LANDSCAPE DESIGN FOR ALL

HERKES İÇİN PEYZAJ TASARIMI

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ÖZ

Herkes için tasarımın amacı; binalar, peyzaj tasarımına konu olan her türlü alan ve mekan, iletişim araçları veya ev eşyalarında, her bireyin aynı fiziksel çevre için geliştirilen çözümleri mümkün olan en geniş ölçüde kullanmasını sağlamak amacı ile gerekli teorilerin, ilkelerin ve çözüm önerilerinin geliştirilmesidir. Herkes için tasarımda; her bireye eşit koşullarda eşit hak, kullanım olanakları, konu ve davranış biçimlerinin sağlanması, kilit kavramlardır. Herkes için tasarım; her türlü kullanıcıya duyarlı kapsayıcı ve sürdürülebilir bir tasarımdır.

Açık alan veya doğal alanların tasarımı ve düzenlenmesi; plancılar, mimarlar, peyzaj mimarları ve endüstri ürünleri tasarımcıları için özel fırsatların yanı sıra benzersiz zorluklar da sunmaktadır. Birçok kırsal ya da kentsel alan, toplumun belli bir kesimi tarafından erişilebilir konumda değil ya da kullanılamaz durumdadır. Herkes için peyzaj tasarımı; çağdaş vurgu, sürdürülebilirlik, ergonomi, eşitlik ve özgürlük ilkeleri kapsamında değerlendirilmeleri gereken bir olgudur. Peyzaj alanları herkes için tasarım kapsamında düzenlendiğinde; yaşlılar, engelli bireyler ve çocuklu aileler de dahil olmak üzere toplumun her kesimini kapsayan bir nitelik kazanabilmektedir. Bu araştırma kapsamında; herkes için tasarım kavramsal anlamda değerlendirilecek evrensel tasarım ilkelerine yer verilmiş ve tasarım bileşenleri peyzaj mimarlığı açısından irdelenmiştir.

Anahtar Kelimeler: Evrensel tasarım, engellilik, erişilebilirlik, herkes için peyzaj tasarımı, peyzaj tasarımı

ABSTRACT

The objective of design for all is to develop theories, principles and solution suggestions for ensuring that each and every individual uses the solutions developed for physical environment in the widest sense, within the scope of buildings, any area and space that is subjected to landscape design, communication tools or households goods. In design-for-all, the key point is to ensure every individual with the rights of use, manners and forms under equal terms.

Along with special opportunities, design and landscaping of open areas and natural fields present unexampled challenges for planners, architectures, landscape architectures and industrial product designers. Many rural or urban areas are not accessible by a certain part of the society, nor is it usable. Landscape design for all is a phenomenon, which needs to be addressed within the scope of the principles of modern focus, sustainability, ergonomics, equality and freedom. Where the landscape areas are subjected to landscaping within the scope of designing, it may be of a characteristic to be used by each and every part of the society, including the elders, people with disabilities and families with children. Within the scope of this research, the universal design principles are included in terms of design-for-all, while examining the design components in terms of landscape architecture.

Key Words: Universal design, disability, accessibility, landscape design for all, landscape design

1. INTRODUCTION

Design for all can be described as a design approach considering each and every individual in the society within all the areas that are related to design, as well as putting this idea into practice depending on the realization ratio of this design (Evcil, 2014). It is also described as an applicable and affordable manner for associating the design with human needs within the scope of its artistic integrity.

Design for all is also named as universal design, inclusive design and lifespan design within the national and international literatures.

The objectiveof the design for all is to create areas that can be used by every individual with a high-quality integrated design. Within this scope, it is a must to create sustainable designs considering every part of the society during the designing process. The opportunities must be equally provided to every user, meaning that it does not variate in terms of its usage manner for users with different skills, disabilities and ages, and it must also be accessible to every user (Arat and Sayan, 2017).

In Turkey, certain laws that consider these groups with special needs have been declared in recent years (Law no: 5378), and the designs have been started to be made within this scope. However, the laws that are declared for individuals with disabilities do not involve every individual of the society, thus leading these individuals not having equal opportunities. It is a principle in design for all for each and every individual, including those with disabilities, children, seniors and those with diseases, are provided with equal opportunities and freedom. It is aimed to reach every individual in the society and to be act fairly with inclusive designs.

