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Regulations to Be Made in Urban Areas in Order to Improve Accessibility of The "Visually-Impaired People

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Abstract

In our country, disabled people encounter many .problems in integrating with the city and city life. The most important one is the "accessibility" in the physical space. Providing accessibility require disabled to move without being in need of any help, without any prevention and to participate in the life activities. It is seen in our country that the obstacle-free walkways for the disabled do not exist in the cities including the pedestrian areas, the legal arrangements with respect thereto are not yet able to achieve the required conditions in the physical environment, and the required sanctions and controls are not sufficient. Moreover, inability to present accurately the difference in the needs as based on the disability type

Keywords: visually-impaired, accessibility, orientation, physical arrangements.

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is exposed in the problems that occur in the arrangements realized. The basic needs of "visually-impaired" people in the urban space, which constitutes the subject matter of the study can be listed as; safety, to understand where s/he is going, to know where s/he is and to obtain information about the surrounding. For the visually-impaired people to obtain such needs depends on their ability to move alone in the urban space. One of the most important issues in achieving this is "orientation". "Orientation" involves the process of determination of the person's own position and relation with the important objects around. It is known that the "accessibility" of a visually-impaired person is based on orientation and the arrangements in the physical environment in achieving this are very important. In this study, the purpose is to present the significance of "orientation" directed to increase the accessibility of the "visually-impaired" people in the urban space and as based on this, to discuss "the arrangements required to be realized in the physical environment".

INTRODUCTION

Visually-impaired people, as referred to in its legal definition, are the people who has 1/10th of visual efficiency -i.e. 20/200 vision- or less after all the visual correction operations or the ones whose fields of view are not over 20-degrees. People who are defined as blind can see objects partially or as silhouettes or cannot see at all (http://www.aof.anadolu.edu.tr /kitap/).

On the other hand, Turkish Language Association's definition is: "People who cannot see at all or people who has less than 1/10th of visual efficiency in both eyes after all the visual correction operations, and therefore people who cannot make use of visual abilities in the educational activities are referred to as blind" (http://www.Tdk. gov, 2007). More than 169 million people worldwide suffer from a visual impairment. Among them, 124 million people have limited vision and 45 million people have no vision. (WHO,2002). According to World Health Organization's estimations the number of people with no vision will reach up to 75 million in 2020. The rate of visual disabilities in our country was estimated to be 1.4% and the ratio of visual disability to general disability was estimated to be 8.4% in the "Disability Type" study conducted by Turkish

Statistics Institute in 2011. According to the Advanced Analysis Report of 2002 presented by the Administration for Disabled People, the number of visually-impaired people in Turkey was 412,313 (http://www.altinokta. org.). It is a fact that Environmental elements -be it residency, public spaces and transportation means- are not designed considering specialties and needs of the disabled. In this context, it is obvious that measures taken are insufficient and disability

types are not defined efficiently. "Inter-sensual" are vital for the perception of urban environment and for accessibility especially for the visually-impaired people. Zevi, while defining a city as a place built for people who can see by the people who can also see, points out the fact that a city is a mosaic which contains different " Inter-sensual " environments and aspects. These aspects play a great role in visually-impaired people's perception and deciphering the urban environment. According to the experimental psychology, tools to read the environment should be enabled in order to create pedestrian action. Deciphering environmental information is possible with enabled data also for the visually-impaired people. Among these are sensual activity (sound of footsteps or white cane), sound of the city, reference points related with scent and also touching with feet (ground, flooring) and hand. Especially the people blind at birth differ from others in terms of mental development. For these people perception of the environment is based rather on sound and touching. Consequently, while "environment" is identified with touching and sound, "distance" is identified with the concept of time. Visually-impaired people use their perception level in order to move in urban spaces. In this context, the perceptions of sound and touching are combined with perceptions such as heat and smell. This inter-sensual transaction makes it possible for the visually-impaired people to orientate, to estimate distances, to cross the street, to walk linearly, to tackle obstacles and to perceive the structural space. "Orientation" is a key element of these estimations based on senses. For this reason, the concept of "orientation" needs to be defined and "physical arrangements" should be made accordingly and properly.

