch users, and parents with baby carriage and women with high heels. In general, drain channels, and gaps should be placed outside of travelling paths. However gaps or openings should have spaces no more than 13 mm wide in same direction if these should be embedded on pedestrian route (URL 8).

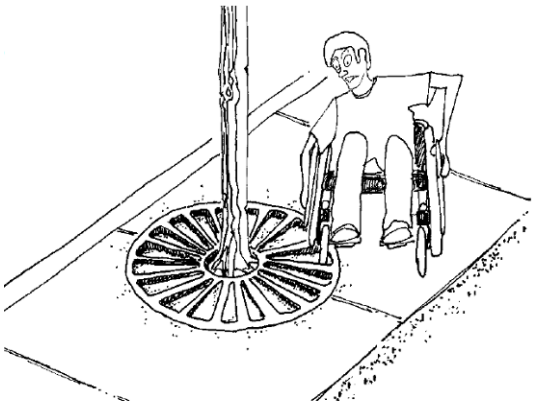


Figure 3.21: Wheelchair Users Is Caught in Wide Grates (Kirschbaum, et al., 2001, p.4-30).

Also the same standards point out that grating with elongated openings should be oriented perpendicular to the main direction of travel (Fig. 3.22).

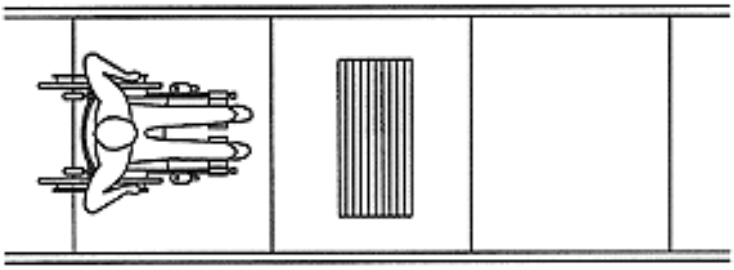


Figure 3.22: Proper Angled of Grates (URL 8)

Trees not only moderate the ray of sunshine, but also serve as an acoustic buffer between pedestrians and vehicle zones. In addition, they improve the aesthetical appearance in public areas. On the other hand the roots of trees create grades which are dangerous for physical disable (Fig 3.23). Therefore, plants require at least 122mm x 122mm planting area around themselves. And as it is shown in Figure 3.24, the trees should be planted that their roots grow down rather than out and have enough space (Kirschbaum, et al., 2001).

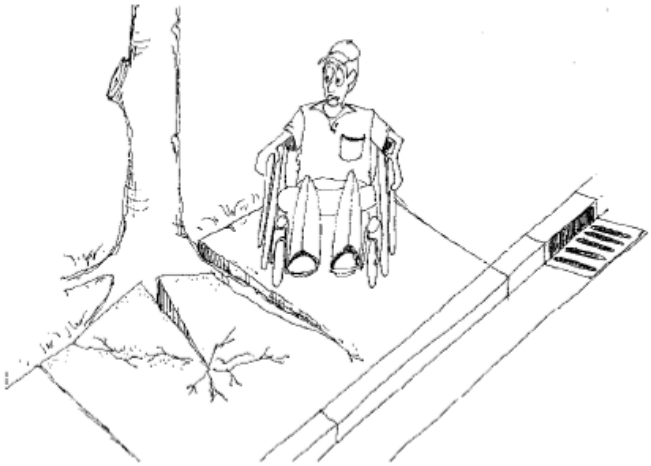


Figure 3.23: Grates Are Often Caused by Tree Roots (Axelson, et al., 1997, p.39)

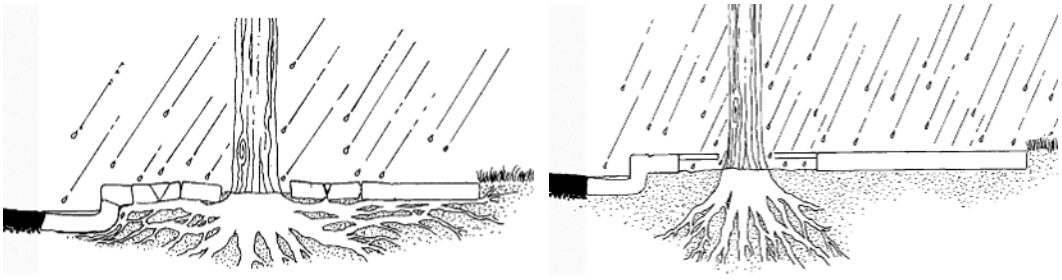


Figure 3.24: Improperly Can Be Very Problematic On Routes (Kirschbaum, et al., 200, p. 4-32).

3.2.2.3 Change in Level

Changes in levels cause that people with mobility impairments face with restrictions to travel them comfortably. In UN and ADA standards are stated that changes in

level between 6 mm and 13 mm should have a bevel less than 50 percent, as is cleared in Figure 3.25.

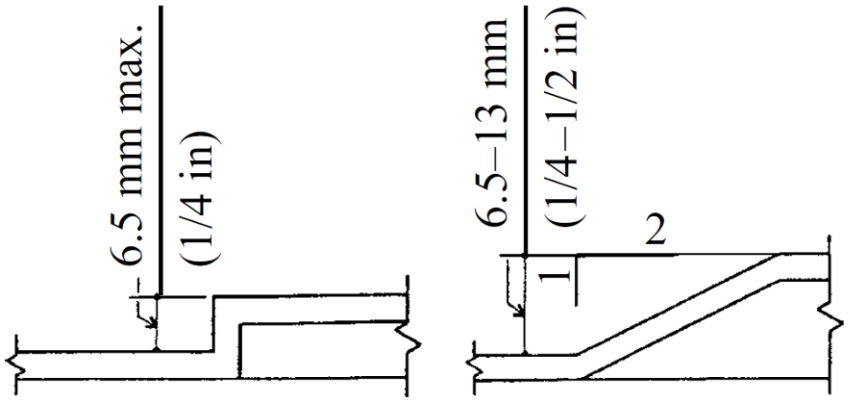


Figure 3.25: Vertical and Beveled Changes in Level (URL 14).

3.2.2.3.1 Curb Ramp

Curb ramps are designed to overcome changes in level between street and sidewalks or two adjacent surfaces with different levels. This displacement some places are more than 13 mm where should be covered by curb ramps. Although curb ramps are different in design, every type of this ramp contains all or some of the elements, that are illustrated in Figure 3.26. Curb ramp component are landing, approach, flare, gutter and ramp (Axelson, et al., 1997).

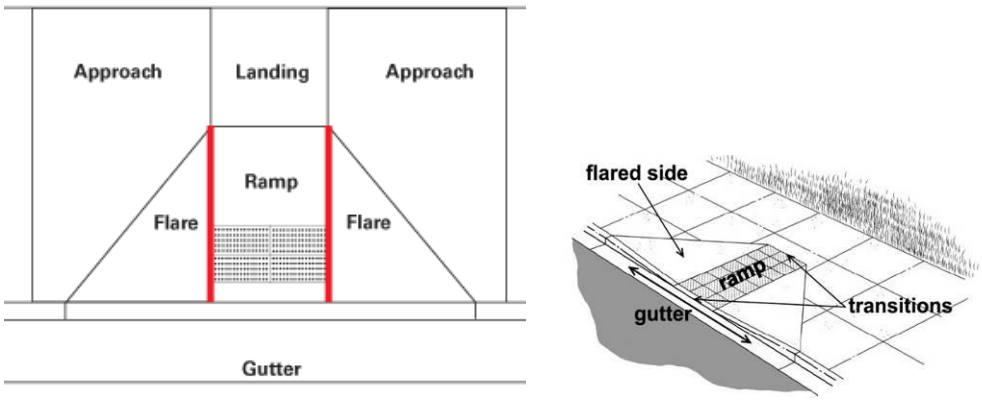


Figure 3.26: Components of a Curb Ramp (URL 10)

The same standards are recommended that the grade of the ramp mustn't exceed 2 percent and at least the width of these ramps should be 900 mm. However, the recommended width of curb ramps in public spaces is 1,200 mm with 1.5 gradient.

American Standard set curb ramps as sidewalk element that has significant impact on accessible sidewalks. Curb ramps is installed between street and the pedestrian route for person with mobility difficulties to provide access. Because, access to sidewalk is not possible without curb ramps. Also, it is mentioned that curb ramps are most commonly found at driveway crossing, intersection and junction points. Driveway crossing is defined a place to allow cars to cross the sidewalk and go into the street that these points are able to create a terrible hazard especially for wheelchair users (Axelson, et al., 1997). As it is obvious in Figure 3.27, considering design of driveway crossing is so important to provide a comfortable and safe travelling for pedestrians.

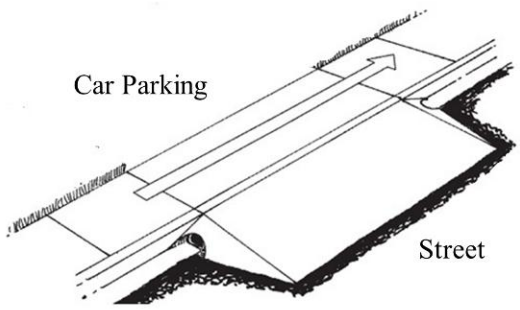


Figure 3.27: Driveway Crossing with Good Design (Kirschbaum, et al., 2001, p. 5-4)

For achieving an accessible design the ramp should be installed along the sidewalks, it should be designed like Figure 3.28.

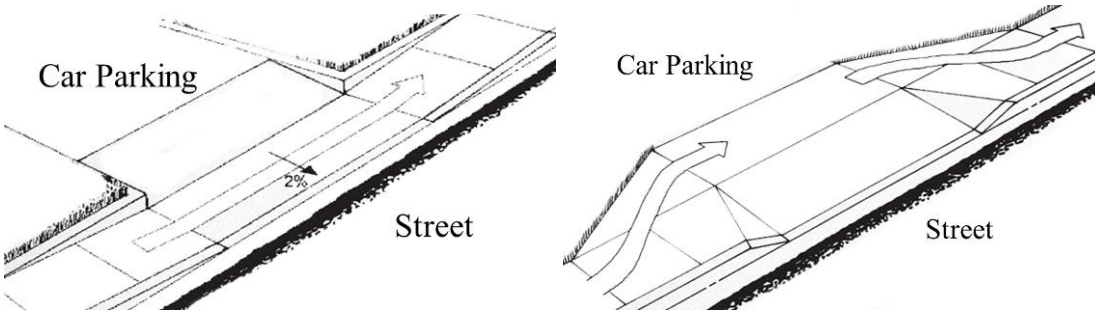


Figure 3.28: Accessible Driveway Crossing (Kirschbaum, et al., 2001, p. 5-4 & 5-5).

Kirschbaum, et al., (2001) categorized curb ramps to perpendicular curb ramp, diagonal curb rams, parallel curb ramp, combination curb ramps and built-up curb ramps that they should be considered as the following issues:

If the sidewalk is wide enough, it can be installed perpendicular curb. Because the curb ramp should be have level landing to travel the disables completely out of them. However, perpendicular curb ramps generally should be located outside of the pedestrian paths. Perpendicular curb ramps without landing create barriers because they force people to travel on flares (Figure 3.29).

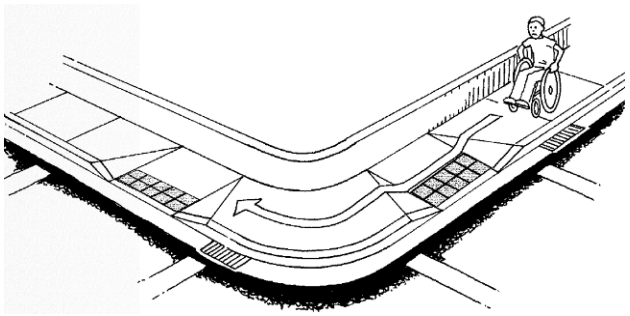


Figure 3.29: Prependicular Curb Without Level Landing (Kirschbaum, Axelson, et al., 2001, p.7-6)

If it is not possible to create a landing at least 915 mm, perpendicular curb ramps should not be constructed. The curb ramp should be extended to provide a landing about 915 mm in narrow paths or sidewalks as shown in figure 3.30.

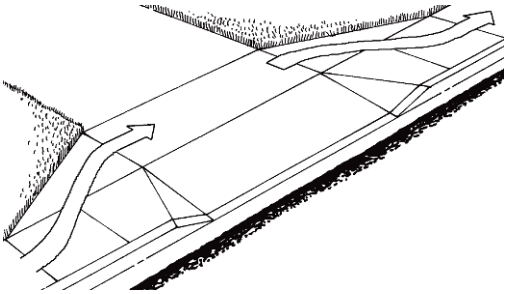


Figure 3.30: Increasing Accessibility On Narrow Sidewalk (Axelson, et al., 2001, p.5-4)

The second type of curb ramp is diagonal curb ramps that they are placed at the curved corner of an intersection (Fig 3.31). The structure of diagonal curb ramps is usually similar to that of perpendicular curb ramps. Because, these ramps will be accessible only if a level landing or maneuvering space is provided at the top and bottom of the ramp. In many situations, diagonal curb ramps are not recommended. Furthermore, diagonal curb ramps should contain at least 1,220 mm of clear space at the bottom of the curb ramp. And the landing space should have a gradient less than 2.0 percent in any direction to prevent water from collecting. If a standard level landing is too difficult for diagonal curb ramps should not be installed.

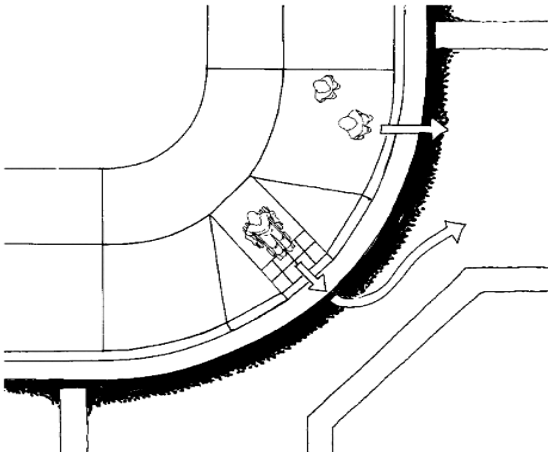


Figure 3.31: Diagonal Curb Ramp (URL 15)

Some paths are so narrow and they have gradient because of topography. Therefore, parallel curb ramps can be installed on the paths because the disable can cross them

comfortably. Parallel curb ramps are also essential on public outdoor spaces (street, square, playground and other public outdoor spaces at sea fronts) with a complicated grade to reduce the effect of slopes (Fig. 3.32).

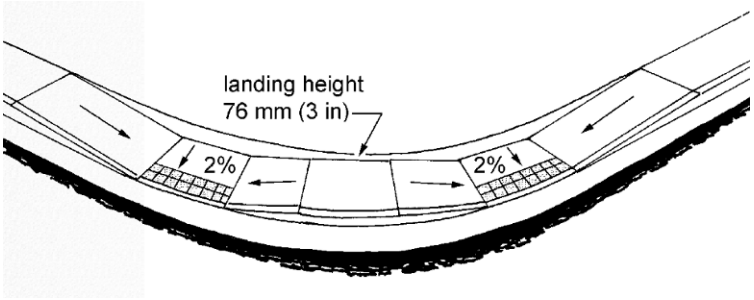


Figure 3.32: Two Parallel Curb Ramps (URL 16)

According to topography of public spaces, some routes should be combined parallel and perpendicular curb ramp. The existing routes at POS are narrow with a steep slope. Therefore, this design is exclusively affective to improve accessibility in the difficult situations (Figure 3.33). This type of curb ramps may be more expensive to install than other types of ramps.

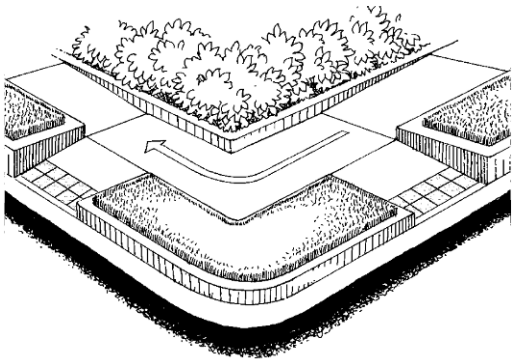


Figure 3.33: Increasing Access with Combined Parallel and Perpendicular Curb Ramps (Axelson, Kirschbaum, et al., 2001, p. 7-13)

Build-up curb ramps are not usually installed on paths. They are frequently embedded in parking lots. As it is stated by Axelson, et al. (1997), the ramps must be

well-designed to providing drainage inlets because they don’t have the gutter (Fig 3.34).

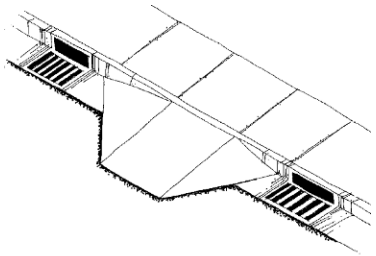


Figure 3.34: Build-up Curb Ramps (Axelson, et al., 1997, p. 46)

3.2.2.3.2 Ramp

When the change in levels is more than 200 mm this displacement should be covered with a standard ramp. Lack of ramps, steep gradient and long ramp without landing make inaccessible design for the disables especially wheelchair users. Providing proper ramps should not be ignored wherever stairs obstruct the way of pedestrians.

According to UN and ADA, the ramps should be wider than 900 mm and the maximum slope of ramps is 1:20 (Fig. 3.35). Also, ramps should be installed landings for resting or maneuvering that the landing space should be wider than 1,525 mm. In the straight ramps landing areas should be installed every 10.00 m, and wherever change of direction occurs on the surface of ramps. In addition, the landing should have a minimum length of 1,200 mm and a handrail at least 400 mm high (URL 8). As it is mentioned at section 3.2.2.1, material of ramps should be firm and slip-resistance.

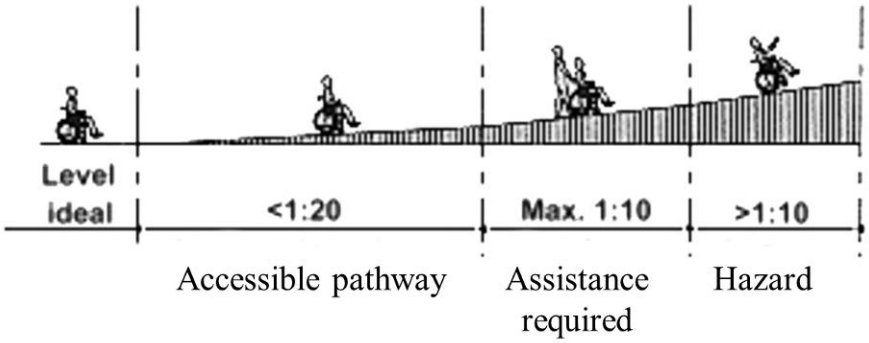


Fig 3.35: Different Grade of a Path (URL 8)

British Standard is stated where an access route with gradient shouldn't be exceed 5% and it should have a level landing for each 500 mm rise. In Table 3.9 is illustrated the maximum gradient for various distances (URL 9).

Table 3.9: Limits for ramp gradients (URL 9)

Going of a flight	**Maximum gradient**	**Maximum rise**
10 m	1:20	500 mm
9 m	1:19	473 mm
8 m	1:18	444 mm
7 m	1:17	411 mm
6 m	1:16	375 mm
5 m	1:15	333 mm
4 m	1:14	285 mm
3 m	1:13	230 mm
Not exceeding 2 m	1:12	166 mm

3.2.2.3.3 Stair or Steps

Standard stair should be designed to provide safe and well-dimensioned stairs that people with mobility problems cross them easier. However, steps create a significant barrier to individuals who use wheelchairs. Templer (1994) mention that steps must not be included in new construction and urban areas because most of wheelchair users can't pass steps independently. Typically, negotiating on steps is impossible even the wheelchair users have an assistant. Although crossing steps is a great

difficult for the disables, the suitable design of the staircases can increase access for other users (Figure 3.36).

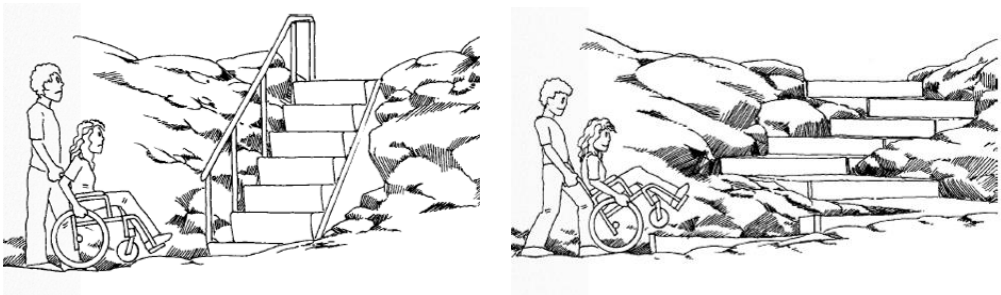


Fig 3.36: Comprising an Accessible Stair and a Stair with Problem (Axelson, Kirschbaum, et al., 2001, p.15-26)

Meanwhile, the standards (UN, BS & ADA) recommended that the height of external steps and stairs are less than 150 mm. The surface of stairs should have at least 1,525 mm deep and handrails must extend a distance between 300 mm and 450 mm at the top of the stairs.

3.2.3 Comfort Facility and Activities

Comfort facilities and activities can improve accessibility for individuals' environment at seafronts that, accessible environment is a definite right for all people irrespective their abilities. Comfort facilities is defined in three categories in the present research; furniture, lighting and signs. They can improve comfort and safety in people environments. Public spaces should have inclusive furniture to provide a resting area for improving accessibility. Also, there should be installed suitable lighting to make public spaces safe. Finally signs and information of trails should be places to give information or warning at seafronts.