In cities or rural areas, individuals are continuously involved in an interaction with the environment. The challenges, inequity, inaccessibility that are confronted by the inhabitants within this environment/landscape lead to major challenges in their social lifes. For this reason, it is a crucial and indispensable fact for landscape architecture. Based on this perspective, the designing process has to be fulfilled considering all the people within the society, while performing landscape design. In order to improve the landscape architecture in line with universal design (design for all), the designs must be usable, accessible and safe, while providing a beneficial environment both for the society and all people. Within the scope of this study, it is aimed at contributing the respective studies by discussing the general principles and related areas of landscape design for all.

2. MATERIALS AND METHOD

The main material of the study comprises of any kind of written and visual resources that are related to the principles of design for all, landscape design and universal design. The method that is followed in the study involves a comprehensive literature research to obtain the related data, as well as analyzing and synthesizing the obtained data. Then due to the obtained findings, after being analyzed, have been examined within the scope of universal design criteria and landscape components, thus setting forth the components of design for all.

3. RESULTS AND DİSCUSSİON 3.1.Design for all

Design for all is a design approach ensuring people of all ages and skills to access and use any kind of design product and environment without confronting any obstacles due to having or not having certain characteristic (Gören, 2016). An inclusive environment is where users, no matter what their skills are, have the ability to perform their up-to-date daily activities conveniently, efficiently and safely without being limited by the poor design, maintenance or management of the physical environment. Within the scope of design for all, it is a must for the designers and producers to ensure that the buildings, products, areas and services meet the needs of widest mass possible. It is aimed at complying with different body types, sizes and movements during the designing process.

Therefore, the objective of inclusive design is to minimize the environmental pressure and obstacles, while reaching to social equality and justice.

Every individual face with challenges in certain periods, since the designers generally design for an average person. Considering the scope of groups of all skills and ages, which can be included within a certain design, the terms "non-disabled" and "accessible" seem to be limited in terms of their definitions. A design for only those with disabilities may not be suitable for a healthy individual, or a design for a certain age group not being suitable to be used by other age groups. For such reasons mentioned, the designs must be made in a manner considering each and every part of the society. Within this scope, the designs have to be

made with a universal perspective by identifying the needs of every part of the society. The outdoor areas with universal accessibility provides betterment of life quality for each and every individual, invluding seniors, children, people with disabilities and adults.

Design for all, as a human-centered design, is oriented at every personl in the society to have the ability to access the products. The objectives of design for all are as follows:

➢ Ensuring the participation of every person,

➢ Designing in a manner considering the diversity in the society,

➢ Providing sustainable solutions with universal design,

➢ Ensuring the governments to take responsibility, as well as promoting the development of the policies & strategies of design for all,

➢ Encouraging the cross-sectoral and interdisciplinary studies,

➢ Ensuring the advantages of universal design for the population to be understood (Trends in Universal Design, 1998).

Design for all is different from the other design approaches. The main criteria of design for all is the content, participation, equality and accessibility. Hanson summarizes the difference between design for all and other designs as follows (translation by Evcil, 2016):

The starting point of design for all is accepted as based on the fact that people require various design regulations and standards during different parts of their lives (i.e. infancy, childhood, elderliness) and under different conditions (Tutal and Dolap, 2016). In line pf this governing idea, it is aimed at creating environments that can be utilized potentially by most people possible without the need of special designs and customizations based on the idea that each and every human being faces with obstacles in certain parts of their lives due to getting older and losing certain skills (Tutal and Dolap, 2016). Within this scope, Goldsmith (2000) created a "universal design pyramid" (Figure 1) Within the hierarchical order from 1 to 8, it is shown that a successful design can be made in a manner it can be used by both ordinary people and those with disabilities, including the seniors and children. The first layer in the bottom of the pyramid represents the active people with fit bodies, while the normal adults that are not athletic, yet have the ability to freely move around, are shown in the second layer. While designing for these user groups, it is not deemed as a must to consider additional factors. Straight line A represents the requirements and satisfaction levels of these people with an insensible design (Hussain and Tukiman, 2015).
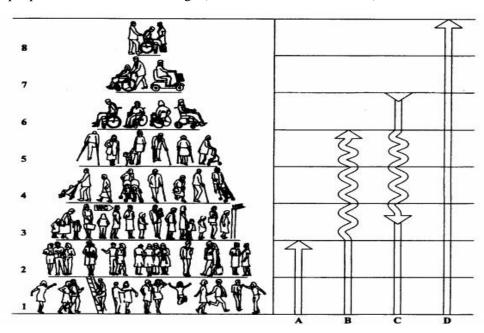

Figure 1. Universal Design Pyramid (Goldsmith, 2000).

