

A RESEARCH ON ACCESSIBILITY OF URBAN PARKS BY DISABLED USERS

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Abstract

The availability and accessibility for people with disabilities in their social environment as parking is extremely important. Therefore, the planning of the park accessible format in order to continue living as a barrier of all individuals with disabilities must be designed and implemented. In the case of individuals with disabilities feel helpless and hopeless and care that leads to restless against them. Therefore, designers need to be sensitive to a barrier-free design will offer the possibility of life on equal terms with everyone. Thus, all disabled people will be fully and be able to easily access social life.

Thanks to technological developments and design diversity in recent years. It became easier for all individuals are equal in area to access. Thus, it aims to seamlessly participate in social life of people with disabilities.

In this study, one of the largest parks in Konya for disabled people were examined and evaluated. Parking available in the area, walking paths, plantings and urban equipment of the

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appropriateness of the disabled, has tried to expose the problems occurring in use. Design measurements were compared with data obtained from space for the disabled, suitable for those determined unsuitable for proposals has been required.

Keywords: Handicapped people; Landscape design; Parks accessibility; Disabled users; Konya/Turkey.

1. Introduction (10pt)

The needs of the handicapped people in the process of participation to the urban life are different from those who are not handicapped and they have similarities. It is necessary that the access of the handicapped individuals to physical environment should be provided for the purpose of being able to perceive them as a part of the whole instead of perceiving them as a separate section of the society and being able to provide opportunities for this in the lived place. It is also necessary that the handicapped people, as all the humans, should be able to benefit from the transportation services as equals and should be able to go to their office, school, shopping, sport centers and parks via the roads and vehicles used by unhandicapped people [1].

There are many different views and definitions regarding handicap. In the notification published by World Health Organization (WHO) in 1980, the basic concepts regarding handicap have been defined and definitions have been given in three separate categories in this issue with a classification giving importance to the health dimension of handicap:

Impairment: It expresses the status of losing or aberration of the physiological, psychological and anatomical structure. This definition is especially used in the defects at organ level.

Disability: This definition expresses the physical and mental faculty loss. It is defined as the normally decrease or loss of a skill due to an impairment occurring as a result of the impairment of health.

Handicap: It means a person not being able to fulfill the life requirements accepted as normal according to his/her age, gender, social and cultural level due to the aforementioned impairment or disability situation [2].

Within the scope of the study; Kozagac Park has been assessed in terms of the accessibility of the physically handicapped individuals by taking into consideration the standards “Basic Information Technical Manual for Local Managements Regarding Accessibility” published by Prime Ministry Administration for Disabled People, TSE 12506 “Urban Roads – Design Rules of Structural Precautions and Signs in Streets, Main Roads, Squares and Roads for the Handicapped and Old People”, TSE9111 “Rules On the Arrangement of Buildings in Which Handicapped People Will Reside” published by Turkish Standards Institute (TSE), “ Accessibility for the Disabled A Design Manual for a Barrier Free Environment” and “Americans with Disabilities Act (ADA) Standards for Accessible Design” published by the United Nations.

Because the participation of the handicapped people to the social life within the scope of “Accessibility” is provided by bringing them together in certain areas, it is primarily necessary that the handicapped people should be able to make a move out of the places they live. Although the concepts of “availability” and “accessibility” are used instead of each other, the concept of accessibility is accepted as more comprehensive than the concept of availability due to the fact that the concept of accessibility has a scope wider than the physical availability. Again; the concept of “Accessibility” is preferred instead of the concept of “Availability” in the UN Contract Regarding the Rights of the Handicapped [3]

