ACCESSIBILITY ASSESSMENT AND IMPROVEMENT OF RECREATIONAL PARKS IN ADDIS ABABA FOR PEOPLE WITH DISABILITIES

THE CASE OF MOBILITY AND VISUALLY IMPAIRED PEOPLE

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DECLARATION

I, undersigned, declare that this thesis is my own and original work and has not been presented for a degree in any other university, and that all sources of material used for the thesis have been duly acknowledged, following the scientific guidelines of the institute

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CONFIRMATION

This thesis has been submitted for examination with my approval as an Institute's advisor.

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This thesis is submitted to the Ethiopian institute of Architecture, Building Construction and City Development (EiABC) and to the School of Graduate Studies of Addis Ababa University in the Partial fulfillment of the requirements for the degree of Masters of Science in Landscape Architecture.

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ABSTRACT

People with disabilities have the right to live independently and participate fully in all aspects of life. They have the right to access the physical environment and other public facilities and services open to the public on an equal basis with others. Nevertheless, due to unfavorable conditions of different natures, people with disabilities who live in Addis Ababa have a limited opportunity to access public facilities and services as equal as others. One of the public facilities that manifest this problem is the limited access to urban parks. Due to design skills or poor management issues, most of the facilities and elements in the parks are whether damaged, obstructed, or miss placed and cause disabled people to have limited access. Hence, this research paper focuses on assessing the accessibility extent of the recreational parks in Addis Ababa for people with mobility and visual impairment and also recommending possible access improvements.

To achieve the main objective of the research, the accessibility level of the recreational parks, factors that affect the accessibility level of the recreational parks, and improvement practices to increase the accessibility level of recreational parks are studied.

Currently, there are 19 functional parks in Addis Ababa, out of which nine recreational parks from nine sub-cities, are selected to be assessed in this research using stratified and purposive sampling methods. The size of the parks and the capacity to accommodate a larger population are the techniques used as sampling and site selection methods.

A survey research method with mixed qualitative and quantitative methodologies is employed. Primary data is collected from a Field observation using an accessibility compliance evaluation checklist and from a formal interview with a selected parks management representatives.

Although people with disabilities cannot be found in the selected parks during the data collection period, to take their views into account, primary data has also collected from the people with disabilities using questioners.

Accordingly, one hundred eighteen mobility and visually impaired people have participated in the questionnaire from the permanent members of the Ethiopian National Association of the Physically Handicapped (ENAPH) and Ethiopian National Association of the Blind (ENAB) using a clustered sampling method.

From the data collected and analyzed the results show that, as measured against the international accessibility standard, the recreational parks studied have a very low accessibility level for people with disabilities. The low level of accessibility is associated with physical barriers imposed in most recreational parks. Uneven surface flooring and obstructed entrance spaces, narrow, rough, and slippery circulation pathways, Steps without an adjacent ramp, lack of curb ramps in grade changes, and absence of textural marking strip and handrails on stairs, and grade change are some of these physical barriers.

Besides the physical barriers, the lack of accessibility consideration for people with disabilities when the parks are designed, inadequacy and lack of implementation of the accessibility standards and design guidelines put in the park development manuals, and lack of regular maintenance and professionally skilled officials to follow-up the maintenance procedures are some of the factors that affect the accessibility of the parks.

Thus, to improve the accessibility level of the recreational parks for people with disabilities, this study recognizes the need for improvement from simple maintenance to modifying and redesigning the inaccessible features of all the park components and infrastructures. The study also recommended responsible bodies such as architects, planners, park administrators, and management staff to play a vital role in increasing the accessibility level of the parks.

Finally, a design proposal is developed in a selected case area to demonstrate the recommended access improvements.

Keywords: Accessibility; Barriers; People with disabilities; Recreational Parks

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LIST OF ACRONYMS

AACGRBGDAA	Adds Ababa city government river basin and green area development and administration Agency
APC	Addis Ababa Plan Commission
CDC	Centers for Disease Control and Prevention
PWDs	People with disabilities
ECA	Economic Commission for Africa
ECDD	Ethiopian Center for Disability and Development
ENAB	Ethiopian National Association of the Blind
ENAPH	Ethiopian National Association of the Physically Handicapped
ICF	International Classification of Functioning, Disability, and Health
MUDHo	Ministry of Urban Development and Housing
UN	United Nations
USAID	United States Agency for International Development
WHO	World Health Organization

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CHAPTER ONE

INTRODUCTION

1.1. Background of the study

An accessible built environment has been recognized as a core element for the realization of a society based on equal rights. It provides citizens with independence and the means to pursue an active social and economic life (EC Expert Group on Accessibility, 2003). Although the right to access the built environment is universal, the opportunity to access the built environment is not (Eoin , et al., 2012). Many people with disabilities are faced with barriers that exclude them from participating as equal citizens. These barriers can be attitudinal, societal as well as physical and affect people with different impairments at different times of their lives.

In order to grant full accessibility for people with disabilities, the United Nations (UN) Convention on the Right of a person with a disability has been signed by all states in 2007 (UN, 2007). Article 9 of the Convention stipulates that persons with disabilities are to be enabled to live independently and participate fully in all aspects of life. This article required state parties to take appropriate measures to ensure people with disabilities access, on an equal basis with others, to the physical environment and other facilities and services open to the public in urban and rural areas.

As most member parties, Ethiopia also ratified the UN Convention on the Right of a person with disabilities in 2010. Since then different laws, policies, and standards have been enacted (International Labors Organization,, 2009). Different researches have also been conducted concerning access to the built environment.

In 2008 The Ethiopian Center for Disability and Development (ECDD) Association with the support of LIGHT FOR THE WORLD Austria, has conducted survey research on the accessibility of selected public buildings and services in Addis Ababa and 12 other towns (Aychesh , 2012). According to the survey conducted in Addis Ababa, from 600 public establishments, it was discovered only 10% of them are accessible and partially accessible by people with disabilities. Based on the finding of the survey the researchers have forwarded recommendations including; awareness raising for building owners, architects and urban planners over the need of accessible built environment, the state to oblige facilities and services to be accessible for a person with disability, and to implement building proclamations.

As the first in its kind regarding access to the built environment, the study conducted by ECDD has brought some remarkable achievements. It influenced many building owners to take the initiative and modified their premises and services in ways that accommodate the need of Disabled people, helps architects and urban planners to enhance their level of awareness on how to make their projects

accessible and moreover it initiated the ministry of works and urban development to formulate rule and directives for the building proclamation 624/2009.

Even though accessibility of most building facilities by disabled people is still questionable, This study is highly encouraged by the ECDD study and the impact it has made in legislators, property owners, architects and planners and aimed to add up a knowledge regarding disabled people access issues into the built environment that has not been addressed by the study conducted by the ECDD, specifically to urban parks.

Just as equal to the other facilities and services in the built environment access to urban parks is crucial for people who reside in urban areas. They are one aspect of the built environment that is of great importance in the daily lives of individuals. Besides environmental benefits through their effects on negating urban heat, offsetting greenhouse gas emissions and attenuating storm-water (Anna , 2003), parks have a capacity to bring people together, engaging individuals from different social grouping that may not normally interact (Andrew , et al., 2015). Urban parks offer possibilities for increasing social activity, improving community cohesion and developing local attachment especially for certain groups who are particularly vulnerable to social exclusion: like people with disabilities (Leah , 2014). In addition, access to urban parks offers direct health benefits such as; psychological wellbeing, reduced stress, obesity, stroke, cardiovascular symptoms, and respiratory disorders. It also improves mental health, concentration capacity, quality of life, overall mortality, and longevity (Cecil , et al., 2013).

Besides, international and national human rights law including the constitution of Ethiopia has recognized for everyone to have the right to live in a healthy environment. In many literatures, it's written one of the best ways to live in a healthy environment for a person who lives in an urban area is to have access to urban parks.

Considering the tendency to overlook people with special needs special people with disabilities, special consideration is deemed necessary by local and international stakeholders to ensure equitable and safe access to such public spaces.

1.2. Problem statement

Accessing parks in a day to day life has numerous benefits such as engaging in physical activities, social interaction, reduce stress, depression, mental illness and provide people opportunities contact with the natural environment (World health organization, 2016). For people with disabilities, who are much more likely to be venerable from such mental and physical ailments, the opportunity to access parks is imperative in establishing a healthier and active life.

However, due to unfavorable conditions of different natures, the majority of the people with disabilities are not getting the benefits most parks have to offer. According to the Addis Ababa Master Plan Revision Project Office (AAMPRPO, 2014), accessible urban green spaces in Addis Ababa are by far

one of the lowest by any international standards. The preclusion of people with disabilities from accessing most parks in the city is the major area where this problem is manifested.

There are 19 functional parks in Addis Ababa. Most of them are used for recreational propose, but none has an arrangement fully accessible by people with disabilities. Due to limited design skill and poor management issues (Bisrat & Yordanos, 2016), most of the facilities and elements in the parks are either damaged, obstructed or miss placed (Biesrat & Yordanos, 2016).As visually impaired users are limited to navigate spaces without using a cane or mobility impaired user without using a wheelchair, all those damages obstructions and misplacements limit access to facilities of those spaces. Park facilities such as playgrounds, sports fields, water bodies, planting mediums or park elements such as west receptacles, seating furniture, drinking fountains and play equipment cannot be reached by People with impairment without compromising their safety. The barriers and limitations of access to the facilities and elements of the parks prevent people with impairment from engaging in activities and thus lead to social exclusion and marginalization. It also prevents their option of contact with the natural environment and forced them to live a stressful life.

The disengagement of people with disability from the natural world represents the disengagement of a significant proportion of society (Sensory Trust, 2017). According to (World Health Organization & World Bank, 2011), from the total population of Ethiopia, 17.8% are people with disabilities and 2.8% of them live in Addis Ababa. Therefore a considerable amount of attention should be given to study the extent of accessibility of recreational parks for people with disability and its improvement.

Thus this study intended to assess the accessibility extent of recreational parks in Addis Ababa for people with disabilities, particularly for those with mobility and visual impairment, and forward possible access improvement recommendations.

1.3. Objectives

1.3.1. General Objective

The general objective of this study is to assess the accessibility extent of recreational parks in Addis Ababa for people with mobility and visual impairment and recommend access improvements.

1.3.2. Specific Objectives

The specific objectives of this thesis are

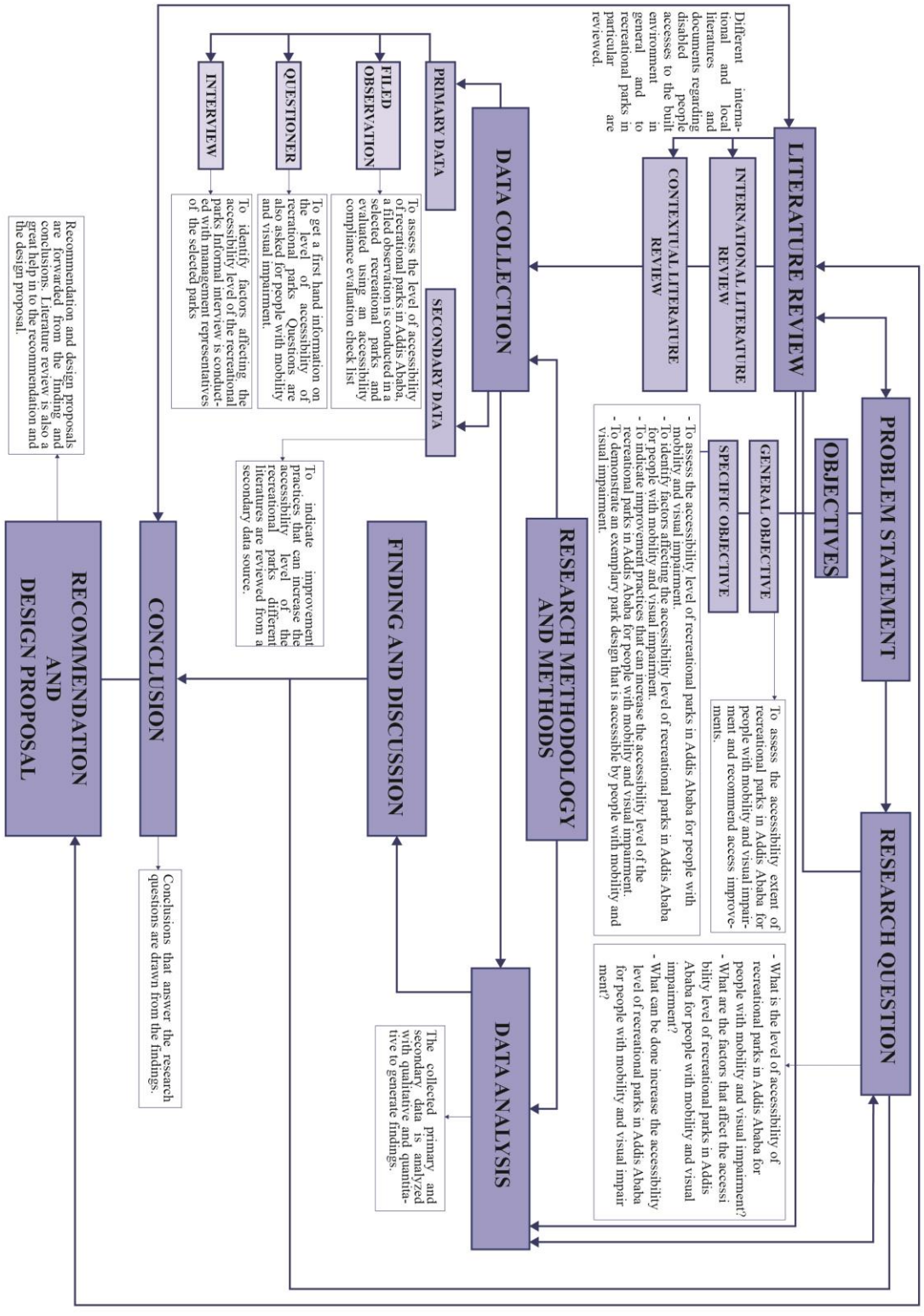
- To assess the accessibility level of recreational parks in Addis Ababa for people with mobility and visual impairment.
- To identify factors affecting the accessibility level of recreational parks in Addis Ababa for people with mobility and visual impairment.
- To indicate improvement practices that can increase the accessibility level of the recreational parks in Addis Ababa for people with mobility and visual impairment.

- To demonstrate an exemplary park design that is accessible by people with mobility and visual impairment.

1.4. Research Questions

1. What is the level of accessibility of recreational parks in Addis Ababa for people with mobility and visual impairment?
2. What are the factors that affect the accessibility level of recreational parks in Addis Ababa for people with mobility and visual impairment?
3. What can be done to increase the accessibility level of recreational parks in Addis Ababa for people with mobility and visual impairment?

1.5. Research design



1.6. Significance of the study

"Small effort towards accessibility makes a big difference in people's life." (Yetnebersh, 2014). The finding of this study will provide a better understanding of the major barriers that people with disabilities encounter when using recreational parks. It will reveal how well the recreational parks perform in terms of access and ease of use by people with disabilities and indicate the area of improvements where necessary.

The knowledge gained can be used by planners, architects/landscape architects, policymakers, and government or private park developers towards creating an inclusive park development that considers the need for people with disabilities.

Most of all the findings of this research will contribute to safeguarding the rights of people with disabilities to live in a healthy and independent environment, and an opportunity in which the disabled people fully exercise their rights.

1.7. Scope and limitation of the study

The study deals with the accessibility assessment and improvement of recreational parks in Addis Ababa for people with mobility and visual impairment. It does not include any disability type except the two. Also, the study is bounded inside the demarcated area of the parks. Issues outside the parks will be raised but won't be the focus of the study.

The researcher has visited several parks in the city to have a general insight into the topic. But due to time constraint observation analysis of 9 recreational Parks in the city are presented.

To achieve the main objective of the study, a primary data is collected from people with disabilities in the form of a questioner. Even though the main aim of the questioner is to collect the data from the people with disabilities who are found at the selected parks but it was difficult to find them in the selected parks during the data collection period. Since the people with disabilities are the main target groups of study, a general data is collected from the people with disabilities by reaching out to the places they can be found in a large crowd.

Even though this study is limited on the accessibility assessment and improvement of recreational parks for people who are disabled, but due to limited materials directly related to the accessibility of parks for people with disabilities in particular, literatures on the accessibility and the inclusion of people with disabilities in the built environment, in general, are a great help for the study.

CHAPTER TWO

REVIEW OF LITERATURE

This chapter comprises definitions and perspectives on disabilities, accessibility, parks and other related terms. It covers a general overview of how disabled people function in a built environment and the barriers they encounter within it. The cause of barriers and improvement techniques within the built space in general and within parks, in particular, are also part of this chapter.

2.1. Definition and perspectives

2.1.1. Disability

Figure 1: Person in a wheelchair. (Source - https://images.search.yahoo.com/search/images;?p=person%20in%20a%20wheelchair. Accessed March 12 2019)

Most people label a person abled or disabled just by checking out a person's functions and appearance (Davis, 1995). For example just by taking a look at the above picture one can say that the person in the picture is disabled just because s/he is seating in a wheelchair. The visible aid, in this case, the wheelchair, identifies the person as disabled. This can be called an everyday life conceptualization of disability (LARS , 2007). However, for a person that takes the stair or the surrounding environment in the above picture, the perspective towards labeling who is disabled and who is not completely changes.

Within different researches and academic literature, the term disabled and disability encompasses a verity of meaning. Medical, social and environmental based definitions are the most distinctive and widely found in different kinds of literature. The everyday conceptualization of disability that focuses

on a person's functional limitation is referred to as functional or medical definition (LARS , 2007). When understanding disability like this, the focus is on a person's functional limitations, and it meant that disability is a cause of a person's impairments (Colin, et al., 1999). Disability researcher also recognizes a definition that conceives disability as an interaction between an individual with impairment and an environment that lacks adaptations. This means that a person with an impairment-only finds him-/herself in a disabling situation when the surroundings are inaccessible. In the above picture, this is illustrated by the interaction between the person in the wheelchair and the stairs. This definition is called environmental definition. Other researchers say the stairs themselves are thought to create a disability, without any connection to the person. Disability, in this case, is the same as barriers in society that keep people with impairments from fully participating in society. This definition is often called the social definition of disability (Michael, 1990).

Considering the variety of definitions the International Classification of Functioning, Disability, and Health (ICF) define disability as:

> *"An umbrella term, covering impairments, activity limitations, and participation restrictions… reflecting an interaction between features of a person's body and features of the society in which he or she lives"* (WHO, 2011).

Just because a person has a functional incapacity (moving difficulties or loss of sight), does not mean he/she is disabled. This paper also adopts a similar approach, directly relating experiences of the social world with the form of the built environment.

In the above definition by ICF, *'Impairment'* is used to refer an injury, illness, or congenital condition that causes or is likely to cause a loss or difference of physiological or psychological function.

Among the different types of impairments, Person with Visual impairment defined as "*a person with weak vision, with severely impaired vision and those that are completely blind"* and Person with mobility impairment is defined as "*a person with walking difficulty, with limited functions in arm and legs and forced to use aids such as crutches and wheelchairs"* (Ylva, 2005).

However it is rare to find a direct definition but often a reliance on the assumption of understood meaning when it comes to disability (Madeleine & Rowena, n.d.), the term "disabled Person", "disabled people" and "People with disability" "people with impairment" are used in this paper interchangeably.

2.1.2. Accessibility

According to the context used, the term accessibility also encompasses a variety of definitions. In its general form, it can be viewed as the "ability to access" and benefit from some system or entity (Frederico, 2011). But when it comes to disabled people and disabling conditions the United Nations general assembly on the right of a person with a disability has identified "accessibility" as a priority in

measures promoting equalization of opportunities for a disabled person. In the convention the term is used to refer;

> *"A feature or quality of any physical or virtual environment, space, facility or service that is capable of accommodating the needs of users of varying abilities or disabilities to understand, get access to or interact with. It also refers to technical standards that are mandated nationally or internationally for the design and construction of a physical or virtual environment, space, facility, and service."* (DESA, n.d.)

In the convention, the term Accessibility is used as an essential means to refer ―full participation and equal opportunity for people with disabilities, to live independently and participate fully in all aspects of life.

The United Nation in the inclusion of peoples with disability handbook tried to categorize the different areas of access or accessibility that are critical to creating an inclusive environment. Which are architectural, programmatic, technology, communication, and alternate formats of Accessibility (UN, 2004). However, when it comes to the built environment architectural/physical accessibility is referred to as the most important in different works of literature.

Architectural/physical Access refers to "accesses to the built environment (indoor or outdoor) and the means of getting to and from the built environment" it means access to buildings, public spaces such as streets, parks, and any other place a person might need to go for work, play, education, business, services, etc. Physical access includes things like accessible routes, curb ramps, parking and passenger loading zones, elevators, signage, entrances, and restroom accommodations (Phil , n.d.).

2.1.3. Barriers

Anything that prevents a person with a disability from participating in all aspect of society because of his or her disability is called Barrier to accesses (AODA, 2005). This includes a physical/ architectural barrier, information or communications barrier, an attitudinal barrier, a technological barrier and a policy or a practice barrier. Among these barriers, physical/ Architectural barriers are the most faced by disabled people in the built environment.

According to the Centers for Disease Control and Prevention (CDC), physical barriers are *"Structural obstacles in natural or manmade environments that prevent access for people with disabilities"* (NARIC, 2018). They are also described as *"design elements that prevent a person with a disability from accessing a place or service"* (AODA, 2005). Sometimes they are called built environment barriers.

Examples of physical barriers include steps and curbs that block a person with mobility impairment from using a sidewalk or entering a space, the absence of a tactile marking on a sidewalk that guides a visually impaired person to walk around or Items left in the walkway, blocking safe passage.

2.1.3.1. Barriers to the built environment

The human-made space in which people live, work, and recreate on a day-to-day basis is referred to as the built environment (Karen & Ngozi , 2008). It encompasses places and spaces created or modified by people including buildings, parks, and transportation systems.

In considering the issue of disability, the built environment is probably the most potent symbol of the exclusion of people with impairments from society (Simon, n.d.). Whereas the social and economic limitations which are associated with a disability often require psychological or sociological analyses to reveal them, limitations of access to the built environment seem to be more physical or tangible exclusions. The Picture of a wheelchair user (Figure 1) who is prevented from accessing a space due to a flight of stairs is a direct image of exclusion which needs little or no analysis. Curbs, thresholds, sidewalk gratings, obstructions, and narrow passages can be mentioned as the physical barriers that exclude disabled people to participate in the built environment (NARIC, 2018). These barriers usually limit the individual's independent movement and hinder the opportunity of disabled people's participation in the community.

When discussing about physical barriers in the built environment it's very important to take in mind that each person with a disability encounter a barrier specific to his or her situation. Thus it's very important to separate and discuss any plans, changes, or modifications with the individuals the changes are meant to accommodate.

1. **People with Mobility impairment -** People who have mobility impairment usually use mobility aids to move from place to place. Some people use manual or electrical powered wheelchairs and some people with walking difficulties use walking aids like walking sticks and special shoes (Ylva, 2005).

   The most immediate type of barrier for mobility impaired person is clearly any object which impedes or restricts there movement. Dropped curbs, uneven or rough surfaces, narrow or congested paths, steep gradients, slippery surface are some of the examples.

   Another indirect but major barrier to mobility impaired users to the built environment is a place where access has been provided but the mode of access makes the user feel like a second-class citizen (Simon, n.d.).A special entrance for disabled people which are away from the main entrance to the facility or where a person is forced to use vehicle entrance instead of using pedestrian passage can be mentioned as a good example.

For reliable and safe access mobility impaired people often require, level surfaces that are not slippery or slope too much either longitudinally or laterally, wheelchair users need an even surface and a wider space for maneuvering. In addition, distances must be short, and space for resting must be available and also guide-rails to give support to those with poor balance.

2. **People with Visual impairment** – visually impaired people typically rely on sensory information from the tip of a Long Cane combined with auditory information. They use Braille or acoustic aid to receive the necessary information and a white cane or a personal assistant (a person or a guide-dog) and designed guiding aid (different surfacing or ground material, distinct borders or railings) to orient them self in the built environment (Ylva, 2005).

   Visually impaired people may have some limited vision, but may not be able to detect very close or looming objects, or irregularities at floor level. A number of obstacles can make access difficult or impossible for this group: cracked and uneven paving results in constant snagging of the cane; objects and clutter on the pavements can also hinder progress; objects which protrude at above waist height (e.g. some telephone cubicles) will not be detected by the cane resulting in a collision.

   Signage is another crucial problem, as most signs and signals are purely visual, such as: street names, some pelican crossings, hazard warnings etc. Braille labeling is rarely provided at public entrances or in complex public areas. Maps and plans are also rarely provided in a tactile version and if they are these are often poorly designed.

   A combination of the lack of signage, obstacles to travel, undifferentiated environments (such as large open spaces which must be crossed), disorientating sounds etc. can make the built environment a very confusing place for the visually impaired traveler.

2.1.3.2. Causes of barriers reducing inclusion in the built environment

Simon Ungar a Scottish psychologist identified three different but connected key systems which operate to exclude disabled people from the built environment: the attitudes of the general public to people with disabilities, the political structures of policy making, and the professions involved in designing and planning the built space. All the three causes are inextricably inter-linked; public attitudes influence policy; the words of political leaders influence attitudes; policies such as design regulations affect the way designers design their product (Simon, n.d.).

1. **The attitudes of the general public to people with impairments**

When it comes to a certain identifiable group in a society Psychologists have proofed that most individuals tend to form a stereotypical attitude towards that identified group (Hahn, 1986). For

example, those who tend to see disability as a medical condition see disabled people as helpless, dependent and tragic.

Simon Ungar illustrated when it comes to exclusion of disabled people in the built environment this type of attitude highly influences the design of the physical environment. He shared his experience on how such an attitude influenced the design of a tram in England over visually impaired people as follows;

> "*During the development of the Super tram system in Sheffield, members of the public were invited to view one of the trams that would run through the city. Two visually impaired people went to the exhibition. Although generally pleased with the design of the tram, one of them noted to an official that the electronic buttons to open the doors from the outside were so perfectly flush with the body of the carriage, that it was impossible to locate them by touch. In response, the official commented that he thought it unlikely that a blind person would be travelling unaccompanied.*"

As described above, this and other attitudes over disabled people affect their inclusion to the physical environment. But, since the design of the urban landscape can play a crucial role in changing attitudes and behavior, architects and planners need to be constantly aware of the potential impact of their work upon public perception of disabled citizens.

2. **Building and Design professionals**

With regard to the built environment, the design professionals are important in conditioning the day to day living experience of disabled people (Rob, 1998). When thinking of the building and design profession it involves many different types of institutions and actors from property developers to design teams to planners and Architects.