ACCESSIBILITY FOR VISUALLY-IMPAIRED PEOPLE

Accessibility refers to be able to reach any public service provided by a city for all the residents. On the other hand, accessibility for the disabled people may well be defined as "removing the obstacles standing in the way to participate in everyday activities". Accessibility is a right for every resident. It is an indispensable component of urbanization, making decisions about a city and sense of belonging. The concept of "accessibility" has gained importance especially after the World War Two in the reorganization process. The idea of making public spaces available for each member of the society and therefore having a more habitable environment was adopted instead of designing for standard needs. Accessibility of a space is measured by being able to move

from one place to another without obstacles and freedom of movement. Accessibility, especially for the visually-impaired people, depends on features such as orientation, continuity and reference points. These features vary depending on estimations made via orientation and physical arrangements. An "urban route" for a person who can see is the mental perception of the urban image. This event is realized within the frame of symbol, sign, etc. logic (Lynch, 1993). On the other hand, perception of the urban route is realized within the frame of some mental and motor skills for the visually-impaired people. Visually-impaired people make estimations using orientation in their behaviors and minds in order to facilitate accessibility and to apprehend the urban route. Thomas renders this conception in 4 parts;

1-memorizing: visually-impaired people recognize the urban route in two phases. First phase involves the departure and arrival points. Central lines and certain indicators designate this route (this is my stop, I am passing by that, etc.). Second phase involves selection of reference points and exploring (sound of a fountain, reference point for a scent, etc.).

2-selection: visually-impaired people have a hard time moving through areas without sidewalks such as pedestrian areas, arcades, shopping areas, avenues etc. and they likely to have doubts about the route walking in such places. However, streets with sidewalks help visually-impaired people to walk linearly because of its traffic sound. In other words, places without sidewalks and reference points may pose a danger for visually-impaired people.

3-creating geometry: creating geometry is possible for visually-impaired people only when they are walking (to go straight, to turn to a side, etc.). Setting an angle is important in following up the reference points and recalling them. A visually-impaired people turns towards the road and crosses the street making an L line (right angle) from the sidewalk. Right angle is important in relating to the connection between places while on the move. U line may also be added. Without these angles a visually-impaired people can only move in a straight line.

4-disintegrating: moving in the dark requires certain reference lines regarding the route. Disintegrating is for separating the route into different parts. A visually-impaired people is able to move more easily in this successive sequence and to estimate the distance (for example, knowing the presence of the upcoming two footways and estimating s/he is close to the destination). Herewith, all these features show that the accessibility for visually-impaired people depends on

estimations made in synchronization and physical arrangements.

"ORIENTATION" IN ACCESSIBILITY AND ARRANGEMENTS TO BE MADE IN PHYSICAL ENVIRONMENT IN ORDER TO ENSURE ORIENTATION

It is widely known that freedom of movement for the disabled people using the above-mentioned urban data has some shortcomings especially in the "accessibility" context. Therefore, orientation of visually-impaired people and making physical arrangements accordingly is of great importance.

Orientation

Orientation is one of the most important elements which makes it possible for a visually-impaired people to roam in the urban space without the help of others. "Orientation" involves the process of determining one's own whereabouts and his/her relation with important objects around using one's senses (Köseler,2006). For this reason, "orientation" is one of the key elements of "accessibility" for visually-impaired people.

Visual orientation

Distinct contours which make urban environment visible and lighting units placed on a straight line are among the elements or "visual orientation" especially for partially visually-impaired people. Lighting in the urban spaces should be sufficient, homogenous and flashy lighting should be avoided. Lighting of some certain points (stairs, stops, railings, etc.) should be customized and intensified. Contrasts in color selection, material and lighting are especially crucial for reading the signals and perceiving certain fixtures.

Auditory orientation

Constant sound sources facilitate orientation of visually-impaired people via creating reference points (a fountain, etc.). Sounds originating from traffic, namely moving sound sources, may also help a visually-impaired people to walk parallel to this sound source. Pedestrian footsteps in an open space or on stairs give a visually-impaired people the sense of motion. Sounds originating from loudspeakers, audible signs, escalators, etc. set a course for the visually-impaired people orientating him/her to a target point. According to Vurpillot (cited by Pailhous,1970) people who are born blind are able to obtain information about their environs using auditory activities (sound of footsteps, white cane, etc.).

Tactual orientation

Tactile sensation is possible via the touch of hands, feet and body. Tactile sensation provides a mental image. In this context;

Hand: Visually-impaired people need to touch embossed symbols in order to read Braille. These elements help read the urban space.

White Cane: This tool can be defined as an extension of the hand which helps locate the ground. It is crucial for perceiving the flooring, obstacles, tactile paving and warning strips.