The first contract conceptualizing the accessibility with its widest meaning and arranging it with an independent provision is the UN Contract of the Handicapped Rights. One of eight principles of the UN Contract of Handicapped Rights is the Principle of Accessibility. In the article no. 9 of the Contract, it is explained that the accessibility should be provided for the handicapped to be able to exist in an equal way in all the areas of life without needing the help of anyone. With this article, they have brought the liability to provide the accessibility to the services such as buildings, roads, transportation vehicles, schools, houses, health facilities, workplaces, open and closed facilities, information and communication devices etc. for the handicapped by the state. Accessibility is a concept expressing to have the opportunities of being able to reach the economic, social and cultural environments, primarily the human-made and natural physical environment, and getting benefit and contributing to the services given in these environments. Accessibility for the handicapped is also a condition for being able to completely attend to all the

areas of social life and live independently as well as being a tool for being able to make use of the rights. It is necessary that access should be provided for the handicapped to the physical environment, transportation, information and communication including the information and communication technologies, other facilities and services open for public in an equal way with other members of the society for them to be able to sustain a life convenient to the human honor independently [4].

The design of the open areas in an ergonomical and detailed way lies behind the basis of the solution of this problem. It is necessary that the designs and applications in the urban open areas should be formed in accordance with the standards of the handicapped individuals for the purpose of forming an accessibly structured environment [5].

2. Materials and Methods

Materials

The material of the study consists of the sheets and data belonging to the study area, the studies previously conducted in the subject and in the study area attained by means of conducting a literature review regarding the issue, in addition, national and international design standards published for being able to realize the designs in convenience to the handicapped individuals in the physical design.

Methods

The measurements and locations of the design elements that may respond to the needs of the handicapped individuals and that take place within Kozagac Park (entrances, pavements, pedestrian crossings, parking lots, ladders, urban furniture etc.) have been determined via in situ measurement. These elements have been drawn, their photos have been taken and the existent physical properties have been detected.

The study method mainly consists of three stages. These stages are given as follows;

Literature review and data collection: At this stage, the publications regarding the parks and accessibility within the scope of our research subject have been examined.

Study area and existent status detection (Findings): The necessary information regarding Kozagac Park has been taken from Konya Metropolitan Municipality, the park has been observed in two terms as summer and winter months and the landscape design has been examined according to the handicapped and old individual criteria. In addition; the comments of the handicapped park users and their companions regarding the problems they face with the use of the park have been taken and assessments have been supported with the photos taken in there.

General assessment- making suggestions: The landscape architecture in the study area has been examined in terms of the design criteria and handicapped individuals and suggestions have been made.

3. THE EXAMINATION OF THE STUDY AREA AND FINDINGS

The study area takes place in the city of Konya, town of Meram, Kozagac District, Hatip Street. The total area is 104.000 square meters (Figure 1 a and b). There are three buffets, two cafeterias, one mini football pitch, one volleyball field, one basketball field, 24 fitness sport equipment, one child game area, one chess game area, amusement park, one animal shelter, one sport facility, one poultry zoo, one aster park and also a pond of 20.000 m² area in the study area.



Figure 1 (a) Satellite view of the research area (b) Google map view of research area

Park Entrances

There are two entrance points providing the entrance to the study area from different directions. The use of entrance points is obligatory due to the fence surrounding the area, one point is both vehicle and pedestrian entrance and the other entrance door is only for the pedestrian usage figure 2 (a). The width measurements of both entrances of the area is in sufficient amount according to the user density and ramp arrangements have been made in the convenient measurements in the places having slope difference.



Figure 2 (a) Park pedestrian entrance door (b) Fence

Pedestrian Ways and Pavements

The pedestrian areas should be arranged in clear, easy and correct geometrical shapes for the visually handicapped people to find their directions easily. The pedestrian way should be arranged with guiding tapes in at least 20 cm width which will be able to be easily perceived by touching with a walking stick in both directions of the net width for the visually handicapped. The net width of the pedestrian way should be at least 150 cm. this measurement may be decreased to 125 cm in the ways in which width is limited. Minimum width is 1,50 m in bi-directional wheel chair traffic crossing and the preferred width is 1,80 m [6].