3.2.3.1 Inclusive Furniture

Rest areas should be wide enough to accommodate furniture and shading elements for the disables. The rest areas must be located out of the trail or travelling paths (Figure 3.37).

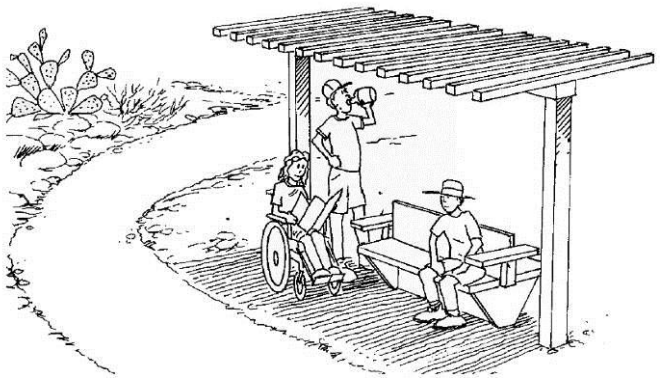


Figure 3.37: Rest Areas Enhance Accessibility on the Route for All Users. (URL 16)

Resting facilities should be embedded at regular distances between 100.00 m and 200.00 m. It might be beneficial to locate rest areas more close at long gradients (Fig. 3.38).

Figure 3.38: Regularly Suitable Distances between Rest Areas
(URL 8)

As it is indicated by Axelson, et al. (1997), the rest areas should be placed close to public toilets, telephones and have proper and various seats and tables with shading elements along the trails.

According to UN, seats should be set back from the main route by at least 900 mm and blank areas should be installed at regular distances about 1.200 mm to enable wheelchair users to sit beside family or friends (Fig. 3.39).

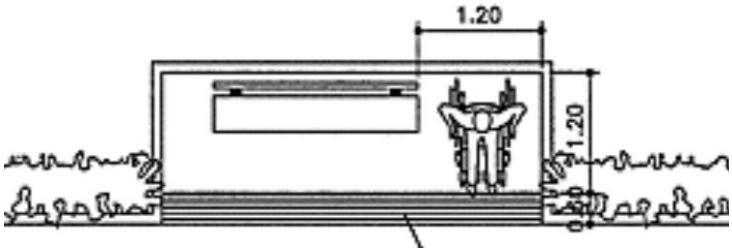


Figure 3.39: Adjoining Space for a Wheelchair Users (URL 8)

Furniture creates primary points of social contact and is utilized for resting, eating, and conversation points. They enable users to stop and experience the environment (Evans, Donnelly, 1993). In general, inclusive seating is significant while creating accessible places (Fig. 3.40).

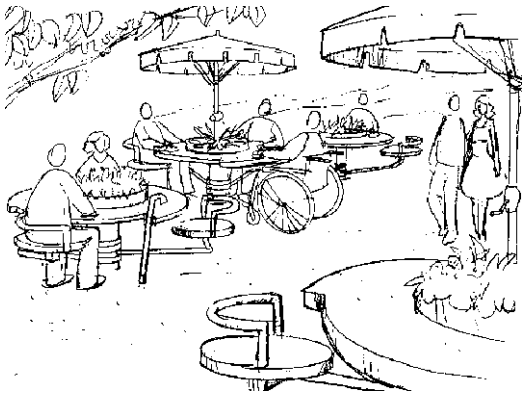


Figure 3.40: A Sketch from an Accessible Environment (Evans, Donnelly, 1993, p.39)

UN and BS is suggested that public seats and benches should be approximately 0.45 m above floor level, with backrests at approximately 0.70 m above floor level (Fig. 3.41). Children may also benefit from seats at around 350 mm above ground. And

the accessible seating elements should have back, arm rest and slightly sloped to waste water (URL 8).

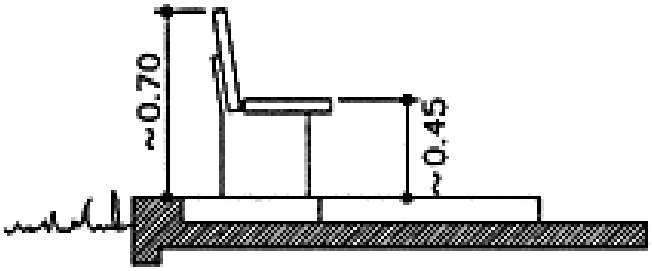


Figure 3.41: Inclusive Seating Element (URL 8)

In addition, Evans and Donnelly (1993) assess that some of physical disable people like person with walking aides more quickly become tired and avoid sitting down because it is too difficult to get up again. The half seating is designed to offer a solution and allow a short break or a deep seating provide a place for relaxing with legs stretched as it is shown in figure 3.42.

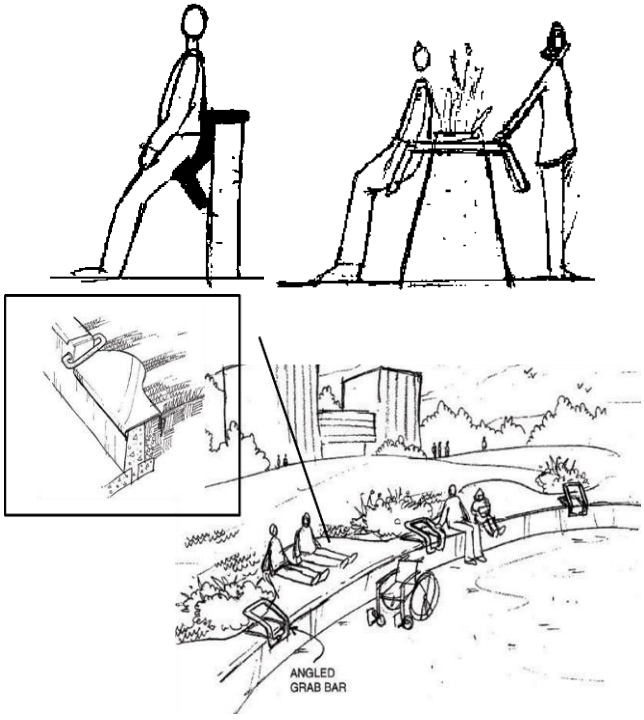


Figure 3.42: A Half Seating Allows Short Break for People and Deep Seating Provide a Place for Relaxing with Legs Stretched (Evans, Donnelly, 1993, p.31)

Meanwhile, tables create a suitable place for eating, reading and other activities. The height of a table should be between 0.75 m and 0.90 m and the minimum depth under the table should be 0.60 m, in order to free movement to all directions (Fig. 3.43).

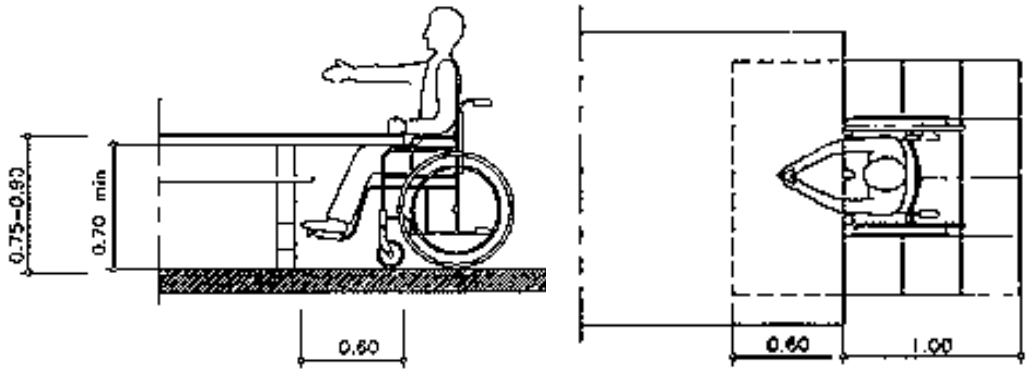


Figure 3.43: Standard Tables Create a Suitable Place for Eating, Reading and Other Activities (URL 8)

3.2.3.2 Lighting

Good lighting must be provided at seafronts that all people are able have safety and comfortable at night time. The illuminance, the quality of the lighting, good color rendering and the avoidance of glare are key factors to be considered. Amount of light falling on a surface is measured in lumens per square meter (lm/m2) or lux (lx). According to British Standard (2010), illumination levels on the sign surface shall be in the 100 to 300 lux range (10 to 30 foot candles). For example, accessible parking spaces and the building entrances should have at least 20 lux. However, the minimum illuminance of ramps and steps should be 100 lux to achieve safety for all people (URL 9).

3.2.3.3 Signage and Street Information

Perfect and detailed street information can help users to choose appropriate routes and increase safety and comfort in accessible routes. Street information can be

provided in many types, including signs, maps, and posters. Bentzen and Tabor (1998) mentioned, that signs should inform all details about surface material, obstacles, percent of slopes, and other routes features street at seafronts. This information usually is located at intersections and their design is so obvious to understand even for illiterate people with their symbols (Fig 3.44).

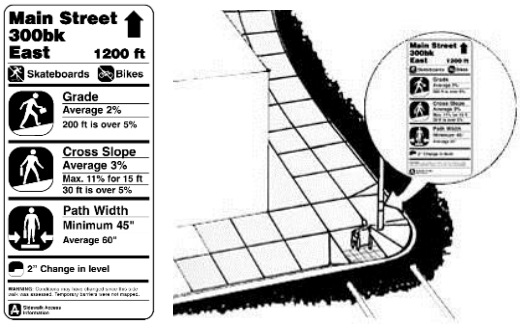


Fig 3.44: One Type of Sign Gives Essential Information about Feature of Street (Axelson, et al., 1997, p. 11-14)

Accessible spaces and facilities should be identified by the international symbol of accessibility (Fig. 3.45).

Figure 3.45: different international symbol for wheelchair users (URL 17)

Directional signs should be used to indicate clearly the type and location of the available facility which are essential in urban spaces (Fig. 3.46). Also, they should be positioned at main entrances, doors, intersections and in places where changes in direction or level happen.

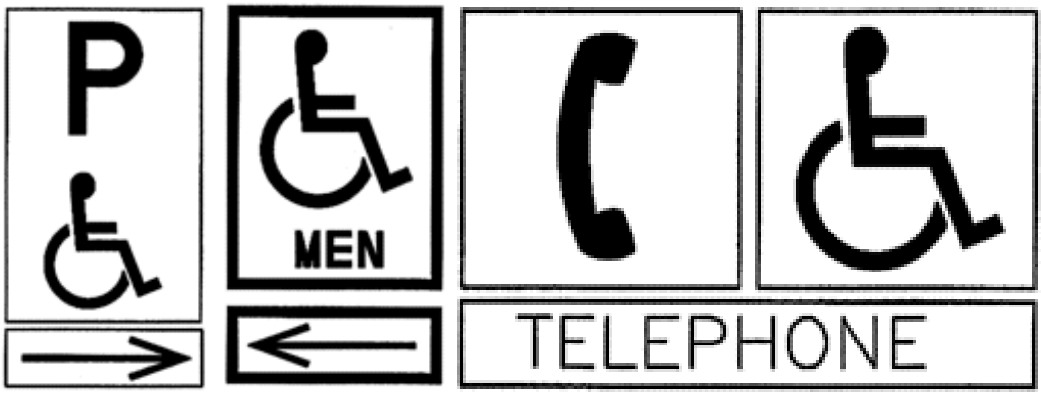


Figure 3.46: Other Types of Essential Signs and Information Signs (URL 18)

At the entrance zones of all seafronts, signs should be located that include detailed information. They are introduced by maps or posters as it is shown in Figure 3.47.

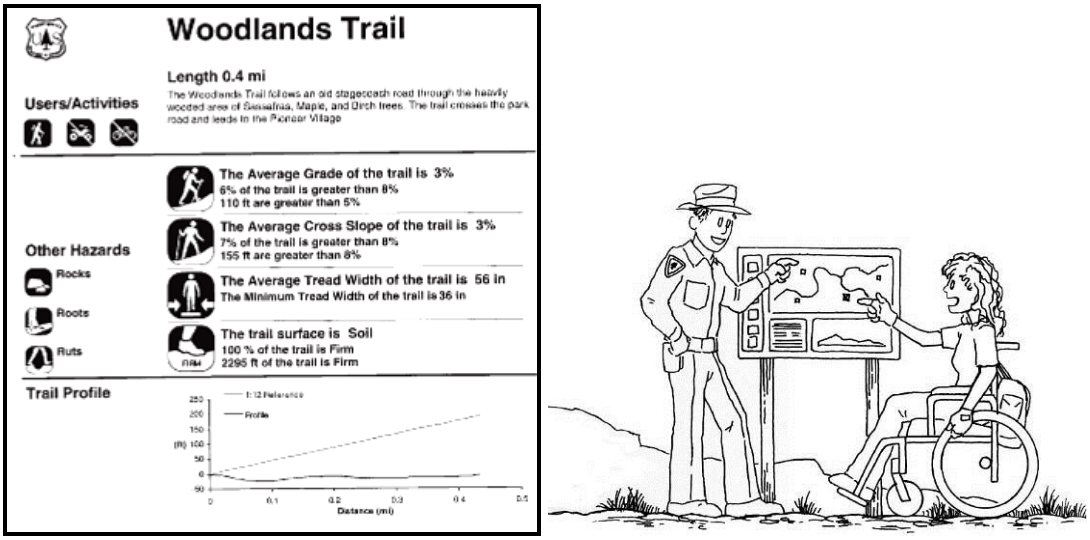


Figure 3.47: Maps at Sea Front Provide Information for the Disable (Axelson, Kirschbaum, et al., 2001, p.13-7 &12-30)

According to the horizontal and vertical range of vision (See Section 3.1.1), UN recommend that maps and information panels along trails, should be placed at a height between 0.90 m and 1.80 m (Fig. 3.48).

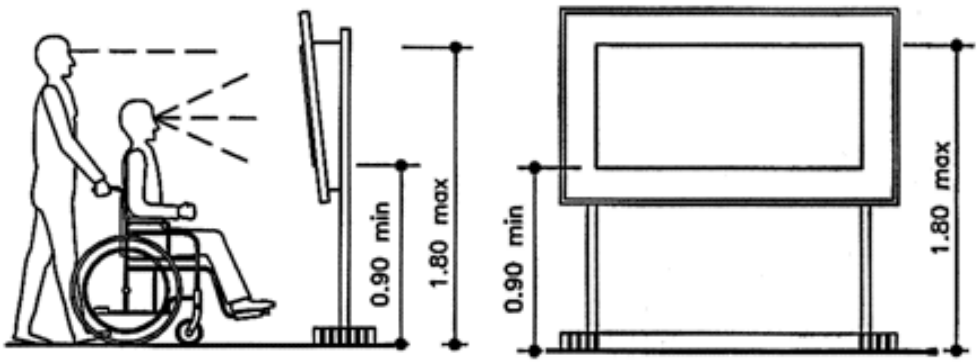


Figure 3.48: Standard Maps as Information Signs (URL 8)

Meanwhile, the color of signs should contrast with the surrounding surface thus as to be clearly distinguishable. Usually the use colors are white, black, yellow, red, blue and green. The color combinations red/green and yellow/blue should not be used (URL 8). Additionally, the other important point in signs is the size of letters that should be in proportion to the reading distance. As is considered by Kell and Fullerton (1982), the proportion of width-to-height for letters and numbers should be between 3:5 and 1:1 and the character stroke width-to-height ratio must be between 1:5 and 1:10 (Fig. 3.49).

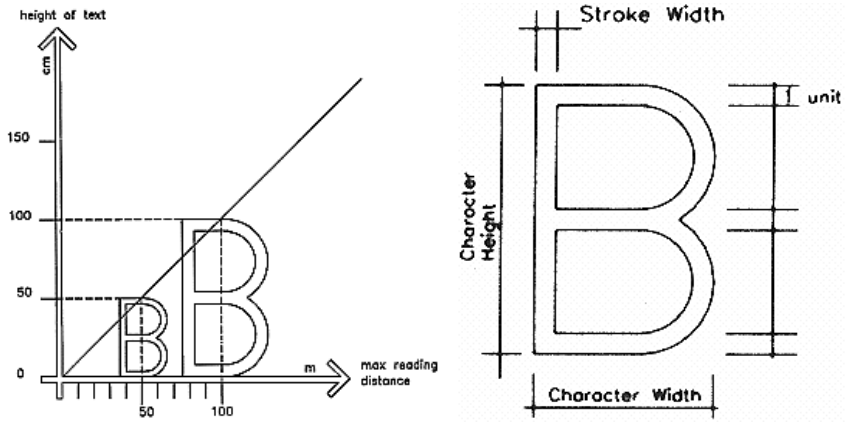


Figure 3.49: Width-To-Height Ratio (URL 8)

3.2.3.4 Play Component

Typically playgrounds are equipped by activity facilities because all children like playing with play component. “Public park and playground are the significant feature

and increase the quality of life. Also, the areas provide a recreational opportunities, public activity and meeting area for all people" (Pasaogullari & Doratli, 2004). All playgrounds should be produced play opportunities that are inclusive and celebrate diversity. Besides, there should be provided environments that promote free play. One of the important priories in a playground is play component. A play component is an element designed to generate specific opportunities for play, socialization, and learning. Swings, spring riders, water tables, playhouses, slides, and climbers are different play components. At least one of each type of play component must be designed accessible with an accessible route.

Figure 3.50: Accessible playground (U.S. Access Board a Summary of Accessibility Guidelines for Play Areas, 2005, p.8)

Figure 3.51: Accessible play component (U.S. Access Board a Summary of Accessibility Guidelines for Play Areas, 2005, p. 27, 28)

U.S. Access Board Summary of Accessibility Guidelines for Play Areas is divide play components to two types: Ground level play components, elevated play components.

3.2.4 Maintenance

Regular maintenance of all urban spaces can improve visitor safety, protect all constructed and natural resources, and create sustained access to the environment. Maintenance of routes involves a number of accurate actions (Birchard, Proudman, 1981):

- Checking the structural features of routes, like steps, bridges and ramps.
- Be careful about the surface free of obstacles, such as Obstacles commonly include bins, parked cars and signs.
- For decreasing most of damaging, well-designed drain channels, and maintaining slopes on paths bed.
- Cutting vegetation to create problems for the surfaces
- Maintaining the covering of surface and joints to create problems by grates.

Maintenance can contain repairing the surfaces of sloped and decrease the gradient of inappropriate ramps, increasing the width of route and filling holes and gaps.

3.2.5 Built Facilities along Sea Front

Disable people like to participate in all types of public activities. It is important that built facilities along the sea fronts like car parking spaces, restrooms, and restaurants and café are existed along seafronts to design accessible. These built facilities should be provided along an accessible route on P.O.S., including restrooms, drinking fountains, parking and some building for eating or drinking like café and restaurants lots regardless of the user types.

3.2.5.1 Parking

The most significant problem that all disable people face with poor parking facilities, insufficient width of the parking and not enough number of parking space for the disabled. Designers should provide accessible parking facilities as close as possible to the point of destination.

UN and ADA are put forward the number of for disables. If a car parking have 400 spaces, there should be provided one accessible space for every 50 spaces. However, if car parking has more than 400 spaces, there should have at least 8 accessible parking spaces plus I spaces for every 100 vehicles over 400 (Table 3.10). Accessible parking spaces shouldn't be places more than 50 m from the specific public space or building entrances.

Table 3.10: Parking Spaces Requirements for Accessible Parking Spaces (URL 10)

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

On the other hand, BS is considered the number of parking spaces according to the existing function of the area. The minimum number of accessible parking space for workplaces is one space for every disable employee plus 5% for disable visitors.

And, the minimum number of accessible car parking space next to the shopping and recreational spaces should be one space for each physical disable employee plus 6% (URL 20).

In addition, the Standard is considered parking to three categories that is listed on-street parking, off-street.

- **On-street Parking:**

On‑street parking should be cleared by signs and installed a curb ram to permit appropriate access (Fig. 3.52).

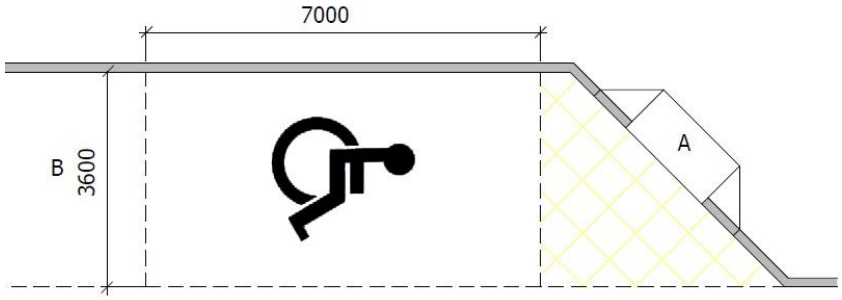
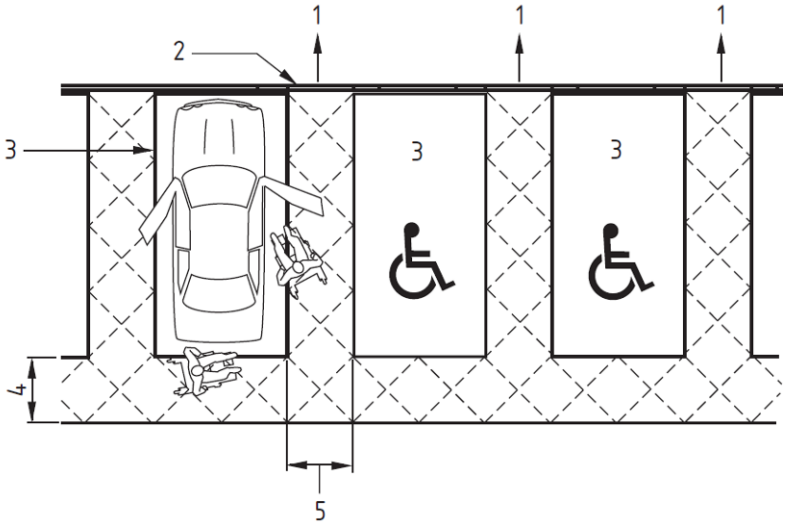


Figure 3.52: Example of a Designated On-street Parking (URL 19)

- **Off-street Parking:**

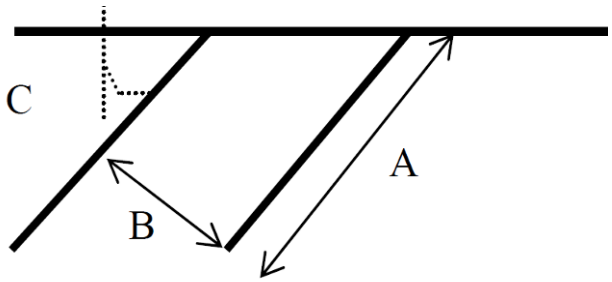
The minimum standard for car parking is 2,400 mm × 4,800 mm and an unobstructed border should be available to simplify comfortable maneuvering for the disable especially for wheelchair users (Fig. 3.53).