Previously it's noted how the medical model of disability has an influence on peoples understanding of disability. the medical definition of disability explains disability in terms of human physiology and anatomy, and it meant that disability is a cause of a person's impairments (Colin, et al., 1999).

When it comes to the built environment, the dominance of medical model definition in the architectural and planning profession (Michael, 1990), plays a major role in the exclusion of disabled people from the built environment. Architects and planners in operation to the medical model argue that the problem rests not with them in producing poor and defection design but the problem really relates to individual who has disease and impairment and argues that disabled people need to be cured by doctors through rehabilitation and needs to fit themselves to the environment, not the environment to be changed and fitted to them (Rob, 1998). Thus they do little or nothing to change the environment itself.

The other factor that excludes disabled people from the built environment in relation to the design professionals is, the way they perceive human scale and standard (Simon, n.d.). Many design professionals receive training that tends to be the premise of a particular consumption of the body. They tends to see the body as a machine like. A body is an interlocking series of parts, components, prefigured to operation, fixed, mechanical and alike. They think people as a standard, like a type, as similar as the same and as prefigured. The system of thinking of taking people as standard is one of the key elements in a way which architects begin to think about design and architecture itself. A good example of this is the work of Le- Corbusier and his work of the "Modular Man"

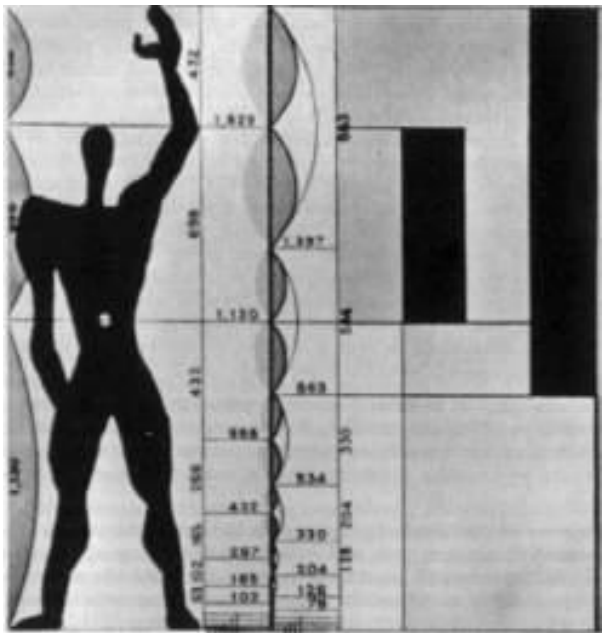


Figure 2: The modular man. (Source - http://homepages.phonecoop.coop/vamos/work/lecturenotes/sun/LectureNotes/city/. Accessed March 15 2019)

The modular man is a projection of abled body, normal or a tough upright, seemly able person. A person who appears not to be hard of hearing nor a person with a vision loss.

The ideal form was that of a white, adult, able-bodied male. In assuming this uniformity, modernists neglected anyone who differed significantly from 'the ideal'. It's similar consumption with the medical model of disability, which takes the healthy, able-bodied individual as the 'norm' and classes any deviation from this ideal state as abnormal.

The other factor is stereotypical thinking of design professionals towards disabled people. Linked with the medical consumption of disability that design professionals tend to define disability primarily in terms of a wheelchair. That is designing for disability in creating an accessible space that is sufficient to create an entry, exit and other points of accesses for people using a wheelchair. But yet the ranges of physical and mental impairment are vast and enormous and are much more than the stereotypical consumption of disability as a wheelchair user.

Yet architectural consumption of access design so too the planners tend to reinforce the stereotypical conception that it's sufficient to build and create access for the wheelchair user only.

3. **Policy and legal instruments**

In the western world the fact that government policy makers are able- bodied men making it obvious that disabled peoples are excluded from the government policy making.
A perfect example is that "failure to make polling stations accessible for disabled people. This exclusion from the political system constitutes a major part of the oppression of such groups, and adds to the marginalization of their voice and of their needs."

The exclusion also comes in different perspective of executing public policies to its limitations. Taking the Great Britain for example, to this date, "planning policy Instead of recognizing that access to the built environment is a basic civil right of all individuals, the policy regarding disabled people takes the form of recommendations and advice to developers and architects. Farther more the implementation of access is left at their discretion."

Though there are some few changes to integrate disabled people in the public policy the driving force behind integration has not been to allow disabled people to enter society on their own merits and to enjoy the independent lives that non-disabled people currently do, but to make disabled people more 'normal' so that they could 'fit in' more easily with the mainstream. Thus the onus remains on the disabled person to adapt to the environment rather than changing the environment to accommodate the person.

The other major change is the fact that conservative governance has taken a shift from centralized control to a market-led system which gave western world individual freedom to shape and mold, raised the possibility of a new way for disabled people to influence the shape of the environment, through consumer pressure. The idea was that each individual was potentially valuable to a particular which would therefore adapt their services to accommodate the customer;

For instance, if shopping malls are not designed to be accessed by all individuals, if disabled people can't get in to use a service, then the service provider loses their custom. A major flaw in this thinking is that different groups in society differ in their spending power, and therefore companies are likely to differ in the emphasis they place on accommodating each of the different groups.

As more and more public space comes under the control of private business, the exclusion of groups with low spending power increases. Disabled people, as a relatively small and generally economically challenged group, have therefore not generally benefited from these changes.

The businesses want to be seen to be making adaptations for disabled people so as to be viewed as caring and charitable by the economically strong (generally able-bodied) members of society. Often this has led to adaptations which are highly visible but poorly designed.

2.1.3.3. Improvement of accesses to the built environment

As it is reviewed in different literature, Conducting an Accessibility Audit (Eoin , et al., 2012), compliance with accessibility standards and design guidelines (Joseph, 2011), and Following the principle of design for all; inclusive design and universal design principles (Sandra , 2016) are few of the many steps that can help to improve accessibility to the built environment.

1. Designing for all

Designing for all means we're designing with the goal of including as many people as possible, regardless of their diverse abilities and their primary senses. This approach has been introduced for decades such as accessible design, barrier-free design, inclusive design, and universal design. All the design approaches are closely linked with each other and have similar concepts of considering arrangements for disabled people but the scope of their target group differs. The accessible and barrier-free design approaches promote accessibility for individuals with disabilities (Steinfeld, 1994), whereas universal and inclusive designs targets all groups in society, regardless of ability or age (The city of Calgary, 2010).

> *"Most designers think Fulfilling disabled people need or focus on the removal of barriers is all that it takes to achieve the maximum level of access to the built environment, however the best way to achieve accessibility is to design a built environment to be usable by all people to the greatest extent possible without any restriction to a specific group or needs. Because focusing on disabled people only has the danger of ending up in an arrangement that treats disabled people as a specific group of people instead of thinking they are part of the society."* (Inclusive Design: Creating a user's World Part two, 2011)

As described above being treated as special by itself is discrimination act disabled people face in their everyday lives. Thus, simply design the built environment to be usable by all people is the best approach towards improving access to disabled people in the built environment.

Universal and inclusive designs are design concepts that are devised in different time to assist design professionals to improve the built environment and related products and to envision design possibilities that is usable by all. Both inclusive and universal designs have the same concept and usually used interchangeably.

> *"Universal design is the design of products, environments, programs and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design"* (The city of Calgary, 2010).

"Inclusive Design is the design of an environment so that it can be accessed and used by as many people as possible, regardless of age, gender and disability" (Howard , 2006)

Both design concepts aim to recognize human diversity and find ways for all people to access and use environments and objects in inclusive ways. In universal and inclusive design, impairment is seen as being not unique to a specific population but intrinsic to the human condition. Impairment, then, as a characteristic of a diverse human society, needs to be factored into design (Imrie, 2004).

According to (Center for unviersal design, 2007) there are seven principles of universal designs: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort and size and space for approach and use. Their main goal is to assist design professionals to make the environment accessible, usable, functional and aesthetically pleasing.

The Commission for Architecture and the Built Environment (CABE) also published and promoted the principles of inclusive design as it relates to the built environment which is; inclusive; so everyone can use it safely, easily and with dignity, responsive; taking account of what people say they need and want, flexible; so different people can use it in different ways, convenient; so everyone can use it without too much effort or separation, accommodating; for all people, regardless of their age, gender, mobility, ethnicity or circumstances, welcoming; with no disabling barriers that might exclude some people and realistic; offering more than one solution to help balance everyone's needs and recognizing that one solution may not work for all (Howard , 2006).

Both universal and inclusive design principles helps designers to avoid "conventional design approaches" that are often based on technical standards and dimensions that rely on a notion of the "normal" body (Le Corbusier's modular man) and "compensatory design approaches" design approaches that provide special accessibility provision for disabled people only usually lead to stigma caused by segregated accessible features (Jenene, 2012).

To keep the diversity and uniqueness of each individual in mind and involve potential users at all stages of the design process; from the design brief and detailed design through to construction and completion is the key for design professionals to deliver an inclusive environment.

2. Compliance with accessibility standards

Accessibility standards are laws that governments, businesses, nonprofits, and public sector organizations must follow to become more accessible (Ontario, 2015). These standards help organizations understand potential barriers so that they can remove them to help improve the

accessibility for people with disabilities. They demonstrate how design professionals, building industry, government, and community can go above and beyond the requirement to ensure equal access for people with disabilities (The city of Calgary, 2010). The Use of accessibility standards as a reference guide increases awareness on the unique abilities and needs of disabled people as far as accessibility is concerned. It is usually joined with National civil rights laws and legislation so it can be implemented.

Most of the accessibility standards deal with the technical considerations and design provisions of measures to be taken into account in the planning and design of the built environment (UNNATI, 2004). This includes issues related to the design of several complementary domains: open spaces and recreational areas, local roads and pathways, the immediate vicinity of buildings, building entrances and the interiors of buildings, etc. The standards consider minimum design consideration to optimize independent movement, space allowances, range of reach, etc by people with different impairment. It usually starts by illustrating the anthropometrics of a person with impairment in relation with his or her assistive devices, e.g. wheelchairs, crutches, walkers, white cane, etc.

Accessibility standard guides are a mandatory tools when conducting an access audit to the built environment (Eoin , et al., 2012). They are also used in a universal design checklist during environmental access modification and improvement (The city of Calgary, 2010).

3. Conducting an Access Audit

An access audit is a form of inspection that can be used to assess the ease of access to, and ease of use of; an environment (such as a building or landscape), a service, or a facility, by people with a range of access impairments (Anon., 2018). It is one of the first of many steps that can help to improve accessibility of the built environment (Eoin , et al., 2012).

Its main purpose is to establish how well a particular environment performs in terms of access and ease of use by a wide range of potential users, including disabled people, and to recommend improvements, where necessary (Bright & Sawyer, 2007). It gives a picture of the level of accessibility, helps to identify points of good or bad access and identify areas of need that are not catered for.

Usually, an audit will consider the needs of all users, and potential users, of an environment and assess the factors affecting independent use and access to services. However, an audit may be carried out in response to a particular issue, such as how to meet the needs of a wheelchair user or a visually impaired person, and this may affect the scope of the audit and the standards used in assessing accessibility.

There are a number of reasons for carrying out an audit including: legislation; funding conditions; to gather data on a space for comparison or analysis; to check compliance with certain standards and regulations; company policy on equal opportunities; public relations/company image; conservation by

use of historic buildings; pressure from lobby groups and awareness of particular problems (Eoin , et al., 2012).

An access audit can be conducted at an early stage of the design, to ensure that accessibility issues have been considered, and also on completion to check that the implementation is consistent with current guidelines and best practice (TMS, 2013). Conducting an access audit at an early stage of the design is the best approach to enable facility owners/providers to plan ahead for costly improvements and allow alterations to be made cost effectively and over time.

The Audit process involves a thorough site inspection, an assessment of the management and use of the environment and identification of accessible user-friendly features as well as access problems. It is important to involve the facility owners, managers and operators, as appropriate, in the audit process. Many of the issues that arise will be concerned with the operation and management of an environment, not just the fabric (Bright & Sawyer, 2007).

2.1.4. Urban Parks

Parks are complex elements of urban space. They are a place to have fun, socialize and contact with nature. They are defined as;

> *"Areas of green space specifically designed for public access and enjoyment and combining a variety of landscape and horticultural elements (sometimes including semi-natural habitats) and facilities for the public (including buildings) and in some cases incorporating sports facilities and/or play areas."* (Nigel, et al., 2002)

Parks vary in size, form and the functions that they perform. Parks usually categorized it into a hierarchy of neighborhood, district and regional /city or Metropolitan Parks. They can be used for either passive or active recreation (Anon., 2009). Since each place is unique in terms of geographical, cultural and socioeconomic make-up, the classification also varies from one region or a Nation to another. Usually, national or regional park development or management authorities develop the classification of parks with its own definition as a guide (APD, 2017).

APD (Addison Park District) in Illinois, USA categories parks into Neighborhood, district and regional parks. Where Neighborhood parks are “small areas of open space that are accessible to local residents, and District and regional parks are larger and cater to the needs of a broader population. The County of Alameda in California, USA classify parks into Local Park, Community Park, and Regional Park. Where Local Parks are Small- to medium-sized parks with basic recreational activities for one or more neighborhoods and community and Regional Park is a large park that serves the open space and recreation needs for all users of the entire Planning Area (Anon., n.d.).

2.2. Disability inclusion and urban parks

Urbanization is a very relative word in terms of the different features it is identified with especially depending on the domain of context of the economic and social aspects. However, consensus can be taken to discuss the issues at hand, example as particular to this paper as urban parks.

Urbanization is often used more loosely, however, to refer to a broad-based rural-to-urban transition involving population, land use, economic activity and culture, or indeed any one of these. Thus, it is frequently used to refer to changes in land-use for specific areas (usually on the periphery of urban concentrations) as this land becomes 'urbanized' and is sold and developed for urban use (e.g. the sale of plots for housing). Number of population has been increasing from time to time so do urbanization. (Gordon & David , 2014).

Based on historical and current data of records and manifestation of human development assessment, there has been a negative and positive correlation between human development and human wellbeing. And as urbanization as part of human development and life style changes, population in a particular urbans tends to be affected unless a counter balance of design is implemented.

Evidences show that with growing urbanization, rates of chronic diseases such as diabetes and heart diseases tend to increase at alarming rate. Improper diet, a sedentary lifestyle and lack of exercise are some of the major factors that contribute to these problems. However, presence of accessible and diverse recreation parks plays a significant role in encouraging people to become more active. They serve urban community to breathe healthier life. Recreation parks provide open spaces for playing, trails for running and walking, as well as for riding bikes. These are just few examples of how recreation parks provide active living opportunities. Accordingly, recreation parks are vital in contributing to the country's leading health strategy, which mainly focuses on prevention. Therefore, recreation parks, together with creative design and management of other urban green infrastructure, can make a difference and contribute to healthier citizens.

Parks are complex elements of the built environment and urban centers (Karen & Ngozi , 2008). Well planned and maintained recreation parks serve urban communities in many ways. Quite often people view parks as simply "play and recreation" places. While "play and recreation" remain important, recreation parks offer many other values.

Urban parks are defined as delineated open space areas, mostly dominated by vegetation and water, and generally reserved for public use. Urban parks are mostly larger, but can also have the shape of smaller 'Pocket parks'. Urban parks are usually locally defined (by authorities) as 'parks' (Cecil , et al., 2013).

Urban parks are essential element of an urban architectural design especially for a city that is populating in an increasing number which changes the demographic figure quite well. And, it can have a restoring role for a population with a lot of constraints for a healthier life style due to social, economic, political and also technological effects caused by urbanization.

Benefit of urban parks are vital and shall be encouraged not only for the wellbeing of a human race at an individual base but also at societal level in whole. Human health & wellbeing, social cohesion (identity), tourism, house prices, biodiversity, air quality & carbon sequestration, water management, and cooling are listed as benefits of urban parks as stated in (Cecil , et al., 2013).

The right of disabled to be inclusive of the above benefits of urban parks is highly advocated by United Nations as parks implicitly being a publicly open and accessible to all the general public. According to article under (UN, n.d.) to enable persons with disabilities to live independently and participate fully in all aspects of life, State Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information, to information and communications including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. In addition, disability as a division of any population in any settlement, design of urban parks needs to be inclusive of disabled for the full functionality of the population from all point of societal, economic, political and other perspectives.

Currently, there is no consensus on formulating the concept of accessibility in different areas, not even within the ISO standardization community. Accessibility is a quality concept that is interpreted differently depending on the design approach used for the development (Hans , et al., 2014). Analytically referencing the statement of accessibility as a quality concept which is stated above, is one of the societal thinking which burdens not only to not have a disability inclusive urban parks design but also overlooked disability inclusive designs in all levels of design. Similarly, (Sandra , 2016) depicts disabilities rights in accessing services or public functions as service providers have a duty to make "reasonable adjustments" to ensure that disabled people are not substantially disadvantages when compared to non-disabled people. However, the gap created due to the phrase " reasonable adjustment " is because the word is deliberately vague which gives for the designer to prioritize parameters such as cost, practicality and the extent of disruption involved in carrying out the work without considering the impact it has on disabled.

There are a couple of different definitions of inclusive design. One of them has sprung from the normalization thinking that the design of urban parks should be as inclusive as possible for as many as possible. Inclusive design bears similarities to universal design and design for all, but with the requirement to also include the concept of ''reasonable'' in the definition (Hans , et al., 2014)

In the above definition and the associated statements in the articles specifically with the phrase of the "reasonable" can be one barrier for disability inclusive urban parks design. According to the citation used in the article (Hans , et al., 2014) ''reasonably possible'' outlays one of the main differences from other approaches, since ''reasonably' 'seems to suggest that the inclusion of people with disabilities can be disregarded if considered too difficult to achieve or too costly, whereas, for example, the United Nations' Convention on the Rights of Persons with Disabilities claims these rights to be absolute and unconditional.

Inclusive design is important so as to incorporate diverse characteristics on particular disabled to use or access a product or platform as equal as not limited people. In regards, (Xiao, 2018) Outlines 6 principles for inclusive designs such as Seek out point of exclusion, identify situational challenges, recognize personal biases, offer different ways to engage, provide equivalent experiences, and extend the solution to everyone. And these principles can be extended to the urban park designs as well.

In conclusion, fostering inclusion of disabled in accessibility towards urban park shall be underlined and emphasized greatly to a wellbeing as well as therapeutic value for disabled as same as not disabled people and even to greater extent.

2.2.1. The design practice of urban parks with regards to PWDs

The inclusion of people with disabilities in the planning of green space in general started for the purpose of improving their health and wellbeing. Therapeutic, Healing and sensory landscapes are the most common practices as reviewed in different works of literature. All the three are landscape design approaches with a concept of reducing stress, treat depression and facilitate an active healthy lifestyle for people with various health conditions, such as people with a range of impairment, people with a physiological and emotional disorder, cancer patients, autistic children and adults (Horowitz, 2012). They can be found around social (public) housing, in schools, in care homes, senior and assisted living settings, around hospitals, airports, bus and railway stations, parks and city buildings (Gayle, 2015).

The concept of therapeutic landscape is first introduced by medical geographers, to define places with natural or historic features for the maintenance of health and wellbeing (Velarde, et al., 2007) and it is more specific and relates to a particular aspect of a disease or healing process (Kristin , n.d.). It's thought of as similar to a medication taken for a specific disease or illness.

Healing landscape is a landscape designed for a specific population, place, and intended positive health outcome (Earl , 2016). It has a similar concept and usually used interchangeably with a therapeutic landscape. Nevertheless, as Earl illustrated a therapeutic landscape is designed to meet the particular needs of a specific patient population whereas healing landscapes generally aim for a more passive involvement and are designed to provide benefits to a diverse population with different needs.

The focus of both landscapes is primarily on incorporating plants and friendly wildlife into space. The setting can be designed to include active uses such as raised planters for horticulture therapy activities or programmed for passive users such as quiet private sitting areas next to a small pond with a trickling waterfall.

In their own sittings, healing and therapeutic landscapes consider inclusive design approaches as a primary principle and comply with accessibility standards so as to be usable by disabled people (Clare & Naomi , 2014). Nevertheless, due to the fact that they are often found in a separate location away from the public often in hospital and health care facilities or in a nursing home or around assisted living residences they are likely to be less accessible by disabled people who are in need of such arrangements in their everyday life.

The other green space design that considers accessibility for disabled people as a basic principle is the sensory landscapes usually called a sensory garden. It is a type of landscape specifically created to be accessible or enjoyable to visitors both disabled and non-disabled (Hazreena, et al., 2016). It provides visitors different sensory opportunities that they may not normally experience. Sensory gardens draw visitors into touch, smell, hear and perhaps test to actively experience the garden with all senses (Shoemaker, 2002).

Anyone can partake in the experience of a sensory garden, but it is especially helpful for individuals with disabilities that affect their sensory responses (Jamestown Parks & Recreation, 2019). They usually have an enhanced infrastructure to permit wheelchair access and other accessibility concerns.

Any other garden has an overall design that includes hard landscaping: walls and/or fencing, formal paths, a pond or water feature, raised beds, terrace or patio, etc.; soft landscaping: planting, e.g. shrubs, flowers, trees, lawns, hedges; colors and textures: e.g. flowers, foliage; and wildlife: birds, insects, fish, etc. The only difference in a sensory garden is that all these components must be carefully chosen and designed to appeal to the senses in such a way that they provide maximum sensory stimulation (Loretto , 1995).

The design and layout provides a stimulating journey through the senses and brings a positive learning experience. For example, it may contain features accessible for disabled individuals such as scented and edible plants, Sculpture and sculpted handrail, water features designed to make sound and play over the hands. Textured touch path, magnifying glasses screens, brail, and audio induction loop descriptions. Depending on the users' group other provisions may integrate sound and music more centrally to combine the play needs of younger users with their sensory needs.

2.2.2. Accessibility standards for urban parks with regards to PWDs

To insure an inclusive, barrier free and accessible parks different design guide lines, construction and maintenance standards were prepared by different organizations in different countries. These guidelines are prepared to be used by different professional that are working in the physical environment such as architects, planners and landscape architects. Usually these guide lines are supported by different disability civil right laws, policies and statutes so as to be complied by the respective bodies.

In this research the following standards and design guide lines are reviewed in a way that can suit the physical and special aspect of urban parks.

The reviewed standard contains a detailed technical requirement of common facilities in parks such as entrance spaces, walkway, ramps, stairs, site furniture and signage. The guidelines also incorporate measures to be taken in site condition such as in elevation and grade change and in areas of obstruction. For further reading refer Annex B of this paper.

2.2.3. Park maintenance

All infrastructures especially those which serve the public need maintenance and repair from now and then. As recreational parks are amongst those which serve the greater public, the importance of regular maintenance will not be put into question. When we say park maintenance it includes all the work necessary to keep a public park area safe, clean, and operating efficiently to serve the needs of its visitors (Anon., 2019).

In most developed countries park maintenance is a matured field and has even its own certification and study. For example in west Virginia, USA there is Park and Recreation Maintenance Management School which gives a comprehensive two-year professional development program designed to teach park and recreation professionals how to develop and manage a wide variety of maintenance programs (Anon., n.d.). Apart from being a professional study park maintenance is also taken as a profession career in those developed countries. Park maintenance workers can become certified in various areas to further their careers and aspirations. Example of certifications include, Certified Park and Recreation Professional, building Operator Certification, Public Grounds Management Certificate, and Playground Maintenance Technician Program. There are even organizations specifically focusing on park maintenance, like the “National Recreation and Parks Association” which is a non-profit organization that provides resources not only on parks maintenance topics but on all aspects of parks and recreation.

While the study by Center for Community Health and Development at the University of Kansas, specifies accessibility of public facilities to disables, shall be ensured during design, when there’s an addition, renovation, or repair made to a public facility (Anon., 2018), as per the study by Upkeep Maintenance Management, Los Angeles, it is also equally essential to maintain them so that they continue to be accessible (Anon., n.d.). Park maintenance is performed differently by the all park

owners. As per the study of Parks Maintenance Operations Plan for Brownsville parks and recreations, periodic inspections and maintenance shall be implemented to get an organized way of park maintenance process. The Cranberry Township PUBLIC WORKS GROUNDS MAINTENANCE DIVISION further details park maintenance practice by adding a maintenance inspection checklist to be done in a specific amount of interval to determine the status of the parks and the intensity of the repair required (Anon., n.d.).

CHAPTER THREE

CONTEXTUAL REVIEW

3.1. Disability in Ethiopia

In Ethiopia people unable to ensure by themselves a normal life as a result of deficiency there physical or mental capability is referred as people with disability (Federal Democratic Republic of Ethiopia, 2002). For generation this people were never considered as an equal and active member of society. Some associate disabilities with spiritual evil and never let the people with disabilities go out in public. Families were hiding their disabled family members at home and never allow their disabled children to gain proper education, health, and social services as the rest of their peers. This fact even leads to inaccurate information and statistics on the total number of disabilities in the country (Federal Democratic Republic of Ethiopia, 2002).

Based on the World Report on Disability jointly issued by the World Bank and World Health Organization, there are an estimated 15 million children, adults and elderly persons with disabilities in Ethiopia, representing 17.6 percent of the population (World Health Organization & World Bank, 2011). This figure seems to be the default estimate for many governments and non-governmental organizations. Ethiopia's Population and Housing Census (1994) indicated a total population of 53, 477,265 of whom 991,916 were disabled (1.85 Percent of the Population) (ILO, 2013) and (Tirusew, 1995) cited figures from a national baseline survey indicating that 2.95 percent of the population had sensory, motor and cognitive disabilities. More recently (Wakane,2011) stated that 5,000,000 Ethiopian (7.6%) of the total population are disabled. However, as the various sources that cite this statistic highlight, this is well below the 17.6 percent estimate that is so often used. The fact that the overall disability information and statistical data is absent makes it very difficult to know the magnitude of the condition.

3.2. Current situation on disability inclusion in Ethiopia

In Ethiopia, persons with disabilities are often marginalized and excluded from development initiatives and services and are, therefore, more likely to be less productive and poor. In recent years, government policies and programs have started to pay increasing attention to persons with disabilities.

The country has ratified and adopted almost all of the relevant initiatives and international legal texts on the rights of persons with disabilities including the UN Convention on the Rights of Persons with Disabilities in 2010. On a national level, the Growth and Transformation Plan, which is the leading document aiming for economic growth and development in Ethiopia, has various chapters and articles which refer directly or indirectly to persons with disabilities, referencing for example special needs

education for children with disabilities, preventive, curative, emergency care and rehabilitative health services, and the aim to expand social security services and participation in political decision making (Light for the World Ethiopia, 2016).