Figure 3 Park pedestrian way

There should not be any barriers in the road surface for the handicapped individuals to be able to use the way by being conscious of their movements and to be able to walk around the walking roads freely without any hindrance and stop. All kinds of disarrangements that may be dangerous should be avoided (The arrangements such as inconvenient grates, truffles, parking lot chains

stretched on the road, abnormal pavement differences on the road surface and abnormal heights) [7].

The coating of the pedestrian way should be sliding-preventive and should facilitate walking, the stairs on the road etc., underground installment on the road surface and manhole covers will not form any bumps and sudden level changes, permanent, continuous or same-level grounds should be formed [8]

The width of one of the two walking ways starting from the entrances of the area and continuing in parallel is 400 cm and the width of the other one is 150 cm. The width of the walking way continuing through the inside of the park is 160 cm. according to TSI 12576 [8], the pedestrian pavement should be at least 150 cm for all the pedestrians to be able to move freely. This distance has been determined as 200 cm as the most ideal by the Prime Ministry Administration for Disabled People [5]. According to [9], the distance necessary for two wheel chairs to be able to pass the road bilaterally is 150 cm. Within the direction of these standards, two walking ways is deficient according to [5] because they are below 200 cm. However; they are convenient for general usage (Figure 3). Paving stone has been used as the coating material on the walking ways in the area. Although paving stone is seen as an ideal material with its economic, aesthetic and enduring properties, the width between the stones to be above 2 mm and the formation of elevation differences between the stones during the laying form negativities for the handicapped individuals.

The surroundings of the obstacles such as sheet dustbin etc. taking place on the way have not been specified with perceivable / sensible surfaces and colors or there is no guiding structure or strips that will enable the visually handicapped people to find their routes and directions in the walking ways taking place with different stimulatory elements. According to the standards taking place in TSI 12576 [8] for the visually handicapped people to be able to move comfortably alongside the walking ways taking place in the area, it is necessary that the illumination elements, sheets and plant ceiling heights taking place alongside the walking ways should be at least 220 cm. Within this scope; it is not in accordance with the standards, because the ceiling height of the trees taking place on the walking way is 190 cm.

Ladders

When the ladders prevent the movement of the handicapped, the connection of different elevations to each other via ramp is important in terms of the provision of accessibility. However; in the event that ladders are obligatorily made, handrail should be made on both sides of the ladder. The formula two risers height + 1 echelon width = 63 cm should be used on condition that one riser height will be maximum 15 cm and it should be in accordance with TSI 9111 [8]. There is a ladder within the area, the measurements are not in accordance with TSE, 1999 [8] standards. In addition; rough and sliding-preventive materials should be used on the surfaces of the ladders and because the use of slate stone as the coating materials in the ladder area forms a rough surface, it prevents sliding. There should be sensible surfaces on the first and last steps for the visually handicapped individuals to comfortably use the ladders. In this respect, the ladders in the area are not in accordance with standards.

Parking Lot

According to the article no. 4 of the Legislation of Prime Ministry Parking Lot Regulation; it is necessary that parking lot space as much as 5% of the parking lot number in all the facility for the handicapped should be separated on condition that it will not be less than one in the general buildings and regional parking lots and general parking lots.

In [9]; it is suggested that a parking lot for at least one vehicle should be separated in the car parking lot places with a capacity of less than 50 cars, a handicapped parking lot for at least one vehicle per 50 vehicles should be separated in the car parking lot places with a capacity of 50-400 cars, a parking lot for at least eight vehicles should be separated in the car parking lot places with a capacity of more than 400 cars and 1 parking lot space should be separated for additional 100 vehicles.

Handicapped plate that is visual and easily readable and notifying that the handicapped could park in the generally parking facilities and the guiding handicapped plate until the parking lot in which the handicapped people could park within the parking facility, the handicapped parking sign on the ground in the open parking lot place, handicapped parking sign on the ground, wall and ceiling in the closed parking facilities should be put. The road signs used in the parking lot

should be illuminated at night. Because the existence of obstacles between parking lot space and the routes to be taken after parking causes to problems, the transportation distances should be maximum 25 meters and preferably 10 meters [5]. According to [9], a width of at least 360 cm should be left for a handicapped vehicle in the parking lot formed by taking the handicapped individuals into consideration.