1. Preferred access route avoiding travel behind parked cars
2. Dropped kerb or level access
3. Standard 2 400 mm × 4 800 mm designated parking space
4. 1 200 mm wide safety zone for boot access and cars with rear hoists, outside the traffic zone
5. 1 200 mm wide marked access zone between designated parking spaces

Figure 3.53: Access around Designated Off-street Parking Spaces (URL 20)

Some of the car parking spaces are angled; angled car parking requires a larger maneuvering space than those are place perpendicular to the sidewalks (Fig. 3.64).

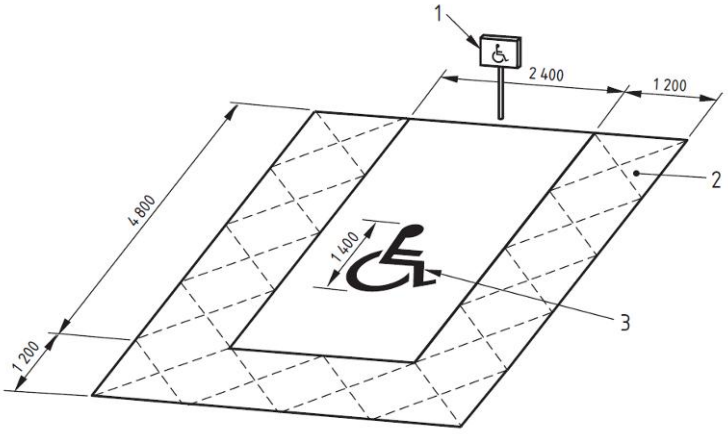


	(A) (m)			(B) (m)		
Angle of park (C)	30°	45°	60°	30°	45°	60°
Standard Dimention	5.4	5.4	5.4	3.6	3.6	3.6

Figure 3.54: Standard Dimension of Angled Parking (URL 21)

The parking spaces for disable people certainly should be clear with sign that it should be fixed 1000 mm above the ground, to identify parking space when road

markings obscured e.g. by snow or fallen leaves. The sign should be an international symbol for access which they are white and blue (Fig. 3.54). Accessible parking spaces shall be located on the shortest accessible route.



1.Sign, with its lower 1 edge 1 000 mm above the ground, to identify parking space when road markings obscured e.g. by snow or fallen leaves, with the words “Blue badge holders only”
2.1 200 mm wide access zone between designated parking spaces
3. International Symbol for Access

Figure 3.55: Accessible Off-street Parking Spaces (URL 20)

3.3 Summary of the Chapter:

Chapter 3 is the last part of theoretical framework through the literature review. This chapter is composed of two sections. The first one is considered the anthropometric principle of the disable to achieve an ergonomic design with the user’s expectations and their needs. In the second section, accessible design with various type and number of guidelines are explained. Therefore, the research used the most affective law, standards and guidelines to analyze and improve accessibility at seafronts. Also, the definitions of the guidelines were given.

After finishing the third chapter, in the following chapter (chapter 4), the specified case studies (Kyrenia and Laguna Sea Fronts) will be evaluated for the disable in terms of accessible design.

Chapter 4

CASE STUDY: EVALUATION OF ACCESSIBILITY AT KYRENIA AND LAGUNA SEAFRONTS

4.1 Introduction

In this chapter, Kyrenia and Laguna Sea Fronts are evaluated in terms of accessibility for ambulant disabled people. The study is tried to highlight the problems and find suitable solutions according to characteristics of their components. For this propose this chapter included four main sections; in the first section (4.1) the introduction has been presented, in the second part (4.2) will consider methodology of the study, the third one (4.3) is included evaluation of Kyrenia Sea Front in terms of accessibility for the disable persons and the last section (4.4) is about Laguna Sea Front's analysis.

4.2 Methodology of Study

This study is a basically qualitative research that in this research, two different analysis methods are used. The methodology of the research includes physical analysis, data collection and data analysis. For the **physical analysis**, existing maps of Kyrenia and Famagusta are collected and then new maps are developed from these. The analysis stage is essential for defining current problems regarding to inventory forms related with accessibility of seafront for ambulant disabled people. Then, **observation** and **visualization** by photographs is considered to evaluate the accessibility of ambulant disabled people.

Kyrenia Sea Front is evaluated according to developed inventory forms divided to eight streets, one square, two playgrounds and two parking spaces (See Appendix A, Table 1-13). On the other hand, Laguna Sea front is included two streets, one playground, a parking, and one beach (See Appendix A, Table 14-18). The streets are analyzed in terms of accessible route (width, obstacles, grade and cross slopes), accessible surface (surface material, gaps or grates and change in level), accessible comfort facilities (inclusive furniture, lighting and signs), maintenance and accessible built facilities (like parking and access to building). And the located square is evaluated in terms of accessible route (width, obstacles, grade and cross slopes), accessible surface (surface material, gaps or grates and change in level), accessible comfort facilities (inclusive furniture, lighting and signs) and maintenance. Also the parks is analyzed according to accessible route (width, obstacles, grade and cross slopes), accessible surface (surface material, gaps or grates and change in level), accessible comfort facilities (inclusive furniture, lighting and signs), accessible activities (accessible play component) and maintenance. Finally the parking spaces is evaluated in terms of the number of parking lots for the disable, type of parking space (on-street parking, off- street parking and angled parking), accessible surface (surface material, gaps or grates and change in level), accessible comfort facilities (lighting and signs) and maintenance.

4.3 Kyrenia Sea Front

Kyrenia is one of the important coastal settlements of North Cyprus (Fig. 4.1). The harbor and castle are most significant characteristics of Kyrenia city. Kyrenia city has a rich history. Aechean settles founded Kyrenia city in the 10th century BC as the main city kingdoms. Byzantines fortified the city against the Arab attacks and

developed Christainity during the 7th century BC. The Lusignans developed the town and the Byzantine fortifications. The east and west kyrenia Caste rebuilt and the castle was constructed on south. The Castle was strengthened and the city started to grow to the west and south during Venetian period. The Ottomans period is lasted between 1570-1878. The British developed the town and tourism (Gürsoy and Smith, 2006). Hanworth (1990) stated the city was developed to attract many tourists during the Republic Period. The image of the town has changed by new constructions after 2000.

Kyrenia seafront is located on the northern coast of the island. Kyrenia is the most attractive place of North Cyprus. Kyrenia is most important seafront in North Cyprus that it is used not only, by the local people and the most of people living in Cyprus but also many visitors coming to the island.

Figure 4.1: Location of Kyrenia City in Cyprus (URL 2)

The sea front at Kyrenia city provides recreational experience and entertaining facilities. Thus, these spaces should be accessible for everybody. In this chapter, the focus is the evaluation of the accessibility of various public urban spaces at Kyrenia and Laguna seafront. The most basic spaces to create seafronts are streets and some

built facility in street like parking spaces, buildings (restaurant, café…), squares and playgrounds.

4.3.1 Evaluation of Accessibility at Kyrenia Sea Front, Streets

Kyrenia Sea Front is divided to eight streets and it is analyzed in terms of accessibility for physically impairments.

Street 1:

The location of street1 (ST1) is between the junction point of Kupdemir Soak, 20 Temmuz Kordonboyu Avenue and the Kyrenia Castle (See Appendix A, Table ST1). This street is located the west of Kyrenia Castle (Map 4.1).

Map 4.1: The Location of Street 1 Where Is Located the West of Kyrenia Castle (Municipality of Kyrenia)

This is a historical street that is enclosed by buildings at one side and the castle wall on the other side. The straight street is vehicular and pedestrian. The street has different width in various zones. Width of the sidewalks is between 500 mm and 1800 mm (See Appendix A, Table ST1). The width of some zones is not standard for ambulant disabled people. Moreover, there are many obstacles like lighting elements,

trees and ash been to decrease the width of the street that create barriers for the disable (Fig. 4.2). Also, because of lack of car parking, it is observed that cars are parked on the sidewalks that create obstacles and decrease width of sidewalk (Fig. 4.3).

Figure 4.2: Reduce Width of Route By Lighting Elements As An Obstacle

Figure 4.3: Parking Cars in Sidewalks That Create Difficulty

Additionally, it is observed that at the end of the street; there is a steep grade that makes the travel impossible for the disable people as it is shown in Figure 4.4.

Figure 4.4: Steep Grade Make Movement Difficult for Wheelchair or Crutch Users to Keep Their Balance

Moreover, sidewalk and vehicular route in the whole street are in different level is more than 13 mm. Therefore, there should be embedded curb ramps for travelling

between sidewalk and street, while there is not any ramp for connecting sidewalk to street or vice versa (Fig. 4.5).

Figure 4.5: Lack of Curb Ramp and Inappropriate Width Cause Limitation for Travelling in the Street

The other factor that has deep influence on accessibility is surfaces treatments that are include to material, gaps or grates and change in level. The first point is material of surfaces and their joints that have effect on accessibility. The vehicular street is paved by asphalt and its sidewalks are covered with decorative stones and concrete tiles. Decorative pavement cause a bumpy trip or uncomfortable for the disables. Also, the joints of concrete tiles are not suitable according to BS that is mentioned in chapter 3. As it is shown in Figure 4.6, non-standard joints cause wheelchair caster & walking aid trip and they cannot move.

Figure 4.6: Difficulty Negotiating by Unsuitable Joints Because Wheels Is Caught between the Joints.

Wheels of wheelchair and walking assistants like crutch get caught in grate and gap openings (Fig. 4.7). Ignoring the maintenance of surfaces is the most important cause

to create gaps and grates. Thus, maintaining the sidewalk is essential for providing access and comfortable travelling in the public routes.

Figure 4.7: Regular Maintenance Is Essential for Comfortable Movement

The last point is change in level that the vertical displacement should be less than 13mm otherwise there should be embedded suitable ramp or stair. Stairs should be constructed if there is no alternative design to apply ramps. If stairs are designed on the route, its design should have the depth more than 950 mm. The disable people should be able to move on steps without assistance.

However, at the end of street 1 it is observed that the displacement is covered by some stairs. The stairs is not suitable for the disable who have to travel by wheelchair users (Fig. 4.8). Also, it is so dangerous to travel in street because, there is a steep gradient and there is not any good view for car drivers.

Figure 4.8: Inaccessible Stair Box.

There is no street furniture along the street 1 that are specially design for disable. Furthermore, lack of information signs and lighting element can create many hazards for the disable (Fig. 4.9). The street doesn't have necessary security for the disable and there is not accessible because of the points is mentioned.

Figure 4.9: Due to Lack of Furniture, Lighting and Signs Cause Unfamiliar and Unsafely Environments.

Street 2:

The location of street 2 is at south of Kyrenis Castle (See Appendix A, Table ST2). This is a historical street that is completely straight and enclosed by trees (Map 4.2). It is pedestrian but cars are parked along the street.

Map 4.2: Street 2 (ST2) Is Located South of Kyrenis Castle (Municipality of Kyrenia).

There are some positive items related to width and gradient however street 2 generally is not accessible not only for ambulant disabled persons, but also for all

people because the street is totally unsafe. As it is clear in Figure 4.10, it doesn't have any sidewalk and cars are parked along the street.

Figure 4.10: The Street Is Dangerous Because of the Vehicle Route and Sidewalk Is Not Separated.

Width of the street is between 6,000mm and 8,000mm that is clearly standard for the disable. Also, obstacle is not observed along the street. Other point that has a significant effect on accessibility is grade of paths; generated because of topography. Grade of street 2 is less than 2 percent which is appropriate for the disables. Also, decorative stone creates uncomfortable feeling as well as repairing of the surfaces which cause dangerous gaps and grapes on the surfaces.

Although, the ramps are preferred in vertical displacement, change in level more than 13mm in the surfaces should be protected by standard ramps or stairs. There are two non-standard stairs. The first one provides accessing from parking to the street and the second one for accessing to Kyrenia sea front (Fig. 4.11).

Accessing from car parking to the street

Providing access to K.S.F

Figure 4.11: Inaccessible Stairs Create Barriers in the Public Domain.

There is no furniture along the street. Furthermore, improving street lightings will encourage people to have nightlife but the street has poor lighting. Ensuring a sense of safety is essential for all areas while it is ignored in street 2.

Street 3:

As it is clarified in Map 4.3, the location of street 3 is at the east side of the Kyrenia Castle. The quay street is straight, wide and pedestrian street.

Map 4.3: Street 3 Is Placed the East of Kyrenia Castle (Municipality of Kyrenia).

Function of the historical street is quay Street. Nowadays, as it observed car are parking to street 3. The width of sidewalk not only determines the types of access but also provides enough space to accommodate accessible comfort facilities like lights

at night and furniture. On the other hand, obstacles in the pedestrian environment are defined as objects which reduce the width of the passageways. Because of the street is wide enough, no obstacle is observed on the path.

Grades are often difficult to control in the sidewalk because sidewalks follow the path of the street. It has slopes to move rain water toward sea. The perpendicular grade cause trouble for movement of wheelchair users and needs more energy as it is presented in the sketch of Figure 4.12. Also, the other significant problem of this space, the grade and lack of edge protection create unsafe environment for all especially for the children who not able to manage risky conditions. As it is observed, there is not any guard to protect people from danger fall.

Figure 4.12: A Route with A Steep Grade in Different Direction of Travelling Route Make Travel Difficult for Wheelchair Users.

The Surface at street 3 is covered by decorative stones which make an uncomfortable or bumpy feeling to ride because of poor maintenance of joints and create fall hazard in some places with deep gaps and grates (Fig. 4.13).

Figure 4.13: Tripping Hazard and Deep Gaps.

Regular path maintenance can improve visitor security. As it is seen in Figure 4.14, poor maintenance is the most significant problem cause unsafe spaces and prevent accessibility at the K.S.F.

Figure 4.14: Poor Maintenance of the Material Covering.

Furthermore, the other fundamental objective is that there are no built ramps or standard stairs for connecting different levels while there are enough spaces for installing appropriate ramp or staircases (Fig. 4.15).

Figure 4.15: Lack of Ramp and Beveled Edge Create Problem for Wheelchair Users.

Street 4:

Street 4 is located north side of the historical Castle (See appendix A, Table ST4). This is pedestrian, straight and short street but, drivers temporarily allow to enter to this street (Map 4.4).

Map 4.4: Street 4 Is Positioned on the North of Kyrenia Castle

Street 4 is wide enough to give opportunities for accessibility. Unfortunately cars obstruct the route (Fig. 4.16, 4.17).

Figure 4.16: The Width of Street 4 Is Between 4,000 to 8,000 mm.

Figure 4.17: Cars Provides Unsafe Environment and Obstacle for All.

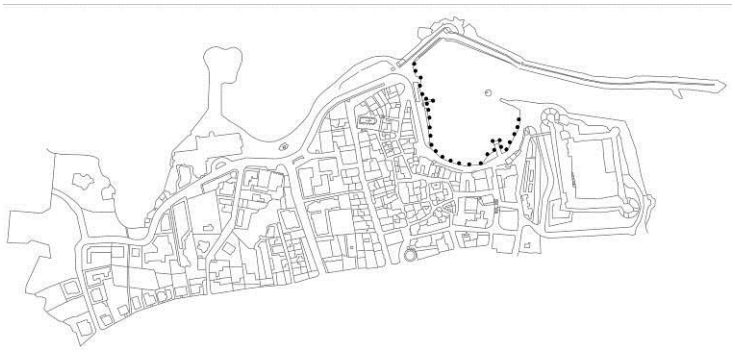
As similar to street 2 & 3, the street is also paved by decorative stone which are not suitable for disables because of the poor maintenance. The street like the others doesn't have appropriate lighting and furniture to survive nightlife around of the historically significant castle.

Meanwhile, the other difficulty observed in this street is opposite gradient running along the path. As it is clear in Figure 4.18, rapid change in grade without landing create problem for wheelchair users.

Figure 4.18: Because Two Different Slopes Arrive together without Landing the Path Create Problem.

Street 5:

The location of street 5 is between the junction point of 20 Temmuz Kordonboyu Avenue and the Kyrenia Castle (Map 4.5). The street is multi-functional or mix-use street. (See Appendix A, Table ST5). The curved steer is enclosed by building and restaurants. Street 5 is a pedestrian and vehicular street that cars create danger for all people. Because, the street is so crowded but it is narrow.



Map 4.5: Location of Street 5 (Municipality of Kyrenia).

This street is very crowded especially during the summer because; many restaurants and cafés are located along it. The width of Street 5 is between 2,500 mm till 4,500

mm that is enough. The street possesses furniture which the majority of them are standard and all of them belong to cafés. However, there is no special furniture for the disables. The shading elements and shopping signs create obstacles along the street (Fig. 4.19).

Figure 4.19: The Furniture, Shading Elements and Shopping Signs Make Obstacles for All People.

This street is paved by asphalt that is appropriate but lack of maintenance and drainage channels cause problems. There are some deep gaps where front wheels of wheelchair are caught to make harder user's movement (Fig. 4.20).

Figure 4.20: Wheels Getting Caught in the Grates

Change in level creates obstacle or hazard for individual who are using assistive devices, like wheelchair, canes and crutches. This risk is mostly critical for persons who have trouble for lifting themselves' feet. Decreasing or eliminating displacements will enhance safety and accessibility on paths for all users Fig. 4.21.

Figure 4.21: Change in Level Needs Ramps or Curb Ramps to Improve Accessibility.

This research just considers public open spaces but it should be mentioned the public building (restaurants, cafés, etc.) don't have accessible entrances. As it is shown in Figure 4.22, this problem can restrict the disables. One of the most important built facility in seafronts are public building like café, restaurants, and so on where should be accessible regardless the ability of users. As it is mentioned the entrances of buildings are not accessible. They are designed by stairs which create hazards and limitations for the disables. Also, some of the entrances have inaccessible ramps.

Figure 4.22: Change in Level Is One of the Significant Difficulties for the Disable If They Are Not Designed Well.

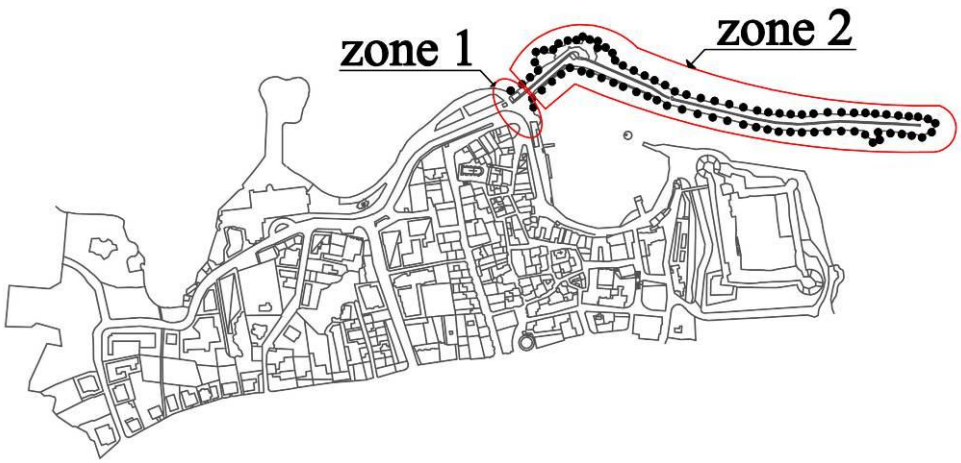
Additionally, most of these public spaces don't have inclusive furniture. Also, the furniture not only located in narrow corridors but also they decrease the width of street as an obstacle (Fig. 4.23). All corridors between furniture provide problem for the disable who use walking aids. The width of the corridors is less than 700 mm that is not suitable wide to allow the disable to pass one another and to turn one

wheelchair users. As it is mentioned in chapter 3, the minimum passing spaces for wheelchair users is a square with 1,525 mm × 1,525 mm that is provided even in narrow corridors. However, as it is observed the corridors (between furniture) are not suitable.

Figure 4.23: Useless Furniture Because of Narrow Corridors.

Street 6:

Street 6 is located on the junction points of Canbulat Street, Sht. Erdal Street and 29 Temmuz Kordonboyu Avenue (Map 4.6). The pedestrian street is long and straight. There is not any building on the street it is used for walking and seeing nice sea view. The street is divided to two zones (See Appendix A, Table ST6).



Map 4.6: Location of Street 6 at K.S.F. (Municipality of Kyrenia).

The width of the first zone is between 800mm to 1,000mm. And it is clear in Figure 4.24, there are some signs and tables as an obstacle to create problem for the disables.

Figure 4.24: There Aren't Wide Enough and Obstacles Decrease the Width.

Access to the service rooms (WC.) is located at the street is impossible because of inaccessible stairs. Service spaces can be reach by narrow stairs that is not proper for the disable (Fig. 4.25).

Figure 4.25: Inaccessible Services (WC.).

The second zone that is the walking path is wide enough. The width of this zone is about 3,500 mm to 4,000 mm. The width provides comfortable traveling and it is proper to be installed inclusive furniture and other amenities.