Another area where inclusion of people with disabilities becomes effective is the accessibility issue of the built environment. In recent years, Light for the world Ethiopia in collaboration of the Ethiopian Center with Disability and Development has provided technical information on accessibility standards to governmental, non-governmental organizations, universities and the private sector. Persons with disabilities were trained to undertake audits and survey the accessibility of public facilities and services in 12 towns of Ethiopia. A 'Guide to Accessible Ethiopia' has been produced, printed and distributed. Locally acceptable standards were developed based upon international standards and in consultation with architects, urban planners, and representatives of organizations of persons with disabilities. Those standards were subsequently adopted by the national government as directives to support the Federal Building Proclamation and Local governments shared costs for accessibility modifications (Yetnebersh, 2014).

Despite the efforts of the government and the initiatives of national and international non-governmental organizations, there is still a great need to work with persons with disabilities towards their full inclusion in all aspects of society and for the different stakeholders to collaborate more closely (Light for the World Ethiopia, 2016).

3.3. Accessibility of parks in Addis Ababa

Within the framework of Ethiopian vision to become middle –income and carbon-neutral economy, the city government of Addis Ababa also envisioned ―to make the city livable, all-inclusive, model for good urban governance, safe and environmentally responsive by 2025. (Abdi , et al., 2015). Among other developmental approaches, the city has envisioned to provide adequate urban parks that are accessible for all.

However, As it is a tradition to measure the Accessibility of any green space in cities by per capita green space, accessibility of parks in Addis Ababa is the lowest in any international standard and when compared to other categories of green space in the city.

The World Health Organization recommends a minimum of 9 m2 per capita green space, but accessible green space in Addis Ababa is less than 1 m2 per person (Biesrat & Yordanos, 2016). On top of that, as shown in the table below, from the cities total green area coverage public recreational parks cover only 0.3%; which makes it the list accessible compared to the other categories of green space in the city.

No.	Green space		
		area (ha)	%
1	Field crop	14578.3	64.5
2	Vegetable farm	341.1	1.5
3	Public recreational parks	69.3	0.3
4	Riverside vegetation	1803.8	7.98
5	Plantation forest	3373.6	14.9
6	Mixed forest	1598.8	7.1
7	Street plantation	Not specified	Not specified
8	Grassland	830.7	3.7
Total Green area		22595.6	

Table 1: General category of green space in Addis Ababa. (Source - (AASOID, 2014))

According to Urban Planning, Sanitation and Beautification Bureau, The causes for the inaccessibility of the parks and green spaces are thought to be a lack of strong urban organizational structures, which of course, are the reflections of political environments and economic development stages of the city. Consequently, the development of urban green space facilities had been suffering from a lack of popular base, like the limited role of the wider community in the development and management of urban parks; the highly limited opportunity by the wider community to access these facilities; and the very traditional approach towards development of urban centers have had contributed to the complex problems that halted the progress of recreation parks and other green spaces in the city.

According to Addis Ababa City planning project office, open and green space planning Design Guideline, published in 2016, not only in Accessibility measured by per capita but when measured by use and functionality, the existing functional parks in the city are also one the lowest in any international standards: most of the parks are not well maintained and managed, are not providing the intended purposes, Some are not operational, and Most of the operational parks do not have the necessary facility to be used by visitors (Biesrat & Yordanos, 2016). As stated in the guideline the lower capacity and experience of implementers at a different level in designing and managing the parks is thought to be the root cause of the problems.

At present, there are about 19 functional parks in the city (Table 3). According to the standard of the MUDHo green infrastructure manual, they are categorized into a neighborhood, Woreda, sub city, and city level parks. City Park is expected to provide diverse recreational facilities and serve a wider population than the others and a Neighborhood parks serve local catchment such that users are within safe walking distance.

Park Type	Size	Population size	Distance from home
City Park	>10 ha	up to 300,000	Upto 10 km
Sub-city Park	1-10 ha	50,000-80,000	Upto 5 km
Woreda Park	0.3-1 ha	10,000-15,000	Upto1.5 km
Neighborhood park	0.1-0.3 ha	3,000-5,000	Upto 300 m

Table 2: Classification of recreational parks in Addis Ababa. (Source - (Bisrat & Yordanos, 2016))

The parks are administered by different offices. Central/peacock Park and Anbessa parks are administered by the Mayor's office. Sheger Park is administered by Document Authentication and Registration Office. Africa Park is administered by a private investor, where the remaining parks are being administered by the Beautification, Parks, and Cemetery Development and Administration Offices (AASOID, 2014).

	Park	Area (m2)	Sub-city
1	Afenchober (Ethio-Korea friendship)	30,209	Gulele
2	Africa	45,707	Kirkos
3	Akaki	62,518	Akaki-Kality
4	Ambassador	9393	Arada
5	AnbesaGebi	12000	Arada
6	BihereTsige	142,796	Nefas Silk-Lafto
7	Central/peacock park	364014	Bole
8	Debab	8619	Gulele
9	Ethio-Cuba friendship	29803	Lideta
10	Ferensay	54201	Gulelle
11	Gola	9625	Lideta
12	Hamle 19	67968	Gulele
13	Kolfe	20000	Kolfe-Keranyo
14	Sheger	70,000	Gulele
15	Yeka	2208	Yeka
16	GedameEyesus	4128	Addis Ketema
17	Kaleb	5000	Yeka
18	Olompia	647	Kirkos
19	Teklehaymanot	4371	Lideta

Table 3: Functional Parks in Addis Ababa. (Source - (AASOID, 2014))

As can be seen in the above table from the 19 functional parks, only BihereTsige and Peacock Park are categorized under City Park. Teklehaymanot, Kaleb, GedameEyesus, Gola, Debab, and Ambassador are categorized under Woreda Park. Olympia Park is categorized under Neighborhood Park, where the rest falls under sub-city parks.

To maximize the accessibility of green space in the city, together with other green infrastructure development more than 15, city, sub-city, Woreda, and neighborhood parks were proposed in the last structural plan of the city (Table 4). Nevertheless, almost all of the proposed parks have not yet been implemented.

In addition, to improve the quality of the existing functional parks, renovation and modification work to some of the parks are undergoing. For example, peacock and ambassador parks are being modified and BeherTsige is being renovated.

No.	Park	Area (m2)	Sub-city
1	Adventist clinic	216,000	Akaki-Kality
2	Adwa	1,123,000	Bole
3	EgziabherAb	27,353	Gullele
4	Embassy of Italy	101,683	Yeka
5	EntotoKidaneMihret Church	104,120	Gullele
6	Filweha	167,884	Kirkos
7	Fistula Hospital	40,000	Kolfe-Keranyo
8	HibretAbiyateBetekirstiyan	21,000	Gullele
9	KirkosKebele 19	114,574	Kirkos
10	Millenium park	169,893	Addis Ketema
11	Sara Ampul	147,683	Yeka
12	ShegoleAnbesa Garage	124,000	Gullele
13	St. Joseph church	53,000	Nifas Silk-Lafto
14	WerkuSefer	150,000	Akaki-Kality
15	JemoKentiba W/Tsadik	82,000	Nifas Silk-Lafto
16	Keranyo	68604	Kolfe-Keranyo
17	AkakiMillenium	4284	Akaki-Kality

Table 4: Proposed Parks in Addis Ababa. (Source - (AASOID, 2014))

3.4. Local Accessibility standards and design guide line of parks with regard to people with disability

In this study, the researcher has reviewed two updated park manuals prepared by urban planning, sanitation, and beautification bureau and the federal democratic republic of Ethiopia ministry of urban development and housing. Both the manual are prepared in a way that can be adapted and used by different park practitioners, community members, youngsters, passive and active recreation users as well as participants. The manuals give guide from park demarcation to park design, construction and operation. However, this study will focus on the Planning and design of recreation park facilities. Also, the researcher will try to relate the recreation park facilities planning and design in relation to people

with disabilities.

1. Recreational Parks Development and Management Manual No.13/2016

This manual is prepared by urban planning, sanitation, and beautification bureau. It contains a detained guideline in recreational park demarcation, construction, and operation. It also contains several park development principles including the involvement of diverse stakeholders and the general public. It also contains basic design and development guidelines related with storm water management, safety considerations and recreational park facilities; Gray infrastructure (natural trails and pathways, seating facilities, visitor centers, lighting fixtures, entrance and fencing, etc…), blue infrastructure (such as swimming pools and artificial ponds), and green infrastructure such as tree species selection. Together with other park planning and design standards, people with disability in the manual are considered as follows;

- "Facilities for disabled individuals should be provided as much as possible in recreation parks. Usually the rugged nature of some nature-based recreation park activities and sites unfortunately precludes access for many disabled persons. However, recreation park facilities and at least all public programs receiving some form of government funding, need to be made accessible to persons with disabilities. Refer part vii, number 1.2 (f) UGIS, 2015. In reality, however, considerably progress remains to be made in terms of providing facilities in many areas for the disabled. But adoption of the following principles could contribute to such progress in urban recreation parks.
- Access to recreation parks for disabled people should be the responsibility of the recreation park manger or all other responsible authority. The following strategies are suggested when striving to ensure accessibility for disabled people in urban recreational parks:
    a) Use a comprehensive systems approach (i.e. barrier-free design should be an integral part of the recreation park planning process)
    b) Acquire knowledge of the concepts, laws and accessibility specifications
    c) Include persons with disabilities and a qualified access specialist in the recreation park facility planning team
    d) Whenever possible try to go beyond minimum standards
    e) Extend accessibility beyond the immediate vicinity of core facilities
    f) Include urban commercial recreation and hospitality industries on the planning team when planning for accessibility of disabled people.
- Although design often calls for unique solutions to specific demands, the adoption of key recreation park facility strategies facilitates the process. Thus, recreation park facility designers should:
    a) Incorporate accessibility in areas that present different levels of difficulty, Plan for

a continuous path of travel , Make sure to retain environmental and aesthetic values while incorporating access , Learn at first-hand whether building materials and supplies perform as claimed and Consider access for persons with auditory, visual and other difficulties (i.e. not only those with mobility disabilities), in order to make recreation park facilities and program truly accessible to all citizens.

b) Accessibility to recreation park walking trails is particularly important. Issues that should be considered include: type of surface, slope and cross-slope, placement of amenities (such as restrooms, benches, drinking-water fountains, etc.) and the provision of information. Although the provision of a continuous path of travel is an obvious need, it is the most commonly misunderstood concept. For instance, the accessibility of points A and C is meaningless if point B in-between presents a barrier. Thus, an otherwise accessible restroom becomes inaccessible to a person with difficulty grasping objects if the restroom door has a knob instead of lever.

2. Ethiopia national urban green infrastructure standard

The Ministry of Urban Development and Housing (MUDHo) has prepared a Climate Change Resilient Urban Green Development Strategy as a road map to fulfill the urban population need in the area of urban green infrastructure service provisions. The office also developed an urban green infrastructure standard guide to be used by different cities in the country. The standard has aimed at setting the basic minimum requirements to be achieved in the design, implementation, and operation of urban green infrastructure by the practitioners and aimed at creating a framework for municipalities to provide effective and sustainable urban green infrastructure (UGI) for their citizens in order to protect public health and environmental quality.

Among other legal responsibilities, the standard prepaid by MUDHo provides minimum requirements to enable national, regional and local public authorities to safeguard the Rights of citizens to live in a clean and healthy environment as its stated in Article 43 of the Federal Democratic Republic of Ethiopian constitution. This section of the standard is addressed by sitting out accessibility standards mainly focused on the allocation of land for green spaces by per capita within the city boundary and by setting out accessibility requirements for components and facilities within the green space to be reached by all citizens regardless of age, ability or disability. And together with other park planning and design standards, people with disability in the manual are considered as follows;

- Location capacity and accessibility
    a) Competent authorities shall ensure that all parks are designed in a way that considers equal access for all people – people with and without disabilities, people of all age groups, and people of all socio economic statuses.

b) A minimum of 30 % of the total park area shall be appropriately laid out for people with disabilities, i.e. no steps and steep ramps shall restrict access."

- Component and facilities (general standards)
  - Slopes of pathways should not exceed 10 %. In areas accessible for persons with disabilities, slopes of pathways should not exceed 6 %.

CHAPTER FOUR

RESEARCH METHODS

This chapter presents the methodological approach of the research that entails the research approach and choice of method coupled with data collection methods and how the analysis was made.

4.1. Choice of methods

This research combines both qualitative and quantitative research methods. To gain detailed qualitative and quantitative data, a survey research approach is undertaken. The choice of method is categorized based on specific objectives as follows;

To assess the accessibility level of recreational parks in Addis Ababa for people with disabilities firsthand information is collected from mobility and visually impaired people on the accessibility of the recreational parks in Addis Ababa and the barriers they encountered while using the parks. The main reason to choose the survey-based questioner method is to take advantage of the fact that survey questioners can reach a large number of respondents in a short period while at the same time give qualitative and quantitative data directly from respondents under survey. Besides the survey-based questioner, a field survey is also conducted to physically assess the accessibility level of the recreational parks by using an accessibility compliance observation checklist.

To identify factors affecting the accessibility level of recreational parks in Adds Ababa, management staffs of government offices primarily designated in the planning and management of the recreational parks were interviewed using open-ended questions.

Also, document review techniques are used to indicate improvement practices that can increase the accessibility level of the recreational parks for people with disabilities.

4.2. Data type and Collection method

Multiple sources of data have been used to investigate different dimensions of the research objective. Both primary and secondary data sources are used in this research.

4.1.1. Primary Data

The primary data are those which are collected through survey questions, interviews, and field survey. The survey questions are collected from mobility and visually impaired people, the interview is collected from park management staffs and the field survey is conducted in nine selected relational parks in Addis Ababa.

Survey questions

In this study survey questions are prepared to collect data from people with disabilities. The main purpose of the survey questions is to have firsthand information on the barriers the disabled people encounter when using recreational parks of Addis Ababa.

The survey question is organized in such a way that all individual questions consist of both closed (fixed) and open-ended sub-questions. This is because closed (fixed) choice questions are easy to classify and quantify, require less time, effort and ingenuity to answer, on the contrary, do not allow the respondents to qualify, develop or clarify their answers. Whereas Open-ended questions give greater insight and understanding of the topic researched but may be difficult to classify and quantify (Abiy , et al., 2009).Therefore using both closed and open-ended question methods will ensure to collect both quantitative and qualitative data.

The questions were collected from respondents in two ways. (1) In the form of a questionnaire where the respondents themselves write their answers to the question paper. (2) By using schedules. A schedule is a name usually applied to a set of questions that are asked and filled by an interviewer in a face to face situation with the respondent. In this method, unlike the questionnaire, the researcher noted down the answers of the survey questions in the question paper. The two separate methods were used because respondents in this research have different requests when it comes to filling out the forms. Respondents who can read and write have filled out the questioners by themselves whereas data was collected using schedules for those who can't.

For the quality of the research outcome, both the questioners and schedules were distributed and collected by the researcher.

Field Survey

Before conducting a field survey first local and international accessibility standards and design guidelines documents concerning mobility and visually impaired people are reviewed thoroughly from a secondary data source. Second, the local and international documents are compared to each other to select the best practice that can help to physically assess the implementation of those guidelines on the recreational parks under survey.

To physically assess the implementation of the guidelines, measurable parameters are extracted from the selected documents in the form of an observation (evaluation) checklist. The variables extracted from the selected documents are the minimum standards and design requirement of park components and infrastructure within the scope of mobility and visually impaired people access requirement.

The observation checklist consists of main and sub evaluation parameters. Eleven Park infrastructures that are commonly found in most recreational parks are taken as the main parameters. Entrances, pathways, ramps, stairs, seating facilities waste receptacles, parking spaces, play equipment, and plant

materials are those that are taken as main parameters. Issues related to safety in each park infrastructure are also one of the eleven parameters. Every eleven parameters are evaluated by sub-parameters. The sub-parameters are the minimum Standard and design requirements of the park infrastructures extracted from a document review (refer to Appendix B).

Interview

To find out the factors affecting the accessibility level of the recreational parks interview with management staffs from Addis Ababa Plan Commission (APC) and Addis Ababa city government river basin and green area development and administration Agency (AACGRBGDAA) were conducted. The two offices have different mandates and level of influence over Addis Ababa's recreational parks development. Where the APC is the Strategic Planners the AACGRBGDAA is the Implementers.

The researcher prepared predetermined topics to be covered but also conduct an informal conversation with respondents in the course of the interview. The data is collected from the interview by recording the conversation with not taking.

4.1.2. Secondary Data

Secondary Data are collected from the country's policy and strategy documents as well as from standards and manuals of the responsible governmental offices. International standards and best practices from other countries are also used as secondary data. To acquire scientific knowledge and perception on related topics, previously conducted studies, publications, books, articles, journals, and the computer database/internet were also used all with proper citation.

4.2. Sample population and sampling method

4.2.1. Sample population

The main sample population for this study particularly for the primary data collection is people with mobility and visual impairments and 9 selected recreational parks in Addis Ababa. To investigate the other dimension of the research objective Park management staffs are also taken as a sample population.

4.2.2. Sampling technique

To sample mobility and visually impaired people, a clustered sampling method is employed. According to Ranjit Kumar, Cluster sampling method is used when the researcher divides the sample population into groups based upon visible or easily identifiable characteristics (a person in a wheelchair or who use crunch or a visually impaired person using a cane or with an escort) and then selects elements with each cluster using a simple random technique. This method is used because Sample populations with mobility and visual impairment are found dispersed all over the city and it is difficult to find them in an aggregated manner to conduct the survey.

Thus, two disability associations that have a permanent member of people with the two impairments were selected as a sampling frame. Ethiopian National Association of the Physically Handicapped

(ENAPH) and Ethiopian National Association of the Blind (ENAB) represent the cluster population of the mobility impaired and visually impaired populations respectively.

Since members registered in the two associations cannot be found at all times, members who visited the organizations at the time of the data collection were taken to respond to the survey questioner.

To sample the recreational parks for the field survey, stratified and purposive sampling methods are used. As a stratified sampling is a process that first divides the overall population into separate subgroups and then creates a sample by drawing subsamples from each of those subgroups (Lisa , 2008), this study takes the sub-cities of Addis Ababa (higher administrative clusters of the city) as a subgroups and samples recreational parks for the field survey one from each sub-city by using a purposive sampling method.

4.2.3. Sample size

From the permanent members of Ethiopian National Association of the Physically Handicapped (ENAPH) and Ethiopian National Association of the Blind (ENAB), a total of 118 people with disability were sampled in this study. 9 Recreational parks from 9 sub-cities are sampled to conduct the field survey and a total of 7 management staffs from AACGRBGDAA and 1 representative from APC are also sampled to obtain data concerning the factors affecting the accessibility of the parks under survey.

4.3. Data Analysis and Presentations Methods

In this study, both quantitative and qualitative data analysis methods were employed. The data obtained from the survey question for people with disabilities were analyzed in both quantitative and qualitative data analysis methods. The quantitative data were analyzed through an interpretation of number and percentage and the qualitative data were analyzed through discussion and narration. Data from a field survey in the form of the checklist was analyzed through discussion and picture narration. The data obtained from an interview is also analyzed through narration.

4.4. Selection of case study recreational parks

At present, there are 19 functional parks in the 10 sub-city of Addis Ababa. The parks found in each sub-city are different from each other by the number of population they serve and the area they cover.

In this study, parks with the largest area coverage and capacity to serve a wider population are taken as a primary criterion to select the parks in each individual sub-cities.

This selection criterion is used because as it is evident that people with disabilities are found dispersed all over the city as the rest of the city dweller, selecting those parks which are intended to serve a larger population will also address the issues of people with disabilities dispersed all over the city. Thus, parks that are shown in the map below are selected from 9 sub-cities to conduct the field survey. A detailed description of each recreational park is listed in Appendix A of this research paper.

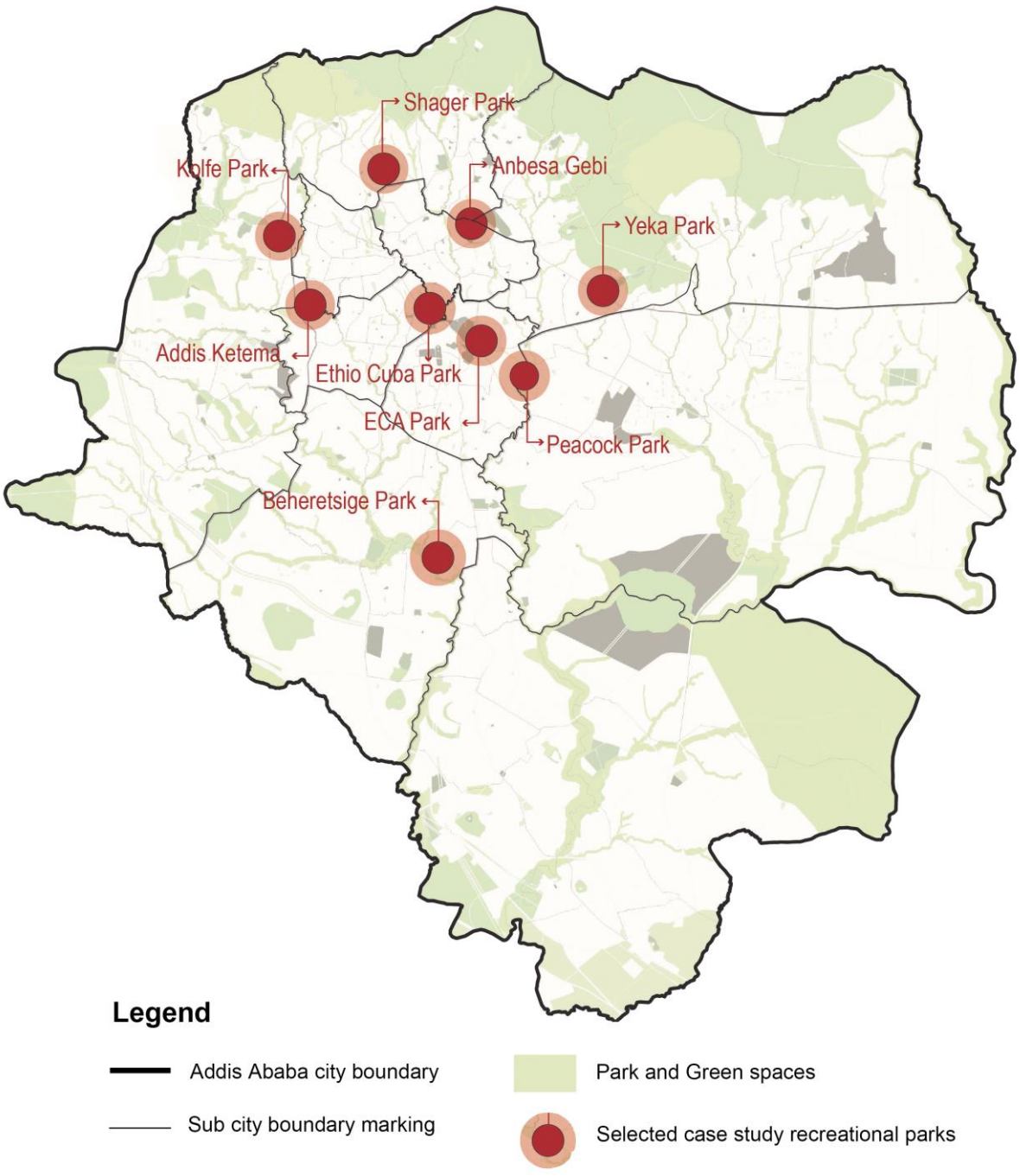


Figure 3: map of the selected case areas (Source - map generated by the author)

CHAPTER FIVE

DATA ANALYSIS AND FINDINGS

This chapter comprises three major parts. The first part presents the data obtained from survey questions on the general perspectives of mobility and visually impaired people towards the accessibility level of the recreational parks in Addis Ababa. The second part of this chapter presents the accessibility compliance of the selected recreational parks in Addis Ababa with accessibility stands and design guidelines. Comparison of accessibility standards and design guideline from local and international documents is also presented in the second part of this chapter. The final part of this chapter presents the analysis of data obtained from interview with management representatives of APC and AACGRBGDAA.

5.1. Presentation of data analysis obtained from questionnaires

In this study a total of 118 respondents with mobility and visual impairment are sampled. Respondents are sampled from Ethiopian National Association of the Physically Handicapped (ENAPH) and Ethiopian National Association of the Blind (ENAB).The sample was taken only from the members of the association because it was possible to find people with the two impairments of different status at the associations.

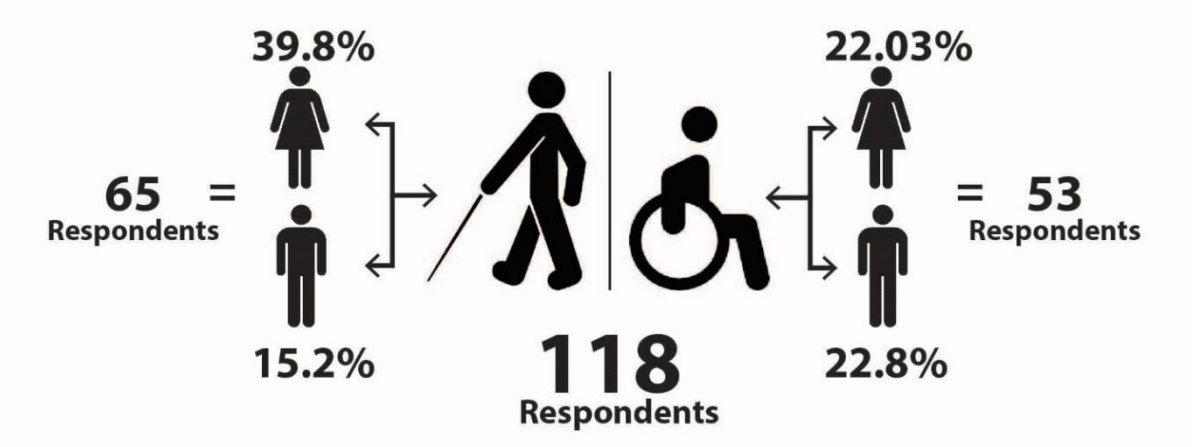


Figure 4: Background information of respondents (1)

Three demographic variables of the respondents were gathered as background information. These are: sex, age and residency duration of respondents in Addis Ababa summarized in the following table below.

From a total of 118 people with disabilities 65(55.08%) are people with impairment and 53 (46.61%) are people with visual impairment.

118 Respondents			
Age	<20	11.%	2.5%
	20 -30	25.4%	20.3%
	30 - 40	10.1%	18.6%
	45 - 60	2.54%	9.32%
	> 60	0%	0%

118 Respondents			
Duration of residency in Addia Ababa	<2 years	0%	0%
	2 -5 years	4.23%	11.86%
	>5 years	48.3%	35.59%

Figure 5: Background information of respondents (2)

As can be seen in the above figure majority of the respondents are in the age from 20 to 45 years. And most of them has reside in Addis Ababa for over 5 years.