Representing the active people, the 3rd layer also symbolizes that woman face discrimination in public areas, as indicated by Goldsmith (Hussain and Tukiman, 2015). On the 4th layer are the seniors, who do

not consider themselves as disabled despite of being less active and needing assistance for walking, and the adults carrying children with stroller. The individuals with disabilities are represented on the 5th layer. It must be relatively easy for a universal design approach to include all these user groups, while having expandable design parameters (Hussain and Tukiman, 2015). The wavy line B represents this extension. While the 6th layer represents the individuals using wheelchairs and having the ability to move by themselves, the 7th layer shows the people with disabilities, who need assistance from a certain tool or person (Hussain and Tukiman, 2015). The 8th layer represents person, as a minor part of the society, who cannot move without assistance. Designs that are made by considering all the user groups from layer 1 to 8, will be recognized as universal design, since each and every need of the users are satisfied.

The inclusive design is a complicated process that requires an integrated approach in order to overcome the limitation of individual perspectives.

Accessibility

The term "accessibility" means creating non-disabled areas for people with disabilities all around the world. People with disabilities to access any physical usage or experience without difficulty under equal conditions with healthy individuals is called "accessible design". As mentioned by Scherrer, "A person with any disability is not a disabled in an accessible environment. Yet a healthy person is also disabled in an inaccessible area."

While design for all includes accessibility, this does not include design for everyone. Therefore, accessibility is limited to a certain area. The main objective is to create a design in a manner satisfying the needs of each and every individual during the design process. Given that individuals with and without disabilities are a part of the society, the designs must be inclusive, non-discriminative, equal and usable by all.

While providing accessibility for individuals with disabilities to a certain extent for being prescribed by laws of Turkey, there are many examples that are not equal and inclusive (Evcil, 2014).

The philosophical principles of accessibility and universal design are similar; the main principles are participation, accessibility and social equality. Design for all reaches beyond the borders of accessibility for involving each and every individual, as well as promoting integrated and widespread products, environmental qualities and services.

Principles and processes of design for all

The objective of universal design is to develop theories, principles and solutions in order to ensure that every individual has the ability to use the same physical design solutions to the greatest extent possible within buildings, open areas, communication tools or household appliances. In universal design, segregating and stigmatizing are to be avoided, whether it is designed for people with disabilities or the other parts of the population.

The Principles of Universal Design were developed by a group of architects, industrial designers, engineers and environmental design researchers, managed by Ronald Mace in North Carolina State University in 1997. The objective of these principles is to provide guidance to the designs. According to the Universal Design Center in NCSU (North Carolina State University), "the objective is to constitute applicable principles for evaluating the existing designs, provide guidance to the designing process, as well as providing training to both designers and consumers about the qualifications of more useful products and environments." Within this context, 7 principles were published under the name of "principles of design for all".

Equitable use

According to the principles of equitable use, segregating or stigmatizing must be avoided, and the design must satisfy the demands of all users by providing the same means for people with diverse abilities.

Analyzing a playground as an example to equitable use within the scope of landscape design for all, where there are playground materials oriented as specific to a certain age group of children (age: 4-10), younger children, or children with disabilities who cannot use the playground effectively, thus confronting a challenge due to not being provided with the same opportunities. This is not recognized as a fair and equal design for each and every individual.

In universal designing, a design may be evaluated within the scope of multiple design principles. For example, using a ramp with double width options in a playground includes not only the equitable use principle, but also the principle of size and space for approach and use.

Flexibility in use

The principle of flexibility in use accommodates a wide range of individual preferences and abilities for a design. This principle underlines the compliance to diverse motor skills and perception levels in diverse speed levels, as well as having flexibility for tolerating a mistake within the product and environmental designing process (Gören, 2016). Within the scope of this principle, the users should be provided with options within the designing process, thus producing alternatives under different conditions.