Figure 4.26: A Top View to Zone 2 of Street 6 (URL 21)

As it is mentioned in the theoretical part surface covering are important in public open spaces. Surfaces covering can support orientation, simplicity of passage for wheelchairs and safety. Street 6 is covered by concrete tiles that can be seen in Figure 4.27. Also, the joint of surfaces don't provide problem for moving wheels of wheelchair and canes. If the size of joint is not standard, wheelchair users and canes will be caught and experience uncomfortable travelling. However, the joint of pavement on ST6 is appropriate for all.

Figure 4.27: Covering Material on Street 6.

All surface of the street is in the same level; flat. At the beginning of the street (zone 1) as it is observed in Figure 4.28 provide two curb ramps for connecting vehicle road to street 6. Grade of the first ramp (left photo in Figure 4.28) is suitable (less than 2 percent). However, surface of ramp has gaps to provide hazard for the disable

because of poor maintenance. The existing ramps are blocked by obstacles or cars that are limit user's movement (Fig. 4.28).

Figure 4.28: Available Curb Ramps in Zone 1 at Street 6.

The street possesses appropriate furniture. However, there are some folding chairs which can provide difficulty for children and people with canes (Fig. 4.29). Additionally, there are no shading elements along the street while shading elements are essential for Cyprus climate. One side of the street is definite by a wall about 1,500 mm, but the other side is open where lack of edge guard loses safety and security for all (Fig. 4.30).

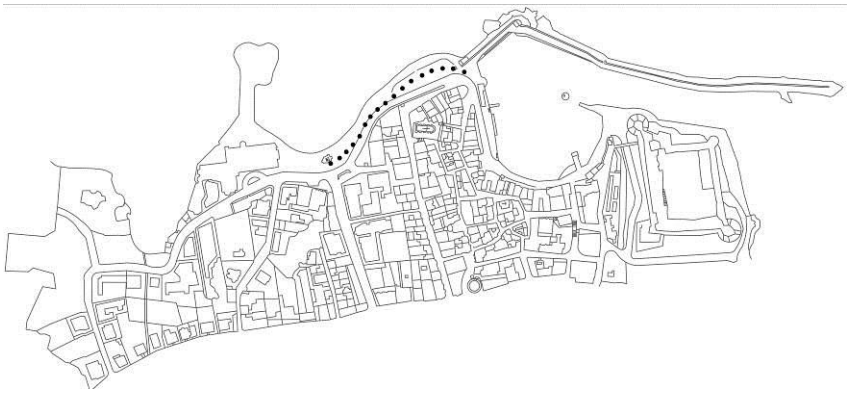
Figure 4.29: Old Furniture Doesn't Have Back and New Ones Create Problem.

Figure 4.30: Lack of Edge Protection Causes Unsafe Space.

There are some lighting elements but they are not enough for creating nightlife. And the majority of them are useless because of poor maintenance. In general, street 6 is accessible but there are some significant deficiencies which can be removed by improving its design.

Street 7:

Street 7 is located between intersection points of Ersin Aydin Street, Ataturk Avenue and 20 Temmuz Kordonboyu Avenue (Map 4.7). This mix-use street is a curved and enclosed street since it has different functions like commercial and retail. It is both pedestrian and vehicular street (See Appendix A, Table ST6).



Map 4.7: Location of Street 7 (Municipality of Kyrenia)

This street has two sidewalks which are located on two sides of the street. The one next to the buildings has width about 1,800 mm. It doesn't possess any street furniture and shading elements. But the other side, the sidewalk has the width between 1,500 to 6,000 mm in different zones (See Appendix A, Table ST7) with the variety of seating elements and small number of shading elements which is not enough for the area. This space is wide enough to provide an accessible sidewalk for all users (Fig. 4.31).

Figure 4.31: Different Width of Street 6 in Various Zones.

However, it is observed that the obstacles at the sidewalk decrease the width of that area that limits ambulant disabled users' access. And lack of garbage in public spaces causes visual pollution as well as obstacles (Fig. 4.32).

Figure 4.32: Obstacles Create Barriers for the Disable.

There are two gradients. The first is suitable for access. However, second one is not standard and somehow make upward movement difficult Figure 4.33.

Figure 4.33: Rapid Changes in Gradient Cause Upward Movement Difficult

The surfacing materials on ST7 are asphalt at street and concrete tiles on sidewalk that cause problems for disables. Also, the joints of concrete tiles create problems for

the disables as well. The sidewalk paths have uncomfortable grates and dangerous gaps that can cause tripping hazard for wheelchair users. Besides, it has lack of maintenance (Fig. 4.34 & 35).

Figure 4.34: Poor Maintenance Can Restrict Access & Threaten Safety for the Disable.

Figure 4.35: Drainage Cause Control Lose & Create Tripping Hazard.

As it is observed in Figure 4.36, the change in levels between street and sidewalk is overcome by standard curb ramps. Unfortunately, they are obstructed by vertical obstacles or vehicles.

Figure 4.36: Obstacles Create Inaccessible Curb Ramp

Besides, at this part of street there is a ramp that has unsuitable width, grade and dangerous edge. Their uses may cause danger for disable people. Moreover, stairs are positioned next to the ramp doesn't have standards according to accessible design (Fig 4.37).

Figure 4.37: Non-Standard Stairs and Ramp According to Accessible Design.

There are some stairs in the street that are so dangerous for all people. This stair without handrails as a guard protection can cause hazardous place not only for the disable and children but also for all people (Fig. 4.38).

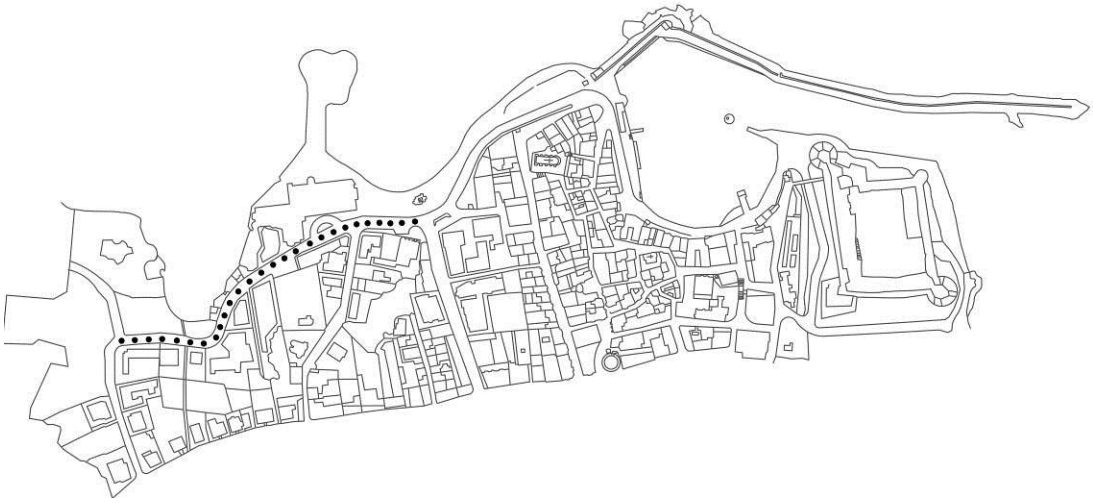
Figure 4.38: Dangerous Stairs at K.S.F.

The sidewalk of street 7 is wide enough to put furniture and seating elements which provide opportunities for relaxation. The number and size of them is suitable for all individuals except children. Furthermore, in this region plants and trees create shading for some resting areas that is proper for the climate (Fig 4.39). Additionally, there are lighting elements in the street but they are not enough. The street has some problems related with maintenance. It needs regular maintenance for proper uses.

Figure 4.39: Samples of Furniture That Are Available in Street 7

Street 8:

Street 8 lies between the military zone and intersection of Ersin Aydin Street and 20 Temmuz Kordonboyu Avenue (Map 4.8). This mix-use street is an enclosed and curved street because it includes different function like leisure, retails, commercials and offices. The street is pedestrian and vehicular. In general, the street is so crowded and unsafe for disables (See Appendix A, Table ST8).



Map 4.8: Location of Street 8 (Municipality of Kyrenia).

The sidewalks have different width and suddenly it stops that create danger for everybody.

There are driveways crossing where permit vehicles to cross the pedestrian paths and enter to street. Unfortunately, these driveways crossing in different parts are blocked by vertical obstacles. The street is so dangerous and inaccessible for ambulant disabled people as it is shown in Figure 4.40.

Although curb ramps is constructed during the street, it is not suitable and safe. Because, they are obstructed by vertical obstacle or they have two steep gradients in

different direction. The gradient in different direction can create dangerous areas for the disable.

Figure 4.40: Dangerous and Terrible Design in Driveway Crossing.

Meanwhile, some areas in the street don't have any sidewalk for pedestrian and people should walk on vehicle route that create a terrible risk for all especially children. Furthermore, width of some sidewalks is less than 500 mm. This width is not enough for crossing two normal people from each other (Fig 4.41).

Figure 4.41: Lack of Sidewalk and Unsuitable width for Sidewalk Creates Risk for the Disable.

While width of sidewalks is not suitable for the disable people, there are obstructed by obstacle like signs, rubbish and lighting elements. Unfortunately some sidewalks are blocked by cars and motorcycles (Fig 4.42).

Figure 4.42: Obstacles Are Shown By Red Circles.

This street is covered by concrete tiles, ceramics on sidewalks and asphalt at street. Surface materials are suitable but absence of maintenance and the cracks on the surface created risk and problems in this route (Fig 4.43).

Figure 4.43: Gaps and Opening Create Problem at Street 8.

There are many different levels on surfaces. Just some of the displacements are connected by ramps which are not suitable according to accessible design and they

can provide danger of falling for the disables (Fig 4.44). And, lack of ramp in some areas restricts wheelchair users (Fig. 4.45).

Figure 4.44: Inappropriate and Hazardous Curb Ramp.

Figure 4.45: Lack of Ramp Provide Problem and Limitation for the Disables

Moreover, there are many on-street parking in the street but they are not accessible for the disables. Furthermore, lack of rest areas and adequate lighting is observed in this street as well. Besides, this street is enclosed by many buildings that they don't have accessible entrance. According to mentioned point; the street is so dangerous and inaccessible not only for ambulant disabled people but also for all individuals.

4.3.2 Evaluation of Accessibility at Kyrenia Sea Front, Square

Square or plaza is the other type of vital public open space at K.S.F. In general, they are used for getting together for various activities such as sitting, socializing and other special events. There is just one civic and quay square at the K.S.F and it is

important node that is called Ataturk square. It has a rectangular shape (Map 4.9). The square is wide enough for passage and other activities (See Appendix A, SQ1).

Map 4.9: Location of Ataturk Square (Municipality of Kyrenia)

Figure 4.46: A View to Ataturk Square (URL 22).

This square is paved with tiles which are hard covering material. The material is firm and slip- resistance but the joint between adjacent paving tiles are not suitable according to accessible design. As it is mentioned in chapter 3, according to British Standard joints are filled with indent should not be more than 10 mm and deep of them should be less than 5 mm. However, the width and deep of covering surface is more than standard to catch wheels and canes for the disable in the square (Fig 4.47).

Figure 4.47: Covering Material & Their Joints.

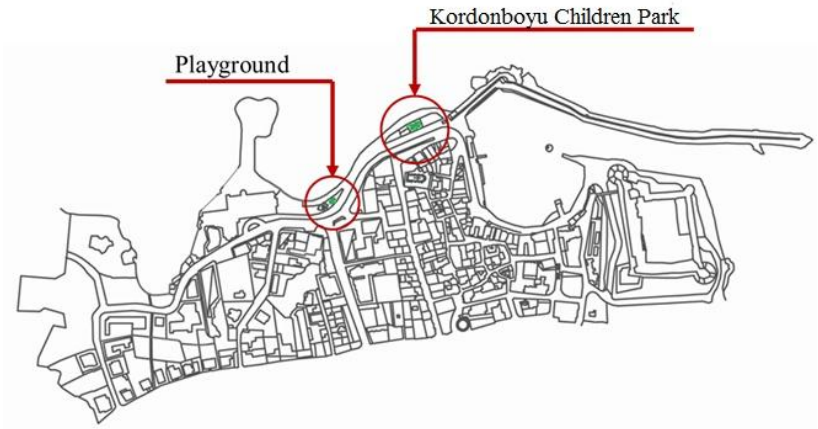
The square doesn't have any different levels and the whole of surface is flat. In addition, there are some seating element and furniture but those don't have backrest and armrest. The seating elements are not standard for elder and children (Fig. 4.48).

Figure 4.48: A View from Furniture in Ataturk Square.

Finally, it can be said that the square is accessible and safe for the disables.

4.3.3 Evaluation of Accessibility at Kyrenia Sea Front, Playground

Playground is one of the essential needs of children. There are two playgrounds at Kyrenia seafront which are shown in Map 4.10. There are different traditional equipment and facilities in the park such as swinging, climbing, spinning, and sliding. All children have the same right for using playground. Therefore, good and accessible design for playground is necessary in order to satisfy this basic right.



Map 4.10: Location of Playgrounds Located at K.S.F (Municipality of Kyrenia).

4.3.3.1 Kordonboyu Children Park

The recreational playground is located between the junction point of street 6 and street 7. The name of the playground is Kordonboyu Children Park. It has rectangular shape (See Appendix A, Table PG1). It has a low wall around the park that the wall provides opportunity for sitting as well (Fig 4.49).

Figure 4.49: Kordonboyu Playground.

The whole surface is flat. The covering material is soft plastic on the playground which is suitable for children. Additionally, the furniture located over there is enough and appropriate according to accessibility. But lack of lighting, shading and landscaping is observed and the existing element at playground is not suitable for disable children.

Figure 4.50: Available Furniture and Play Components in the Playground.

Although there are some positive things related to the area, the playground is not accessible and suitable for the disable children. It's design should be improved in order to satisfy disable needs.

4.3.3.2 Second Playground Located Next to Ataturk Square

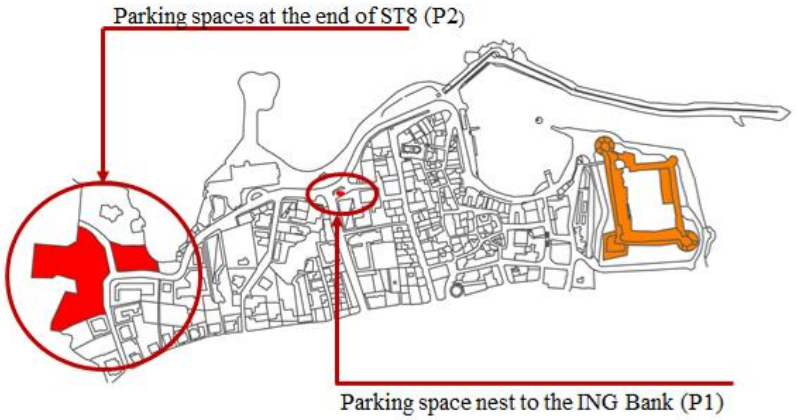
This recreational playground is located next to the Ataturk square that it has amorphous shape See Appendix A, Table PG2). Fortunately, the base is covered by different materials. Trees and flowerbox has decreased the width of footways about 500 mm that is not acceptable for accessible design. It is detected that there is not any ramps or different levels over there. In general, the surfaces are covered by decorative stone in routes and soft plastic material in play area. Gaps and grates create risk for the disables. Furthermore, it should be mentioned that plants and tree have provided shading and friendly spaces.

Figure 4.51: Different Materials Help to Distinguish Play Areas and Walkways.

Furniture of this space is not standard in size for children. They should be set back from the main route by at least 600mm according to British Standard. On the other hand, lack of access and poor maintenance create significant problem. While the playground has good things referred to accessibility, it needs regular maintenance and proper equipment for disables.

4.3.4 Evaluation of Accessibility at Kyrenia Sea Front, Car Parking

In general, there are three parking spaces along the K.S.F. The first one is located opposite of Ataturk square; next to the ING bank (See Appendix A, Table P1). The second and third one is situated at the end of street 8 (See Appendix A, Table P2). These parking spaces are shown at Map 4.11. It isn't proper for disable users.



Map 4.11: Location of Parking Spaces (Municipality of Kyrenia).

There is only one car parking space for the disables at the first car parking. However, it is obstructed with vertical obstacles and there is not embedded curb ramp to connect car parking to sidewalk (Fig. 4.52).

Figure 4.52: The Parking Space Is Not Only Obstructed with Obstacle, But Also There Is Not Any Curb Ramp.

The surfaces of the first parking are pave by concrete tiles. Although, the pavement is suitable, due to lack of maintenance and very close joints, the disables experience uncomfortable riding. But the other car parking spaces are covered mostly by asphalt and concrete tiles. There is no accessible car parking for the disables. Also, because of poor maintenance, there are gaps that create difficulty for the disables. Again, as it is observed, the installed openings for wasting water cause unsafe area for ambulant disabled people The grade of these curb ramps located at the entrance of parking is suitable according to accessible design. However, inappropriate opening and gaps are creating danger for the disable and women with high-heel shoes (Fig 4.53).

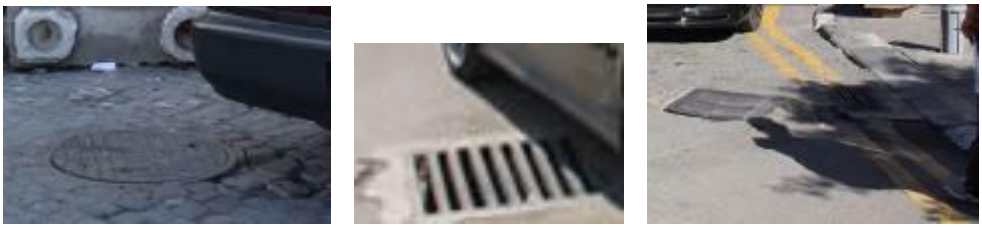


Figure 4.53: Gaps and Opening Provide Hazard for the Disable.

Along the street 1, 5, 7 and 8 include many on-street parking spaces but all of them are inaccessible for the disables.

4.4 Laguna Sea Front

Laguna Sea Front is located at Famagusta (Gazimagusa) that is one of the coastal settlements of Northern Cyprus. The city lies on the east of Mediterranean Sea (Fig 4.54). It is the second largest city of Northern Cyprus. Turkish Cypriots and students of the Eastern Mediterranean University are the residents of Famagusta. The population of the coastal city is about 35,453 at 2006. The disable people that are living in this city are more than 4,597 (Polili, 2012). Also, the number of student is around 15,000 who have significant influence on the economy of the City (Fasli, Pakdel, 2010).

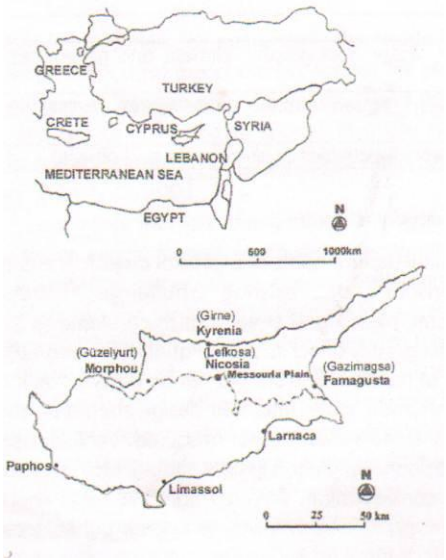
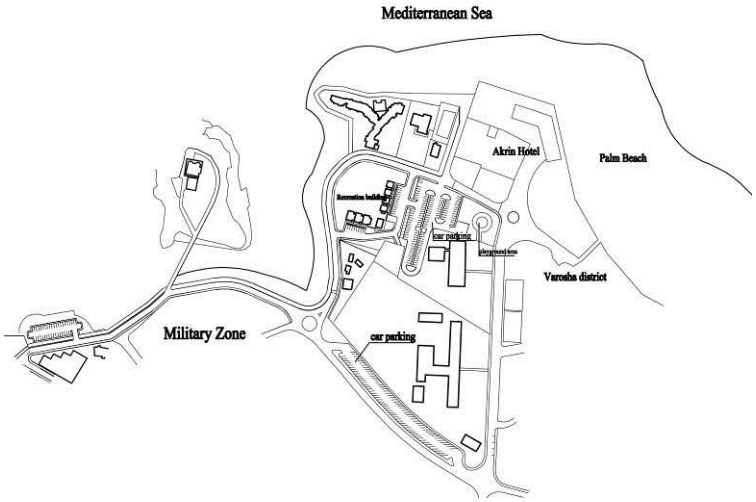


Figure 4.54: location of Laguna at Cyprus (Fasli, Pakdel, 2010)

According to Doratli at 2007, the history of Gazimagusa is considered in seven particular periods. The first period returns to 648-1192 AD when the oldest settlements was founded. The Lusignan period lasted from 1192 to 1489. During this

period, Famagusta improved according to emphasis to the Eastern Mediterranean, its harbor and the walls. After Lusignan period until 1571 was called Venetian period. Variations in social and cultural life had a significant influence on the style of architecture and environment. During 1571-1878 the city was occupied by Ottoman and this period was called the Ottoman. Famagusta was transferred to a modern coastal city in the British period (1878-1960). Also, the sixth period is lasted between 1960 to 1974 and the period after 1974 is the last period (Doratli, 2000). Laguna is the only design coastal area opened to the public uses. Thus, the Laguna Sea Front has a significant influence on Gazimagusa city (Map 4.12). Laguna is placed on the south east of Famagusta. According to Fasli and Pakdel (2010), Laguna is enclosed by the Mediterranean Sea on the north-east, Varosha district in the south and military zone on the west.

An important project was adapted to the L.S.F in 2007. The project includes buildings and outdoor space organizations; such as restaurants, cafés and parking spaces. Especially at summer time, it is actively used by the local people and tourists.