Time spent in the recreational parks of Addis Ababa					
	Most of the time	Average	Few times	Barely	> I dont't go at
	1.69%	5.08%	7.62%	13.55%	27.11%
	0%	9.32%	6.77%	10.16%	18.64%

Figure 6: Time spent in the recreational parks of Addis Ababa

From a total of 118 respondents with disabilities, 54 respondents (27.11% mobility and 18.64 visually impaired people) have never visited any parks in Addis Ababa while 64 has visited these parks. And from those who visited the parks, 28 respondents (13.55% mobility and 10.16% visual impaired people) barely spent their time in the recreational parks, According to the majority of the respondents who never visited the parks and those who spent less of their time in the recreational parks is because, due to the availability of parks near them and the barriers they face while visiting.

One mobility impaired respondent who use a wheelchair as a mobility aid said he barely spends time in any recreational parks in the city and explained;

"The recreational facilities of this kind cannot be found near my home or workplace. The parks that exist in a much-dispersed place are not well maintained to be used by a person with a disability like me."

As shown in the above table, 2 respondents (1.69% mobility impaired people) spent most of their time in the recreational parks, 17 respondents, (5.08% mobility and 9.32% visually impaired people) and (7.62% mobility and 6.77% visually impaired people) spent average and few of their time respectively I the recreational parks. From a separate questioner, it is understood that the respondents visit recreational parks primarily to appreciate nature, to meet people, to read books, and use park facilities such as food and drinks.

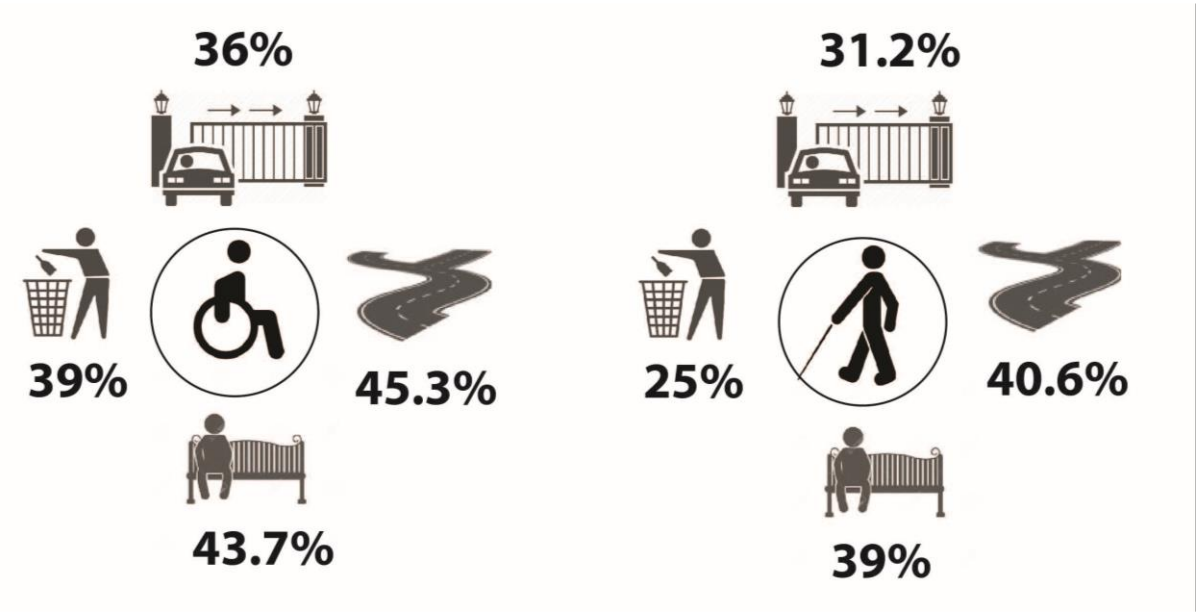


Figure 7: Barriers encountered by respondents at the different parts of the parks in Addis Ababa

All the 64 respondents who have visited recreational parks in Addis Ababa have said they have encountered barriers at the different parts of the parks in Addis Ababa. 43 respondents (36% mobility and 31.2% visually impaired people) encountered barriers at entrance spaces, 55 respondents (45.3% mobility and 40.6% visually impaired people) at circulation pathways, 34 respondents (43.7% mobility and 39% visually impaired people) at seating facilities, and 41 respondents (39% mobility and 25% visually impaired people) faced barriers in areas of waste receptacles.

The barriers mentioned by mobility impaired respondents includes; damaged surface flooring at entrance, pathways, around seating spaces, slippery and narrow pathways, obstruction at entrance and pathways, unconstructed soft nature of grounds around seating spaces, and poor placement of seating facilities and waste receptacles. And the barriers mentioned by most visually impaired respondents includes; threshold at entrance gates and absence of information and orientation guiding around entrance spaces, Open man hole on path of travel, Unclipped tree branches on path of travel, and Absence of orientation or information guides and poor placement of seating facilities and park furniture.

The following quotes are some of the direct response of the respondents on the barriers they have encountered in the different recreational parks of Addis Ababa.

"*Most of the time more than the pedestrian entrances the vehicle entrances are constructed carefully. I barely used the pedestrian entrances because most of the entrance ground is damaged and not leveled; sometimes the entrance gates are too narrow. To use such facilities I usually use the vehicle entrance.*" (Wheelchair user respondent, 2017)

"*The material used on the circulation pathways is too slippery and dangerous for a person who uses a crutch like me*" (a crutch user respondent, 2017)

"*Some of the circulation spaces are too steep, in which a wheelchair user can be out of control. Also, some of the pathways are too narrow to allow a wheelchair user like me.*" (Wheelchair user respondent, 2017)

"*Because the surface materials of the pathways lack maintenance my crutch usually stuck on the hole. Also, the same thing happens on the pathways with natural grounds.*" (A crutch user respondent, 2017)

"*The fact that the circulation pathways have no information or orientation guidelines it's very difficult for me to navigate.*" (Respondent with total sight loss, 2017)

"*There are different Obstruction on the path of travel such as tree branches, stone and open manholes that are very dangerous for a person who lost his sight like me.*" (Respondent with total sight loss, 2017)

"*People with mobility impairment use different moving aids such as wheelchair and crutch; because of this, the regular seating spaces are not suitable for people with the impairment. However, the designers don't usually acknowledge such details.*" (A crutch user respondent, 2017)

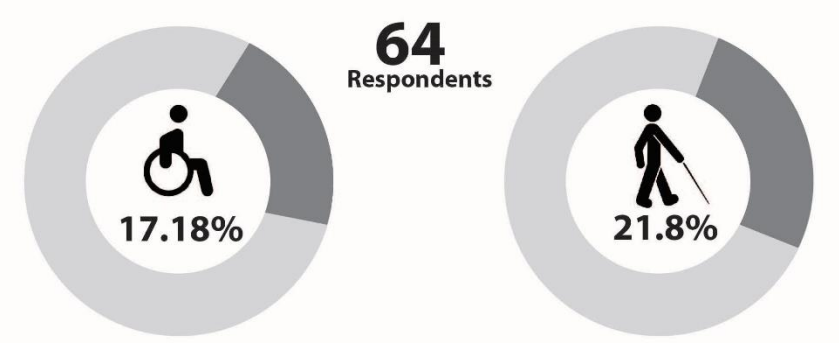


Figure 8: Safety risk encountered by respondents in the recreational parks of Addis Ababa

From the 64 respondents (17.18% mobility and 21.8% visually impaired people) said they have experienced an accident due to the barriers presented above.

In addition when asked about the accessibility of the recreational park that are found in Addis Ababa, out of the 64 respondents 90 (48% mobility and 42% visually impaired) respondents say they are not accessible for them.

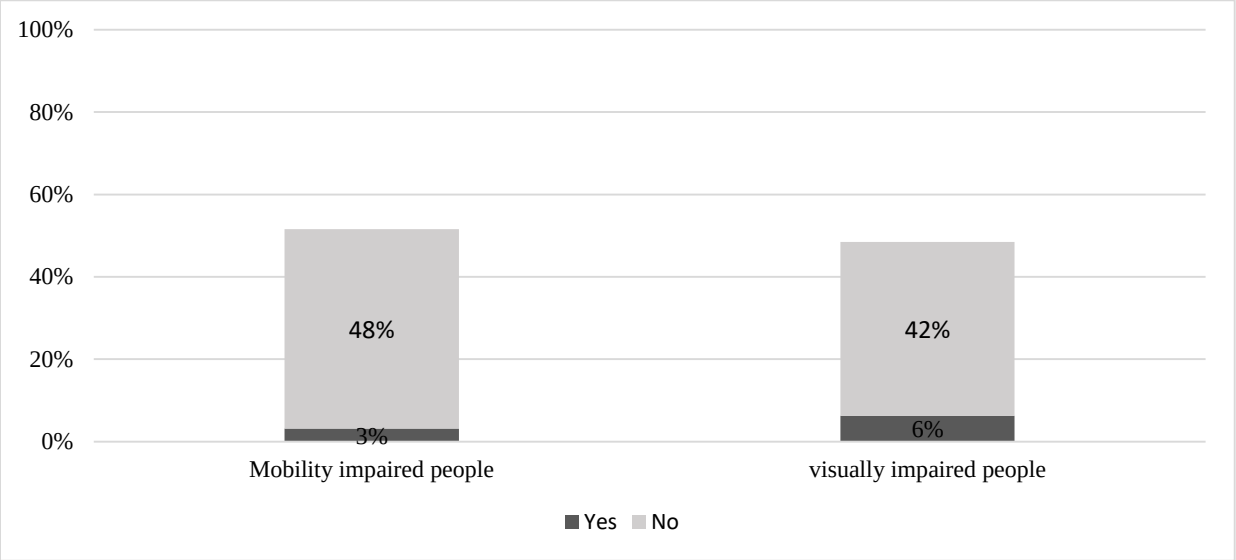


Figure 9: General recreational parks Accessibility by respondents

5.2. Presentation of data analysis obtained from Field survey

To measure the accessibility compliance of the recreational parks, first local and international accessibility standards and design guidelines documents concerning mobility and visually impaired people are reviewed thoroughly. Second, the local and international documents are compared to each other to select the best practice that can help to physically assess the implementation of those guidelines on the recreational parks under survey.

From local documents, two park design manuals prepared by urban planning, sanitation, and beautification bureau, and the federal democratic republic of Ethiopia ministry of urban development and housing, are reviewed. From international documents, six design guideline manuals, prepared in different countries are also reviewed.

When the disabled people access consideration in the local park design guidelines are compared with the international accessibility design guideline, the local design guidelines are found to be inadequate.

The international documents are intentionally prepared to address disabled people's access considerations in parks and other outdoor environments. They contain clear and concise technical requirements of infrastructures and facilities such as entrance spaces, walkways, ramps, stairs, site furniture, signage, etc. The local design guidelines manuals are prepared to guide the planning and design of park facilities in general, and disabled people accessed considerations are mentioned in a

single section. Rather than giving detailed technical requirements the guideline generally encourages component authorities to ensure all parks to be accessed by people with disabilities and encourages park designers and managers to generally provide access to people with disabilities. Some of the guidelines stated in the local documents reviewed from urban planning, sanitation, and beautification bureau, and the federal democratic republic of Ethiopia ministry of urban development and housing are;

"Whenever possible try to go beyond minimum standards", "Incorporate accessibility in areas that present different levels of difficulty", "Plan for a continuous path of travel",

Thus, when compared with the international guidelines, the local design guidelines are found to be inadequate to measure the accessibility compliance of facilities and infrastructures in the recreational parks under survey.

Data obtained from field survey

To assess the recreational park's compliance with accessibility standards and design guidelines, a field survey in nine selected recreational parks in Addis Ababa has undergone. The detailed analysis of the observation is presented as follows.

		Shager Paark	**Yeka Paark**	**Kolfe park**	**Anbesa gebi**	**Addis ketema**	**Ethio cuba**	**ECA park**	**Peocock park**	**Beheret sige**
1.	Entrance	50%	60%	60%	80%	40%	60%	40%	60%	60%
2.	Pathways	33%	43%	71%	57%	43%	62%	71%	29%	19%
3.	Ramps	38%	25%				44%	38%		
4.	Stairs	50%	40%			25%	80%	45%	50%	50%
5.	seating facilities	36%	22%	29%	33%	33%	83%	67%	8%	19%
6.	Waste receptacle				25%	25%	67%	75%		50%
7	Play equipment	20%	20%						0%	20%
8.	Signage	13%	13%	13%	0%	0%	0%	0%	0%	13%

9.	Safety considerations	25%	20%	50%	50%	50%	50%	25%	25%	20%
10.	Plant materials	33%	50 %	50%	67%	83%	67%	33%	33%	50%
11.	Parking	0%		0%	0%	0%	0%		0%	0%
	Total accessibility compliance %	**30%**	**33%**	**39%**	**39%**	**33%**	**51%**	**44%**	**23%**	**30%**

Table 5: Accessibility compliance of the recreational parks in Addis Ababa

1. Entrance

The accessibility compliance of the entrance spaces in all of the parks is measured by five parameters that are shown in Appendix B section 1 of this research paper and analyzed as followed.

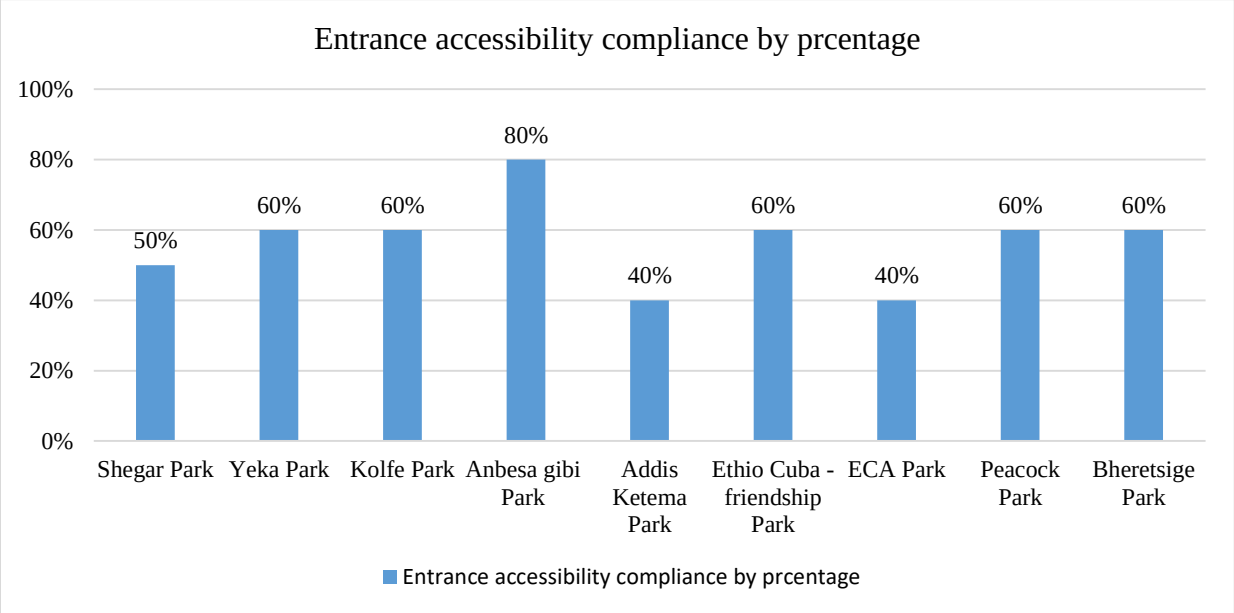


Figure 10: Entrance accessibility compliance by percentage

As observed in the field survey, most of the parks getaway is a double-leaf door with a minimum opening clearance of 900 mm. In all of the parks except in Sheger, Yeka and ECA Parks the ground outside of the parks is at the same level as the ground inside. In Yeka and ECA Parks, the grounds are at a different level. But a ramp is provided. Whereas in Sheger Park, there is no ramp provided as an alternative access.

In Addis Ketema, ECA and Kolfe parks, it is observed that the gates have a threshold that exceeds the 50mm height, which is a potential hazard for visually impaired people and an impediment for mobility-impaired people.

The position of entrance in Yeka and Peacock parks is marked with signage placed on top of the getaways. However, none is marked through proper accessibility signage using the international symbol of accessibility.

Except for Anbesa Gebi and Kolfe parks, the entrance space surface is not uniform, continuous, non-slippery and free of obstruction. In the other parks, the surface is either poorly constructed or damaged.

With a cumulative effect of the five parameters, entrance space accessibility compliance of the parks is shown in (figure 10). While the entrance of ECA and Addis Ketema parks are the lowest with 40% accessibility compliance, Entrance of Anbesa Gibe Park has the highest with 80% accessibility compliance when compared with the other parks.

Figure 11: Entrance of Sheger Park (left) and Entrance of Yeka Park (right). (Source - Author)

Figure 12: Entrance of ECA Park (left) and Entrance of Anbesa gebi Park (right). (Source - Author)

Figure 13: Entrance of Peacock Park (left) and Entrance of Kolfe Park (right). (Source - Author)

2. Pathways

The accessibility compliance of pathways in all of the parks are measured by seven parameters that are shown in Appendix B section 2 of this research paper and analyzed as followed.

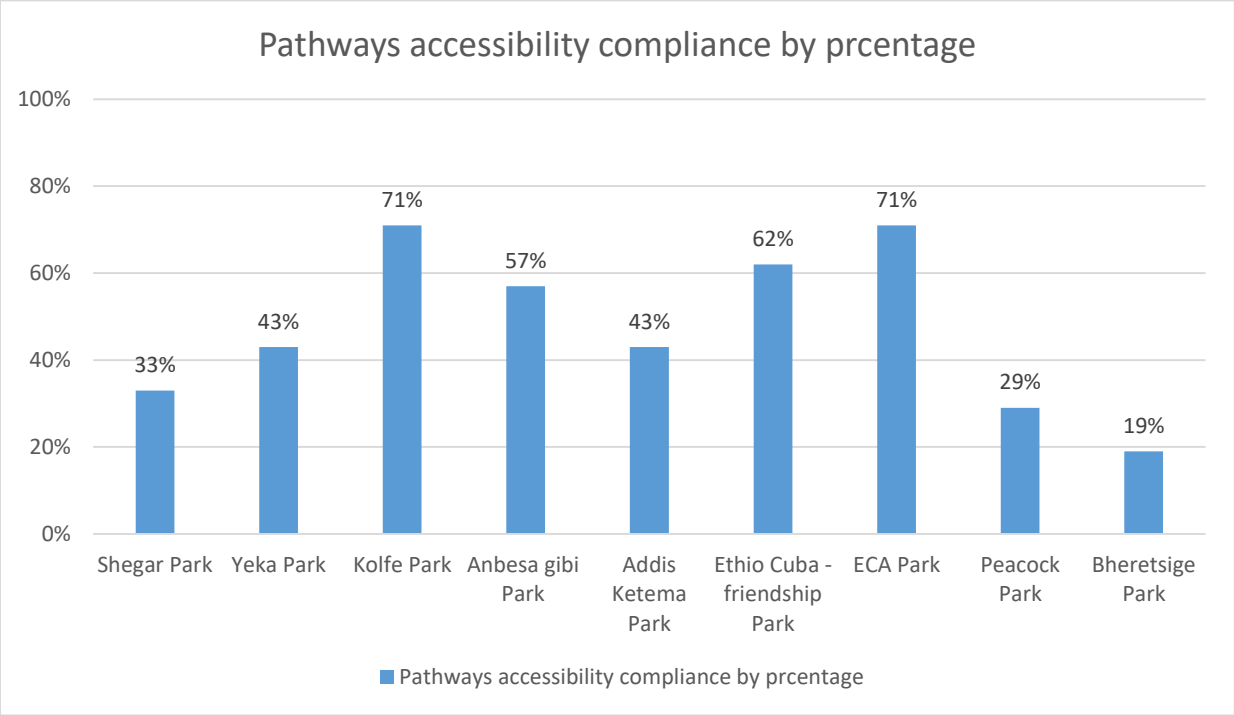


Figure 14: Pathways accessibility by percentage

Pathways that are available within the observed parks are made of dressed stone, cobblestone, terrazzo tile, concrete, and asphalt surface material. Natural desired paths created by frequent movement of visitors are also observed in the parks.

Even though the minimum width of the pathways in all of the surveyed parks is 900mm, none of the available paths except in Kolfe and ECA parks are fully obstruction-free. The obstructions, for example, are open ditches, planted trees, accumulated dirt, and large rocks/stones.

The gradient of the pathways in some of the parks exceeds 5% slop. This condition is especially worse in Sheger and peacock parks. The gradient of pathways in Kolfe, Anbesa Gebi, and ECA parks is relatively flat when compared with the other parks.

The surface texture of pathways in ECA, Anbesa Gebi, Ethio Cuba –friendship and Kolfe parks is smooth, continuous and slip-resistant. In contrast, the surface texture of pathways in the other parks is slippery, rough, and uneven. For example, Asphalt roads in Beheretsige parks are observed being deteriorated and damaged, and Stone and concrete pathways in Peacock Park have grown alga and are very slippery.

Curbstones are provided in Yeka, Kolfe, Addis Ketema, ECA, and Ethio Cuba – friendship parks, to separate pathways to adjacent landscape features with a minimum height of 15mm. However, in Sheger, Anbesa Gebi, and peacock parks, it is only provided in some of the pathways within the parks. Whereas in Beheretsige park curbstones are not provided at all.

There are no orientation, information, or direction guides provided on or along with the pathways in any of the surveyed parks. In Yeka Park a tactile surface paver technically is used to guide a visually impaired person is observed, but it is not correctly installed.

In general as shown in (figure 14), When compared with the other parks, pathways in Kolfe and ECA parks are the highest with 71% accessibility compliance and pathways in Beheretsige are the lowest with 19% accessibility compliance.

Figure 15: Misplaced tactile marking in Pathways at Yeka Park (left) and Damaged Pathways at Beheretsige Park (riaht). (Source - Author)


Figure 16: Obstruction free Pathways at ECA Park (left) and at Ethio – Cuba Park (right). (Source - Author)


Figure 17: Steps in Pathways at Sheger Park (left) and, steep and damaged Pathways at Peacock Park (right). (Source - Author)


Figure 18: Sleeper Pathway at Peacock Park (left) and, damaged asphalt road at Beheretsige Park (right). (Source - Author)

3. Ramps

From the 9 parks that are surveyed, ramps are available in Sheger, Yeka, Ethio-Cuba Friendship and ECA Parks. In all of the four parks the accessibility compliance of the Ramps are measured by eight parameters that are shown in Appendix B section 3 of this research paper and analyzed as followed.

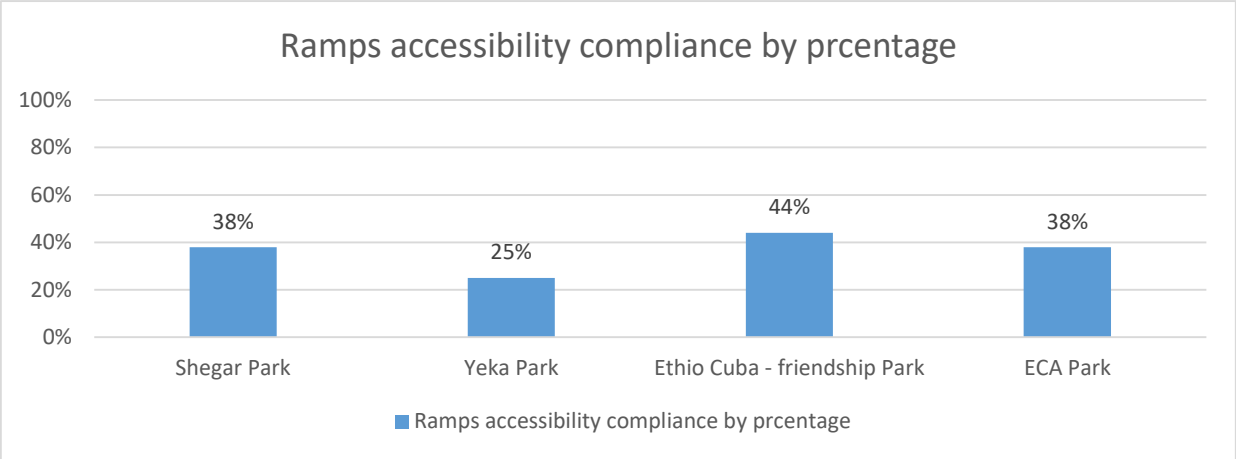


Figure 19: Ramps accessibility compliance by percentage

In Ethio Cuban – friendship park ramps are observed in entrance space and along with pathways. In Yeka and ECA parks ramps are observed in entrance spaces where in Sheger Park it's provided only along with pathways.

Observation of Ramps in Ethio Cuban- Friendship Park is made by categorizing the ramps according to their surface material in two types (see Section 3 of Appendix B). Type one (ramp with cobble stone surface finish) and type two (ramp with Terrazzo tile surface finish). Both ramps with cobble stone and terrazzo surface finish have a minimum width of 900mm and a gradient that does not exceed 5% slop. It is observed both types of ramps have no landing at the top and bottom or when change in direction. A stone guardrail is observed in some of the ramps but is absent in others. It is also observed there is no textural surface indicator at the top, bottom or in any surface of the ramp to alert or guide visually impaired people.

Figure 20: Terrazzo paved ramps with protective hand rail at the side but dropping to a stair with no safety consideration at Ethio - Cuba Park. (Source - Author)


Figure 21: Cobble stone paved Ramps with no protective hand rail, no landing and damaged at Ethio - Cuba Park. (Source - Author)

In Yeka Park a ramp is observed at the entrance space. It is 900mm wide and has a gradient that does not exceed 5% slope. It is constructed with concrete surface material that is damaged and obstructed. There is a Landings at the top of the ramp but there is no properly designed landing at the bottom. The space at the bottom of the ramp is narrow and obstructed with grown vegetation. There is no protective handrail at both side of the ramp and no textural surface indicator to alert or guide visually impaired people.


Figure 22: damaged concrete ramp at Yeka Park (left) and, ECA Park (right). (Source - Author)

In Sheger Park a ramp is provided in a pathway. It is 900mm wide and has a gradient that does not exceed 5% slope. It is constructed with a slip resistant terrazzo surface finish that is firm and unobstructed. Landing is provided at the top but absent at the bottom. There is absence of protective handrails and Textural surface indicators to assist visually impaired people.