There are two parking lots within the study area; while there is handicapped parking lot in one of them, there is not any lot in the other one. There is the handicapped plate in the parking lot including the handicapped parking lot, but there are not guiding and on-ground handicapped parking signs. The night illumination of the parking lot is insufficient, paving stone has been used as the ground coating within the parking lot and the lots of the vehicles have been separated with strips. An area of 250 cm x 300 cm has been separated for a single car and this is not in accordance with the standards, there are plates showing the entrances and exits of the parking lot. There are three handicapped parking lots in the place with a capacity of 120 vehicles and this is in accordance with the standards within this meaning.

Sitting Elements

According to [10] a sitting element should be especially easily reachable and should be designed with convenient materials. The surface of the sitting element should not be sliding and shiny, it should especially not be made of concrete out of the heavy metals. According to the data of [5], the height of the bank from the ground should be 45 cm, the height of the back-leaning place should be 70 cm. The height of the tables in the resting areas should be between 75 cm and 95 cm and the minimum depth below the table should be 60 cm for the wheel chair to approach from all the directions. In addition; an area of 120 cm should be left for the wheel chairs near the sitting bank in the resting areas.



Figure 4 (a) Bank of the park

(b) Camellia and bank

The height of the banks being one of the sitting elements taking place in the study area from the ground has been measured as 45 cm. This height is not convenient because the maximum height is 45 cm. The width of the sitting places of the banks is 42 cm. It is quite convenient when the standard being 38 cm is considered. There is no distance near the banks and that is necessary for the wheel chair to comfortably approach here. There are places necessary for two handles to take support near the banks (Figure 4 a).

The heights of the different sitting units taking place within the area from the ground are not convenient for the handicapped individuals. The minimum depth below the table should be 60 cm for the individuals using wheel chair to be able to approach the sitting individuals from all the directions. The heights of the sitting places from the ground and the sitting widths are in accordance with the standards, the camellia entrance width is not in accordance with the standards (Figure 4 b).

Sitting elements should especially be easily-accessible, the transportation to them should be easy and these elements should be designed with convenient materials. The surface of the sitting element should not be slippery and shiny; it should especially not be made of concrete out of heavy metals. There should not be any obstacle in front of the sitting element and there should not be any stairs. While conducting the design of a resting area, there should be an area of 90cmx90cm for the wheel chair near the sitting elements and there should also be an area of 150x150cm in the front side. The sitting element should have the height of 45-50cm and depth of 40-50cm. There should certainly be the handle support places to lean while sitting. Back support is both necessary in such kinds of designs, and it is also the supplementary item of the sitting element. Resting areas and banks should be made per each 100 m near the pavement in a way that it will not prevent the pedestrian flow in the parks and dense roads [11].

Illumination Elements

According to [10] illumination should be provided alongside the road especially from the ramps and ladder entrances and in the places having obstacles. The height and location of the illuminations change depending on the number of the users of that area, existence of any danger and safety.

Its height should be 3-4 meters in the pedestrian ways, 4,5-6 meters in the streets, 7,5-9 meters in the avenues and 10-12 meters in the main road. In the park gardens, the maximum height of the low illumination elements should be 100 cm and the maximum height of the high illumination elements should be 240 cm [12]. According to [8], head pass distance should be made in 220 cm height.

Illumination is very important in terms of safety for the handicapped people in the areas having potential danger such as especially the ramp and ladder entrances. Illumination should be planned by using fixed elements by taking the needs of the handicapped into consideration. The increase in the light intensity is beneficial for the people with weak vision in terms of perceiving the places.