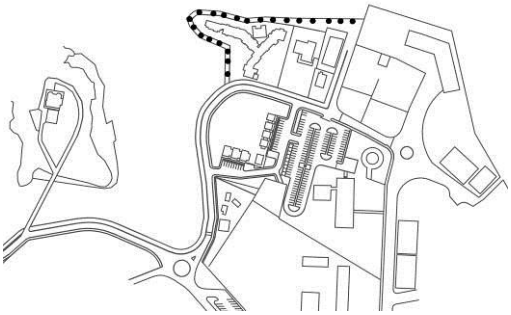
Map 4.12: A Plan of Laguna (source: Municipality of Gazimagusa)

4.4.1 Evaluation of Accessibility at Laguna Sea Front, Streets

Laguna Sea Front (L.S.F) is divided to two streets that are analyzed in terms of accessibility for physically impairments.

Street 9:

Street 9 is located between Palmiye Street and Nadir Street, behind the residential apartments (Map 4.13). The mix-use street is curved, short and pedestrian street (See Appendix A, Table ST9).



Map 4.13: The Location of Street 9 at L.S.F (Municipality of Gazimagusa)

The street has divided to three levels with different width. The middle one was vehicle route. Fortunately, nowadays, the vehicular entrance is closed from one side. The Figure 4.55, the first section is around 900 mm that is not appropriate width for the disable. Other sidewalks are wide enough. However, the third one doesn't have acceptable circulation for wheelchair users.

Figure 4.55: A View from the Street 9

Seating, lighting elements, flowerboxes and garbage are decreased width as an obstacle and in some areas create inappropriate circulation especially for wheelchair users. Also, in the last part of street 9, cars are parked on the sidewalks that create obstacles and decrease width of trails (Fig. 4.56). While plants and trees create shading area in the street, they are obstructed paths by declining its width.

Figure 4.56: Sitting, Lighting Elements, Flowerboxes and Garbage As Well As Cars Decrease the Width As Obstacles.

It is covered by concrete tiles that have suitable joints for the disable. On the other hand, poor maintenance and metal caps create problems for the disables. The netted or parallel metal bars permits water to drop through the opening area. As it is mentioned in chapter 3, either the distance between slides shouldn't be more than 13 mm or they should be located perpendicular to the main direction of travelling. But, inappropriate metal bars can catch the wheels or canes of the disable and cause dangerous travelling.

Figure 4.57: Lack of Maintenance & Dangerous Opening

In General, ramps are preferred comparing to stair for the disables because it is easier to move ones. But if only stairs exit, they should be designed according to accessible design standards. However, the most important problem faced here is lack of ramp and curb ramp for accessing to different levels (Fig. 4.58).

Figure 4.58: Lack of Ramp and Curb Ram.

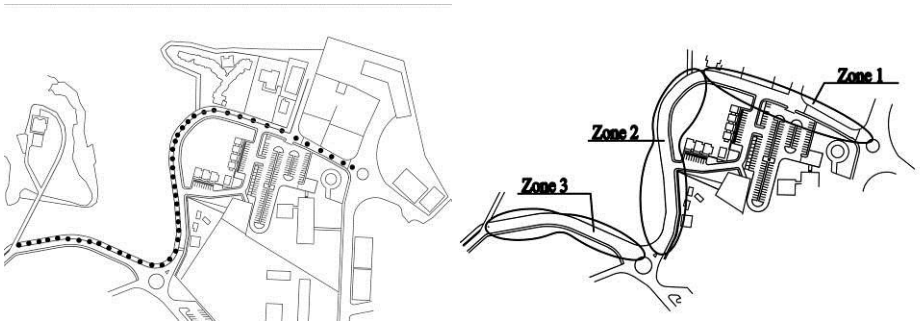
Along the street, enough rest areas are existed with sitting elements which are embedded in suitable distance. However, it is preferred to provide back and armrest for furniture. Again lack of lighting elements creates unsafe area.

Figure 4.59: Available Furniture

In general, street 9 is accessible. However, if the significant problems are removed, proper maintenance are adapted, and curb ramps are provided, it will be more accessible.

Street 10:

The location of street 10 is started from the entrance of Arkin Hotel till the military zone which is called Nadir Street and this mix-use and curved street is pedestrian and temporally vehicular (See Appendix A, Table ST10). This street is divided into three different zones with various characteristics (Map 4.14).



Map 4.14: Location of Street 10 and Its Zones (Municipality of Gazimagusa)

Zone 1 has two sidewalks with a two-way vehicular way but zone 1 and 2 have one-way vehicular path. As it is presented in Appendix A (Table ST10), the sidewalks have different widths that are suitable for the disable. In all zones, furniture, garbage, lighting elements, cars & trees decrease the width of sidewalks and provide restriction for the disables. Also, trees obstruct the sidewalk in some area as an obstacle (Fig. 4.60). Besides, in zone 2 curb ramps are existed to connect sidewalk to vehicular paths but they are obstructed by concrete obstacles (Fig. 4.61).

Figure 4.60: Trees, Garbage and Lighting Elements As Obstacles.

Figure 4.61: Decreasing the Width of Curb Ramp with Cars & Barriers As Obstacles

In the zone 1, both the vehicular street and sidewalks are covered by concrete tiles. It is possible to see both concrete tiles and decorative stones in zone 2. But the decorative stones create problem and uncomfortable riding for the disable. Also, in the third zone, the base is paved with decorative stones and concrete tiles that create uncomfortable travelling. The right sidewalk in zone 3 is covered by cement.

Figure 4.62: Various Types of Material of Different Zones.

Gaps and gratings can create dangerous areas for wheelchair users, users with walking aids, parents with baby carriage and women with high heels. Drainage

should be placed outside the pedestrian pathway. As it is shown in Figure 4.70, there is a drain channel running along the sidewalks of the street and they have metal caps. Drain channel is situated exactly in the end of ramp. The drainages can cause danger for the disables (Fig. 4.70).

Figure 4.63: Dangerous Curb Ramp & Drain Channel.

The useless flowerbox without any greenery not only decrease the width of sidewalk but also, create dangerous gap or grate for the disables (Fig. 4.64).

Figure 4.64: Gaps and Grates Create Dangerous for Disables.

Besides, ignored regular maintenance can cause danger for all people (Fig. 4.65). Therefore, continuous maintenance should be applied to public areas.

Figure 4.65: Lack of Maintenance Cause Danger for Everybody.

In addition, change in levels is a big problem in this area. Furthermore, lack of curb ramps between sidewalk and street is observed. Also, as it is shown in Figure 4.61, the existing curb ramps are obstructed by obstacles made by concrete. Meanwhile, the curb ramps are embedded in driveway crossing to help disables pass the areas easily (Fig. 4.66).

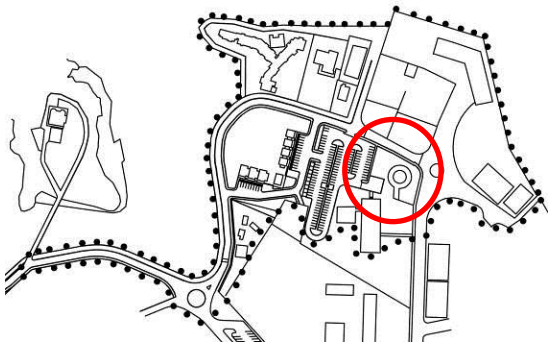
Figure 4.66: Lack of Ramp in Vertical Displacements Limit the Disable

Moreover, lack of furniture is seen in zone 1, but there is enough furniture in zone 2 and 3. Also, lack of signs is observed in all street of Laguna. Entrances of some ramps are blocked by cars. However, some entrances are inaccessible because of lack of ramp and nonstandard stairs.

As sum, although there are some positive things, in general there are some restrictions for physically disable people. It will be more accessible for the disables if the design of street is improved.

4.4.2 Evaluation of Accessibility at Laguna Sea Front, Playground

As it is shown in Map 4.15, the playground is situated at the junction between Kemal Server Street and Nadir Street See Appendix A, Table PG3).



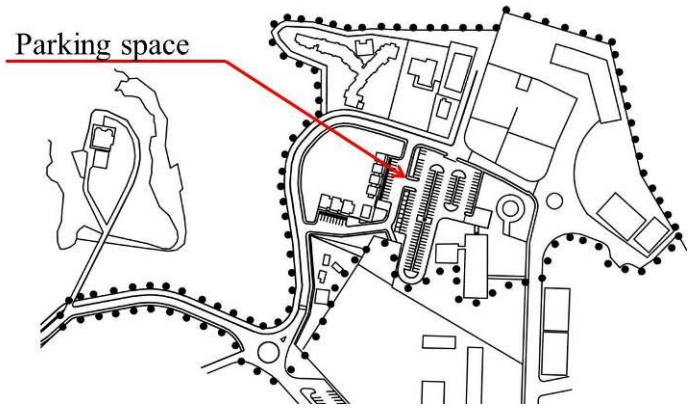
Map 4.15: Red Circle Is Shown the Location of Playground Is Located at Laguna (Municipality of Gazimagusa).

The playground is accessible and safe for all children. The surfaces of playground are paved by cement on walk paths and soft plastic material on play areas. The playground is equipped with accessible facilities for children who have physical impairment. The playground is completely flat and it has suitable furniture for individuals. On the other hand, there isn't any suitable furniture for children. Also, lighting isn't adequate (Fig. 4.67).

Figure 4.67: View of Playground

4.4.3 Evaluation of Accessibility at Laguna Sea Front, Car Parking

This parking is located at Nadir Street and it is very close to the all facilities; such as restaurant, playground, and café and so on.



Map 4.16: Location of Parking (Municipality of Gazimagusa).

Pedestrian routes are constructed to create safe paths in the car parking. However, width of the paths is decreased by lighting elements and garbage as obstacles. As it is observed in Figure 4.68, there aren't any curb ramps that links pedestrian from car parking to its pedestrian routes.

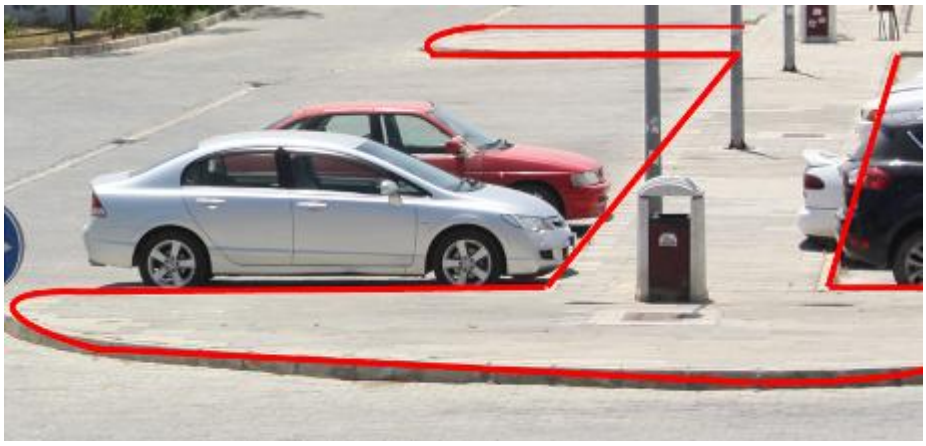


Figure 4.68: Pedestrian Paths in the Parking (Personal Archive).

Furthermore, there is not any clear border to distinguish the parking space from each other. The parking doesn't have any parking area for the disable. There should be provided a border around of parking about 1,200 mm to create enough space for maneuvering. This problems cause hazard and limitations for the disable especially for the wheelchair users.

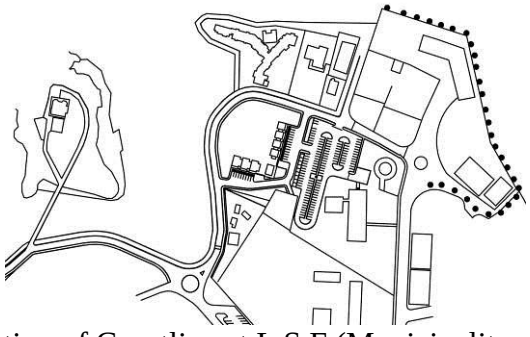
Besides, the surface material is concrete tile that is accessible. Moreover, the parking have a drain channel and caps for removing water but those create problem for physically disable people (Fig. 4.69). Additionally, it is observed that the car parking has lack of signs and proper lighting.

Figure 4.69: Drainage systems Create Hazard Area

Finally the parking is not accessible for physically disable people. When the parking is so crowded there is also unsafe for the disable. This parking can be accessible if the design of the place is improves according to accessible design.

4.4.4 Evaluation of Accessibility at Laguna Sea Front, Beach

As it is shown in Map 4.17, the open space lies from the entrance of Arkin Hotel till the behind of it. This is a recreational seafront with a straight coast (See Appendix A, BA1).



Map 4.17: Location of Coastline at L.S.F (Municipality of Gazimagusa).

This street is about 15,000 mm where mostly there is used for parking cars. Unfortunately, lack of sidewalk creates unsafe area for the disable (Fig. 4.70). Also, cars limit accessibility for the disable and create narrow corridors. The surface of this zone is asphalt that is suitable material but some areas create problem for the disable due to poor maintenance.

Figure 4.70: The View of the First Zone in Beach Analysis

There is corridor to provide access to beach that is shown in Figure 4.71. The width of the route is about 1,500 to 1,800 mm. According to accessible design standards; this width is suitable for the disable. The covering material is stone tiles that have suitable joints but the material cause uncomfortable riding for wheelchair users. Change in level at the end of the route is more than 13mm but, lack of ramp is visible (Fig. 4.71).

Figure 4.71: Lack of Curb Ramp

The coastline is called Palm Beach that is divided to two zones. The first zone is sandy and the second one is rocky. Sandy beach is embedded woody paths (temporary paths) that are a suitable material for the disables. Because sand or soft surface provide significant limitation for physically disable people. Although, this route is covered by suitable material, it doesn't have an appropriate width. Width of the way is about 1,000 mm that restricts the disable turning and passing the others (Fig. 4.72). Only this zone has furniture for people who want to have sun bathing. However, there is not any special furniture for wheelchair users.

Figure 4.72: The View of the Beach

As it is observed in Figure 4.73, other zone of the beach is completely unsafe and inaccessible. This part is utilized by fishermen and it possess by rocky and peddles (Fig. 4.61)

Figure 4.73: An Observation to Zone 4 of Beach

Finally, this beach is totally inaccessible for the disable and it should be improved by proper solutions.

4.5 Summery of the Chapter

Sea fronts are one of the important types of P.O.S that they provide different activities for all people. Therefore, the spaces should be accessible for the disables as active member of the society. Kyrenia and Laguna Sea Fronts are the most important and beautiful seafronts in North Cyprus. They are used not only by the huge number of citizens but also by many tourists. Chapter 4 was evaluated Kyrenia and Laguna Sea Fronts in terms of accessible design standards for ambulant disabled people. As it is clear, K.S.F has more problems and limitations for the disables than L.S.F. They are considered in the following part as conclusion and recommendation chapter.

Chapter 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

Public open spaces provide a wide and great variety of leisure or entertaining experiences, relaxing time after a hard day at work, escaping from air or sound pollution at crowded cities, meeting with friends, having social communication. Human with and without disabilities have a certain right to access to the all of transportation and recreational experiences created by public open spaces. There are various types of public open spaces such as streets, squares, parks and water front. Coast helps to create a dynamic environment with different functions and activities. Besides, it should be mentioned that public spaces should have accessible design for welcoming to all people. However, since every people have unique abilities, seafronts should be designed to meet every user's needs. Accessibility is a significant concept for urban design/planning. Because, it allows people to meet various activities, such as shopping, meeting and participating to the society.

Accessible design is an approach towards designing or redesigning the outdoor and indoor spaces to satisfy all individuals' needs fairly in a society. There is a positive relationship between the accessibility of a public space and utilization of them. As it is highlighted by many urban theorists, poor accessibility is one of the main reason affecting the use of public spaces.

Nowadays, there are many people in the world with permanent and temporary disabilities. Disability is increasing dramatically in all over the worlds because of war, increase the number of older people, raising the accidents and so on. At 2010, it is estimated, over one billion people are living with one or some types of disability. This number is about 15 percent of the world's population. This is so clear even if individuals don't have disabilities, those who achieve many opportunities from accessible design such as a pregnant woman, parent with carriage and a female with high-heels shoes. All people souled be able to use and enjoy seafronts.

In this study, ambulant disabled people are considered during the seafront analysis. As it is mentioned in chapter 2, ambulant disabled people are divided into three categories:

- Elder people: Although aging itself is not a disability, it can decrease the ability.
- Children: Children have less capabilities and abilities than adults because of lack of brain development and deficiency of their experiences.
- People with physical disability: They should be used wheelchair, walking aides and prosthesis for moving

In this study, two important seafronts of North Cyprus named Kyrenia and Laguna Sea Fronts accessibility is analyzed. More than 10 countries many organizations have been established to consider accessible design. According to anthropometric principles of ambulant disabled people the research is considered the significant law, regulation and guidelines of accessible design that referred to seafronts as a type of POS. While, analyzing the ambulant disabled people UN, BSI and ADA or ADAAG standards are used.

This study is organized under five chapters. The first is introduction the subject and reason for selecting Laguna and Kyrenia Sea Fronts. The second one includes an overview of public open space, accessibility and necessity of accessibility at P.O.S., type of disability and right for them. Chapter 3 is considered the importance of accessible design that it is included laws, standard and guidelines to support accessibility at seafronts. Then, the forth chapter is evaluated the selected cases depending on the theoretical background. Finally, chapter 5 is conclusion and recommendations depending on findings.

5.2 Concluding Remarks

The Kyrenia and Laguna Sea Fronts are the most important and beautiful P.O.S in North Cyprus. K.S.F is a recreational, commercial and historic seafront that is located on the north of the island. Due to mentioned characteristics, many people rush to the Kyrenia to achieve different activities and various experiences such as visiting the historical castle, relaxing, meeting friends, and even for working. And, Laguna is a recreational seafront that is located in Famagusta and on the north-east of North Cyprus.

Accessibility has significant influence on the users' satisfaction and improving the quality of public spaces. Inaccessible design at public open spaces creates restrictions for group of people who are affective in society. As it is defined in chapter 2, accessibility is an important right for all individuals especially for ambulant disabled people who utilize wheelchairs, walking-aides, and prosthesis. People with mobility limitations include difficulty in moving soft surfaces, while moving on different levels, and require a wider path of travel.

In order to reply these expectations and requirements, present research is evaluated Kyrenia and Laguna Sea Fronts due to considered rules and regulations which have significant effect on accessible design.

In general due to the new design at L.S.F, it is observed that L.S.F has less difficulties and limitations compared with K.S.F in terms of accessible design. Streets, squares and parks are vital spaces in the seafronts where should be accessible to achieve recreational experience, entertaining opportunities. It is clear that the movement of cars and motorcycles cause unsafe spaces for almost all streets. And, vehicles are obstructed sidewalks that limit movement of the disables especially at K.S.F. Lack of sidewalk, sudden decreasing of the width of pedestrian paths and inappropriate width of sidewalk are the significant problems that create danger and limitations for the disables in terms of accessible design especially at K.S.F. Besides, obstructions are the basic crises in the most areas of both the Sea Fronts. Trees, furniture, garbage and lighting elements create limitations for the disable at Kyrenia and Laguna Sea Fronts. Street 4 and 5 at K.S.F is ignored in terms of functional activity. It is decreasing the vitality of the streets while they have good view to Mediterranean Sea. On the other hand, negative density of activities creates many barriers in street 5 at K.S.F. Furthermore, some streets of K.S.F have steep grades to provide limitations and danger for the disable especially wheelchair users. Lack of edge protection creates dangerous area for all people especially for the disable people and children. Moreover, surfaces of both of the Sea Fronts are paved by various materials. The materials of surfaces are firm, stable and slip-resistance however their close joints create uncomfortable travelling for the disables especially at K.S.F. Some sidewalks of L.S.F are paved by decorative stones which provide difficulty negotiating for the disable especially wheelchair and walking-aids users. In addition,

poor maintenance on base surfaces decreases the quality of routes for the disable especially at Kyrenia. Lack of maintenance cause many gaps and grated at K.S.F. Gaps and grates provide uncomfortable travelling and dangerous areas for the disable. Meanwhile, lack of curb ramp restricts the connection between sidewalks and street especially in K.S.F. Also, sidewalks at public spaces are broken due to different reasons such as at intersections or junction of two streets and the entrance of parking spaces. The disables are restricted in the spaces because of lack of curb ramps or obstructed curb ramps at both seafronts. Inappropriate drainage systems and opening can also cause hazard for the disable at both Sea Fronts. Furthermore, well lighting provides night life and support accessibility at public spaces. However, as it is observed, there is no adequate lighting in some areas at two seafronts. Lack of shading elements and accessible furniture create uncomfortable spaces at both of seafronts. Information signs are ignored at the both seafronts that cause dangerous areas for all. Consequently, Kyrenia Sea Front has more problems and limitations for the disables. Fortunately a new project was adapted to the Laguna Sea Front in 2007. In the new project, accessible design standards were considered. Table 5.1 shows the negative and positive points in streets that are located at K.S.F and L.S.F.