Like Yeka Park the ramp at ECA Park is provided at the entrance space. The width of the ramp is 3000mm wide, enough to allow two way wheelchair traffic. The gradient of the ramp exceeds 5% slope. Even though landings are provided at the top and bottom of the ramp, the surface of the landing is obstructed and poorly constructed. In addition there is a lack of handrail or tactile surface indicators provision. A drainage system is not also provided to avoid accumulation of water.

In general when measured by the ramp accessibility parameters accessibility compliance of ramp at ECA Park is 38%, the ramp at Sheger Park is 25% accessible, the ramp at Yeka Park is 44% accessible and accessibility compliance of ramp in Ethio cuba – friendship park is 38%.

4. Stairs

In the field survey except Kolfe and Anbesa Gebi parks stairs are observed in seven of the parks. The Stairs available in all of the 7 parks are measured by ten stair accessibility parameters that are shown in Appendix B section 4 of this research paper and analyzed as followed.

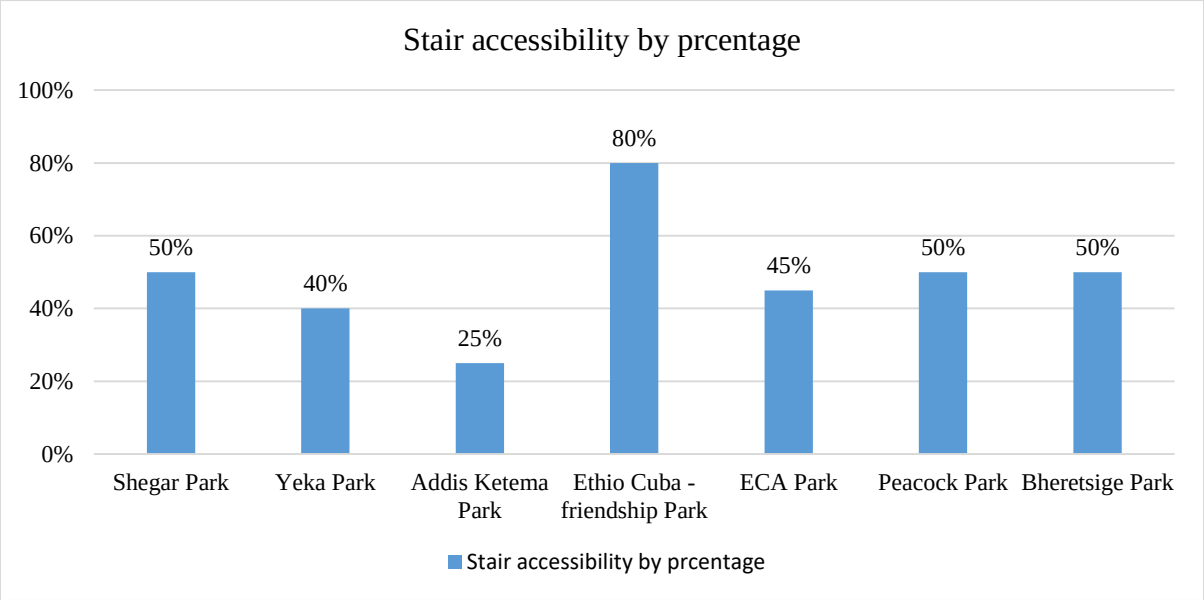


Figure 23: Stairs accessibility compliance by percentage

As it is observed in the field survey width of available stairs in the parks except for a stair in Addis Ketema park, are 900mm and above. It serves one-way traffic at all times but two-way traffic is only catered at some of the stairs available in the parks.

Except in Yeka Park, no complementary ramp route is provided in any of the available stairs to allow mobility-impaired people.

Riser and treads of stairs in most of the parks are uniform. However, observation shows riser and treads of stairs in Sheger, Yeka, and Addis Ketema parks vary in height and width.

Landings on stairs are available in most of the surveyed parks. But, safety-related issues are observed in stairs available in Addis Ketema and ECA parks. The stair observed in ECA Park has a proper landing on the top end of the stair, but the bottom end of the stair falls into an open ditch.

For stairs that contain two or more risers, Handrails are only provided in ECA and Ethio Cuba – friendship parks. However, for an available stair more than 3000mm wide In Ethio Cuba –Friendship

Park, a continuous stone handrail is provided at both sides, but not an intermediate handrail. Also, a handrail is observed in a stair available in ECA Park but only at one side of the stair.

It is also observed no textural marking indicators are provided at the trades and the top, bottom or intimidate landings of the available stairs in any of the parks.

In a field survey conducted in a rainy season, it is observed stones and concrete stairs in Peacock, Addis Ketema and Yaka parks have grown alga and are slippery.

When measured by the stair accessibility parameters listed in (table 9), available stairs at Sheger, Peacock, and Beheretsige Park has 50% accessibility compliance, stairs in Yeka park has 40% accessibility compliance, stairs in Addis Ketema park has 25% accessibility compliance, stair in Ethio Cuba – friendship park has 80 % accessible compliance, and stairs in ECA park has complied with 45% of the accessibility measurement.

Figure 24: Stair falls into an open ditch with no proper landing at ECA Park (left) and Stair with no regular riser and trade at Addis Ketema Park. (Source - Author)

Figure 25: Stair grown alga at Peacock Park (left) and Stair with a width above 3000mm but no intermediate handrail at Ethio – Cuba Park. (Source - Author)

Figure 26: Stair with alternative ramp at Yeka Park (left) and, Stair with no Provision of ramp at Beheretsige Park (right). (Source - Author)

5. Seating facilities

Seating facilities are available in all of the 9 parks. Accessibility compliance of the seating facilities are measured by 7 accessibility parameters that are shown in Appendix B section 5 of this research paper and analyzed as followed.

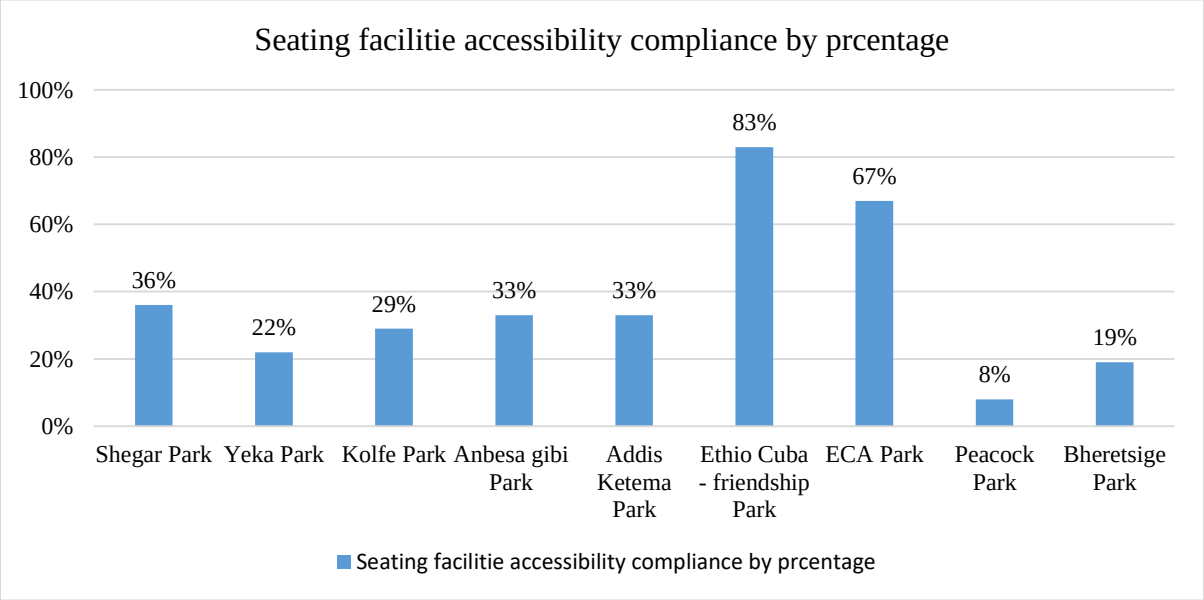


Figure 27: Seating facility accessibility compliance by percentage

In the surveyed parks an individual, grouped and shaded seating facilities are observed. The seats and benches in these facilities are made of wood, metal, concrete, and stone.

Most seating facilities in Sheger, Yeka, Kolfe, Addis Ketema, and Beheretsige parks are found in a fenced area where Seats and benches are placed in unconstructed natural ground. These seating facilities don't have a circulation space that is properly connected with the main circulation paths. The facilities are not found in a regular interval and there is no orientation or information signage in or around the facilities to guide visually impaired people. On top of this, some of the seats and benches placed in the fenced area don't have a suitable arm and back support. This condition is especially observed in Beheretsige Park.

Shaded seating facilities are available specifically in Yeka, Beheretsige, ECA and Addis Ketema parks. These facilities are found in the fenced area where there is no circulation space that is properly connected with the main circulation paths. Shaded seating facilities with an access to a main circulation pathway is observed in Addis Ketema Park, but it is placed at a raised platform that is not allowable to mobility impaired people.

Individual and grouped seats placed adjacent to circulation pathways are also observed in some of the parks. In Peacock Park, these seats are placed on a raised platform. Most of them are accessed by a stair without any complementary ramp to allow mobility-impaired people. In Yeka Park the seats don't have an available space adjacent or around them for mobility-impaired people to maneuver. In Sheger Park the seats are placed on a natural ground that is not firm and leveled. Besides, none of the seating facilities mentioned above have a proper orientation or information signage in or around the seats to guide visually impaired people.

In contrary seating facilities in ECA and Ethio Cuba – friendship parks are found at one side of the main circulation paths. They are provided in a regular interval, have a suitable arm and back support and have an available space adjacent to them for wheelchair users. However, they don't have orientation or information guides in or around the seats to guide visually impaired people.

Figure 28: Seat placed in a raised platform at Peacock Park (Left) and seat with narrow entry at Yeka Park (Right). (Source - Author)

Figure 29: Seats placed on a natural ground that is not firm and leveled (left) at Sheger Park and (Right) at Ethio – Cuba Park. (Source - Author)

As indicated in table 10, accessibility compliance of seating facilities in ECA and Ethio Cuba – friendship parks is 83% and 67% respectively. When compared with the other parks, seating facilities in the two parks have a better accessibility compliance. As indicated in figure 27, accessibility compliance of seating facilities in Sheger Park is 36%, Yeka park with 22%, Kolfe park with 29%, Anbesa Gebi and Addis Ketema parks with 33%, Beheretsige with 19%, and seating facilities at Peacock Park has only 8% accessibility compliance.

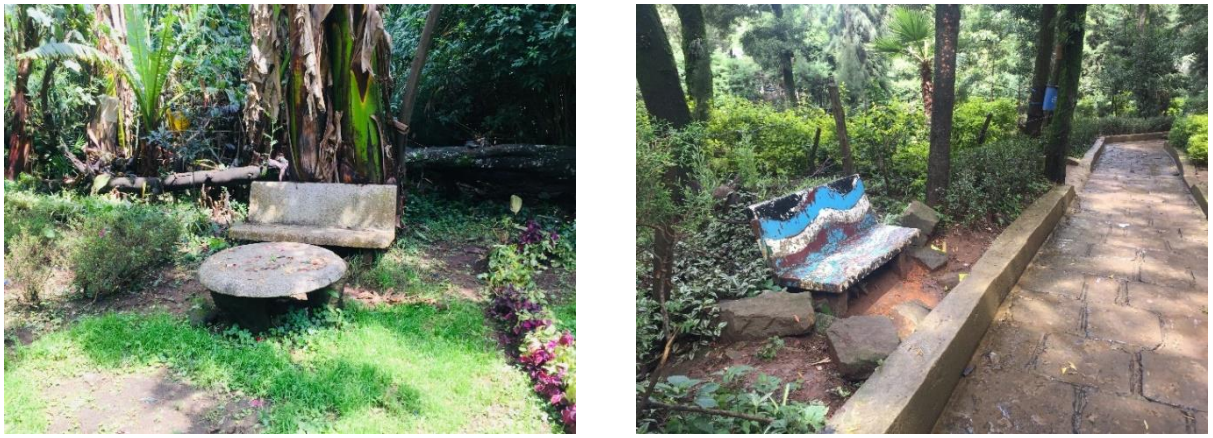


Figure 30: Seating at Yeka Park with no orientation guide. (Source - Author)

Figure 31: Seating spaces with an elevation change and no provision of ramp at Addis Ketema Park (Left) and Peacock Park (Right). (Source - Author)

Figure 32: Shaded seating space on a natural ground with no circulation space that is properly connected with the main circulation paths (left) at Sheger Park and shaded seating space with an access with to a main circulation path but placed in a raised plat form at Addis Ketema Park (Right). (Source - Author)

Figure 33: Seating spaces placed provided in a regular interval and outside the main circulation path at ECA Park (Left), and with an adjacent space for a wheelchair at Ethio Cuba –parks (Right). (Source - Author)

6. Waste receptacle

Out of the 9 parks, Waste receptacles are available only in Anbesa gebi, Addis ketema, ECA, Ethio Cuba – friendship, and Behere tsige parks. Accessibility of the waste receptacles for mobility and visually impaired people are measured by 4 accessibility parameters that are shown in Appendix B section 6 of this research paper and analyzed as followed.

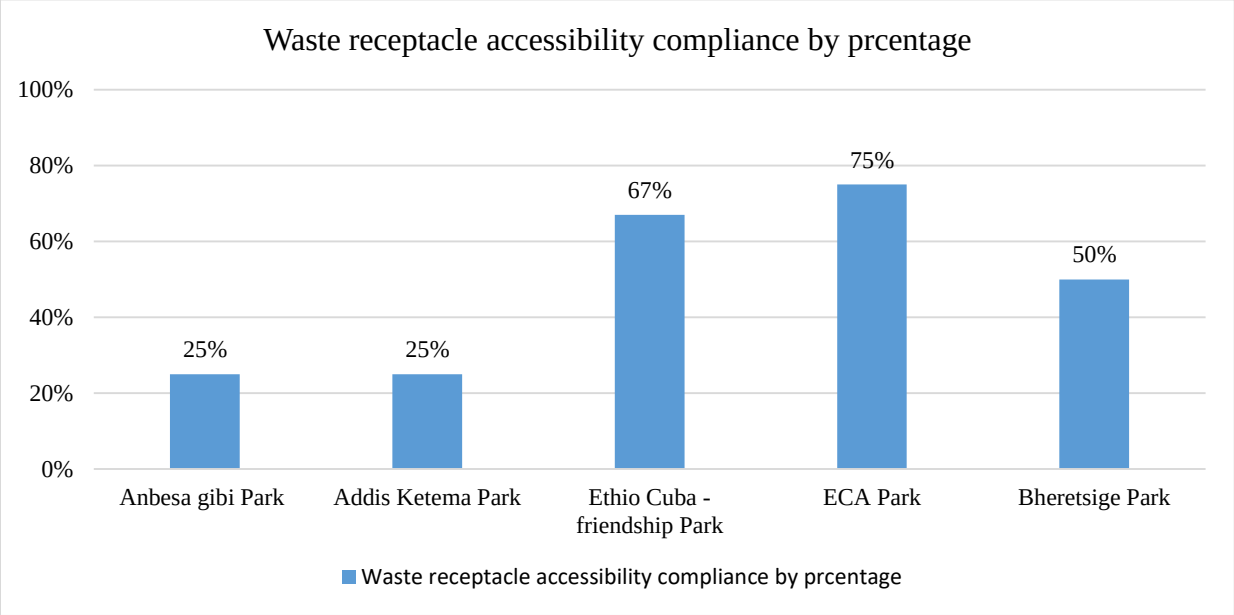


Figure 34: Waste receptacles accessibility compliance by percentage

As observed in the field survey, available waste receptacles in the parks are made of plastic. In Ethio Cuba –Friendship Park, waste receptacles are mounted on a firm and leveled pad and are found at allowable height to be used by mobility-impaired people.

Waste receptacles in ECA and Anbesa Gebi parks are attached to a pole were in Behere Tsige and Addis Ketema parks, they are attached to a tree. Receptacles that are attached don't face the line of pedestrian

flow. Though, the receptacles in Anbesa Gebi and Addis Ketema parks are not at allowable height when measured from the ground.

Waste receptacles in all the parks are not identified by suitable signs and contrasting color to assist visually impaired people.

As indicated in (figure 34), accessibility compliance of waste receptacles in Beheretsige Park is 50%, waste receptacles in Anbesa gebi and Addis ketema park has 22% accessibility compliance, ECA park has 75% accessibility compliance and Ethio Cuba –Friendship Parks has 67% accessibility compliance.

Figure 35: Waste receptacles at Ethio – Cuba Park (Left) and at ECA Park (Right). (Source - Author)

Figure 36: Waste receptacles at Anbesa Gebi (Left) and at Kolfe Park (Right). (Source - Author)

7. Play equipment

In the field observation, children play equipment is only found in Sheger, Yeka, and Peacock and Beheretsige parks. Accessibility of the play equipment for mobility and visually impaired children are measured by 5 accessibility parameters shown in Appendix B section 7 of this research paper and analyzed as followed.

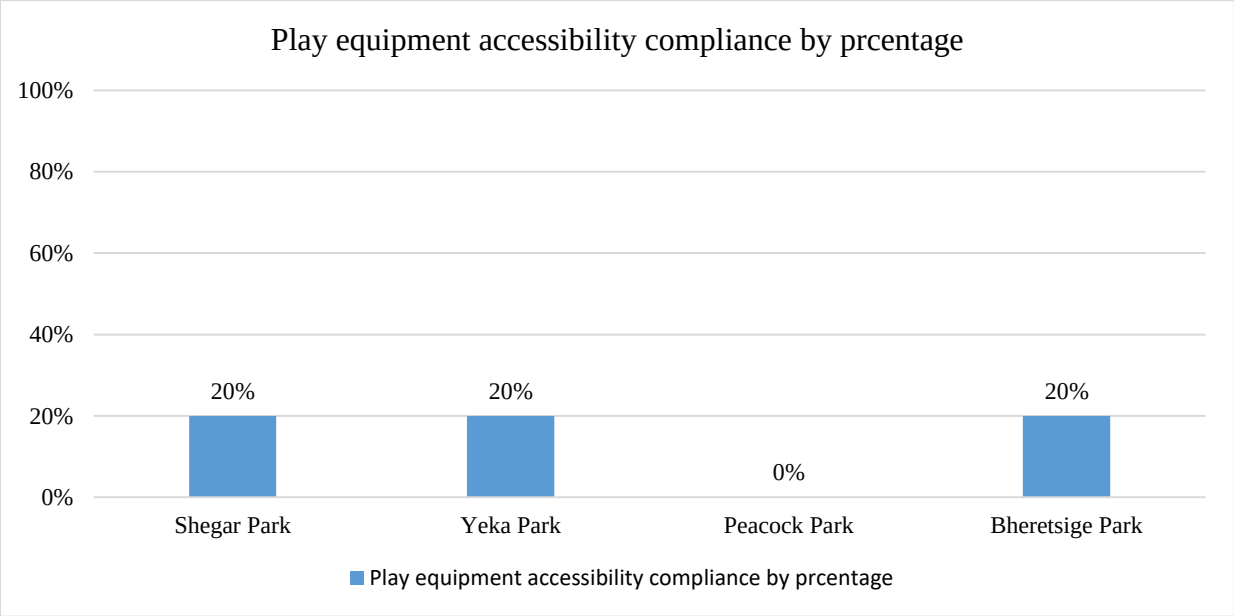


Figure 37: Play equipment accessibility compliance by percentage

In four of the parks, available play equipment is placed in unconstructed natural ground without a proper path connected with the main circulations of the parks.

Play equipment in all of the parks are found at allowable surface gradient, but the surface they are placed is not even and slip-resistant. It is observed Some Play equipment in Peacock Park are placed in a raised platform without any provision of a ramp.

Play equipment in none of the parks have a transfer platform or grab bars to assist mobility impaired children and orientation or information guides in or around to guide visually impaired children.

As shown in (figure 37), accessibility compliance of play equipment in Peacock Park is not accessible at all. Where equipment in Sheger, Yeka, and Beheretsige parks play has 20% accessibility compliance.


Figure 38: Play equipment at Sheger Park (Left) and Peacock Park (Right). (Source - Author)


Figure 39: Play equipment placed at unconstructed platform with no circulation connected with main pathways at BehereTsige Park (Left) and Peacock Park (Right). (Source - Author)


Figure 40 : Play equipment with no orientation guide and no provision of transfer plat form and grab bars at Sheger Park (Left) and Yeka Park (Right). (Source - Author)

8. Signage

In the filed observation accessibility Issues related to signage are measured by eight parameters shown in Appendix B section 8 of this research paper.

From the parks under survey, signage is observed in Sheger, Yeka, Kolfe, and Beheretsige parks. Accessible space and facilities in Anbesa gebi, Addis Ketema,Ethio Cuba – friendship, ECA, and Peacock parks are not indicted in any information or direction indication signage. Thus accessibility issues related to signage in these parks are not available at all.

The signage observed in Sheger, Yeka, Kolfe, and Beheretsige parks are information and directional signage. The information signs that are observed are located at the entrance spaces to only give directives about the park uses and services. Rather than informing about available services, they command about what to do and what not to do when using the parks. These signs are written in small fonts and not supplement by an embossed text or braille to be accessed by visually impaired people. Besides these information signs are not positioned in a height between 900mm and 1800mm to be easily seen by a mobility-impaired person.

The directional signs are specifically observed in Yeka, Sheger and Beheretsige parks. These signs are very small in number and don't properly show the direction of the facility it is intended to indicate. They are not identified by international symbols of accessibility nor are placed in a height to be visible by mobility impaired people. In addition the letters in the signs are very small in size and difficult to be read from distance. They are also faded due to poor maintenance.

When the available signage in Shege, Yeka, Kolfe and Beheretsige parks are evaluated, they have only complied with 13% of the accessibility parameters.

Figure 41: Directional signage at Sheger Park (Left) and Beheretsige Park (Right). (Source - Author)

Figure 42: Information Signage at Kolfe park (Left) and Beheretsige Park (Right). (Source - Author)

Figure 43: Information Signage at Yeka park. (Source - Author)

9. Safety considerations

Safety considerations in the different parks are measured by five parameter shown in Appendix B section 9 of this research paper and analyzed as followed.

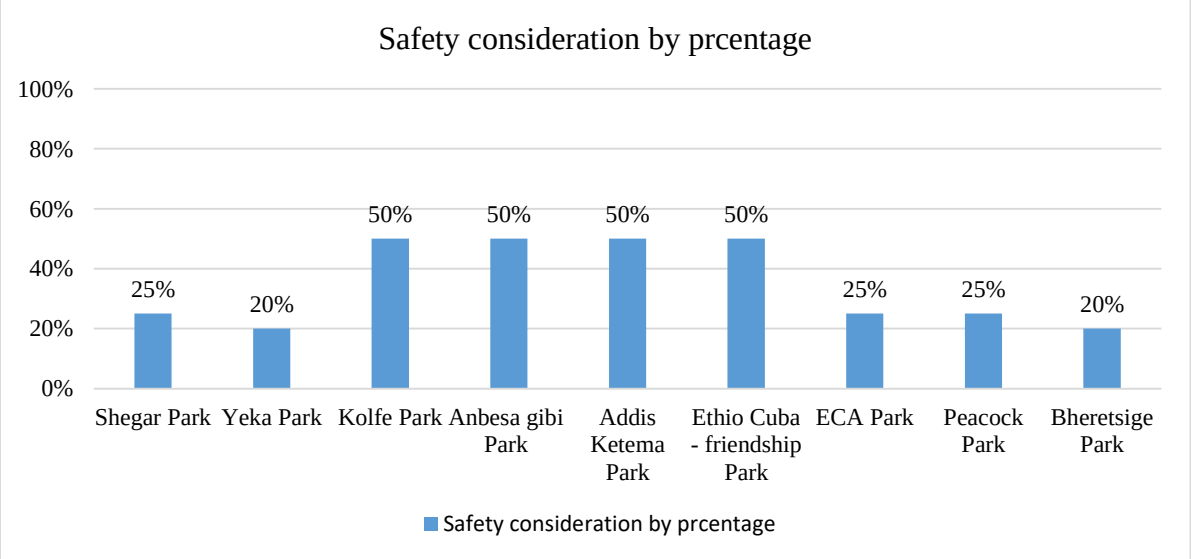


Figure 44: Safety consideration by percentage

Several issues related to safety concerns are observed in all of the parks under the survey. In ECA Park along with the main circulation pathway, there is a cascading artificial pond. The level difference between the edge of the pathway and the bottom of the artificial pond exceeds 13mm. But no guard or alternative safety consideration is provided. In the park, an open ditch at the bottom end of an available stair is also observed.

In Peacock and Ethio Cuba – Friendship Park, Ramps and pathways are found at a different level to adjacent vicinities but no guard or alternative safety consideration is provided.

In Sheger, Yeka and Beheretsige parks, man-holes and open drains are found on the main travel path. In Kolfe, Beheretsige, Addis Ketema, Anbsa gibe, and Ethio Cuba –friendship parks, Pathways are obstructed with trees but no tactile warning markings are installed around the projected areas. In Yeka and Beheretsige parks, Excavated areas for construction works are not fenced for safety reasons.

Among the safety considerations listed in section 9 of Appendix B, overhanging vegetation is clipped to a clearance height above 2m in all of the parks.

As shown in Figure 44, safety measures taken in Sheger, ECA, and Peacock parks has 25% compliance, and in Kolfe, Addis Ketema, Anbsa gibe, and Ethio Cuba –friendship parks has fulfilled 50% of the criteria where Yeka park has only complied with 20% of the safety considerations.

Figure 45: Stair with no landing and leading to an open drainage at ECA Park (Left) and open manhole on the travel path at Beheretsige Park (Right). (Source - Author)

Figure 46: Tree planted on path of travel at Beheretsige Park. (Source - Author)

Figure 47: Open manhole on the travel path at Yeka Park (Left) and open drainage on the travel path at Beheretsige Park (Right). (Source - Author)

Figure 48: Elevated Path ways with no Protective rail or curb at Peacock Park (Left) and Ethio Cuba Park (Right). (Source - Author)

Figure 49: Elevated Path ways from adjacent landscape with no Protective rail or curb at ECA Park (Left) and ramp with no landing and protective handrail at Ethio Cuba Park (Right). (Source - Author)

10. Plant materials

The accessibility compliance of plant materials in the surveyed parks are measured by the accessibility parameters that are shown in Appendix B section 10 of this research paper and analyzed as followed.