Foot: Walking is the basic means of "coming and going". Visual impairments restrain the dynamics of this motion. Visually-impaired people, using their feet;

-can discern the ground type (sand, grass, gravel, etc.)

-can discern the inclination (uphill, downhill)

-can discern differences in the flooring (warning strips at dangerous places, footways, in front of stairs, etc.)

Scent orientation: Helps identifying an entrance, a place, a building (parks, gardens, bakeries, subways, etc.).

Arrangements to be made in physical environment in order to ensure orientation

Pavements pedestrian roads:

In order for the visually impaired people to walk freely on the pavements and the pedestrian roads (CFPSAA,2010);

-there should be sufficient spaces to move and there should not be any obstacles.

-sufficient spaces should be maintained.

-continuity should also be maintained, space identifying, limiting, architectural and natural components should be considered.

-steering tools of warning and flooring should be available.

-in order to determine the pedestrian junctions, turns, changes in levels and uses, when approaching these spaces, changes should be made on the surfaces of the flooring

- pavements/pedestrian roads should be distinctively distinguished from the vehicle ways (material, height etc.).

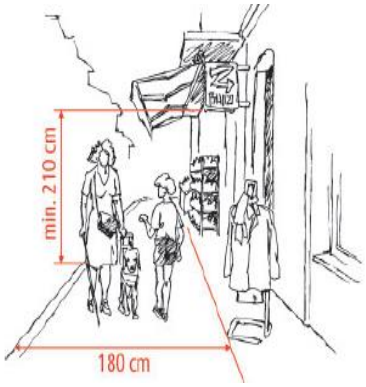

Figure1. Pavement Widths and Hung Obstacles Dimensions.

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Figure1.

Figure 2. Distinguished Pavements/pedestrian roads.

Figure 2.

Figure 3. Pavement height and refuge dimensions.

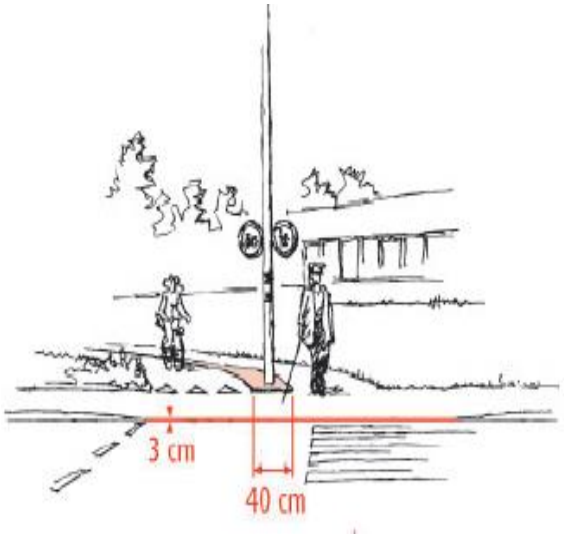


Figure 3.

Walking

Flooring: Perceivable surfaces are of essential importance for the visually impaired people to travel in urban areas conveniently and freely. These surfaces are separated into two groups as warning surfaces and notifying surfaces. Warning surfaces should use the pedestrian crossings, steps, differences in levels, mass transportation platforms and the points of entering and exiting here. Notifying surfaces should be embossed or audible so as to inform the locations of the bus stops, phone booths, toilets etc. Moreover, it is required for orientation in the complicated areas (CFPSAA, 2010).

*Stairs and ramps***:** Warning surfaces should be present at the starting points of stairs. There should always be railings nearby the ramps. On the side roads where sufficient spaces are available, the ramp allowance should be taken from the road (not the pavement). Changes in the changes of level of pavements may become a problem for the visually impaired people.

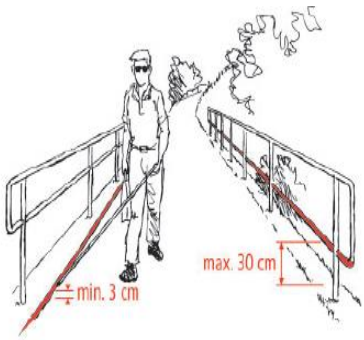


Figure 4. Railing dimensions.