Table 5.1: Comparative Positive and Negative Points of Streets Are Located at Kyrenia and Laguna Sea Fronts in Terms of Accessible Design

		Positive	Negative
street	**Kyrenia Sea Front**	❖ Suitable furniture in some zones ❖ Suitable material in some areas	• Lack of sidewalk is observed in some areas • Narrow sidewalk • Decreasing the width of routes because of obstacles • Existing steep grades and unsuitable cross slope provide problem for the disable • The joints of materials are close to create bumpy riding • Lack of curb ramp and ramp when change in level is observed in some areas • Inaccessible stairs, curb ramps and ramps provide danger for the disables • Existing hazardous gaps, grates and openings • Lack of shading elements • Unsuitable lighting creates unsafe environment • Creating dangerous and risky environment because of poor maintenance • Dangerous pedestrian routes because of cars • Lack of edge protection • Building entrances are inaccessible for the disable • The junctions and driveway crossing are completely unsafe
		Positive	**Negative**
	Laguna Sea Front	❖ Wide sidewalks provide comfortable maneuvering for the disable especially wheelchair users. ❖ Installing accessible curb ramps in some areas ❖ Appropriate maintenance cause a safety and familiar environment ❖ Existing deep edge protection cause safe space for all ❖ Forbidding vehicular cars create safe zones at the sea front ❖ Mostly it is observed that the building entrances are accessible for the disable ❖ Good maintenance	• Lack of appropriate furniture in terms of accessible design • Obstructed route and improper circulation because of obstacles • Lack of greenery and shading elements • Inappropriate material surface is observed in some areas • Lack of signs and information street • Inaccessible driveway crossing limits physically disable people • Improper design for drainage channels
Comment: It is clear that Kyrenia Sea Front have much more problems and limitations for the disable. Fortunately, a new project was adapted to the Laguna Sea Front in 2007 was considered accessible design standards for the public open space.			

K.S.F has a civic square that are named Ataturk square. It is completely flat. It has some negative and positive points in terms of accessible design that they are considered in Table 5.2.

Table 5.2: Positive and Negative Points of Ataturk Square at Kyrenia Sea Front

		Positive	**Negative**
Square	**Kyrenia Sea Front**	❖ The square is wide enough ❖ Suitable lighting ❖ Regular maintenance	• Lack of shading elements • Inappropriate furniture • Unsuitable material because of their joints
Comment: The square is accessible and safe for the people who have physical impairment			

The present study has been considered playgrounds as important urban spaces located at Kyrenia and Laguna seafronts. The playgrounds located at K.S.F was designed inaccessible way. Lack of accessible play component, lighting and maintenance create unsafe place for all children.

However, the playground at Laguna is equipped by suitable play components. The playground is designed according to accessible design standards.

To sum up, the playground placed at Laguna Sea Front is accessible for the disable because of the new project reflect accessible design. However, the playgrounds located at K.S.F are inaccessible for the disable. Table 5.3 is evaluated positive and negative points of the playgrounds.

Table 5.3: Comparative Positive and Negative Points of Playgrounds That Are Located at Kyrenia and Laguna Sea Fronts in Terms of Accessible Design

Playground	**Kyrenia Sea Front**	**Positive**	**Negative**
		❖ The surface is paved by suitable material ❖ Suitable furniture for the disable	• Inappropriate width of route in some areas of the playgrounds • Obstacles create limitation for the disable • Lighting elements are not enough for the places • Lack of shading elements • The playgrounds don't have any suitable and accessible playgrounds for the disable children • Poor maintenance cause hazardous surface and unusable play component
	Laguna Sea Front	**Positive**	**Negative**
		❖ Wide route cause comfortable travelling for the disable especially wheelchair users. ❖ There is not observed any obstacles. ❖ Material of surfaces are appropriate ❖ Suitable furniture ❖ Accessible play component ❖ Providing safe and friendly playground because of good maintenance	• Lack of lighting create risky area at night • Lack of greenery and shading elements are observed
Comment: The playground placed at L.S.F is accessible for the disable because of the new project reflect accessible design. However, the playgrounds located at K.S.F are inaccessible for the disable.			

Along the seafronts, many important outdoor and indoor built-facilities like restrooms, restaurants, cafés and different types of car parking spaces are observed. The study just is considered parking spaces as outdoor built-facilities. In Kyrenia and Laguna Sea Fronts many on-street parking spaces are cleared. Also, K.S.F has two parking spaces that one of them is located opposite of Ataturk Square and the other is situated next to the Rocks Hotel. However, both of seafronts don't have any standard car parking spaces according to accessible design standards that this is serious

problem and limitation for the disable people. Because, it is observed that the specified seafronts doesn't have any accessible transportation.

In addition, lack of control about the number of vehicles and clear border around parking spaces, restrict all people at parking spaces. Table 5.4 is considered the positive and negative points that refer to accessible design standards for car parking.

Table 5.4: Comparative Positive and Negative Points of Parking Spaces Are That Located at Kyrenia and Laguna Sea Fronts in Terms of Accessible Design

<table>
<tr><td rowspan="4">Parking Space</td><td rowspan="2">Kyrenia Sea Front</td><td>Positive</td><td>Negative</td></tr>
<tr><td>❖ They are closed to the specified place
❖ Good maintenance</td><td>• Lack of pedestrian trails in the space create danger for all
• There are not observed any place for the disable
• The parking spaces doesn't have any border
• Lack of curb ramp
• Inappropriate surface material
• Unsuitable lighting
• Lack of signs
• Lack of greenery and shading elements</td></tr>
<tr><td rowspan="2">Laguna Sea Front</td><td>Positive</td><td>Negative</td></tr>
<tr><td>❖ They are closed to the specified place
❖ Providing a pedestrian route to create safety for people but the route is not accessible for the disable
❖ The regular maintenance cause proper space</td><td>• There is not any space for the disable
• The parking doesn't have any space for the disable
• Lack of curb ramp
• Improper surface material
• Lighting elements are not enough in the space
• Lack of signs and information</td></tr>
<tr><td colspan="4">Comment: Both of sea fronts have many on-street parking spaces and off-street ones but all of them are inaccessible and dangerous for the disable people especially the wheelchair users.</td></tr>
</table>

Laguna Sea Front has a straight and recreational beach, named Palm Beach. The public space provides unique activities like swimming, sunbathing, fishing and etc.

The temporary hard surfaces are embedded at Palm Beach to provide comfortable travelling for people. However, the width of the woody surfaces is not suitable for the disable. Lack of suitable width, curb ramp and accessible recreational facilities cause inaccessible public space for the disable that they are listed in Table 5.5.

Table 5.5: Positive and Negative Points of Palm Beach at Laguna Sea Front

		Positive	**Negative**
Beach	**Laguna Sea Front**	❖ The material of temporary paths are suitable ❖ There is not any obstacle to create problem for the disables ❖ Enough shading elements	• Unsuitable width of temporary paths • Lack of curb ramp • Poor maintenance • Inappropriate furniture for the disables • Lack of accessible recreational facilities
Comment: Palm Beach is inaccessible and unsafe for the disables.			

5.3 Recommendations

To be able to improve and increase the quality of the Kyrenia and Laguna seafronts according to accessible design, some recommendations are given in the following section:

- Avoiding of being victimized accessible design for receiving to catch aesthetical reason. Thus improving educational programs about accessible design for students and professionals in fields that share roles in the planning, design, and construction of public spaces.
- Encourage the development of accessible designs in the public open spaces to meet users' requirements and expectations.
- Improve stable and reliable methods to achieve accessible transportation agencies for the disable people. Therefore, development accessible transportation helps to decline the number of private vehicles.

- For improving safety and security for the disables:
    a. Controlling speed of motor vehicle at driveway crossing, intersection and junction.
    b. Forbidding traffic of vehicles in some streets to create a safety and familiar areas and to prevent hurt of vehicles to significantly historic places.
    c. Achieving city life and preventing to be ignored potential areas. Therefore, evaluate the effects of various traffic calming applications on the disabled, the elderly, and children.
    d. Improving the quality of lighting elements at seafronts to increase of nightlife and improve the quality of public spaces and safety.
    e. Analyzing intersections, junctions and driveway crossing to embedding standard curb ramps for creating full access (See Figure 3.27 and 3.28).
    f. Providing well-designed edge protection to improve safety for all individuals and maintain good view at sea.
    g. Providing a regular maintenance programs, routine maintenance needs, and supply management problems to create a public safety issues.
    h. Developing information signs and mapping that provide access information to pedestrians.
- Improving the quality of routes and sidewalks:
    a. Constructing wide sidewalks in all public spaces to create comfortable maneuvering for the disables
    b. Removing all obstacles to provide off-barrier environment
    c. Providing an appropriate circulation and wide sidewalks with applying well-designed spaces for furniture, lighting elements and other sidewalk elements.

d. Installing accessible curb ramp, ramp, and stair to provide appropriate connection at change in levels.

e. Increasing designs for drainage systems and drain channels.

- Providing comfort and activity facility to improve accessibility for the disable:

    a. Providing enough rest areas with accessible and furniture with different design for all individuals like movable tables, half seating and deep seating (See Figure 3.24).

    b. Increasing the ability of users in extreme, intolerable or harsh climates (very cold or hot temperature, places with heavy snow or rain) to increase comfort at seafronts with providing rest areas with shading elements in hot temperature or a completely covered rest areas in cold temperature (See Figure 3.37).

    c. Providing accessible recreational facilities such as beach wheelchairs and considering temporary paths, changing and bathing rooms for the disables at seafronts.

- Improving the design of essential built-facilities along seafronts:

    a. Preparing accessible parking spaces with a suitable border around them to create maneuvering for the disable persons.

5.4 Agenda for Future:

This study includes theoretical information about public open spaces, accessibility, accessible standards and disability that can help researchers with similar subject. Besides, local and governmental authorities such as municipalities and urban planning department can get benefit from the data collection and analysis which have been drawn by the author of this research. For further researches, social accessibility of disables at sea fronts could be studied.

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URL 1: http://www.who.int/disabilities/world_report/2011/chapter1.pdf (World Report on Disability 2011)

URL 2: http://en.wikipedia.org

URL 3: www.trekearth.com

URL 4: http://www.google.com

URL 5: melbournenearandfar.wordpress.com

URL 6: http://www.emu.edu.tr/defaulteng.asp

URL 7: www.pps.org

URL 8: http://www.un.org/disabilities

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URL 21: http://www.nzta.govt.nz/resources/traffic-control-devices-manual/part-13-parking-control/docs/13-parking-control.pdf

URL 21: www.google earth.com

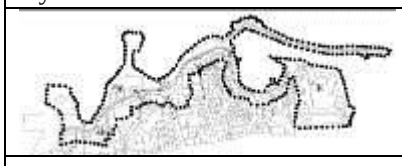
URL 22: wikimapia.org

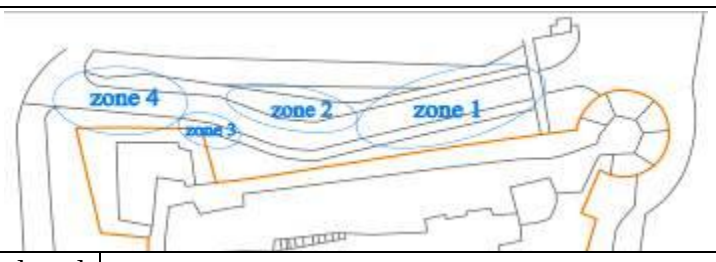
APPENDIX

Appendix A: Physical Analysis in Inventory Forms

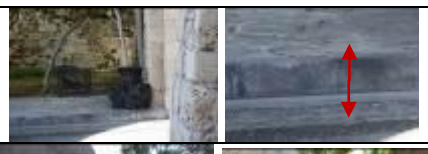
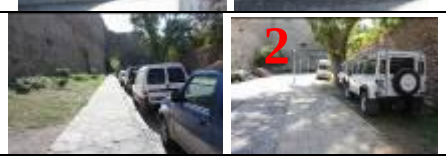
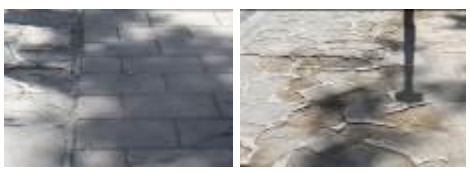
ST1	Street Analysis	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

Address: Intersection point of 20 Temmuz Kordonboyu Avenue and the Kyrenia Castle.





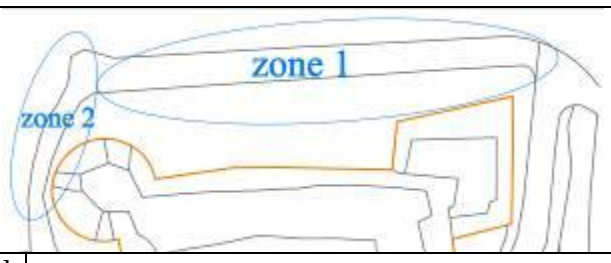
Function of the street: Historical Street	**Form of the street**: Straight and enclosed Street	**Type of street**: Pedestrian and vehicular street

		Standard	**Picture**	**Explanation**
Street 1	**Accessible Route** – **Width**	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1**: It is about **1 000 mm** that is not standard for ambulant disable people **Zone 2**: It is approximately **1 800 mm** that is enough for the disable **Zone 3**: It is around **500 mm** that is not suitable for the disabled people. **Zone 4**: It is nearly **1 700 mm** that is suitable for the disable.
	Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m. • They should not protrude more than 100 mm (4 in) into walks and passageways.	 	It is determined that cars are parked on the sidewalks that create obstacles and decrease width of footways. Lighting in **zone 1**, ash bins and tree in **zone 4** are as obstacle that decrease the width.
	Grade & cross slopes	• 2% ≤ Gradients on access routes ≤ 5%		In general the sidewalks don't have any grade. **In zone 4,** there is a grade for pedestrian that is about 7% which is more than the standard. It is improper for the disable.
		• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		There is not any cross slope or cross fall in all zones. So it is impossible to travel from street to sidewalk for the disables.
	Accessible Surface – **Material**	• An access route should have a firm, slip‑resistant and reasonably smooth surface.		**Zone 1, 3, 4** are paved by decorative stone & asphalt. **Zone 2** is covered with decorative stone, concrete tiles & asphalt.
		Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm, & Deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm & Deep of joint ≤ 5mm		**Zone 1, 3, 4:** Decorative pavement cause a bumpy ride or uncomfortable for the disables. **Zone 2**: The joints of concrete tiles are not standard according to BS (British standard). Non-standard joints cause wheelchair caster & walking aides like crutches trip and they cannot move.
	Gap & grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		In all zones, lack of maintenance of material; gaps and grates create hazard for disable people.
	Change in level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		In **zone 4** lack of ramps and non-standard stairs create inaccessible way for the disable people.
	Comfort Facility – **furniture**, **Lighting**, **Signs**	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.		**In all zones**; Lack of rest area, deficiency of signs, absence of good lighting at nights, shortage of safety because of vehicles and lack of maintenance, absence of inclusive furniture are observed.
	Maintenance	• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

Comment: This street is not accessible for ambulant disable people. The street is completely unsafe for them.

ST2	Street Analysis	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

Address: South of Kyrenis Castle.



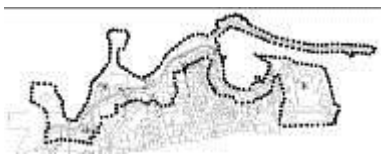
Function of the street: Historical street	**Type of Street:** Straight and enclosed street	**Type of street**: Pedestrian street

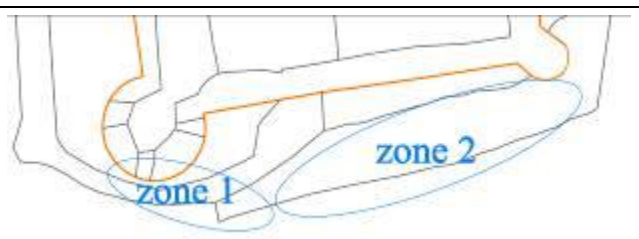
			Standard	**Picture**	**Explanation**
Street 2	**Accessible Route**	**Width**	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Wdith providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided	 	**Zone 1:** It is about 8,000 mm, which is suitable for ambulant disable people. **Zone 2:** It is around 6,000 mm that is suitable for the disabled people.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.	 	The vertical object like tree, branches, signs, shading and lighting elements are located on a suitable space that is appropriate for the disables.
		Grade & Cross Slopes	• 2% ≤ Gradients on access routes ≤ 5%		**Zone 2**: The grade is about 2% that is standard and appropriate for the disable.
			• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		**Zone 1:** There is a cross slope for connecting street to the sidewalk that have standard grade but it doesn't have a suitable surface.
	Accessible Surfaces	**Material**	• An access route should have a firm, slip‑resistant and reasonably smooth surface.	 	The street was paved by decorative stone.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm & deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm & deep of joint ≤ 5mm	 	The decorative pavement causes experience a bumpy ride for ambulant disable people.
		Gap & grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)	 	Lack of maintenance generates gaps and grates are hazard for disabled people.
		Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.	 	In two **zones (1, 2)** lack of ramps and non-standard stairs create inaccessible roads for the disable people.
	Comfort Facility	**Furniture** **Lighting** **Signs**	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.	 	In **zone 1 &2**, absence of rest area, deficiency of signs, lack of good lighting at nights, shortage of safety- because of vehicles-. Lack of maintenance and absence of inclusive furniture create problems.
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

Comment: Although there are some positive things related to the width. In general, the street is totally dangerous for ambulant disable people. It can be accessible for the disable if the design of street is improved.

ST3	Street Analysis	Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus

Address: The east side of the castle.





Function of street: Quay street | **Form of street:** Straight and wide street | **Type of street**: Pedestrian street

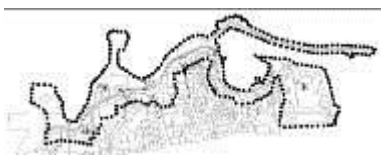
Street 3

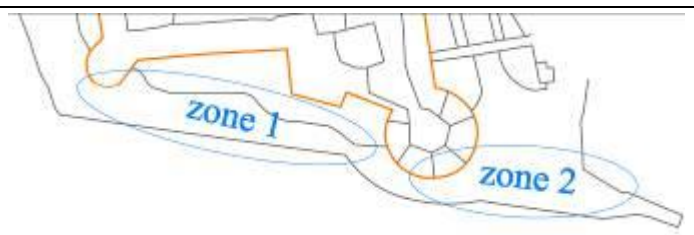
		Standard	Picture	Explanation
Accessible Route	Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided.		**Zone 1:** It is between 1200 mm and 1800mm that is suitable for ambulant disable people. **Zone 2:** It is around 8000 mm that is suitable for the disabled people.
	Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zone 2:** The wide is enough so the vertical furniture like lighting can't make problem for width of this street.
	Grade & cross slopes	• 2% ≤ Gradients on access routes ≤ 5%		**Zone 2:** The grade is about 2% that is standard and appropriate for the disable. However, there is no any edge protection*. Therefore, it creates danger for the disable that is more obvious in right photo.
		• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		**Zone 2:** There is not any cross slope or cross fall. Therefore, it makes hazard for the disable.
Accessible Surface	Material	• An access route should have a firm, slip‐resistant and reasonably smooth surface.		The street was paved with decorative stone.
		Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm, & deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm, & deep of joint ≤ 5mm		The decorative pavement causes a bumpy ride or uncomfortable condition for the disables.
	Gap & Grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		Lack of maintenance of material generates gaps and grates create hazard for disabled people.
	Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		**Zone 2:** Lack of ramps and non-standard stairs create inaccessible roads for the disable people.
Comfort Facility	Furniture Lighting Signs	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.		**Zone 1 &2:** Lack of rest area, absence of signs, lack of good lighting at nights, shortage of safety & insufficiency of maintenance that is clear in second row pictures and lack of inclusive furniture are detected.
	Maintenance	• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

Comment: This street is totally dangerous and inaccessible for ambulant disable people especially for wheelchair users. It can improve accessibility for the disable if design of the street is improved with standards.
* There is no edge protection at the end of view terraces that is so dangerous for children and disables people.

ST4	Street analysis	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

Address: North side of the historical Castle





Function of the street: Mix-use street | **Type of street:** Straight and narrow street | **Type of street**: Pedestrian street

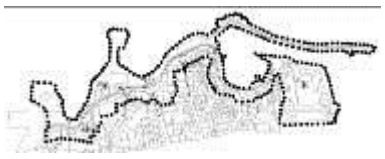
Street 4

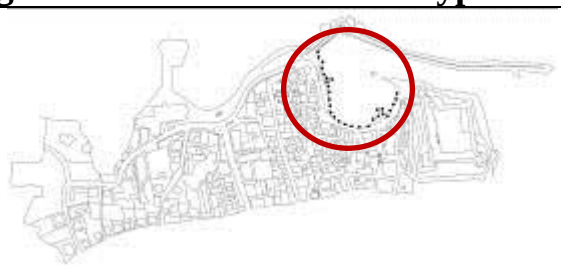
		Standard	Picture	Explanation
Accessible Route	Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1:** It is about 4000 mm that is suitable for ambulant disabled people. **Zone 2:** It is around 8000 mm that is suitable for the disabled people.
	Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zone 1, 2:** Vertical objects are located on suitable places. But It is determined that cars on the sidewalks destroy security and decrease width of footways.
	Grade & cross slopes	• 2% ≤ Gradients on access routes ≤ 5%	 	**Zone 1, 2:** The grade is about 2% that is standard and appropriate for the disable people. Nevertheless, the gradient of the slope is toward the sea create difficulty for moving of wheelchair users what is tried to explain in the sketch.
		• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		**Zone 2:** There is a cross slope that is more than 2%. This slope is not suitable in gradient and also material.
Accessible Surface	Material	• An access route should have a firm, slip‐resistant and reasonably smooth surface.		The street was paved with the decorative stone.
		Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm, & deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm, & deep of joint ≤ 5mm		The decorative pavement cause a bumpy ride or uncomfortable for the disables.
	Gap & grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm, • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		**Zone 2**: There is a curb ramp that is dangerous for the disables because of gap.
	Change in level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.	 	**Zone 2:** There is a curb ramp that is not suitable.
Comfort Facility	furniture Lighting Signs	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.	 	**zone 1 &2 :** Lack of rest area, absence of signs, lack of good lighting at nights, lack of inclusive furniture and lack of maintenance are seen
Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

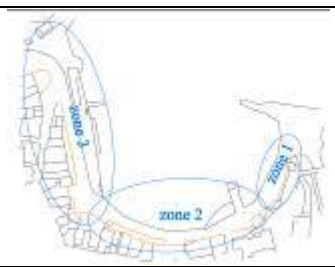
Comment: It can be accessible for the disable if the design of street is enhanced.