Many illumination standards have been determined by foreseeing the height of the eye level of an adult person when on foot. The eye level height of the wheel chair users is approximately 1.19 m. urban outdoor areas should be illuminated in sufficient way to provide access and personal safety. Here; the selection of pale material that will prevent reflection and the increase in the illumination level in the dangerous areas are necessary [13].

Dustbins

Dustbins should be assembled with at least 40 cm distance and at least 90 cm, utmost 120 cm height to the border stone near the pedestrian pavement in a way that they will not prevent the pedestrian movement [5]. According to [12] their height should vary between 60-100 cm.

There are 4 different dustbin types within the study area. None of the dustbins taking place is in the sufficient distance from the walking ways. The height of one of them is not in accordance with the standards and the heights of other three of them are in accordance. Because they are not in sufficient distance from the walking way, they prevent the usage and comfortable walking of the handicapped individuals.

Dustbins should take place with the distance of at least 40 cm to the border stone near the pedestrian pavement in a way that they will not limit the movements of the pedestrians. They should be installed in a way that their height will be at least 90 cm and utmost 120 cm. Wrongly

assembled dustbins may be a danger factor for the handicapped pedestrians. It is necessary that the dustbins, as it is in other equipment elements, should also be made detectable and easily perceivable with the use of transverse colors in terms of preventing this situation. Within this scope; it could be suggested that the dustbins should be assembled by taking the heights in convenience to the illumination poles into consideration [13].

Fountain

The water drinking places of the fountains should have the height of 90 cm. however; the fountains may have different heights; while the convenient height is 85 cm for the wheel chair users, the height of 95 cm is convenient for other users [5]. There is one piece of fountain within the study area and 75 cm height of the water drinking place of the fountain from the ground is not convenient for the use of the handicapped individuals and especially wheel chair users. No strips or shiny colors guiding the visually handicapped individuals to the fountain unit have been used. The existence of laying height in front of the fountain is not in accordance with the standards, but the way width is convenient for the wheel chair users.

Vegetation

One of other criteria that should be paid attention in the designs made for the urban green areas is the vegetational design; the plants are also used functionally a much as for their aesthetic properties in the green areas. However; each plant has properties peculiar to themselves. These are the physical properties such as leaf, bloom, branch, trunk, root, tissue, corona etc. peculiar to the plant itself and the sensory properties such as sound, smell, taste and touch depending on these properties. These properties may express different meanings for different handicap groups and they should be taken into consideration during the design stage. Within this scope; the plant species and places should be carefully selected in the vegetational designs to be made on the pedestrian ways for the handicapped users to be able to make use of the pedestrian ways without any problem. Thorny plants, seeds and fruit layer trees and plants that may form a slippery surface should be avoided in the pedestrian ways because they may pose danger. The branches coming up to the pedestrian ways pose dangers for especially the visually handicapped individuals. The herbs should be planted in sufficient distances from the pedestrian ways in a way that they will not prevent passing or they should be regularly maintained and pruned [14].

Visually disabled people may magnificently get benefit from the vegetation carefully made. The vegetational designs including strong transverses and eye-catching silhouettes may be visual tips in finding directions for the individuals with low vision. The branches broken due to the rain and dropping on the walking way, the species whose leaves dropping on the ground may form slippery surfaces and contamination, thorns and the species producing toxic and slippery fruits may pose threats in the walking ways and they should be carefully used due to these problems. Because the thorny plants, seeds and fruit later trees and plants that may cause to a slippery surface are potentially dangerous plants, they should be kept away from the pedestrian ways. The branches coming up to the pedestrian ways form a dangerous obstacle for especially the visually handicapped people. It should be ensured that the branches of the plants should not prevent the pedestrian ways. They should either be planted in sufficient distance to the pedestrian ways in a way that they will not prevent passing, or the sufficient and regular maintenance and pruning should be made. The selection of the bushes, small trees and flowers which will form variety in different colors, shape and smell has a significance [13].