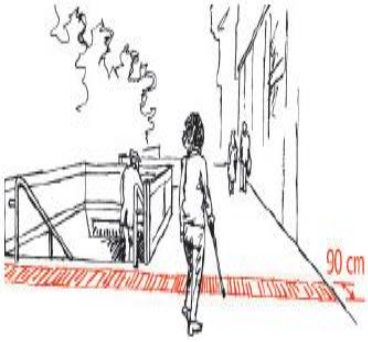
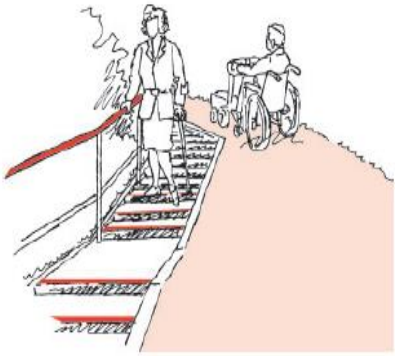


Figure 5. Entering and Exiting Points Surfaces.

Figure 4. **Figure 5.**



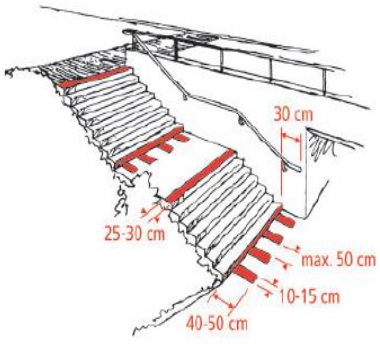


Figure 6. Stairs and Ramps.

Figure 6.

Road Passages

Junctions: At the points of passage, low kerb and perceivable surface should be available. The width of the waiting refuges should at least be 150 cm and at most be 200

cm. The maximum heights at the points of passage should be 3 cm (CFPSAA, 2010).

Traffic Lights : The traffic lights should be located nearby the pavements, in a way to center the pedestrian crossings and the heights of the warning buttons on them should not exceed 85-110cm. In controlled passages, convenience and safety for the visually impaired pedestrians should be provided by means of the audible or the embossed signs. Both of them being together should be preferred. No billboards, rubbish bins should be located near the traffic lights.

Figure 7. Traffic lights and pavements.

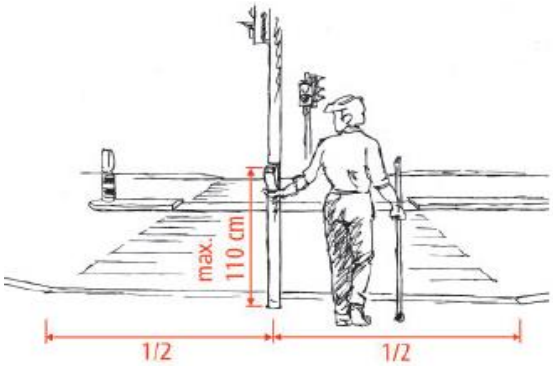


Figure 7.

Urban Furniture

High *Obstacles:* They should not be present at passage areas individually.(for instance, street lightning etc.) If the urban furniture is obliged to be present, audible warnings from the ground should be in place. Locations such as phone booths, stops etc. should be at least 30 cm. above the ground in order for them to be perceived by means of a cane.

Figure 8. Urban Furniture location.

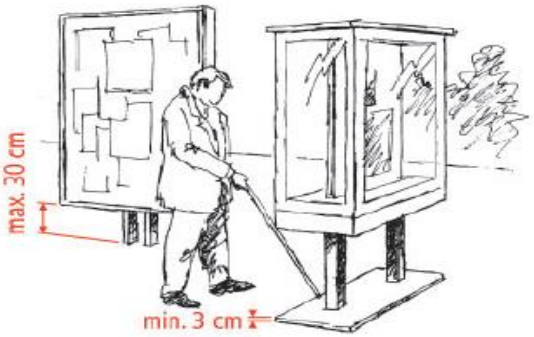


Figure 8.

Low Obstacles: In order for the urban furniture such as rubbish bins, flower tubs to be timely perceived by visually impaired people by the use of cane, their heights and widths should be paid importance to.

Obstacles which form protrusions or hung obstacles: It should be 210cm. from the ground at a minimum.

(Illuminated billboards, information boards, under the stairs

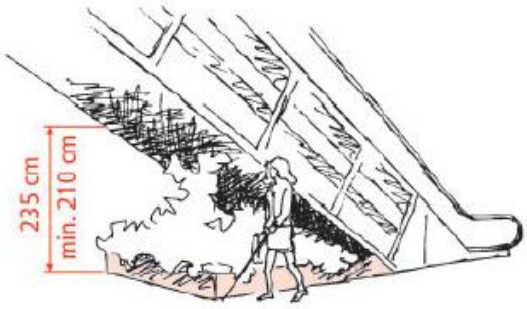


Figure 9. Obstacles Under The Stairs

etc.)