ST5	Street Analysis	**Questioning Accessibility of Disable People at Sea Fronts, Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

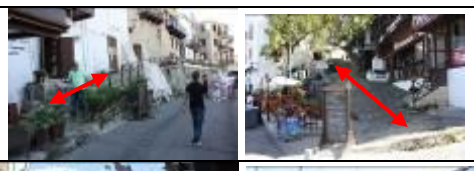
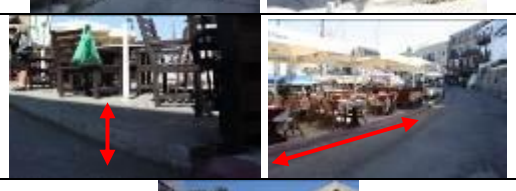
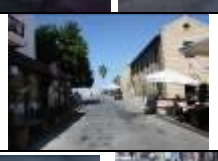
Address: Between the junction point of 20 Temmuz Kordonboyu Avenue and the Kyrenia Castle







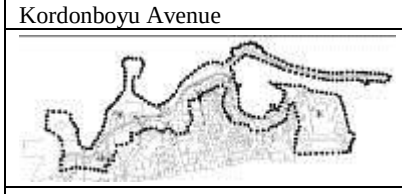
Function of street: Mix-use street | **Form of street:** Curved and enclosed street | **Type of street**: Pedestrian and vehicular street

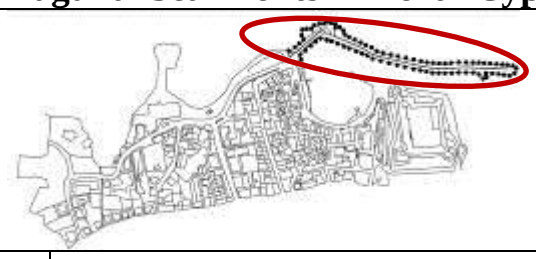
		Standard	Picture	Explanation
Street 5	Accessible Route – Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1:** It is about 2500 mm that is suitable for ambulant disabled people. **Zone 2:** It is between 2500 mm and 3100 mm that is suitable for the disabled people. **Zone 3:** it is between 4000 mm and 4500 mm that is completely suitable width for corridor of the trail.
	Accessible Route – Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zone 1, 2, 3:** In all zones; the furniture, shading elements and shopping signs make obstacles for all people.
	Accessible Route – Grade & cross slopes	• 2% ≤ Gradients on access routes ≤ 5%		**Zone 2:** Access to some buildings and secondary road are provided by ramp. The grade of ramps is more than 5%. These ramps are completely inaccessible.
		• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		**Zone 1, 2, 3:** Lack of cross slopes in changing levels of sidewalks is detected. It is impossible to move between levels for wheelchair users.
	Accessible Surface – Material	• An access route should have a firm, slip‐resistant and reasonably smooth surface.		The street was paved by asphalt.
	Accessible Surface – Gap & Grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		Lack of maintenance and waste metal cap generates gaps and grates create hazard for disabled people.
	Accessible Surface – Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		**Zone 2 & 3:** Lack of ramps and non-standard stairs create inaccessible roads for ambulant disable people.
	Comfort Facility – Furniture / Lighting / Sign	• The distance between resting points ≤ 100m • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.		**Zone 1, 2& 3:** Lack of rest area and lack of inclusive furniture in route are observed. Besides, all of the furniture belongs to restaurants or café that they are not standard for the disable. Also, in some areas this furniture create obstacle for people.
	Comfort Facility – Maintenance	• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		
	Accessible Built- facility – Access to Building	• Use of ramp with 2% gradient for entrancing to building due to difference between indoor and outdoor levels. • Doors shouldn't open to outside. If they open outside should have about 1200 mm space for maneuvering the disable. • Minimum wide of door: 820 just for crossing one person & 1220mm for two person		Nonstandard entrance of some buildings, use of nonstandard stair instead of ramp (first pic. In second row) or usage of ramp with more than 5% gradient (second pic. In second row) are detected for accessing to building.

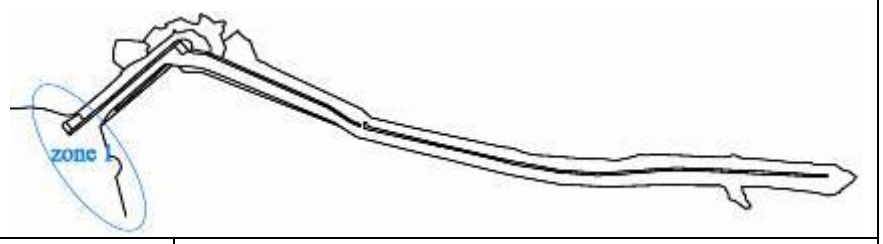
Comment: The street is accessible and all problems can be removed by proper solutions. But, there is not safe whenever the cars are using the street.

ST6	Street Analysis	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

Address : Intersection points of Canbulat Street, Sht. Erdal Street and 29 Temmuz Kordonboyu Avenue







Function of street: Mix-use street | **Form of street:** Straight and long street | **Type of street**: Pedestrian street

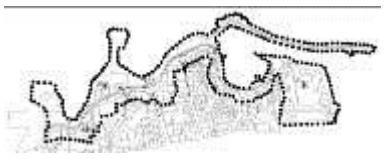
Street 6

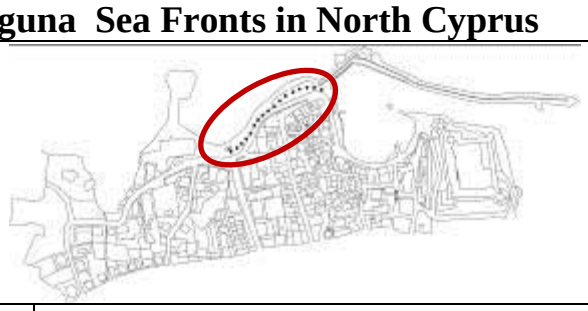
		Standard	Picture	Explanation
Accessible Route	Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • With providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1:** It has between 800 mm and 1,000 mm width that is not appropriate for wheelchair users. The other section is between 3500 mm and 4000mm that is completely broad.
	Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zone1:** Sign of *Tourist Information Office* and shading elements for selling tickets create obstacles and cause problem to cross for the disable.
	Grade & Cross Slopes	• 2% ≤ Gradients on access routes ≤ 5%		This street doesn't have any grade.
		• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		**Zone 1:** There is just one cross ramp for travelling between different levels but the ramp has about 55cm width that is not suitable. Beside, exactly in the landing is placed a shading elements as an obstacle and most of time cars are parked on the ramp..
Accessible Surface	Material	• An access route should have a firm, slip‐resistant and reasonably smooth surface.		The entire street is covered by concrete tiles.
		Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm, & deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm, & deep of joint ≤ 5mm		The joint of the material is standard for the disable.
	Gap & Grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		**Zone 1:** The displacement that is shown in the picture creates danger for ambulant disable people.
	Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		All displacements are covered by nonstandard stairs that all of important accessibilities are impossible for the disable like rest rooms, all cruise shipping and etc. picture in second row shows: the grade is about 2% that is suitable for the disable in **zone 1**.
Comfort Facility	Furniture Lighting Signs	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.	 	Old seating elements that are shown in first picture are not standard. Beside the new ones which are mentioned in the second picture are suitable just for older disable but they are not appropriate for children. Lighting elements is not enough. One side of the street is embedded by wall but the other side lack of guard or handrail provides unsafe area for all people. Lack of maintenance create problem for all.
Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

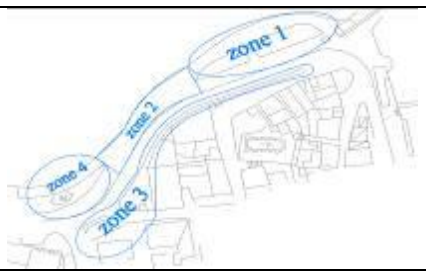
Comment: This street is accessible for the disable people. But design of the street should be improved in essential places that are mentioned above.

ST7	Street Analysis	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

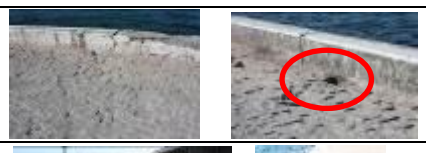
Address: Intersection points of Ersin Aydin Street, Ataturk Avenue and 20 Temmuz Kordonboyu Avenue.







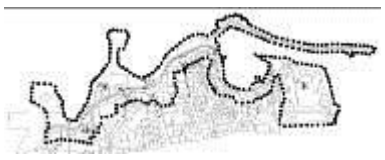
Function of the street: Mix-use street | **Form of street:** Curved and enclosed street | **Type of street**: Pedestrian and vehicular street

			Standard	Picture	Explanation
Street 7	Accessible Route	Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1:** Sidewalk of this zone is divided to two areas by playground. First area is next to the street is about 1,500 mm and other one is next to the sea is more than 2,500 mm. **Zone 2:** It is between 5,500 mm to 6,000 mm that is suitable for the disable people. **Zone 3:** it is about 1,800 mm that is appropriate. **Zone 4:** the width of the zone is about 3,500 till 4,000 mm.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zone 1, 3, & 4:** lack of garbage in public area create dirty places and block the passageways. Also retailers decrease the width of sidewalks to create difficulty for the disable.
		Grade & Cross Slopes	• 2% ≤ Gradients on access routes ≤ 5%		**Zone 1:** There are installed a gradient to create good view to the sea. The gradient of the grade is suitable and have enough wide. **Zone 2:** There create a gradient due to the topography that is nonstandard.
			• Accessible cross slope ≤ 2%, access surface of crossfall ≥ 0.610m, • 6mm ≤ a vertical displacement ≤ 13mm		**Zone 1, 2, 3 and 4:** in all zones exists suitable curb ramps where the disable can cross them comfortably.
	Accessible Surface	Material	• An access route should have a firm, slip‐resistant and reasonably smooth surface.		All zones are paved by asphalt and concrete tiles.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm, deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm, deep of joint ≤ 5mm		Joints of this pavement are standard but because these are close together create uncomfortable and bumpy riding.
		Gap & Grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm		Lack of maintenance and drainage holes generates gaps create hazard for disabled people.
		Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		**Zone 1:** in zone 1 is constructed a ramp is completely dangerous for the disable. **Zone 2:** all of the routes for accessing to the sea are covered by stairs that are not accessible. **Zone 1, 2, 3 and 4:** in all zones, the displacements between street and sidewalk are covered by curb ramps that metal vertical obstacles create problem for the disable because of decreasing the width of ramps.
	Comfort Facility	Furniture Lighting Signs	• The distance between resting points ≤ 100m • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.		**Zone 1, 2, 3 & 4:** Enough rest areas, lack of enough lighting are observed. Edge guard is provided in the street but the height of this is not enough to provide safety. Lack of maintenance is a problem in the street.
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

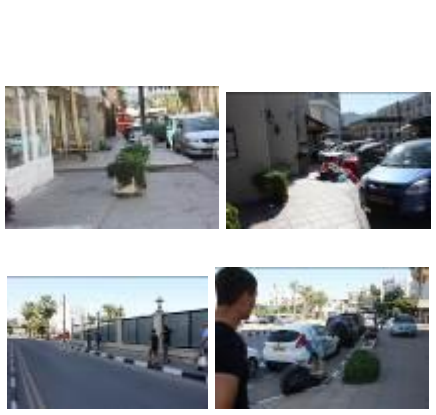
Comment: In general the street is accessible. However, poor maintenance, lack of flexible setting elements and shading are observed in the street.

ST8	Street Analysis	**Questioning Accessibility of Disable People at Sea Fronts, Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

Address : Lies between the military zone and intersection of Ersin Aydin Street and 20 Temmuz Kordonboyu Avenue



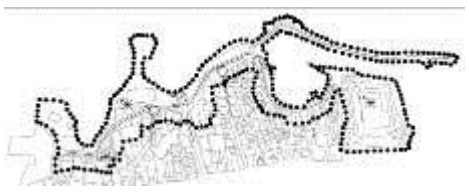
Function of the street: Mix-use street | **Form of street:** Enclosed and curved street | **Type of street**: Pedestrian and vehicular street

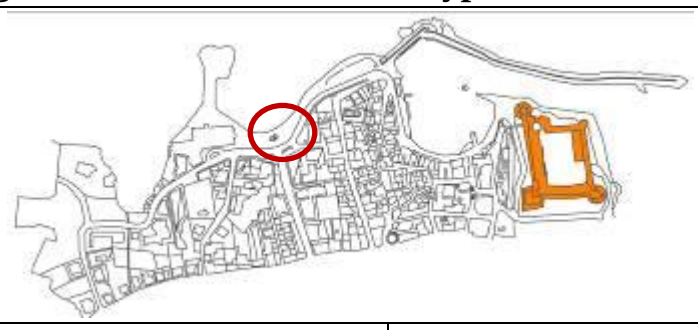
			Standard	Picture	Explanation
Street 8	Accessible Route	Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • With providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1:** There is sidewalk on two sides. Right side is about 1,500 mm and the other is about 2,000 mm. **Zone 2:** There is not any sidewalk on right side and other side is about 2,500 to 3,000 mm. **Zone 3:** There are not any passageways. Some places have sidewalk that is about 500 mm that is not accessible for all. **Zone 4:** width of sidewalks in this zone is between 500 mm till 900 mm that is not standard for the disable.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zone 1, 2, 3 and 4:** In all zones; signs, garbage and rubbish decrease the width and create barriers. Especially all curb ramps are closed by vertical difficulties.
		Grade & Cross Slopes	• 2% ≤ Gradients on access routes ≤ 5%		**Zone 2:** There are two grades for accessing to parking and next street that they are so steep and inaccessible for the disable.
			• Accessible cross slope ≤ 2%, access surface of crossfall ≥ 0.610m, • 6mm ≤ a vertical displacement ≤ 13mm		**Zone 1, 2, 3 and 4:** All curb ramps in the street are inaccessible and crossing them to create danger for the disable. And some of them are closed by obstacles.
	Accessible Surface	Material	• An access route should have a firm, slip‐resistant and reasonably smooth surface.		The street was paved by asphalt on vehicle paths and concrete tiles on sidewalk.
		Gap & Grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm		Poor maintenance generates gaps and grates create hazard for disabled people.
		Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		**Zone 1, 2, 3, and 4:** all curb ramps in the street are completely inaccessible and create hazard for the disable. And some of them are closed by obstacles.
	Comfort Facility	Furniture Lighting Sign	• The distance between resting points ≤ 100m • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground		**Zone 1, 2, 3 & 4:** Lack of rest area and lack of inclusive furniture in route are observed. Shortage of safety because of vehicles and lack of sidewalks, poor maintenance and deficiency of signs are observed.
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making		
	Accessible Built-facility	Access to Building	• Use of ramp with 2% gradient for entrancing to building due to difference between indoor and outdoor levels. • Doors shouldn't open to outside. If they open outside should have about 1200 mm space for maneuvering the disable. • Minimum wide of door: 820 just for crossing one person & 1220mm for two person		The entrances of all buildings in this street are in different level with sidewalks that the different levels are defined by stairs even hotels in the street. And the sizes of some entrances are not suitable.

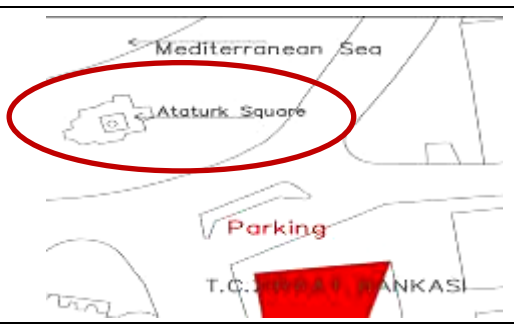
Comment: This street is completely inaccessible and is so unsafe for all people especially ambulant disable people.

SQ1	Square Analysis	**Questioning Accessibility of Disable People at Sea Fronts, Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

Square name: Ataturk square







Function of the square: Quay and civic square

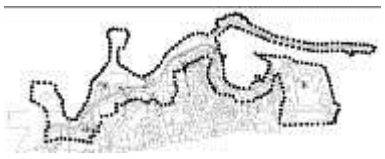
Form of square: Rectangle

			Standards	Picture	Explanation
Square	**Accessible Route & Standard Orientation**	**Width**	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		Width of this square is suitable
		Obstacles	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		There is not any obstacle
		Grade & Cross Slopes	• 2% ≤ Gradients on access routes ≤ 5%		The surface of square is completely flat. There are not slope.
			• Accessible cross slope ≤ 2%, access surface of crossfall ≥ 0.610m, • 6mm ≤ a vertical displacement ≤ 13mm		Surface of Ataturk square doesn't have curb ramp or grade.
	Accessible Surfaces	**Surface Material**	• An access route should have a firm, slip‑resistant and reasonably smooth surface.		The square is paved by square tiles of polished stone that is a firm material however have a weak slip-resistant especially for rainy weather.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm & deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm & deep of joint ≤ 5mm		Where the joint of the stony tiles are filled but with recess: width of joints is more than 10 mm and the deep of them is more than 5 mm so it is nonstandard. Where the joint is filled to surface: the dimension of them is standard
		Gaps & Grates	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		There are not unsuitable gaps or opening that is because of regular maintenance.
		Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		There are displacement spaces which are related to aesthetic design. But other spaces are not any different levels.
	Comfort Facility	**Furniture**	• Seating elements should be set back from the main route at least 600mm. • at least 900 mm square should be provided for wheelchair users • Seats should be 450-520mm high and perches should be 500-750mm high. Children may also benefit from seats at around 350mm above ground.		The seating elements in the square are standard but they are not standard for children. Lack of seating elements with backs and armrests. Absence of shading elements for seating especially in the Cyprus where it is sunny most days. Lack of information signs is shown.
		Lighting	• Illumination levels on the sign surface shall be in the 100 to 300 lux range • Providing international symbols		
		Sign	• width-to-height ratio should be between 1:5 and 1:10 • Signage that provides information about potential obstacles, surface type, grade, cross-slope, and other trail features width-to-height ratio should be between 1:5 and 1:10		
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

Comment: the square is accessible and safe for the ambulant disable people.

PG1	Playground	Questioning Accessibility of Disable People at Sea Fronts, Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus

Playground name: Kordonboyu Cocuk Parki



Form of space: Rectangle

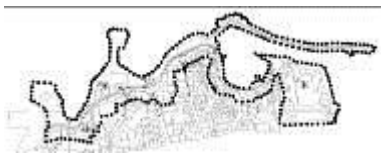
Type of space: Recreational playground for children

			Standard	Picture	Explanation
Playground	Accessible Route	Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		The width of routes in the playground is proper for children because there are wide enough.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m. • They should not protrude more than 100 mm (4 in) into walks and passageways.		There is not any obstacle.
		Grade & Cross Sopes	• 1% ≤ Gradients on access routes ≤ 2%		The whole surface of the playground is flat.
			• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		There is not any slope or ramp in the playground.
	Accessible Surface	Material	• Suitable combination of soft and firm material • All access routes should have a firm, slip‐resistant and reasonably smooth surface. • On the other hand usage of soft material like plastic, grass covered and etc. for play area where there is the risk of falling like the end of a slide.		The playground is paved by black and soft plastic material.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm, deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm,deep of joint ≤ 5mm		The pavement has standard joints.
		Gap & Grate	• a vertical displacement should be ≤ 13mm, • cracked concrete ≤ 25 mm (1 in), • broken areas ≤ 50 mm x 50 mm		There are not any gaps or grates that create danger for the disable.
		Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		There is not seen any change in level.
	Comfort Facility	Furniture Lighting Sign	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.	 	Furniture is enough and standard. Inadequate lighting may cause problems.
	Activity Facility	Play Component	• Use of Ground-Level Play Components, Elevated Play Components that are accessible for children who have mobility impairment. • Play facility with seating should be have the maximum 18 inches (455 mm) height • Play tables is recommended: 24 inches (610 mm) high minimum, 30 inches (760 mm) wide minimum, 17 inches (430 mm) deep minimum	 	This playground doesn't have any facilities or play components that ambulant disable children can enjoy of them. For example, the slide that has located in the playground it doesn't have any ramps for accessing.
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		Most of recreational facilities are useless because of poor maintenance.

Comment: The playground is not accessible and suitable for the disables who are children. Its design should be improved because playground is a place for playing and enjoying for all.

PG 2	Playground	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

Address: Next to the Ataturk square



Form of space: Amorphous

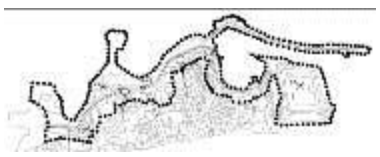
Type of space: Recreational playground for children

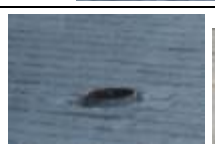
			Standard	Picture	Explanation
Playground	Accessible Route	Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Wdith providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		The park is defined by a pathway is about 1,000 mm that is not proper for wheelchair users.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		Trees and flower boxes decreased the width of routes as obstacles.
		Grade & Cross Slopes	• 1% ≤ Gradients on access routes ≤ 2%		The whole surface of the playground is flat.
			• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		There is not any slope or ramp in the playground.
	Accessible Surface	Material	• Suitable combination of soft and firm material • All access routes should have a firm, slip‐resistant and reasonably smooth surface. • On the other hand usage of soft material like plastic, grass covered and etc. for play area where there is the risk of falling like the end of a slide.		The playground is covered by decorative stone on the pathway and soft plastic material in the play area.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm, deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm,deep of joint ≤ 5mm		All joints of materials are standard.
		Gap & grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		There are some flowerboxes are not covered by grass or flowers that they will be provided dangerous spaces as a gaps or grates.
		Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		There are no places to have different level.
	Comfort Facility	Furniture Lighting Sign	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.		Furniture is not enough. Lack of lighting provides danger for children.
	Activity Facility	Play Component	• Use of Ground-Level Play Components, Elevated Play Components that are accessible for children who have mobility impairment. • Play facility with seating should be have the maximum 18 inches (455 mm) height • Play tables is recommended: 24 inches (610 mm) high minimum, 30 inches (760 mm) wide minimum, 17 inches (430 mm) deep minimum		This playground doesn't have any facilities or play components that are proper for ambulant disable children.
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		Poor maintenance creates dangerous gaps in the playground. And Because of lack of maintenance, the usage of some facilities is impossible.