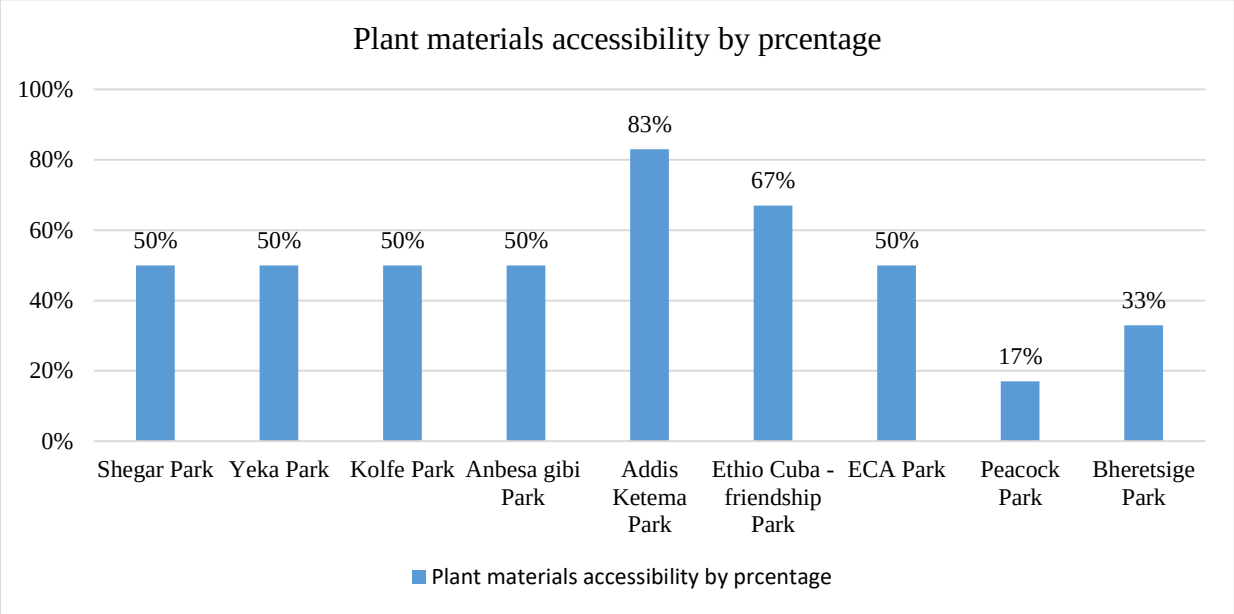


Figure 50: Plant materials accessibility considerations by percentage

There is a variety of plant specious in all of the observed parks. Different Tree specious dominate in the parks but shrubs and flowering plants are also observed in the parks. Except in ECA Park, plantings, especially tree specious are fully grown in all of the parks. Since ECA Park is new and recently constructed, trees and other plant specious are not fully grown yet.

It is observed plant materials in Ethio Cuba –friendship and Beheretsige parks are with a variety of colors. However, in the other surveyed parks, the color of most plant material is predominantly green.

Planting beds adjacent to pathways in Yeka, Kolfe, Addis Ketema, ECA, and Ethio Cuba – friendship parks, have defined separation edge with a minimum 100mm height. However, in Sheger, Anbesa Gebi, and peacock parks, it is only provided in some areas. Whereas in Beheretsige park a defined edge is not provided at all.

Raised planting beds are observed in Anbesa Gebi, Peacock, and Addis Ketema parks. Except for a raised planting beds observed in Addis Ketema Park, the raised planting bed in the two parks exceeds 460mm height.

In Beheretsige and Peacock Park, plants with thorns, such as “Dovyalis abyssinica” are planted adjacent to pathways. In some of the other parks, the plants are observed but they are planted away from active areas. In Peacock Park over hanged brunches of trees over a pathway are also observed.

Figure 51: Raised planter at Addis Ketema Park (Left) and at Peacock Park (Right). (Source - Author)

Figure 52: Plant with variety of color (Left) and plants with thorns planted adjacent to pathways (Right) at Beheretsige Park. (Source - Author)

Figure 53: Fully grown Trees at BehereTsige Park (Left) and trees not fully grown (Left) at ECA Park. (Source - Author)

11. Parking

A parking space is provided in all of the parks except in Yeka and ECA parks. However, none of the parking spaces has complied with any of the required accessibility parameters that are shown in Appendix B section 11 of this research paper.

- **Summary of data obtained from field survey**

The average accessibility compliance of available park facilities and infrastructures in each recreational park under survey is summarized in the Fieger below. Where Ethio Cuba is the most with 51 % accessibility compliance, Peacock Park is the list with 23% accessibility compliance.

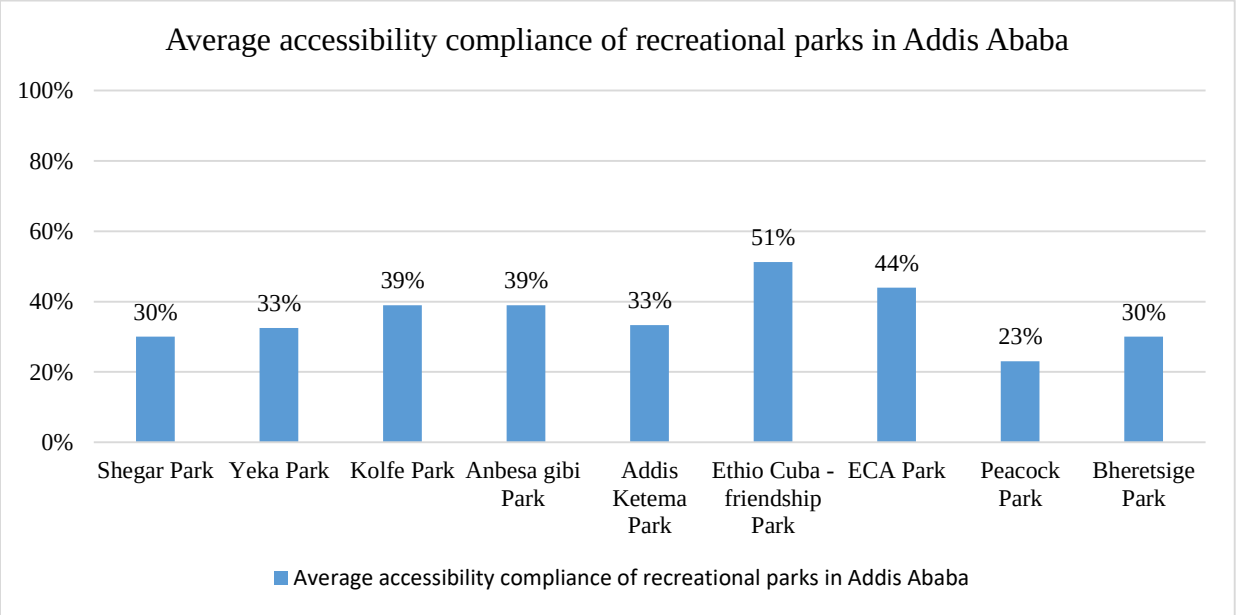


Figure 54: Average accessibility compliance of recreational parks in Addis Ababa

5.3. Presentation of data analysis obtained from interview

The researcher conducts a semi-structured interview with Addis Ababa Plan Commission (APC) and Addis Ababa city government river basin and green area development and administration Agency (AACGRBGDAA). The two offices have different mandates and level of influence over Addis Ababa's green area development. APO prepares the master plans for the green areas coupled with providing standards and guidelines to lead the development. AACGRBGDAA is responsible for developing and managing the green areas including the recreational parks found in Addis Ababa.

The primary aim of the interview is to explore the causes that can affect the level of accessibility of the recreational parks for people with disabilities in relation to the implementation of accessibility standards, development of the parks and the maintenance process.

The first interview was conducted with the representative from the APC. The interview question was generally about the provision of policies, standards, and design guidelines for recreational parks concerning People with disabilities and if and how they control the implementation of the standards and guidelines (See Appendix D for the interview guide). The response of the representative from APC is presented accordingly.

Even if there is no policy that specifically refers people with disability to be enabled to access green areas or specifically to recreational parks, by recognizing the policy that is put for every person to live in a clean and healthy environment, the representative from the APC said there is a park design guideline manual that urges park developers to provide access for people with disabilities in the design and development process.

When asked about the implementation follow up on the guidelines when parks are developed or modified, the representative admitted their office does not usually follow the implementation of the guidelines regarding people with disabilities. Even though following up the implementation of the guidelines is the responsibility of the APC, all the other problems associated with the other different planning, such as roads, housings, commences, social services, and other infrastructures, of the city has kept them busy. Besides preparing the guideline the office has done nothing to enforce it.

Nevertheless, the representative explained that they never stopped reminding the responsible developers to provide access to disabled people in every opportunity they got, during institutional meetings, stockholders meetings, and when invited to review a park design.

> *"Though it is the authority of the office to enforce the written guidelines, practically it lacks the proper emphasis and enforcement of these guidelines to make the parks inclusive of the impaired people other than mentioning it on meetings & reviews there is no farther action taken on the ground level."*
>
> *"Moreover, the guidelines are constantly bridged, due to the short handedness on professionals in the enforcing authority to follow-up implementation."*

The other interview was conducted with the management staff of AACGRBGDAA. Seven management representatives of AACGRBGDAA in seven sub-cities and management representatives from the central office of AACGRBGDAA were interviewed mainly on the development and maintenance of the recreational parks that are surveyed in this study.

The first question raised for the management representatives was if there is any accessible infrastructure provision for people with disabilities (mobility and visually impaired people) in the existing recreational parks. And except management representatives from Yeka and Ethio – Cuba parks, management representatives of Sheger, Addis Ketema, ECA, and Behere Tsige parks said there is no accessible provision in the parks for both mobility and visually impaired people. Management Representatives from Yeka Park replied that it's hard to fully say there is an accessible infrastructure provision in the

park but explained that a ramp is provided at the entrance of the park for wheelchair users. Management representative from Ethio Cuba Park said all the circulation pathways are accessed with a ramp in consideration of wheelchair users and the management representative of Kolfe Park replied even if there is no provision of accessible infrastructure in the park since the park pathways are flat mobility-impaired people can access the park.

As of the other management representatives who said there is no accessible infrastructure provision for people with disabilities, when asked why there is no accessible provision, most of the representatives associate it with the original design of the parks.

All representative from Sheger, Yeka, and Behere Tsige parks has explained that the original design of the parks does not include accessible provisions for people with disabilities in the first place and because the parks are very old and damaged, they said it aggravated the problem.

Management representative from Addis Ketema Park also associated the lack of provision of accessible infrastructure for PWDs in the park with the original design and further explains that the park was not initially a public facility but was a privet owned residence and after it becomes a park no modification has done to enable people with disabilities to access the park.

As it is a semi-structured interview, the researcher asked the management representatives if they have the information on why the original design doesn't include an arrangement for people with disabilities or if it is possible to find the original design of the parks for the researcher to analyze if it was incorporated accessible provisions for PWDs. But, none of the representatives have the idea why the original design does not include accessible provisions for PWDs. And concerning the original design document, management representative from AACGRBGDAA central office replied except design document for ECA park, the original design for the rest of the parks are no were to be found.

The other question asked is, if the parks have undergone a design modification or a maintenance ever since they start giving service and if they have a formal regular maintenance schedule, maintenance checklist and a repair manual.

According to the management representatives from AACGRBGDAA central office, none of the parks have a formal regular maintenance schedule in place. Thus accordingly none of the parks have an audit checklist which acts as a guide during an inspection or a repair manual in place as a standard to be followed during maintenance. As per the management representative, even though all of the parks didn't have a scheduled maintenance procedure in place, Sheger, Yeka, Kolfe, Addis Ketema, Ethio Cuba friendship, and Behere Tsige parks have made unscheduled repairs from now and then. While Anbesa Gebi and Peacock Park are currently under modification, ECA Park is a new park that is just opened. Even though the parks have gone through different maintenances, the offices haven't kept any record of the performed repairs.

When asked how they performed the maintenance with no formal schedule, maintenance checklist and a repair manual, a representative from Yeka Park has explained the day to day maintenance work such as site cleaning and plant trimming is handled by haired maintenance works. But the significant maintenance works such as pathway, seating/resting shades, or indoor facility repairs are usually given to small scale enterprises. The representative further explains, due to budget limitation that they usually don't perform the significant maintenance work frequently. And added, for example, the maintenance performed recently last year was performed to create job opportunities for the small scale enterprises but not to standardize the parks for people with disabilities or to upkeep the quality of the park in general.

The last question the management representatives were asked is the challenges faced by AACGRBGDAA concerning accessibility provision issues to people with disabilities in the existing recreational parks. Management representatives from AACGRBGDAA central office replied, even if the office recognized that the existing parks need maintenance and improvement concerning access to PWDs, the office is challenged to facilitate the need due to budget-related issues**.** With a limited budget allocated for the operation of the existing parks, currently, most of the budget is allocated for the new parks that are planned to be developed in the city.

> *"Though maintenance is necessary, not just in relations with accessibility to disables, but the parks as a whole, authorities/government are focused on the new parks that are planned to be built for the future which is related to the scares budgetary allocations. Which is worsen the problems with making the parks accessible to people with disabilities."*
>
> *"To make the parks inclusive of impaired society, it requires a significant amount of funding and a whole design change, which the government does not have the budget for."*

The other challenge mentioned by the management representative is the lack of skilled professionals with the knowledge that can recognize access related issues with regard to PWDs.

The representative has trace back the last time the office performed a maintenance and explained further;

> *"There was a budget release for the park maintenance in the previous year but the maintenance itself shows a poor quality which in turn does not show the proficiency it needed. The parks were maintained by small scale enterprise which has no previous experience or the basic knowledge about constructing parks or maintain it, which ended up with poor execution and budgetary loss to the government."*

As understood from interviewing the representatives of the managers, the reference to recognize people with disabilities is more or less the mobility-impaired people. Besides, in all courses of the interview,

most of the management representatives from the AACGRBGDAA said existing functional parks do not fulfill the standard for non-disabled people let alone for people with disabilities.

CHAPTER SIX

RESULTS AND DISCUSSION

6.1. Level of accessibility of the recreational parks with regard to PWDs

The accessibility compliance of the 9 parks in Addis Ababa were assessed based on the different park accessibility and design guidelines and the result shows 30% for Sheger, 33% for Yeka and Addis Ketema, 39% for Kolfe and Anbesa Gebi, 51% for Ethio – Cuba friendship memorial park, 44% for ECA, 23% for peacock, and 30% for Biheretdige park fulfill the criteria. As this percentage gives a picture of the level of the park's accessibility as described by (Bright and Sawyer 2007), this is not the case in these parks under survey.

For example; the accessibility compliance of entrance space in the 9 parks were evaluated by the required accessibility standards, and the result shows that Yeka, Kolfe, Ethio – Cuba friendship, Peacock, and Bihere Tsige parks meet 60%, Addis Ketema and ECA 40 %, Sheger 50% and Anbessa Gibi 80% of the standards. However, a mobility-impaired person who uses wheelchairs cannot access Sheger Park at all just because the ground Outside is not the same level as the ground inside the park. While in Yeka and ECA parks, because there is a level difference in the outside and inside park ground, alternative ramp access is provided for wheelchair users but when the ramps are evaluated by the required accessibility standards they have only complied with 25% and 38% of the standard respectively. Therefore even though there is access but it's of poor quality (See section 3 of Annex E). Similarly, even though a ramp is provided for wheelchair users at the entrance of Ethio - Cuba Park, it is observed the gate leading to the ramp is permanently closed at all times so mobility-impaired individuals cannot access the ramp due to the closed gates.

Besides, all the entrance in the 9 parks including entrance at Anbessa Gibi Park which has 80% accessibility compliance, has no tactile markings or orientation guides provided for visually impaired individuals making it difficult for visually impaired individuals to access the parks independently.

As entrance spaces are the first components a person encountered to access any place including parks, it's a no brainer that the limited access to the entrance means limited access to the entire park and its facilities and components in general.

Pathways in all the 9 parks were assessed with the required pathways accessibility standard and it was found that Sheger park has complied with 33% of the requirement, Yeka and Addis Ketema 43%, Anbessa Gibi and ECA 57%, Peacock 29%, and Biheretsige has complied with 19% of the accessibility requirement. However, even with this percent of accessibility compliance, pathways in Sheger, Yeka, Addis Ketema, Peacock, and Bihere Tsige parks are connected with a stair but no alternative ramps are provided for those using wheelchairs to making it inaccessible for mobility-impaired individuals.

Even though available pathways in Ethio - Cuba friendship parks have better accessibility compliance next to pathways in Kolfe Park, the pathways are at an elevated level with no protection handrail and are not safe for visually impaired individuals. Though the width and gradient of ramps found in these pathways did consider wheelchair users, there is no proper landing to rest or change direction for these users. With no proper landing and no handrail on the top, the bottom and side of the ramps make it unsafe for wheelchair users.

When all the parks are evaluated by the safety consideration to be taken for people with disabilities, most of the safety issues are observed in the park's pathways. For example, in Yeka and Sheger parks open man-holes are observed on the main travel path, and in Addis Ketema, Anbessa Gibi and Ethio - Cuba Parks, trees are observed planted on the main travel path making it unsafe for visually impaired individuals.

Pathways in all the 9 parks including pathways at Kolfe park which has better accessibility compliance, has no tactile markings or orientation guides provided for visually impaired individuals making it difficult for those individuals to access the parks independently.

From the field survey it is understood available park facilities such as seating spaces, waste receptacles and playgrounds in the 9 parks has complied with some of the accessibility criteria (see section 5, 6 and 7 of Appendix B) however except park facilities (seating spaces and waste receptacles) in Ethio - Cuba friendship and ECA parks, available park facilities in the rest of the parks are not connected with main circulation pathways thus they cannot be reached by mobility or visually impaired individuals.

Few of the park facilities in Addis Ketema and Peacock parks are connected with main circulation pathways, but since they are observed placed in a raised platform, they cannot be reached by mobility-impaired users.

The seating facilities placed adjacent to circulation pathways in ECA Park don’t have a space provided for wheelchair users but has still complied with 67% of the standard. Just because space is not provided for wheelchair users, a mobility-impaired person cannot use the spaces. This problem is observed in all the parks except Ethio - Cuba friendship Park which complied with 83% of the requirements.

In all the 9 parks including Ethio Cuba Friendship and ECA Park with the highest seating and waste receptacles accessibility compliance, available pathways are not indicated with tactile markings or orientation guides provided for visually impaired individuals making it difficult for visually impaired individuals to access the facilities independently.

From the above paragraphs it can be understood that even though available park facilities in the 9 parks has complied with the standards at a certain percentage because most of them are not connected with the main circulation pathways with a properly constructed path they have low accessibility level for mobility-impaired people and the absence of guiding aid make it completely inaccessible for visually impaired individuals.

The parks with Available Parking spaces have not complied with any of the required standards that a parking space should consider for people with disabilities (See section 11 of Appendix B). The fact that there is no dedicated parking space reserved for wheelchair users makes the area inaccessible by mobility-impaired wheelchair users when the parking is full of cars.

As discussed above and as the observation shows, all park components and facilities; entrance, pathways, landscape facilities such as seating facilities, waste receptacles, and play equipment, parking spaces, and planting spaces are not indicated in any signage that is made in consideration of people with disabilities. As signage is important for orientation and way finding especially for visually impaired people all the parks have failed in complying with that (See section 8 of Appendix B).

In addition important point drawn from the observation is, all the parks under survey have complied with the accessibility standards required for mobility-impaired people to a certain degree, but they have not complied with any of the standards set for visually impaired people.

Thus, as mentioned in the start of the dissection, even if the accessibility percentages can give a picture of the level of the parks accessibility, it's rational to say all the parks have lower accessibility level for people with disabilities, especially those who are visually impaired.

6.2. Factors affecting the accessibility level of the recreational parks with regard to PWDs

As reviewed in the literature the universally acknowledged challenges of Stereotype views, lack of awareness and insufficient professional training to park managers, facility maintenance workers, and general design and policy-making professionals is an underlying problem in limiting access to public facilities in the physical environment (Simon, n.d.). These challenges have been observed in the surveyed recreational parks where park planners' and managers clearly describe their facilities are not serving the general public let alone people with disabilities.

This distinction between the general public and people with disabilities as seen by the park management staff indicates the existing perception of categorization and bracketing of societal groups which goes against the idea of equal accesses to all regardless of physical conditions.

The lack of awareness about physical impairments which leads to gross generalization plans and implements physical environments that discriminate and marginalizes people with disability. Furthermore, the lack of clear guidelines on design, maintenance, and repair of such facilities leads to a further decline in such facilities from being accessible.

The existing guidelines that have been reviewed and compared with the international accessibility standards, showed drawbacks such as ambiguous definitions and contents that are more advisory than prescriptive towards the procedures and standards such public facilities should adhere to before becoming operational.

Considering design preparations for the recreational parks, it was understood that most of the designs are not available for review and nearly all designs that are implemented clearly indicate no consideration has been put for people with disabilities. Inadequate knowledge and training backgrounds for professionals who are supporting the parks contribute significantly to the observed challenge in affecting the level of accessibility.

A complete shift of attention of responsible authorities to the parks planned to be developed in the future has also lead to limited budget allocation for the operation of the existing functional parks, which intern affects the maintenance procedure which directly related to the low level of accessibility of the parks.

Concurrent to design and policy-making professionals the poor skill set of maintenance and construction works who undertake upgrade and repair works contribute to the factors limiting access by not following design instructions and executing work to the poorest qualities.

6.3. Improvement of the recreational parks for an increased accessibility

In the literature chapter of this paper, it is discussed the first of many steps that helps to improve the accessibility of the built environment is to audit the facility's compliance with disabled accessibility standards. The audit helps to understand potential barriers, points of good or bad access, and identify areas of needs that are not catered for.

Accordingly as presented in the analysis chapter and discussed in the previous section, the accessibility compliance inspection of the selected recreational parks in Addis Ababa showed a low level of compliance when measured by the accessibility standards and design requirements.

Though the points of bad access are much greater than that of the good accesses in all the surveyed parks, the inspection has also identified where accessibility is catered.

For the points where bad access is provided, the observation rivaled most of the problems is associated with the design and maintenance of the facilities. Those which are associated with design of the facilities for example are; seating facilities in peacock parks that are placed in a raised platform to be accessed with a stair with no provision of an alternative ramp, ramps in Ethio Cuba park with no landings, manholes and open drains on main travel path in Yeka and Beheretsige parks, stepped entrance space at Sheger park with no provision of an alternative ramp, and entrance, pathways and other park facilities with no provision of guiding signs for visually impaired access. And some of the problems which arise due to lack of maintenance include; faded signage in Beheretsige to the point where it is unreadable even for a sighted person, obstructed and damaged pathways in Yeka, Beheretsige, and Peacock parks, and entrance at Yeka and Ethio Cuba parks, where a grass is grown on accessible ramps

To remove these problems especially those associated with the design of the facilities, modifying them to comply with accessibility standards might seem enough but as suggested by (Jenene, 2012) in the literature chapter of this paper the maximum level of accessibility can be achieved when the principles

of inclusive and universal design concepts are applied. Even if these practices are best when they are applied in the initial design of the space, they also can be applied during modification and design repairs.

Accordingly, a sensory landscape concept can be applied as an equivalent practice with inclusive and universal design concepts. Because in the literature it is described a sensory landscape is a landscape design concept that considers accessibility for disabled people as a basic principle when designing or modifying landscapes to be accessible by all including people with disabilities. Not only these design principles allow spaces to be simply accessible but it provides different sensory opportunities that the disabled people may not normally experience.

From the field observation, it has revealed the accessibility level of the surveyed parks is very low especially for visually impaired people primarily due to the absence of guiding and tactile information that helps for their independent navigation. Even if the provision of guiding strips in/on travel routes is a mandatory requirement to reach the minimum accessibility level, the accessibility can be increased by implementing some of the sensory landscape design concepts (see Appendix B). This practice especially increases the accessibility level of plant materials in the parks because the dominant feature of all of the surveyed parks is the plant materials. As seen in the field observation most plant materials in all the parks are provided for their shading. However, if sensory landscape design concepts are implemented the accessibility level of the plant materials by the people with disability can be increased. Besides shading, the plant materials can be accessed with touch, smell, hearing, and test by both mobility and visually impaired people.

A similar concept can be used to increase the accessibility of the pathways, seating facilities, playgrounds, parking spaces, etc.

In addition to accessibility improvement through design modification, continuous maintenance is another important aspect identified from the literature review. In the field observation, it is understood some of the park facilities have a low level of accessibility due to lack of maintenance. For example, the ramp at the entrance of Ethio - Cuba Park was observed grown grass and the gate leading to the ramp is permanently closed because they are broken. Due to these reasons, mobility-impaired individuals cannot enter the park even to use accessible provisions. But with simple maintenance, a mobility-impaired wheelchair user can be enabled to access the park.

Besides this, as reviewed in the literature accessibility of park facilities to disables, not only can be ensured during design, when there's an addition, renovation, or repair but also by maintaining them so that they continue to be accessible. This concept should be stressed because in the field survey in the 9 parks in Addis Ababa, even though the points of bad access are much greater than that of the good accesses, the inspection has identified spaces where accessibility is catered. Not maintaining those to continue their level of accessibility has a danger of lowering the accessibility level form level they stay

now. Thus even after the accessibility improvement, continuous maintenance is as essential as the modification and repairs of the inaccessible features to increase the level of accessibility.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATION

In this chapter findings from the data analysis and discussion are concluded and possible recommendations are made.

7.1. Conclusion

One of the public facilities where access should not be restricted and highly contribute to better the health and social interaction of any person in the built environment are public recreational parks. Considering this and the right of people with disabilities to accesses any public spaces as equal as others, the main aim of this study is to assess the accessibility extent of recreational parks in Addis Ababa for people with mobility and visual impairment.

In the assessment process first accessibility Level of recreational parks in Addis Ababa for people with mobility and visual impairment is assessed. When evaluated against international standards for disabled accessibility, the accessibility level of the recreational parks for mobility and visually impaired people is found below average. The low level of accessibility of the parks goes beyond where neither mobility nor visually impaired people are spotted using one of the parks on the evaluation process.

Even though further research is needed past the spatial scope of this study, the physical barriers directly associated with the low level of accessibility have a clear contribution in limiting the motivation of people with disabilities to enjoy the spaces even before coming to the park. For example, the entrances of the assessed parks have no orientation guides provided for the self-navigation of visually impaired individuals and are also not accessed by mobility-impaired individuals due to the obstructed and narrow gateways. As the first component a person encounters to access space, it's a no-brainer that the limited access to the entrance means limited access to the entire park and its facilities and components in general.

Besides that, narrow, obstructed, uneven, and slippery circulation pathways, Steps without an adjacent ramp, lack of curb ramps in grade changes, absence of textural marking on stairs and grade change, Open-man hole and unclipped tree branches on the path of travel, poor placement of seating facilities and play equipment, and absence of orientation and information guides or signage throughout the parks play a significant role for the low level of accessibility.