In the landscape design of an area, roads created with land-based slope, in addition to the stairs in a park design within the scope of landscape design is a practice, which can be shown as an example to the principle of flexibility in use. (Figure 2)

Figure 2. Combination of ramp and ladder (Khatri, 2018)

Simple and intuitive use

Independent from the experience, information, language skills or personal concentration level of the user, the simple use of design is evaluated within the scope of this principle (Anonymous b, 2018). Unnecessary complexity must be avoided, while developing simple, comprehendible and usable designs.

Within the scope of this principle, the users of diverse languages, culture or age groups, should not have difficulty in perceiving the landscape and the environment in public open areas. The area must be intuitively perceived without the need of any additional information.

Perceptible information

The design must effectively convey the required information to the user independent from the environmental conditions or sensory abilities of the user. Readable and diverse communication ways of individuals (visual, audial or tactile) should be considered in design.

In landscape designing, suggestions that comply with the perception of each and every individual are to be developed. For example, in a park design, audial guidance (for those with impaired hearing and children in particular), odour gardens (for sight-disabled individuals in particular) and visual guidance are to be used in a manner appealing to those with disabilities and individuals of all ages in order to help them to perceive the area. The yellow direction stones laid on the roads do not only provide guidance to sight-disable people, but also warn standard healthy individuals.

Tolerance for error

A design is expected to create safe areas for people by minimizing the dangers and negative impacts of accidents or unwanted actions. During the designing process, the components that pose danger must be

removed, thus creating isolated & protected areas. Having safe environments should not be the sole objective, but the individuals must feel safe whilw using or living them, as well.

To give an example within the scope of landscape design works/practices; when a pool restoration is performed for a park design, the pool depth is to be on a standard level considering the possibility for children to accidently fall into the pool, as well as placing the required warning signs in the respective area and taking the required measures.

Low physical effort

This is the design principle ensuring that the demands are kept within the expected limits of the body functions. The design is to be efficient, comfortable and usable by putting the lowest physical effort possible. Along with the requirement to create designs considering the individuals with a large variety of body sizes and skills, repetitive activities that continuously required physical effort must be minimized.

For example, a pedestrian road would allow people to walk more comfortably provided if it is kept with the minimum slope, thus being preferred for requiring lower physical power for people with disabilities, people using push chairs and bikers.

Size and space for approach and use

Regardless of the body size, posture or mobility of the user, a suitable size and area are to be provided with regards to approach, accessibility and use (Anonymus c, 2018). A clear visual angle is to be provided for a sitting or standing user, and an area is to be constituted for personal assistance.

To give an example; an area is to be created that is sufficient for an individual on a wheelchair over a pavement road, a person with a push-chair or with a child to have no difficulty in walking. In the playgrounds, satisfactorily sized areas are to be available for people with disabilities and adults.

These principles possess the characteristics of a guide for landscape design and other designing professions. Designing by taking these 7 principles into consideration would appeal to more, thus being used by more; and the objective of design for all would achieved within this scope.

In addition to universal design principles, all other conditions within plan & development process are to be taken into consideration. These conditions can be summarized as social thoughts, economy, aesthetic design, sustainable development and cultural values.

Design for all is expected to be aesthetical, in addition to being assistant, easy and ergonomic. Designing without aesthetics, as one of the fundamental principles of it, is not complete within the scope of design for all. Universal design aims at maximizing the accessibility and usability level of a product, therefore functionality is of great importance. However, universal design is not solely based on functionality. A designer must accept the idea that the usability of a product may be affected from its appearance. Aesthetic usableness effect shows that people, finding designs user-friendly, tend to find it easier to use these designs (Anonymous c, 2018).

Designing for all requires considering that the costs are equal or lower compared to a standard design. The cost of a product or design directly affects its applicability, since reasonable cost is a main problem for design and production process, the universal design turns into an marketable approach for answering the requirements of the majority of consumers. Since design for all will be more marketable for being more useful for people with diverse skills, a large market share will be generated, as well.

Designing for all must be carried out in an aesthetical, accessible manner with lower costs, appealing to each and every individual within the society having diverse cultures and knowledge levels.

3.1. Landscape Design For All
Design for all has been widely used since the concept, which was developed by Mace in 1985, in various fields of design like landscape design, architecture, engineering and industrial design (Afacan, 2011).