Comment: The playground is not accessible and suitable for the disables who are children. Its design and maintenance should be improved.

P1	Parking Analysis	Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Front in North Cyprus

Address: Next to the ING bank

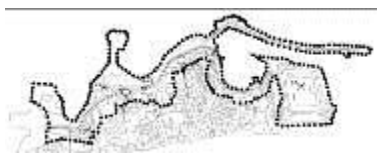


			Standard	Picture	Explanation
Car Parking	The Number of Parking		According to UN & ADA: • If parking space is less than 50 at least one accessible parking space should be provided • If parking space is 400 at least be provided one accessible space for every 50 spaces • If parking space is more than 400 at least 8 accessible parking spaces should be provided + 1 space According to BS: • For workplaces, the minimum number of designated spaces should be one space for each disable worker plus 5% of visiting persons • For shopping, recreation and leisure facilities, the minimum number of designated spaces should be one space for each ambulant disable employee plus 6% of visiting people.	 	Just it has one place for disabled people that is not appropriate and the entrance of that has been closed with a vertical obstacle. It doesn't have an appropriate entrance and exit standard. And the location of the parking is suitable because there is as close as the street but it doesn't have a standard route for traveling to street
	Type of parking	Off- street parking	• Standard designed parking is 2400 mm × 4800 mm • Creating 1200 mm corridor around of parking spaces for enough space for maneuvering		The parking is not standard and safety
	Accessible Surfaces	Surface Material	• An access route should have a firm, slip‑resistant and reasonably smooth surface.		The parking is paved by concrete tiles that are firm and slip-resistance. However, there aren't any differences between the place for cars and the way for people that create hazard for drivers & passengers.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm & deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm & deep of joint ≤ 5mm		The joints are standard but this type of pavement causes ambulant disable people experience a bumpy ride.
		Gaps & Grates	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)	 	Openings generate gaps and grates are existed that are dangerous for the disable.
		Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.	 	There are not ramp for connecting different levels. But at the entrance of the parking is a curb ramp for connecting sidewalk to vehicle way which is suitable. Also next to parking space for wheelchair user is not provided any ramp to travel the disable to sidewalk.
	Comfort Facility	Lighting Sign	• Illumination levels on the sign surface should be in the 100 to 300 lux range • A minimum illuminance of 20 lux for accessible parking spaces • Providing international symbols should be fixed 1000 mm above the ground, to identify parking space when road markings hidden by snow or fallen leaves. • Showing the accessible design with a drawing the symbol on the ground with 1400 mm high		Enough lighting While this parking is not accessible, there is a standard symbol for the disable.
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.	 	Poor maintenance about material create hazard for the disable.

Comment: This parking is not accessible and is completely unsafe for ambulant disable people.

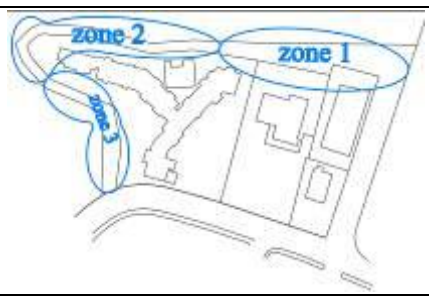
P2	Parking Analysis	Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus

Address: Next to the Rocks Hotel.



	Standard		Picture	Explanation
Car Parking	The Number of Parking	According to UN & ADA: • If parking space is less than 50 at least one accessible parking space should be provided • If parking space is 400 at least be provided one accessible space for every 50 spaces • If parking space is more than 400 at least 8 accessible parking spaces should be provided + 1 space According to BS: • For workplaces, the minimum number of designated spaces should be one space for each disable worker plus 5% of visiting persons • For shopping, recreation and leisure facilities, the minimum number of designated spaces should be one space for each ambulant disable employee plus 6% of visiting people.	 	There is not any space for the disable.
	Type of parking	Off-street parking • Standard designed parking is 2400 mm × 4800 mm • Creating 1200 mm corridor around of parking spaces for enough space for maneuvering	 	While there has enough space, the parking is not standard and safety for the disable.
	sidewalk Surfaces	Surface Material • An access route should have a firm, slip‑resistant and reasonably smooth surface.		The parking mostly is paved by asphalt. And somewhere is covered by concrete tiles.
		Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm & deep of joint ≤ 5mm. unfilled joints: • width of joint ≤ 2mm & deep of joint ≤ 5mm		Asphalt doesn't have joint. But concrete stones have suitable joints.
		Gaps & Grates • a vertical displacement should be ≤ 13mm, • cracked concrete ≤ 25 mm (1 in), • broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		Openings creates danger for the disable.
		Change in Level • The change in level should be cover with standard stair or ramp if it is more than 13mm.	 	There are not ramp for connecting different levels. It isn't observed any curb ramp for connecting to sidewalk.
	Comfort Facility	Lighting • Illumination levels on the sign surface should be in the 100 to 300 lux range • A minimum illuminance of 20 lux for accessible parking spaces		Poor lighting and lack of sign is observed.
		Sign • Providing international symbols should be fixed 1000 mm above the ground, to identify parking space when road markings hidden by snow or fallen leaves. Showing the accessible design with a drawing the symbol on the ground with 1400 mm high		
	Maintenance	• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		Maintenance of the parking spaces is proper.

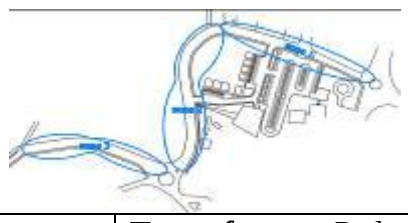
Comment: This parking is completely not accessible for the disable. Additionally, there is not any space for the disable and there is completely unsafe for ambulant disable people.

ST9	**Street analysis**	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia & Laguna Sea Fronts in North Cyprus**
Address: Lie between Palmiye street and Nadir street, behind the residential apartmants 		
Function of the street: Mix-use street	**Form of street:** Curved and short street	**Type of street**: Pedestrian and vehicular street

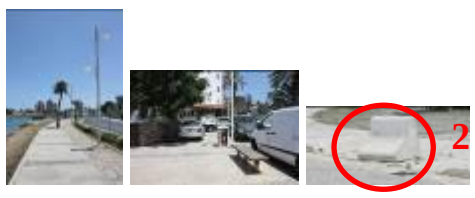
			Standard	**Picture**	**Explanation**
Street 9	**Accessible Route**	**Width**	• 1800 mm ≤ suitable general routes ≤ 2000 mm • With providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1:** This is divided to three sections. As it is clear in photo 1; the first section is by 900 mm, the second is about 3,150 mm and the last section is about 9,000 mm. **Zone 2:** This is divided to 3 areas. The left one is about 2,500 mm, the middle one is about 3,150 mm and the left one is about 900 mm. **Zone 3:** There are three levels in this zone with different width. The left one is between 4000 mm and 4500 mm, middle section is about 3,150 mm and the last one is about 900 mm.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zone 1, 2, 3:** The furniture, lighting elements, trees and signs obstructed the sidewalks for all people. **Zone 3:** Cars are parked on the sidewalks that create obstacles and decrease width of footways.
		Grade & cross slopes	• 2% ≤ Gradients on access routes ≤ 5%		No grade is observed.
			• Accessible cross slope ≤ 2%, access surface of crossfall ≥ 0.610m, • 6mm ≤ a vertical displacement ≤ 13mm		Cross slope is not seen.
	Accessible Surface	**Material**	• An access route should have a firm, slip‑resistant and reasonably smooth surface.		**Zones 1, 2 & 3**: These zones are covered by concrete tiles that are suitable according to accessible design.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm &deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm & deep of joint ≤ 5mm		The joints of material are suitable.
		Gap & grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		**Zones 1, 2 & 3:** Lack of maintenance, waste metal cap and the roots of trees generate gaps and grates. They create hazard for disabled people.
		Change in level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		**Zones 1, 2 & 3:** Lack of ramps limits the disable in different levels. Non-standard stairs create problem and hazard for them.
	Comfort Facility	**furniture**	• The distance between resting points ≤ 100m • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520 mm high and perches should be 500-750 mm high. BS 8300 recommends between 450 mm and 475mm for fixed seating. Children may also benefit from seats at around 350 mm above ground.		**Zones 1, 2& 3:** There are enough rest areas but the furniture are not proper. Also, furniture create obstacle for people in some parts. **Zones 1& 2:** Lack of good lighting creates risky areas for the disable. Improving maintenance should be provided.
		Lighting			
		Signs			
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		
	Access to building		• Use of ramp with 2% gradient for entrancing to building due to difference between indoor and outdoor levels. • Doors shouldn't open to outside. If they open outside should have about 1200 mm space for maneuvering the disable. • Minimum wide of door: 820 just for crossing one person & 1220mm for two person		There is THE PALM HOUSE where is a café and restaurant. There is installed a ramp that aren't accessible because of steep grade and without hand rail.

Comment: Fortunately, cars are not allowed to enter in zone 1 and 2. But, in general there are many significant problems that they should be removed for achieving accessible design.

ST10	**Street analysis**	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**
Address : Nadir Street		



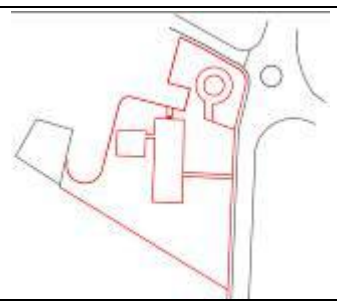
Function of the street: Mix-use street	**Type of street:** Curved, long and wide street	**Type of street**: Pedestrian and vehicular street

			Standard	**Picture**	**Explanation**
Street 10	**Accessible Route**	**Width**	• 1800 mm ≤ suitable general routes ≤ 2000 mm • With providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1:** Left sidewalk is 1,800 mm right one is about 2,250 mm that is suitable for the disable. **Zone 2:** This zone is divided to 3 sections by changing in levels. Right section is about 2,250 mm. the middle one is vehicular and by 4,500 to 5,000 mm and the right one is around 4,900 mm. **Zone 3:** Right sidewalk is about 3,250 mm and left one is by 1,000 mm.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zones 1, 2 & 3:** In all zones; furniture, garbage, lighting elements, cars & tree make obstacles for all people. **Zone 2:** All curb ramps which are providing access to different levels or building is obstructed by concrete obstacles. The cars are parked on the sidewalks that create obstacles and decrease width of trails.
		Grade & cross slopes	• 2% ≤ Gradients on access routes ≤ 5%		**Zone 1:** There are ramps for accessing to street. They are suitable for wheelchair user. **Zone 2:** Ramps and curb ramps of this zone are completely appropriate. But some of them are obstructed by concrete barriers.
			• Accessible cross slope ≤ 2%, access surface of crossfall ≥ 0.610m, • 6mm ≤ a vertical displacement ≤ 13mm		**Zone 1, 2:** Ramps are existed in these zones that provide accessibility.
	Accessible Surface	**Material**	• An access route should have a firm, slip‐resistant and reasonably smooth surface.		**Zone 1:** sidewalk and vehicle road are paved by concrete tiles. **Zone 2:** there is covered by concrete tiles and decorative material called cobblestones. Decorative stones create problem for the disable. **Zone 3:** there is paved by cobblestones and concrete tiles that create uncomfortable travelling. And the right one is covered by cement.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm &deep of joint ≤ 5mm. unfilled joints: • width of joint ≤ 2mm & deep of joint ≤ 5mm		Concrete tiles have standard joints.
		Gap & grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		Lack of maintenance and waste metal cap generates dangerous gaps and grates.
		Change in level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		**Zone 2 & 3:** Lack of curb ramps and non-standard stairs limit the disable especially wheelchair users.
	Comfort Facility	**furniture** **Lighting** **Signs**	• The distance between resting points ≤ 100m • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.		**Zone 1:** Lack of furniture is observed **Zone 2, 3:** Enough rest area with imperfect furniture in route is observed. Also, in some area this furniture create obstacle for people. Providing a regular maintenance is essential for the street.
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		
	Access to building		• Use of ramp with 2% gradient for entrancing to building due to difference between indoor and outdoor levels. • Doors shouldn't open to outside. If they open outside should have about 1200 mm space for maneuvering the disable. • Minimum wide of door: 820 just for crossing one person & 1220mm for two person		Entrance of some building is covered by ramps that they are obstructed by car most of time. However some of them have nonstandard changing in levels that create hazard for the disable.

Comment: Although there are some positive things but in general there have restrictions for physically disable people. It can be totally accessible for the disable if the design of street is improved.

PG3	Playground	Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus

Playground name: Kordonboyu Cocuk Parki



Form of space: Rectangle

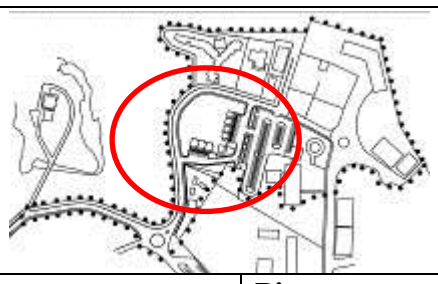
Type of space: Recreational playground for children

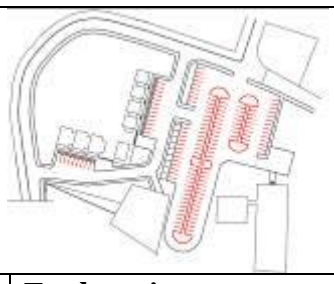
			Standard	Picture	Explanation
Playground	Accessible Route	Width	• 1800 mm ≤ suitable general routes ≤ 2000 mm • With providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		The route are enough wide for maneuvering and safety.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		There is not any obstacle.
		Grade & Cross Slopes	• 1% ≤ Gradients on access routes ≤ 2%		The whole surface of the playground is flat.
			• The width of ramp should be about 0.610 m (2 ft.) • The flare of ramp should be less than 2% that is recommended 1.5%		There is not any slope or ramp in the playground.
	Accessible Surface	Material	• Suitable combination of soft and firm material • All access routes should have a firm, slip‐resistant and reasonably smooth surface. • On the other hand usage of soft material like plastic, grass covered and etc. for play area where there is the risk of falling like the end of a slide.		The playground is covered by cement in routes and soft plastic material in play area.
			Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm, deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm,deep of joint ≤ 5mm		The pavement has standard joints.
		Gap & Grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		There are not any gaps or grates that create danger for the disable.
		Change in Level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		There isn’t any vertical displacement.
	Comfort & Activity Facility	Furniture Lighting Sign	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.		The number of furniture is not enough but they are standard according to accessible design for parents and elder people. However there is not any standard furniture for children. Lack of lighting provides danger for children and adults.
		Play Component	• Use of Ground-Level Play Components, Elevated Play Components that are accessible for children who have mobility impairment. • Play facility with seating should be have the maximum 18 inches (455 mm) height • Play tables is recommended: 24 inches (610 mm) high minimum, 30 inches (760 mm) wide minimum, 17 inches (430 mm) deep minimum		This playground has some facilities or play components for physically impairment children can enjoy of them.
	Maintenance		• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		It is clear, the playground is new. Therefore, for maintaining accessibility the maintenance should be regular.

Comment: The playground is accessible and suitable for the disable children. Disable children can enjoy from the place.

P3	Parking Analysis	Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus

Address: Laguna, Nadir Street



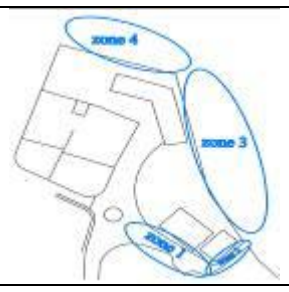


	Standard		Picture	Explanation
Car parking	The Number of Parking	According to UN & ADA: • If parking space is less than 50 at least one accessible parking space should be provided • If parking space is 400 at least be provided one accessible space for every 50 spaces • If parking space is more than 400 at least 8 accessible parking spaces should be provided + 1 space According to BS: • For workplaces, the minimum number of designated spaces should be one space for each disable worker plus 5% of visiting persons • For shopping, recreation and leisure facilities, the minimum number of designated spaces should be one space for each ambulant disable employee plus 6% of visiting people.	 	The location of the car parking is suitable. Because it is close to specified public space but it doesn't have any space for the disable. Although, there are some pedestrian corridors, the width of corridors is not suitable according to accessible design. Also, they are obstructed by lighting elements and garbage.
	Type of Parking	Off- street Parking • Standard designed parking is 2400 mm × 4800 mm • Creating 1200 mm corridor around of parking spaces for enough space for maneuvering	 	The parking spaces doesn't have clear border.
	sidewalk surfaces	Surface Material • An access route should have a firm, slip‑resistant and reasonably smooth surface.		The parking is paved by concrete tiles that are firm and slip-resistance.
		Where joints are filled to the surface: All adjacent units ≤ twice the joint width. filled joints with recessed: • Width of joint ≤ 10mm & deep of joint ≤ 5mm. unfilled joints: • Width of joint ≤ 2mm, & deep of joint ≤ 5mm		The joints are standard.
		Gaps & Grates • A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		There are drain channel and metal caps which they can cause hazard for the disables.
		Change inLLevel • The change in level should be cover with standard stair or ramp if it is more than 13mm.	 	There are not ramp for connecting change in levels even at the entrance of the parking. Also, next to the car parking space is not embedded any ramp for travel of the disables to the sidewalk.
	Comfort Facility	Lighting Sign • Illumination levels on the sign surface should be in the 100 to 300 lux range • A minimum illuminance of 20 lux for accessible parking spaces • Providing international symbols should be fixed 1000 mm above the ground, to identify parking space when road markings hidden by snow or fallen leaves. • Showing the accessible design with a drawing the symbol on the ground with 1400 mm high		There is enough lighting. There are not any spaces for the disables. Lack of signs is observed. The maintenance is suitable because of the car parking is constructed in new project.
	Maintenance	• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

Comment: This parking can be more accessible if the design of the place is improves according to accessible design. Also, the car parking spaces should be provided for the disables.

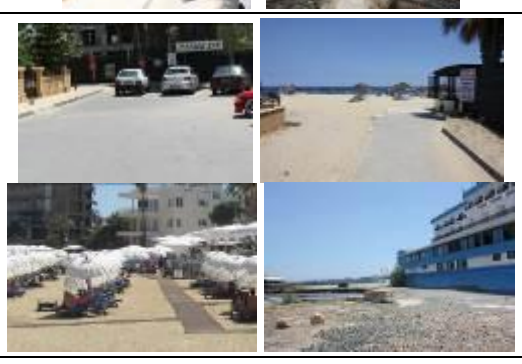
BA1	**Beach Analysis**	**Questioning Accessibility of Disable People at Sea Fronts , Case Study: Kyrenia and Laguna Sea Fronts in North Cyprus**

Address: Located between entrance of Arkin Hotel to behind of that.



Function of the space: Recreational seafront

Form of the space: Straight coast

			Standard	Picture	Explanation
Coastline	**sidewalk surfaces**	**Width**	• 1800 mm ≤ suitable general routes ≤ 2000 mm • Width providing passing places 1500 mm is acceptable • According to access statements, at least 1200 mm should be provided		**Zone 1:** It is about 15,000 mm **Zone 2:** It is between 1,500 mm and 1,800 mm that is suitable for the disable people. **Zone 3:** Temporary routes with hard surface are provided at the beach during summer. But, it is about 1000 mm that is not suitable **Zone 4:** There is no any suitable route. So, it is dangerous area for the disables.
		Obstacle	• Obstacles should be away from the walls between 0.685 m and 2.030 m (27 in and 80 in). • They should not protrude more than 100 mm (4 in) into walks and passageways.		**Zone 1:** Sometimes cars decrease accessible route as an obstacle **Zones 2, 3 & 4:** In all zones; there not any special obstacles
		Grade & cross slopes	• 2% ≤ Gradients on access routes ≤ 5%		There is no inappropriate grade.
			• Accessible cross slope ≤ 2%, access surface of crossfall ≥ 0.610m, • 6mm ≤ a vertical displacement ≤ 13mm		There are not any ramps.
		Material	• An access route should have a firm, slip‑resistant and reasonably smooth surface.		**Zone 1:** It is paved by asphalt. **Zone 2:** It is covered by tiles. **Zone 3:** It is paved by some woody routes just during the summer and sands. **Zone 4:** It is paved by natural stones.
		Gap & grate	• A vertical displacement should be ≤ 13mm, • Cracked concrete ≤ 25 mm (1 in), • Broken areas ≤ 50 mm x 50 mm (2 in x 2 in)		**Zone 4:** Poor maintenance has created a terrible hazard for the disable.
		Change in level	• The change in level should be cover with standard stair or ramp if it is more than 13mm.		**Zone 2:** There is not any change in level. Just zone 2, there is a change in level where is inaccessible for wheelchair users.
	Comfort Facility	**Furniture** **Lighting** **Sign**	• The distance between resting points ≤ 100m. • Seats should be set back from the main route by at least 600mm. • Seats should be 450-520mm high and perches should be 500-750mm high. BS 8300 recommends between 450mm and 475mm for fixed seating. Children may also benefit from seats at around 350mm above ground.		**Zone 3:** There is some furniture at beach; however, they are dangerous for the disables. There should be equipped by wheelchair benches for the disable and other appropriate facilities. Also, Lack of lighting is observed. Regular maintenance should be provided. There should be equipped by hard temporary or fixed paths with hard covering with enough wide all time.
		Maintenance	• Providing regular maintenance programs to create safety. Maintenance is the most crucial factor of successful place making.		

Comment: The beach is not accessible for wheelchair users and it can be improved by proper solutions. There should have accessible routes and facilities which are suitable for the disable.