Figure 9.

Planting: Plants with thorns or harsh plants should not be used. The plants designed to create a convenient location may provide orientation for the visually impaired people. Moreover, the branches leaning to the pedestrian roads may cause hazards for the visually impaired people and actions should be taken in this context.

Information Boards: Embossed Boards for blind people and illuminated information boards on which bold points were used for scriptures should be used.

Other than those mentioned above, the cafes and urban furniture should be limited, no cars, bicycles which could harm the visually impaired people should be parked on the pavement and no billboards and no furniture in front of the stores should be used and suitable warning flooring and notifying flooring surfaces should be used in such areas (Schmidt,&Manser, J., 2003).

Stops

The stops should be accessible easily and without obstacles. The tariffs should include voice message systems relevant to the bus routes/schedules or embossed Letters should be used.

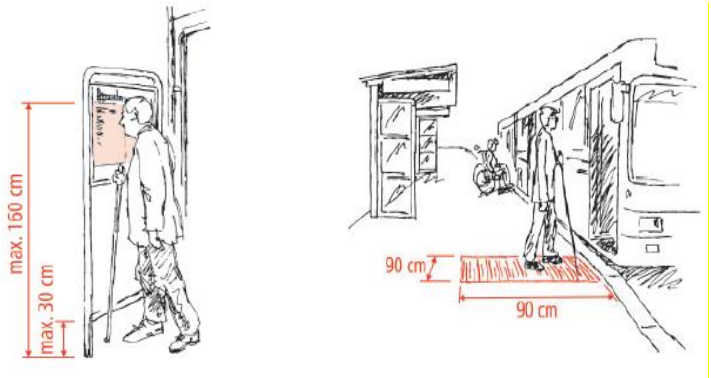


Figure 10. Stops Accessibility.

Figure 10.

The height of the information boards should not exceed 160 cm. and rectangle shape should be used. In order to cause the visually impaired person wait at the correct location, at least 90x90 informative surface should be maintained. Good illumination should be performed for the partially visually impaired people.

CONCLUSION

The obstacles which restrict the accessibility of visually -impaired people in urban areas and which restrict them should be eliminated. Because, the right of accessibility which is among basic human rights is essential in terms of the participation of all people, especially the disabled people to participate in and integrate with the urban life.Visually-impaired people make estimations using orientation in their behaviors .For helping the visually- impaired people's estimations made through orientation such as "memorizing, selection, creating geometry, disintegrating", there is a need for different physical arrangement and techniques on the urban route. Beside the first string arrangements that have to be done on the urban route such as passing a street, removing the obstacles, entrance and exitof a building, it is very important for the visually- impaired people to be directed correctly in the location. In this context, the differences of requirements should be considered based on the types of disablement and the arrangements to be made for the visually- impaired people should be more different.

According to this;

-in the visual orientation; for the ones who see slightly a good illumination must be made, the signalisation system must be reinforced for being with ease. Also illuminations must be made dedicatedly in the important points on the urban route.

-in the auditory orientation; there must be directive warning vehicles on pavements and pedways, audible signs on controlled passages, audible warnings showing the city furnitures existence.

-in the tactual orientation ; the floor covers, warning and instruction surfaces, ground grade, sort become important. Regulations are needed for sensing the urban furnitures through white staff, the instruction surface on the stops etc.

- olfactory orientation is helping visually -impaired people in identifying the identity of a location, generally by obtaining itself naturally on the urban route.

Consequently, by phsyical regulations, instructions etc to be made ,the urban route must be assumed as multi-sensory and the visually- impaired people must perceive the city in this manner.

In Turkey, through "Regulation under no. 5378 regarding "the disabled people" enacted in June 1, 7 years of term was given to the local administrations for rendering the physical environment suitable and convenient for the access by disabled people enacted in 2005. However the term given to the local administrations has filled its 8th year in 2013 and an additional term was given to the municipalities with shortcomings provided that it does not exceed two years. At the end of the additional term, the arrangements which should meet the basic needs of people with different disabilities and cause them to participate in urban life are subjects of discussion. In this context, the universities, different occupation groups, vocational chambers, non-governmental organizations, foundations for disabled people etc. should make all contribution made by the local administrations and the inspection and implementation should be executed by closely monitoring this process.

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Remark: The images in the section, "The changes to be made in the physical environment so as to maintain

orientation" were provided from the text prepared by CFPSAA.

RESUME

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