The universal design, in general, underlines the integration of accessibility and usability to the products and environments, as the fundamental structures of design. Iwarsson and Stahl (2003) mentions that the term "universal design" can be described as considering the requirements and interests of the whole society, including not only the physically and/or intellectually troubled, but also the seniors, children adults with diverse ethnic origins and national backgrounds, beyond a certain group with regards to the design of buildings, vehicles or environment (Hussain and Tukiman, 2015) (Figure 3).
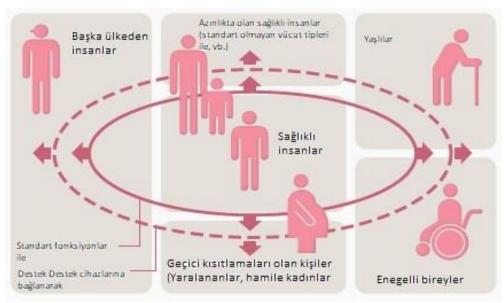
Figure 3. Universal design concept for all people (Hanson, 2004)

The concept "design for all", mentioned as a macro-environmental approach by Hanson (2004), aims to reach a state where not a single user is excluded by expanding the design parameters, while denying all positive or negative discrimination (Tutal and Dolap, 2016). It must be ensured for landscape design for all that the number of people to be involved must be extended to the highest ratio possible. Personal welfare, social adaptation, opportunities and personal skills must be considered as equal for each individual. There is no internal conflicts within the definitions of landscape design and universal design. This shows that it is possible to perform landscape design in line with the universal design principles.

The perception of individuals over a landscape may variate greatly depending on age, disability status, environment or other conditions. In landscape design, the designing process can be carried out in a manner involving such users, taking possible changes for such situations into consideration. Within this scope, during the landscape designing process:

Poorly designed environments may phase out or obstruct seniors, children, adults with push-chairs, bigger, taller or smaller people, and in addition to those carrying heavy loads, those suffering from physical, sensorial or cognitive inefficiencies. Certain characteristics in landscape design may cause problems for young, healthy and talented people. Almost every individual faces with problems in structured-environment use in any period of his/her life, and they are mistreated based on misapplication of traditional landscape design from this point of view (Tutal and Dolap, 2016). In order not to face such problems, the landscape architects has to make arrangements within the scope of universal design.

During landscape designing process, the designs must be developed in a manner not leading to additional costs and obvious differences but creating simple, integrative solutions for all.

It is possible to apply the principles of universal design in all the landscape architecture areas. In this context, the areas that are within the scope of landscape design for all are as follows:

Playgrounds

Within the scope of universal design, the playgrounds are to be established in a manner meeting the requirements of children of all ages, with or without disabilities (Figure 4). While creating playgrounds for all, playing environments are to be universally designed considering the diverse skills, ages, genders and cultures of individuals. Inclusive and embracing play experience will be able to be ensured with designs approaching developmental requirements of all kids, while presenting opportunities for physical, cognitive, communicational, social/emotional and sensorial development.

While choosing the type, shape and material of the playground equipment, the inclusive design approach has to be used. All parts of the playground and all the equipments must be accessible by each and every user. Additionally, compliance with the principles of universal design cannot be ensured solely with an accessible design and playground equipment; the inclusive design must be followed within the general plan of the playground.

Figure 4. The Ankeny Miracle Park is available for different age groups and disabled - unrestricted children's playgrounds (Kyle, 2015)

While designing playgrounds,

➢ Safe and healthy areas should be established, where children cannot be physically injured.

➢ All the activities that are offered in the playground must be accessible. For example, if there are three three swings in a playground, at least one of them must be accessible by children with disabilities (Rodman, 2009).

➢ The playgrounds must be accessible with cars, and the respective roads must be kept open for vehicle entrance & exit for emergency.

➢ There must be areas, where children and adults of all ages and skills can move freely and comfortably.

➢ The areas to be created must be satisfactory for parents accompanying the children to wait and to involve in the activities with their children in the playgrounds. The design of the playgrounds must be made in a manner not closing the visual angle of the adults (Rodman, 2009).

➢ The playgrounds must be designed in accordance with the age groups and children with physical restraints.

➢ A safe distance must be kept between the play groups.

➢ Organic and permeable materials have to be used to the most possible extent for the health and safety in the playgrounds.

➢ During the vegetal arrangement of playgrounds, thorny and poisonous plants should not be used.