In the second process of the accessibility assessment of the recreational parks, besides the physical barriers, other factors that affect the accessibility level of the recreational parks are also identified.

Although not found for documentation and further study, lack of accessibility consideration for the people with the impairment on the original design of the parks is one factor that lowed the accessibility level of the recreational parks. Narrow entrance gateways, steps with no adjacent ramp, seating benches placed in a raised platform, and circulation pathways with no tactile markings are all physical barriers that relate to a design that didn't consider the need of people with disabilities.

Inadequacy of recreational park accessibility standards and design manuals regarding people with disabilities, the failed implementation of the accessibility standards set out in the manual due to lack of follow up, and the absence of regular maintenance and professionally skilled officials to follow-up the maintenance paved the way for the low level of accessibility.

Furthermore, inadequate knowledge and training background of design and policy-making professionals, the poor skill set of maintenance, and construction works are other factors that affect the accessibility level of the recreational parks.

Despite the fact, to increase the accessibility level of the recreational parks for people with mobility and visual impairment, much work is not done under the current park management system.

The low accessibility level of the recreational parks is recognized by the responsible authorities, but due to the poor skill set of maintenance workers who undertake improvement and the limited budget allocation for the operation of the recreational parks makes the improvement attempt to be executed to the poorest quality. And it’s clear no matter how the accessibility is, it will fail throughout its life span if responsible authorities do not allocate budgets for maintenance.

In summary, this paper concludes the recreational parks studied have a very low accessibility extent for mobility-impaired people and remarkably low accessibility for visually impaired people. It also concludes by recognizing the need for improvement from simple maintenance to the extent of modifying and redesigning the inaccessible features of all the parks' components and infrastructures.

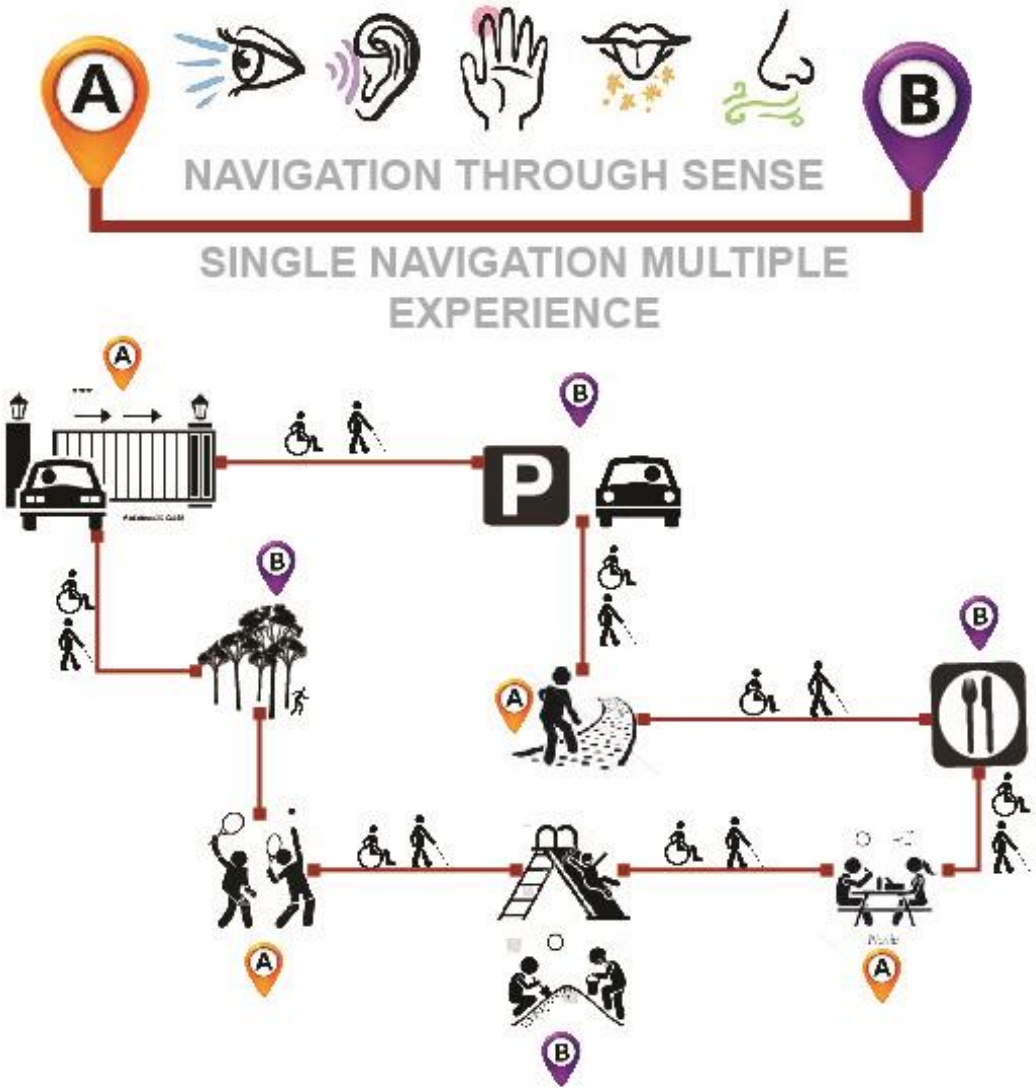
7.2. Recommendation

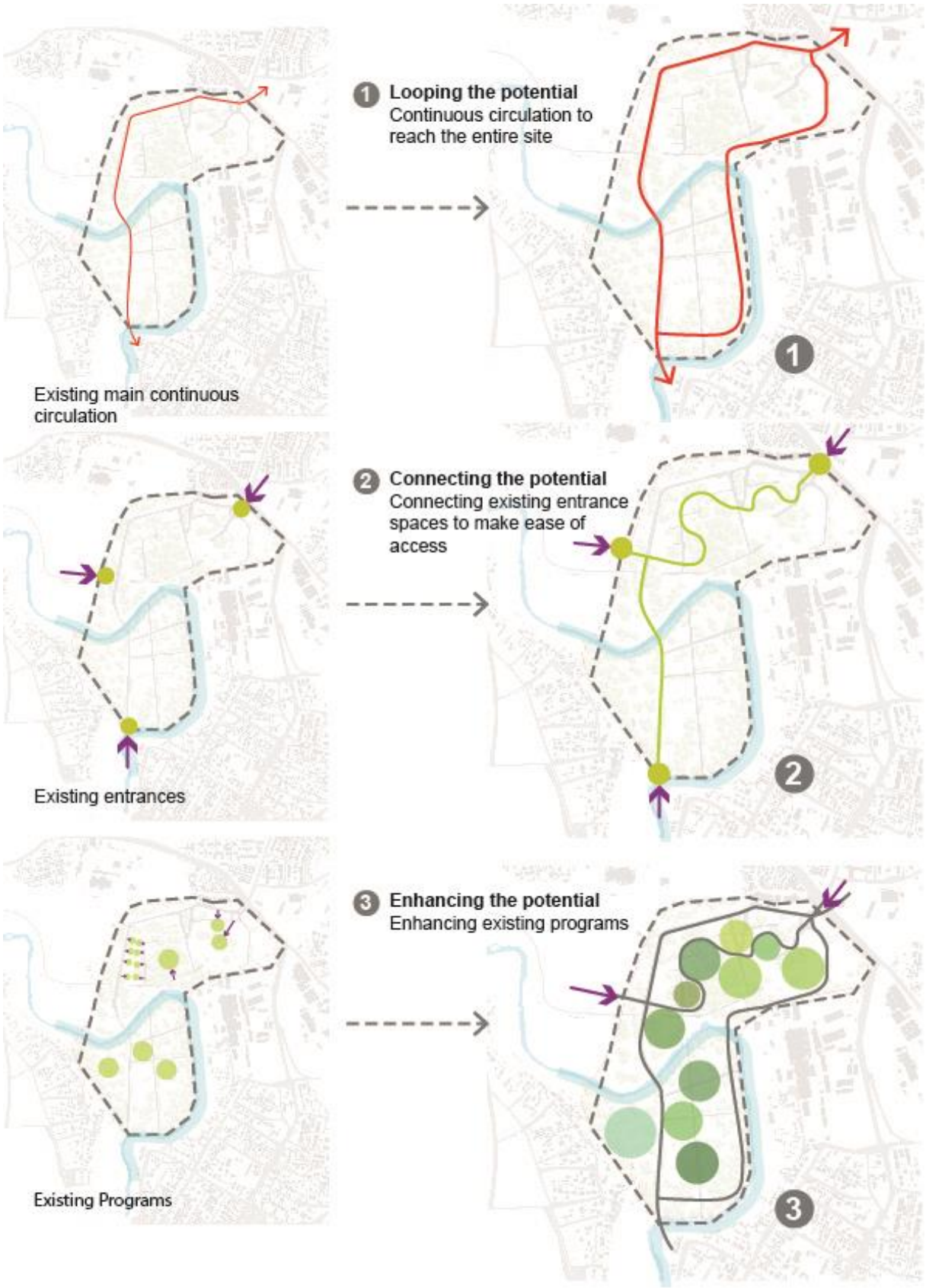
Based on the findings and conclusions made above, the researcher forwarded improvement recommendation that can increase the accessibility level of the recreational parks in Addis Ababa for people with disabilities.

- Addis Ababa's plan commission could take up a stronger leadership role by formulating plain Policies, principles, and procedures that can ensure the inclusion of people with disabilities and should monitor closely to the provision of adequate access in the development of new parks and when upgrading the existing ones.
- As the standards and design guidelines concerning access to PWDs in the existing recreational park design and management manuals are found to be ambiguous and inadequate for implementation, further study is recommended on the adaption of clear and concise accessibility standards that are adequate for implementation. It is also recommended for the manuals to be bounded with state laws, so the implementation of the standards to be mandatory.
- As recreational park developers and operators play the leading role in the inclusion of people with disabilities, awareness-raising and professional training concerning access requirements of people with disabilities need to be given to the recreational parks' planners, designers, managers, and maintenance staff.
- Available infrastructures, components, and facilities in the recreational parks; entrance gateways, pathways, stairs and ramps, seating facilities, waste receptacles, signage, parking spaces, and plant materials and other facilities need to fulfill the needs of people with disabilities both mobility and visually impaired people.
- As fulfilling the needs of people with disabilities should never be disregarded, to bring the maximum level of accessibility, using the concept of inclusive and universal design principles is recommended when modifying or maintaining the recreational parks.
- The park management authorities (AACGRBGDAA) should recognize the importance of maintenance in making the parks accessible by PWDs and in keeping the accessible points of the parks as is.
- The park management authorities should have a maintenance schedule and a maintenance inspection (audit) checklist to determine the accessibility status of the recreational parks and the intensity of the repair required.
- When designing a new park or modifying an existing one maintenance manual should be prepared.

7.3. Design proposal

As can be understood from the finding of this research all the parks under survey has a low accessibility compliance where Ethio - cuba park is the heights with 51% accessibility compliance and peacock park has the lowest with 23% accessibility compliance. As one of the specific objectives, accessibility improvement recommendation is given in the previous chapter. To show the implementation of the recommended accessibility improvement BehereTsige Park is selected as a demonstration site. This park is selected because it is one of the parks with the lowest accessibility compliance. Even though Peacock Park is the list accessible when measured with accessibility standards, at the time of the study the city government is changing the function of the park from public recreational park to Special Park (zoological park). Thus, to be used as a future reference in case of improvement implementation in regard to public recreational parks, BehereTsige Park with the second lowest accessibility compliance is selected as a demonstration site.




Existing main continuous circulation
1 Looping the potential
Continuous circulation to reach the entire site
1
Existing entrances
2 Connecting the potential
Connecting existing entrance spaces to make ease of access
2
Existing Programs
3 Enhancing the potential
Enhancing existing programs
3

PROGRAM

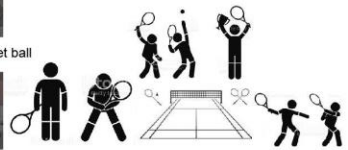
Two Security houses

Circulation/ (Vehicular road, Pathways, walking tail

Basic amenities/ (Drinking water, toilet, seating area, shaded structures, cafeteria and first aid facilities)

Parking space/ Car Parking

Sport Activities/ Tennis/ Basket ball



Sensory Garden

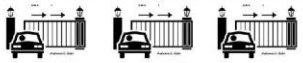
Aromatic garden/cafteria Sound garden Flower garden

Parking space/ (for vehicular and bicyle)

Social space/ plaza and children play ground

Ceremonial and events spaces / Wedding/graduation/special meeting

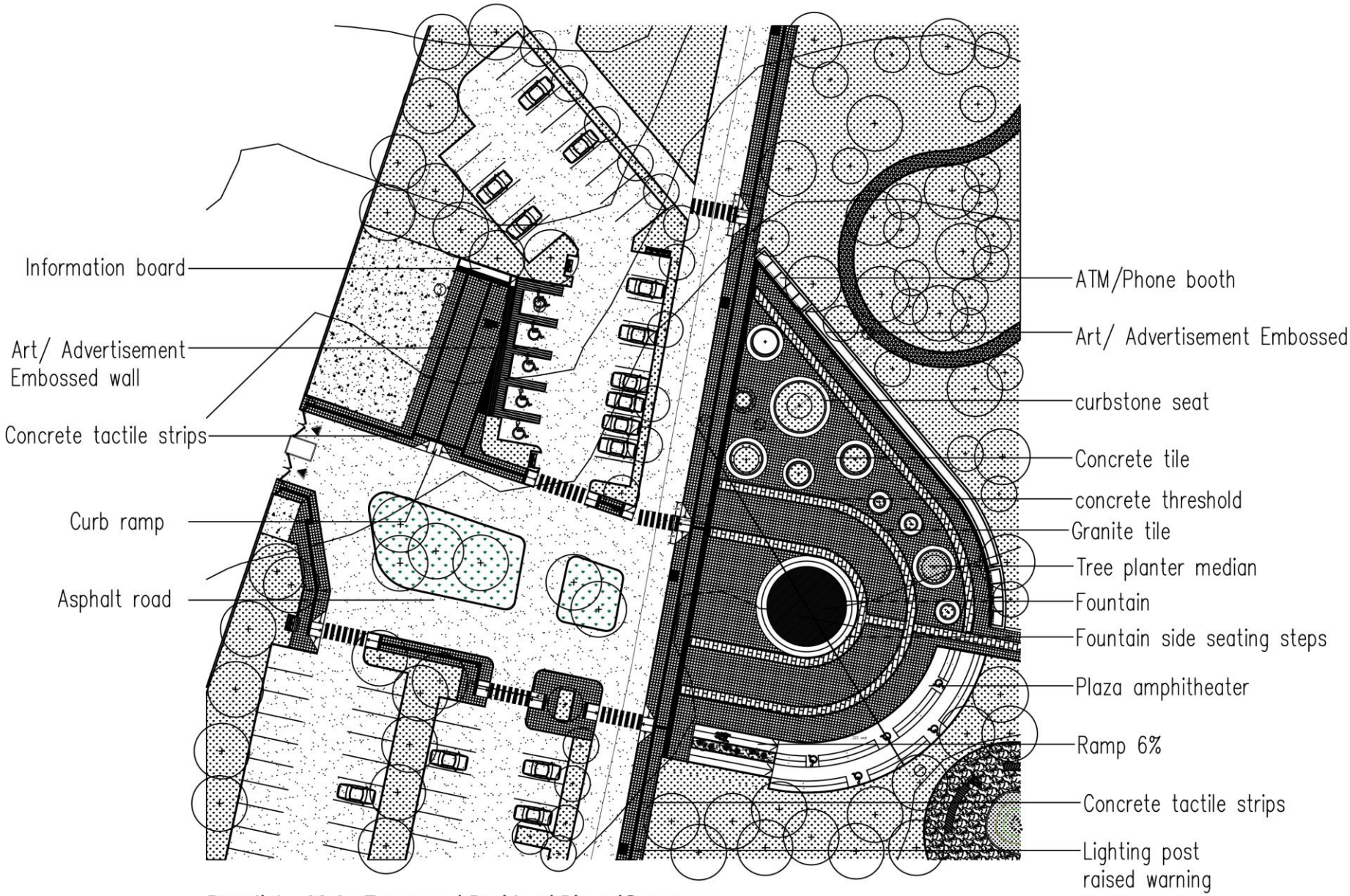
Three Gates



Fountains

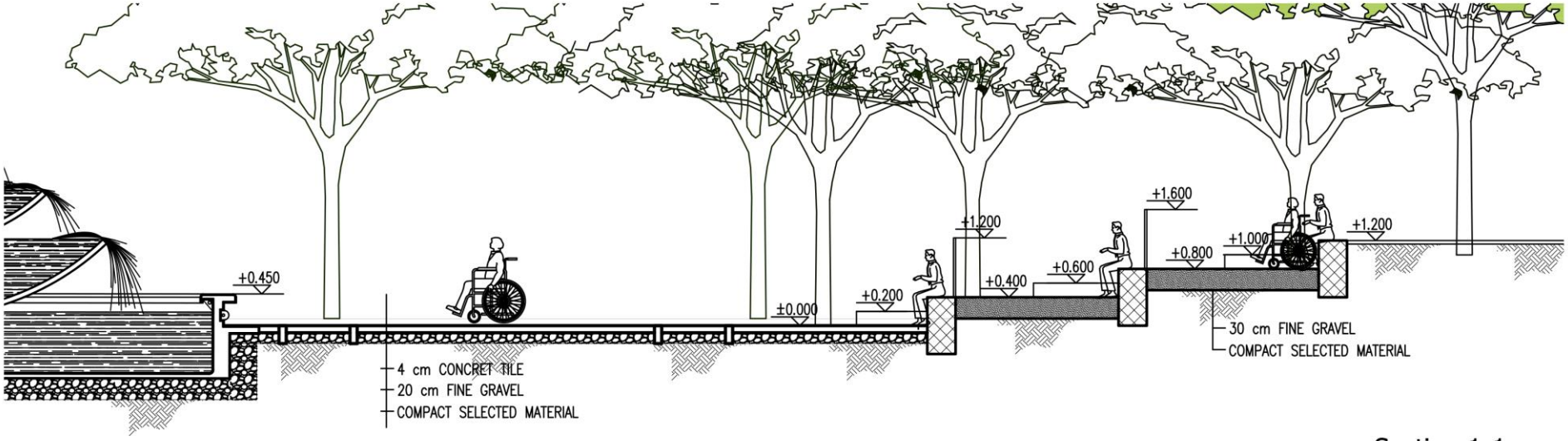
“Forest walk”


Multifunctional plaza
Aromatic garden/ Cafeteria
Entrance plaza 1
Seating space
Vehicular Asphalt road
Sport field
Seating plaza
Entrance plaza2
Secondary pathway
Main Entrance 2
2200
Flower garden
Playground
Parking
2210
Walking trail
Sound garden
Ceremonial space

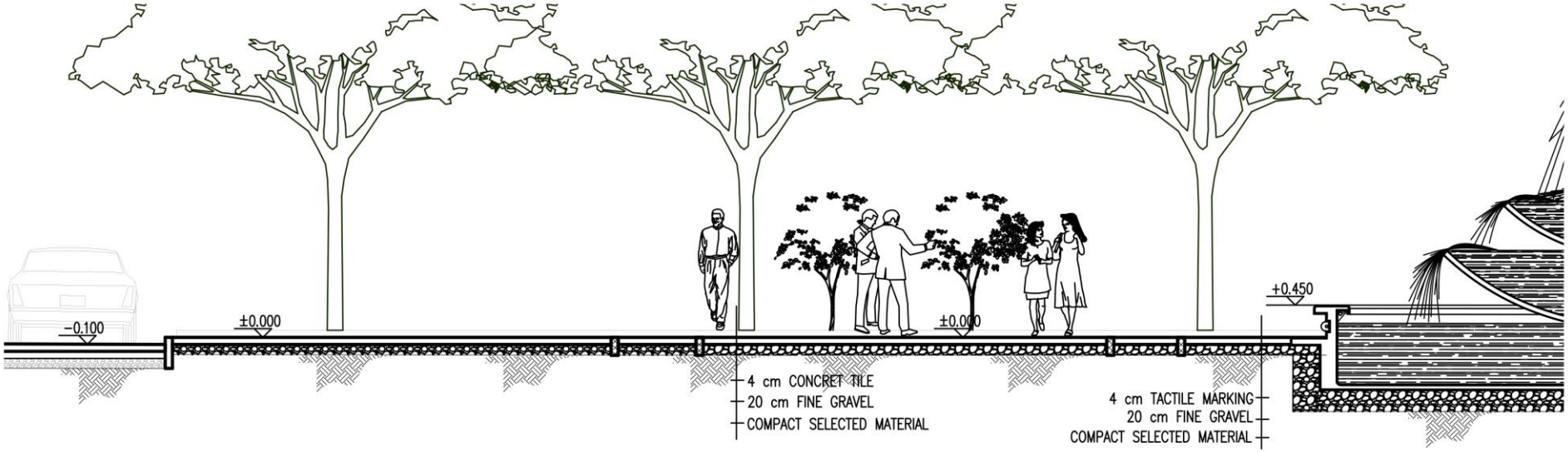


Detail 1 - Main Entrance/ Parking/ Plaza/Gateway

Sc 1: 500



Section 1-1
Sc 1: 75



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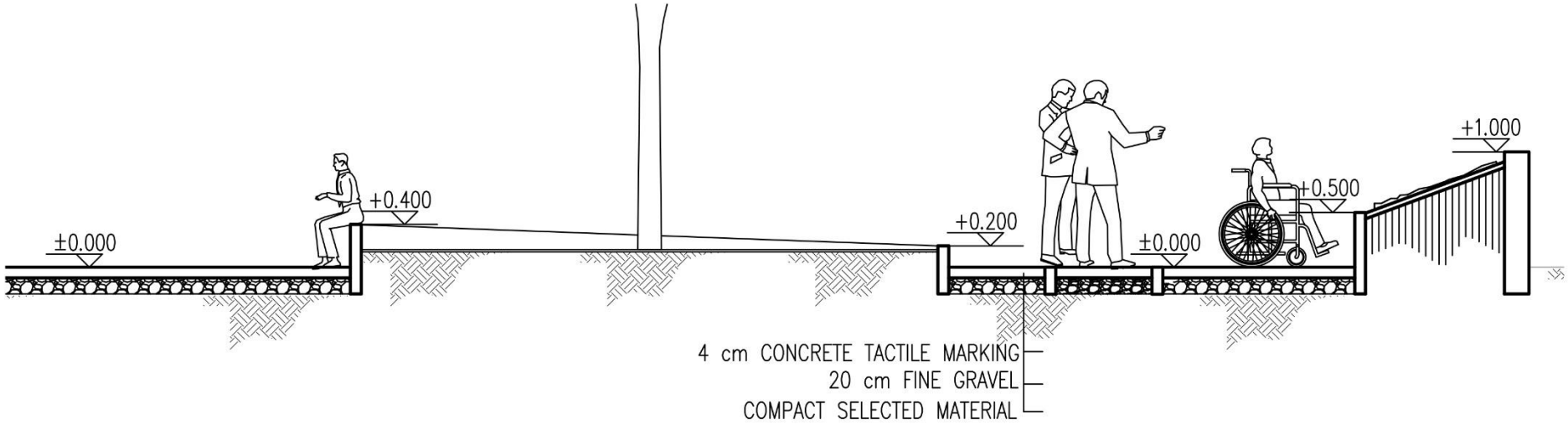
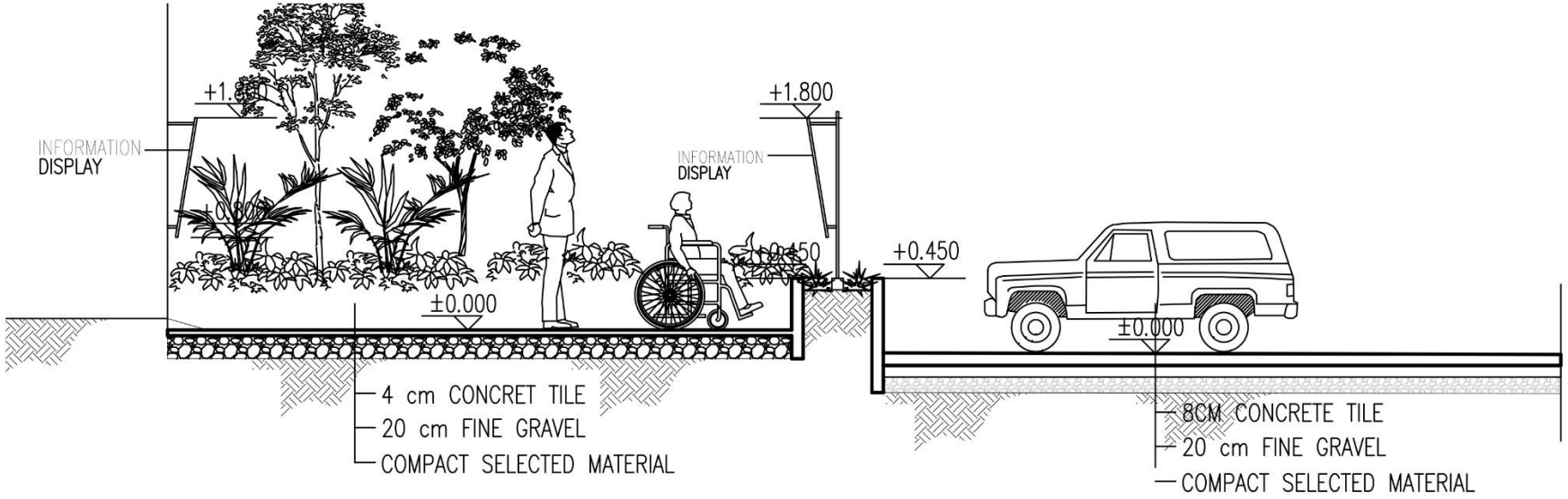
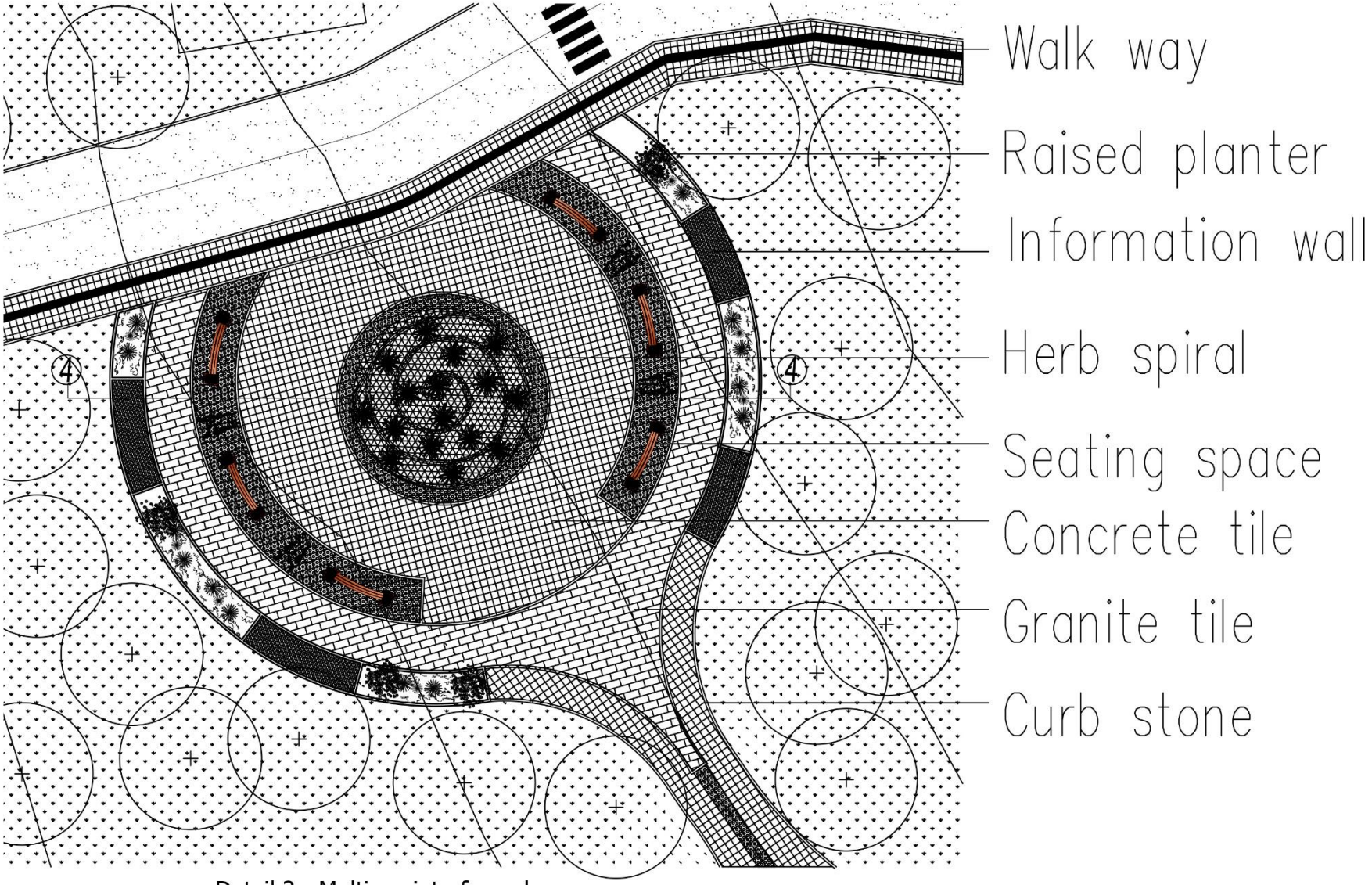