Figure 5. Vegetation samples from Konya Kozagac Park

There are plants with 3500 leaves and 2300 evergreen and in many different species within the study area alongside the walking ways; most of these plants are not in sufficient distance to the way and because the branches of most of them come up to the walking way, they pose threat. The surroundings of the plants have not been elevated with a platform and their surroundings have not been limited by a different material. There are no strips or protection separating the walking ways from the green area and that may be felt by the visually handicapped people.

4. RESULTS AND DISCUSSION

The urban green areas taking place inside the cities are the open places in which the people meet their needs such as resting, entertaining and socialization. The parks taking place in the urban green areas are also the important areas for meeting the needs of the people. Within this scope; it is important for the parks to be accessible in terms of turning them into livable places. All the people should be considered as equals without any discrimination whatever their age, physical status and skills are at the stage of participation to the urban life. At the end of this study, it has been detected that movement of the handicapped people without any obstacle and their availability to the areas have been limited due to the wrong applications that are not in accordance with the standards in Kozagac Park being one of the greatest parks of Konya and being densely used by the citizens.

Although the widths of the walking ways used within Kozagac Park are in accordance with the standards, inconveniences of the surface coatings to the standards are the applications restricting the movements of the handicapped people. In addition; there are not susceptible surfaces and walking strips warning the visually handicapped individuals on the ways taking place within the area.

The parking lot areas taking place in both entrances of the area are in sufficient number. The parking lot widths are in convenient measurements. There is a special parking lot space separated for the handicapped people. In addition; on the ground, international handicapped sign has been used and the signs and guiding plates that will direct the handicapped people have been located. No warning material has been used for the handicapped people at the beginnings and ends of the ladders taking place within the area. Also, the measurements of the ladders are not in accordance with the standards.

Most of the sitting units taking place within the area are in sufficient heights. However; there are not sufficient areas near the banks for wheel chairs. The illumination elements in different types and dimensions are generally in accordance with the standards. Dustbins narrow down the road because they take place on the pedestrian ways. In addition; they do not have the patterns or

color difference necessary for determining the places of the equipment in terms of visually handicapped people.

There are not sufficient amount of guiding and informing plates within the area. As a result, the following suggestions have been developed for the solutions of the problems faced in the study area.

*The material of the pedestrian ways should be replaced with a convenient material and walking strips should be formed for especially the visually handicapped individuals to be able to follow the way with their walking sticks.

*Ladders, their heights and widths should be re-arranged in an equal way with one another in accordance with the standards.

*The contents of the informing and guiding plates should be placed in the area in a way that they will be in accordance with the standards.

*Toilets and sinks which are designed in accordance with the standards regarding the handicapped people and in which the handicapped people could easily meet their needs should be put in the area.

*Areas should be formed near the sitting elements in the sitting areas in which the wheel chair users could also take place.

*The fountain and kiosk should be replaced in a way that it will give opportunity for the handicapped people to comfortable use.

*Those that are not in accordance with the standards out of the urban equipment elements should be re-arranged for the purpose of making them convenient to the standards.

*The damaged equipment elements should be repaired or replaced for the Vandalism acts taken in the urban equipment elements both not to give any damage to the users and not to cause new Vandalism acts.

The branches of some plants taking place alongside the walking ways in the area come up to the walking ways. The pruning and maintenances of the plants taking place alongside the walking ways should be regularly made in terms of not giving any damage to especially the visually handicapped individuals.

There is a pond having a wide water surface in the park. The pond is surrounded with wire fences for safety purposes. However; there are not wire fences at some points and this poses a

great danger. For this reason; all the surroundings of the pond should be fenced for the purpose of providing safety precaution.

The ground pavements around the equipment should be arranged in different patterns and color for the handicapped people using the area to be able to reach the urban equipment elements comfortably and also to be able to perceive them.

As a result of this study; it has been detected that Kozagac Park is not quite convenient for the use of handicapped people from many aspects. The park could be provided with comfortable usage opportunities both for the handicapped individuals and for the healthy individuals by means of the improvement and revision works to be carried out by the local management.

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