There are some non-disabled (custom designed for children with disabilities) playgrounds in our country, however there are not parks nor playgrounds that are designed for diverse age groups. Additionally, in the general designing process of the playgrounds, including the roads for accessing these playgrounds and the distance between the toys are not designed in accordance with the principles of universal design.

Each and every child in all over the world must be able to use the playgrounds and play equipments without the need of such factors as language, religion, nationality, gender, age, height, weight, skills, etc. The access to these areas should not be restricted based on any physical or social disability. As mentioned in Convention on the Rights of the Children, Article: 31; "Playgrounds, children clubs, libraries, sports and culture centers are to be established in order for the children to spend their leisure times and improve

themselves. Every child is entitled to participate in such activities" (Anonymous d, 2018). Within this scope, the landscape architects must provide inclusive, intregrative and sustainable designs.

Sport fields and courts

Playing sports is entitled to every person in accordance with International Olympic Regulations. "Each person must have the opportunity to play sports in the spirit of Olympics in a manner strengthening friendship, unity, fair sports mentality and mutual understanding without any discrimination" (Anonymous e, 2018). In this extend, the sport fields have to be designed more inclusively in a manner that they are usable by any individual of any age, with and without disabilities, with any physical and mental skills.

Equal accessibility to all key components of sports and recreation facilities are to be stipulated for allowing each and every individual to participate. While designing and developing these key components, there are many topics to take into consideration, which have an impact on the effective use of sports & recreation facilities by people, in order to support the idea of fair accessibility and planning. These are related to the functional skills of a person and it combines the general functional requirements of all people and personal functional requirements that are specific to everyone. These are as follows:

Additionally, a number of functional supports, used by many people, has to be taken into consideration while designing for equal accessibility. These functional supports in sports & recreation facilities include:

Parking lots

➢ While designing for ensuring the fastest and easiest transportation to this area by determining the service scope of the parking area in parking area design for all, the principles of safety and accessibility has to be taken into consideration, as well.

➢ While designing parking areas:

➢ In parking areas, which do not serve for a specific building, accessible parking areas must be placed to the closest point for accessible pedestrian entry.

➢ The specified parking areas must be well-analyzed with the pedestrian roads, and they must be located in the closest location possible to the buildings and squares.

➢ In the designing process of the specified parking areas, the pedestrians must be able to pass easily by using the pedestrian road, but not the vehicle lanes.

➢ Entrance / exit of the parking area must be well-designed, and the routes within the parking area must be specified.

➢ In the pedestrian junction of the parking area, the user must have a clear visual angle after getting out of his/her car; the surface and slope of the access road is to be accessible and walkable, and the users must be able to walk safely over the marked pedestrian crossings. The pedestrian roads must typically follow the road lines, where the pedestrian roads or parking areas are connected (Rodman, 2009).

➢ It is a must for the parking areas to have parking lots for people with disabilities. The parking lots for people with disabilities must be designed to the closest points for such areas like buildings, parks, squares, etc.

Sidewalks and roads

Side walks and roads must be accessible by all users. The roads and side walks must be free of obstacles, and designed as usable by each and every person (i.e. people with disabilities, seniors, children).

While designing roads and sidewalks within the scope of design for all:

➢ Alternatives (like elevators or ramps) have to be arrenged for people, who do not use stairs as next to the sidewalks and roads. The design must be made by using the land slope rather than the stairs as well as using ramps.

➢ While up to 10% of slope is deemed suitable for ramps, the ideal slope rate has to be 6.66 as per CSA standards (Rodman, 2009).

➢ In the roads, high-contrast coloured warning and guiding lanes are to be used, particularly before the junction points.

➢ In the sidewalks, any living & nonliving obstacles are to be avoided, which will limit narrow the walking lanes of pedestrians.

➢ The hiking trails and sidewalks must have a width of at least 1.5 m (Rodman, 2009).

➢ The width of the sidewalk ramps must be 2 m as minimum (Rodman, 2009).

➢ Drainage systems must be designed for preventing water accumulation on sidewalks and roads.

➢ The traffic lights over the sidewalks must have accessible pedestrian signals. Each traffic circle must be equipped with one accessible pedestrian signal.

➢ The manhole covers for the vehicle lanes must be placed out of the hiking trails, upwards to the junctions. These holes must be aligned with the road. The drainages on the sidewalks have to be placed out of the hiking trails; where it cannot be done so, it must be designed as vertical to the movement direction with a gap of up to 13 mm (Rodman, 2009).

➢ The elevation difference between the sidewalk and the road must be kept on minimum, and a ramp is to be placed between the road and sidewalks for ensuring accessibility.

➢ Coniferous plants should not be preferred for roadside forestation, as well as choosing the plant types with the height not blinding the user in the traffic.

➢ In the sidewalk forestation, no tree should be planted on the hiking trails of people, and the trees planted on the roadsides should not blind the visibility of the users.

➢ The traffic circles must be equipped with touch-warning lanes, directional guides for directing the sight-disable people towards the circle or to the light / signal standards and to allow them pass the Street safely.

➢ The obstacles at height or on surface level, ribbed objects, including the drainage grids in the hiking trails are potentially dangerous for everyone. These obstacles may jam the wheels of wheelchairs, push-chairs and bikes, or posing danger for visually impaired persons. The banks, mail boxes, billboards, parking meters, lighting poles, electricity poles, facade protection poles, tree grids and drainage grids must be designed carefully within the scope of these obstacles (Rodman, 2009).

➢ The roads must be designed with robust and hard surfacing, nonskid and nonreflective materials and colours. Loose materials like sand, pebblestones that complicate the movement and lead more power should not be used (Erkovan, 2013).

➢ The elements used in the design process – i.e. the parallel gap between the bars of the drainage grids – should not have a structure to complicate the use of wheelchair, walking sticks, high heels, in order to prevent the dangers and mistakes to the greatest extent possible (Erkovan, 2013).

Landscape structures and street furniture

Landscape structures should be placed on urban open areas, which can be accessed and used easily by every person. Street furniture are to be designed in a manner meeting the needs of people of all ages and physical capabilities. The spatial structure, organizational and design characteristics should include sitting and assembly areas for each and everyone. Within the scope of design for all:

Sitting elements

➢ The usage and comfort level of the sitting areas, within the scope of designs for which the exposure and predominant wind direction factors has to be taken into consideration, will be improved.

➢ Skid-resistant surfaces should be used.

➢ Urban equipment elements have to be placed in a manner not preventing the pedestrian circulation.

➢ In order to meet the requirements of people with wheelchairs, the individuals with disabilities and those using push-chairs should be involved as adjacent to the sitting areas, where their friends and family members can sit nearby. These elements are to be placed in a manner not interfering the pedestrian circulation.

➢ For sitting areas, the respective sitting units have to be designed with backrests and arms, while designing sitting areas for those, sitting in wheelchairs, can use them interactively.

➢ Park benches should be fixed to the ground in accordance with the public area conditions.

➢ The sitting area of park benches depends on the designer's purpose, however it must have a width of at least 0.9 m to 1.2 m for one person to sit (Rodman, 2009).

➢ An area should be designed for users on wheelchair to fix their wheelchairs next to the other users or for the service dogs.

Litterbins

➢ The litterbins should be accessible and easy to reach.

➢ An accessible litterbin can easily to be opened by hand.

➢ The ground clearance of the litterbins should be between 75 to 90 cm for seniors and children with disabilities and with limited mobility, and they are to be easily opened (Rodman, 2009).

➢ The force to be applied for opening a hinged cover should not exceed 5lbf (Rodman, 2009).

➢ The litterbins should not have sharp edges.

➢ The litterbins should have approach areas around them.

➢ Lighting units

➢ Outdoor lighting units should be assembled for all accessible hiking trails.

➢ The lighting poles have to be placed out of the hiking route, and should not pose an obstacle for pedestrians or vehicles.

➢ The light coming from road lighting units should not be directly reflected on the eyes of people at night time. The light is to be reflected under the eye level.

➢ The lighting units should not be blocked by tree branches or other things blocking the light to be reflected on the surface. Where it is blocked by the trees, pruning is to be performed regularly and continuously.

➢ There should not be any dark area in the park or road, where no light is reflected.

➢ While preparing or analyzing a lighting plan; the light, lighting level and type of lighting order is of great importance. The irregular distribution of lighting equipment may cover the obstacles, disrupt the hiking/walking surface or confuse the pedestrians, which lead the pedestrians to concentrate on the road looking directly forward, instead of looking the areas around them. People move more confidently and comfortably on a dim-lit road, provided they are surrounded by or directed to a more powerful lighting source (Rodman, 2009).

Plantation

In plantation, any kind of factor can be taken into consideration. The plants have to be selected in accordance with the respective area.

➢ Thorny and poisonous plants should not be used in areas that are accessible by children.

➢ While designing gardens and parks, the botanical or structural designs in the area should be able to be seen in sitting or standing position.

➢ Fruit plants should not be used in areas that are close to pedestrian and vehicle roads. These plants may create slippery and dangerous surfaces due to the fruits falling into the ground.

➢ The plants with height, branch characteristics and texture blocking the visual values, driving and walking should not be used in pedestrian and vehicles roads. Where there are plants blocking the visibility in the area, pruning has to be performed on them.

➢ While designing gardens and parks, the plantation or structural designs in the area are able to be seen in sitting or standing position.

➢ Such areas like squares and parks that are frequently used by public should not be subjected to plantation, considering those that are allergic to polen.

➢ The trees to be planted in such areas has to be designed in a manner protecting people from such environmental factors as sunlight, wind and noise.

Urban open areas (parks, gardens, picnic areas, squares, recreation areas, etc.)

Interactions with natural environment has to be proven by be encouraging to increase the physical power, mental awareness and socialization, as well as providing rehabilitation for human health (Carman, 2016). Open areas with universal design provides improvement in the life quality of everyone (for seniors and adults in particular).

Squares, gardens, recreation areas and parks are important public open areas in actual urban environment. Well-defined landscape areas are the open areas having the ability to improve the quality of living quarters, meeting the expectations of human. In this context, designs are to take the human needs into considerations, while being appealing to each and every individual, while designing urban open areas like parks, squares and picnic areas (Figure 5).

The need for shady and cozy sitting areas, proper walking surfaces and hiking trails with minimum slope are the components for a person to move confidently in outdoor areas. Senior individuals, people with disabilities and children to move from point A to B comprises the basis of urban open area design.

In the designing process of parks, recreation areas, squares and picnic sites;

➢ The pedestrian and vehicle roads can be easily used by everyone, while being promoted to be used, as well.

➢ Urban open areas with ponds, pools and water sports areas, should provide resting and recreation activities for people of all ages and skills.

➢ Safe areas should be designed for each and every person.

➢ Social interaction has to be ensured for everyone by providing accessible park tables with proper benches and tables.

The designs must be performed by taking the physical specifications of the area in an urban and built environment. Design for all criteria to be applied in urban open areas are to be evaluated with the ones in the other six items.

The concept "design for all" started to become widespread in 2000's in all over the world, and today, many countries create designed environments within this scope. There are many examples of parks and recreation areas around the world, which have been created within the conception of design for all.

Figure 5. Gardens by the Bay (Ak, 2015)

4. CONCLUSION

Changes in demographical structures in all over the world increased the importance of universal design. The population growth for seniors and people with disabilities increases the need for a more supportive and healty environment. In recent years, the universal design approach has presented an opportunity to focus on accessibility, safety and inclusion matters.

People differ from each other in terms of height, power, ability to see, hear, mobility and balance, etc. Each individual has unique physical and sensorial characteristics, which changed a lot in time. With universal design, it is aimed at meeting the needs of these users in general by focusing on the changes. As Mace mentioned, "Each individual is unique, and as a group, the human kind varies largely by characteristics".

Today, universal design is applied by various disciplines. Landscape architecture is a discipline of our daily life, which concerns every person of the society. Within this scope, the landscape architects must show an inclusive approach in designing, thus adopting and applying the principles of universal design along with general design, aesthetics and ergonomy. The main objective of designers is to ensure that each and every individual in the society has to be satisfied with equal rights and opportunities.

In conclusion, before taking any decision within the designing process, the needs of each and every user has to be understood clearly. A perfect landscape design must be clearly comprehensible and open to development by showing more awareness to the nonverbal communication for the physical environments, increasing the areas that give the impression of convenience and safeness, as well as raising concern over finding solutions.

It is a must for designs considering social structures and life within the scope of senility, disability, affection and childhood, to be inclusive, and to embrace the relation with the environment within an integrative approach, as well. Landscape design for all is a fact that is inclusive, while improving the life quality, considering each and every person and having a sustainable structure, integrating with changes with its flexible structure or adjusting itself to such changes, both safe and freedom-based, which needs to be taken into consideration in all fields of design in creating living environments.

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