Section 2-2
Sc 1: 50

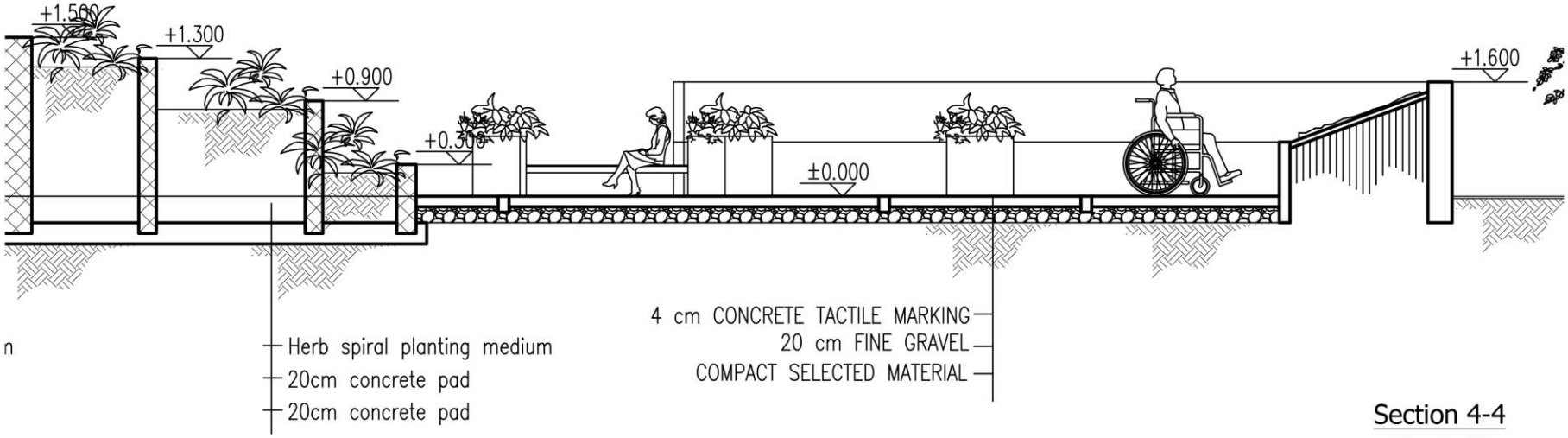


Section 3-3
Sc 1: 50

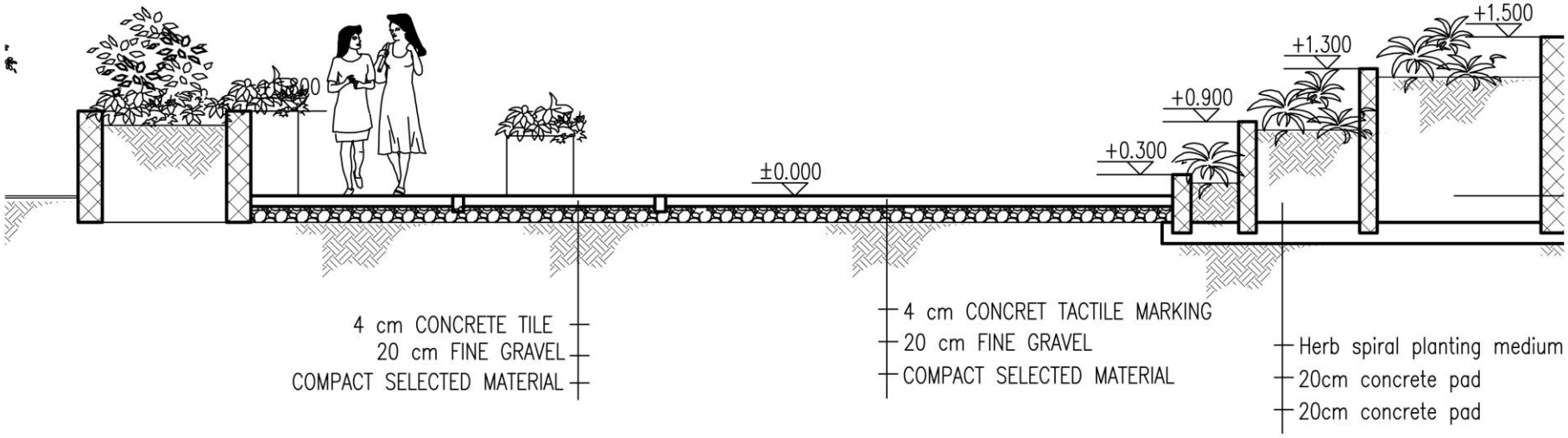


Detail 2 - Multiuse interface plaza

Sc 1: 200



Section 4-4
Sc 1: 50



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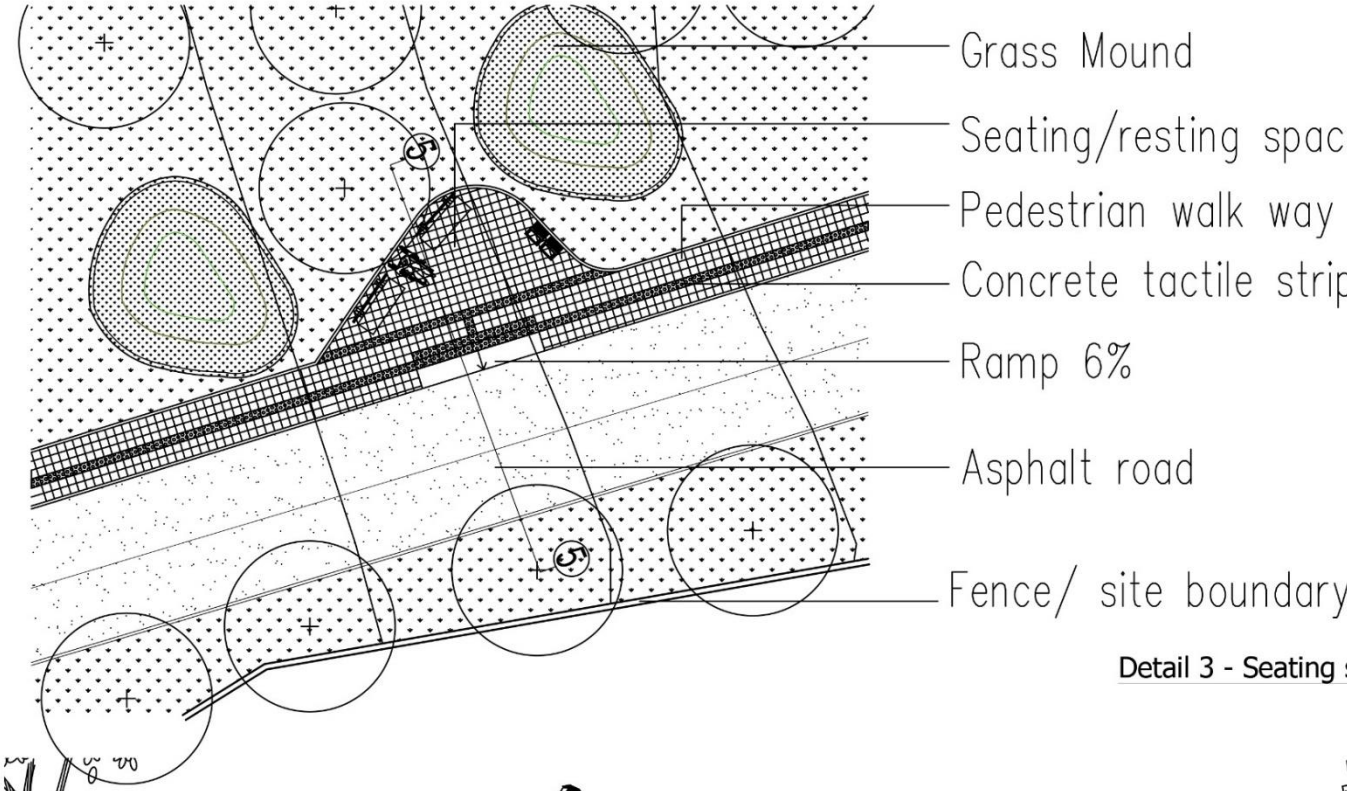
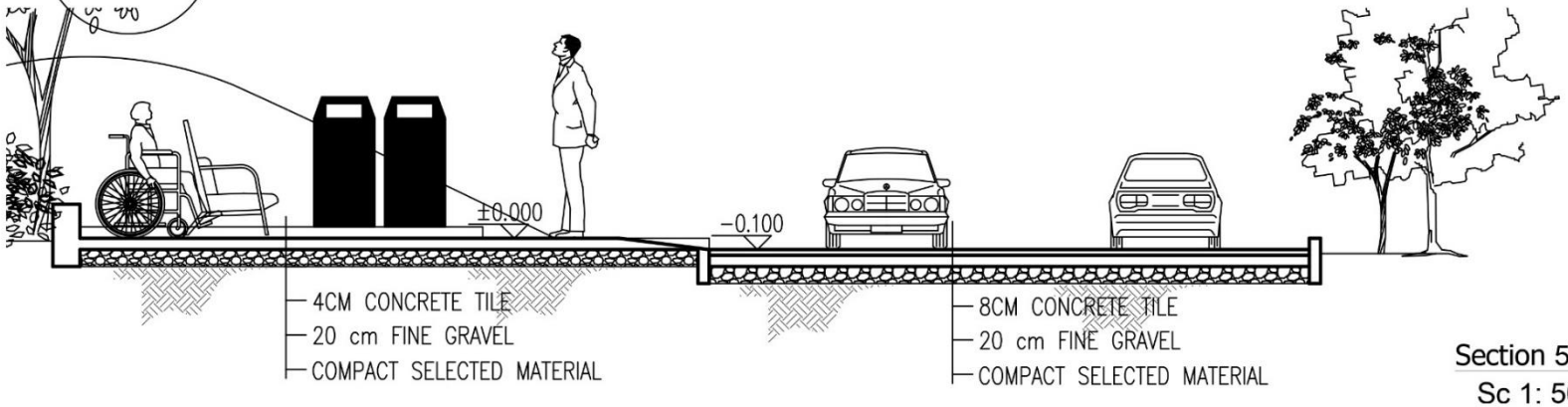
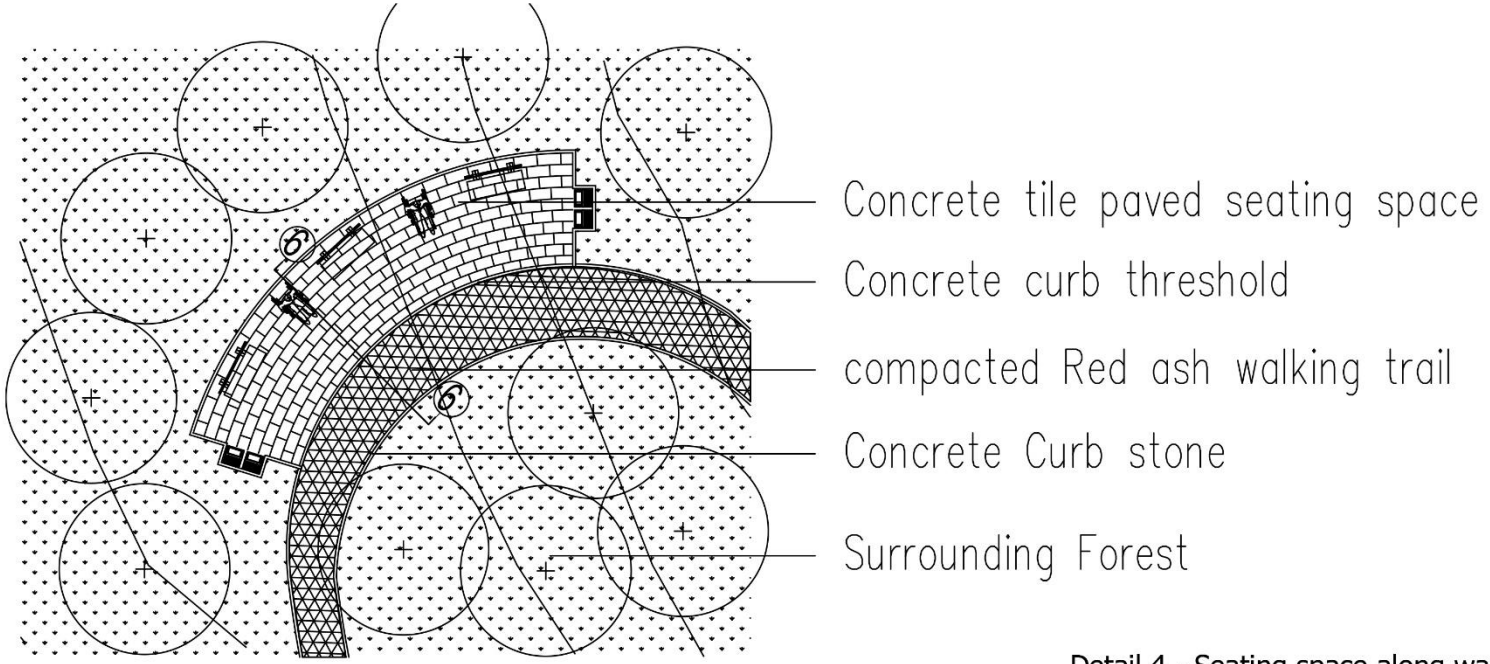


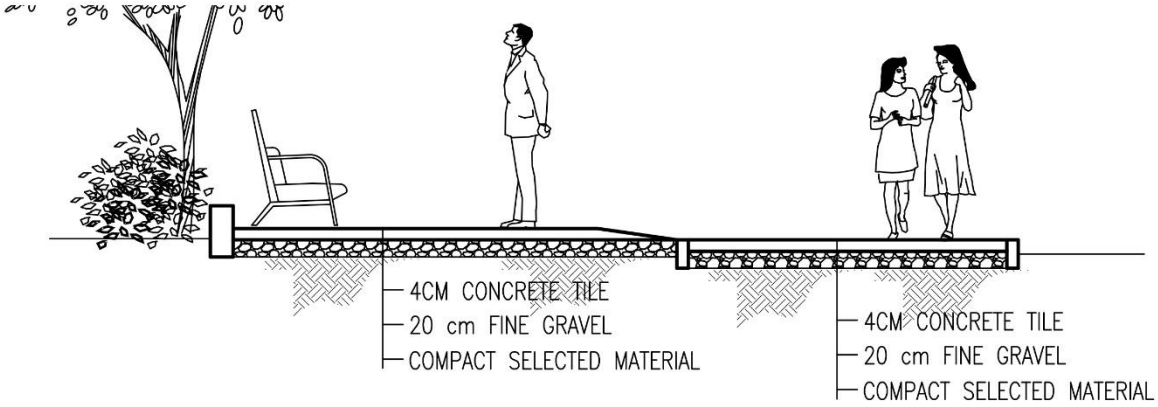
Detail 3 - Seating space along main road
Sc 1: 200



Section 5-5
Sc 1: 50



Detail 4 - Seating space along walking trail
Sc 1: 200



Section 6-6
Sc 1: 50

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Appendix

Appendix A - Description of study sites

Appendix B -Selected parks accessibility compliance evaluation checklist

Appendix C -Survey Questionnaire to people with disability

Appendix D - Interview Questions for park management staff's

Appendix A – Description of study sites

Sheger park **(Scale 1:8000)**

Location – Gulele subcity, Woreda 08

Category – Sub City Park

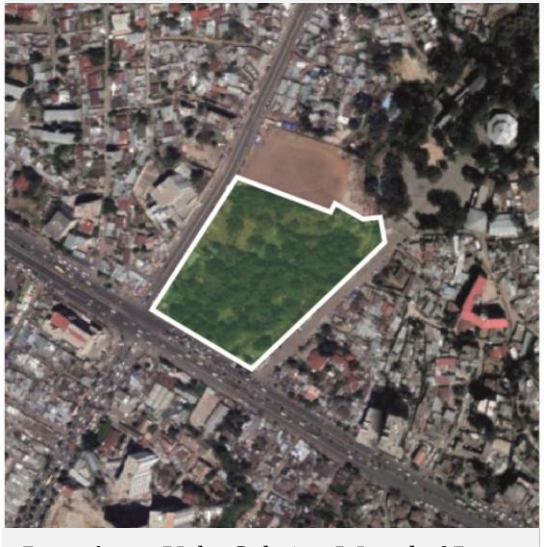
Give service since - 1980

Total area – 70,000m2

Population Size - 50,000-80,000

Main facilities and components – Main Entrance Ticket office, children playground, administrative offices, Toilet, wedding photograph space, sport field, indoor game space,car parking pathways, individual and group seating spaces, ceremonial spaces and plantings.

Yeka park **(Scale 1:8000)**



Location – Yeka Subcity, Woreda 05

Category – Sub City Park

Give service since - 1976

Total area – 22,081m2

Population Size - 50,000-80,000

Main facilities and components – Main Entrance Ticket office, administrative offices, Toilet, play equipment, pathways, individual and group seating spaces, ceremonial spaces and plantings.

Kolfe park **(Scale 1:8000)**

Location – Kolfe Keranio subcity, Woreda11

Category – Woreda Park

Give service since - 1991

Total area – 7,479m2

Population Size - 10,000-15,000

Main facilities and components – Main Entrance Ticket office, administrative offices, Toilet, pathways, car parking, individual and group seating spaces, ceremonial spaces and plantings.

ECA park **(Scale 1:8000)**

Location – Kirkos subcity, Woreda 01

Category – Sub City Park

Give service since - 2011

Total area – 52,419 m2

Population Size - 50,000-80,000

Main facilities and components – Main Entrance, Building blocks (not giving service yet), site viewing roof, sport field, cascading water path, pathways, seating spaces mounds, artificial tunnel, and plantings.

Peacock park **(Scale 1:8000)**

Location – Bole subcity, Woreda 04

Category – City Park

Give service since - 1976

Total area – 364,014 m2

Population Size - up to 300,000

Main facilities and components – Main Entrance Ticket office, children playground, administrative offices, Toilet, car parking pathways, individual and group seating spaces, ceremonial spaces and plantings.

Beheretsige park **(Scale 1:8000)**

Location – Nifassilk Lafto subcity, Woreda 10

Category – City Park

Give service since - 1957

Total area – 142,796 m2

Population Size - up to 300,000

Main facilities and components – Main Entrance Ticket office, Animal zoo, children playground, kiosk, ceremonial and photograph space, administrative offices, rental halls, sport field Toilet, car parking pathways, open air and sheltered seating spaces and plantings.

Anbes Gebi park (Scale 1:8000)

Location – Arada subcity, Woreda 06

Category – Sub City Park

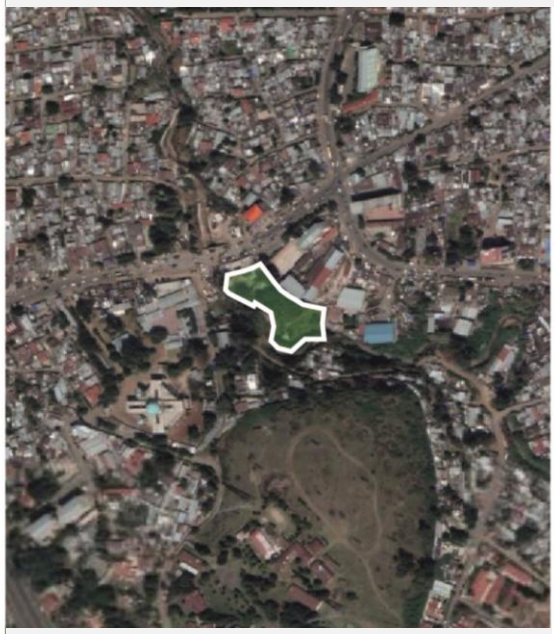
Give service since - 1938

Total area – 12,000 m2

Population to serve - 50,000-80,000

Main facilities and components–Main Entrance Ticket office, Animal zoo, cafeteria and restaurant, ice cream shop, administrative offices, Toilet, car parking pathways, seating spaces and plantings.

Addis Ketema park (Scale 1:8000)



Location – Addis Ketema subcity, Woreda 03

Category – Woreda Park

Give service since - 2003

Total area – 4,436 m2

Population to serve - 10,000-15,000

Main Facilities and components - main Entrance, Ticket office, administrative offices, car parking, pathways, seating spaces and plantings.

Ethio Cuba - friendship park (Scale 1:8000)

Location – Lideta subcity, Woreda 09

Category – Sub City Park

Give service since - 1976

Total area – 24,412 m2

Population to serve- 50,000-80,000

Main Facilities and components - Main entrance, Ticket office, Toilet, sculptures, cascading water fountain, car parking, pathways, seating spaces and plantings.

Appendix B– field survey accessibility compliance evaluation Checklist

	1. ENTRANCE	Shager Park		Yeka park	Kolfe park	Anbesa gebi park	Addis ketema park	Ethio cuba park	ECA park	Peocock park	Behere tsige park
		E1	E2								
1	Doorways and gateways have a minimum clear width of 900mm.	√	√	√	√	√	√	√	√	√	√
2	The ground Outside of the park is in the same level as the ground inside the park or there is a ramp provided to allow wheelchair users.	√	×	√	√	√	√	√	√	√	√
3	Either the entrance gate/door has no threshold or don't exceeding 50mm height.	√	√	√	×	√	×	√	×	√	√
4	The position of the entrance is well marked through proper accessibility signage using the international symbol of accessibility.	×	×	×	×	×	×	×	×	×	×
5	The entrance space surface is even continuous non-slippery and free of obstruction.	×	×	×	√	√	×	×	×	×	×

Table 6: Field survey accessibility compliance evaluation for entrances at the 9 recreational parks in Addis Ababa

Sheger Park – E1 – Entrance 1

E2 - Entrance 2

	2. Path Way	Shager Park			Yeka park		Kolfe park	Anbesa gebi park		Addis ketema park	Ethio cuba park			ECA park	Peocock park			Behere sige park		
		P1	P2	P3	P1	P2		P1	P2		P1	P2	P3		P1	P2	P3	P1	P2	P3
2.1	Width of Pathway are in the range of 0.90m – 1.80m.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2.2	Pathways are clear and obstruction free.	√	√	×	×	×	√	√		×	×	×	√	√	×	×	×	×	×	×
2.3	Slop and gradient of pathway does not exceed 5% slope.	×	√	√	×	√	√	√	√	√	√	√	√	√	√	×	√	√	×	×
2.4	Surface texture of pathways are smooth, continuous, non-slip and even.	×	×	×	×	√	√	√	√	×	√	√	√	√	×	×	×	×	×	×
2.5	There are Orientation guides in or on the circulation surface.	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
2.6	There are direction and information signage on and along pathways.	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
2.7	Carb stones that separate pathways to adjacent landscape features has a minimum of 0.15m height.	√	×	×	√	√	√	√	×	√	√	√	√	√	√	×	×	×	×	×

Table 7: Field survey accessibility compliance evaluation for Pathways at the 9 recreational parks in Addis Ababa

√ - comply with the guideline **× - don't comply with the guideline**

Sheger Park – P1 – pathway 1 (stone paved)
P2 - pathway 2 (cobble stone paved)
P3 - pathway 3 (Terrazzo tile paved)

Yeka Park – P1 – pathway 1 (stone paved)
P2 - pathway 2 (Terrazzo tile paved)

Anbesa Gebi Park – P1 – pathway 1 (stone paved)
P2 - pathway 2 (Terrazzo tile paved)

Ethio Cuba Park – P1 – pathway 1 (stone paved)
P2 - pathway 2 (Terrazzo tile paved)
P3 - pathway 3 (cobble stone paved)

Peacock Park – P1 – pathway 1 (Asphalt paved)
P2 - pathway 2 (stone paved)
P3 - pathway 3 (Concrete paved)

Peacock Park – P1 – pathway 1 (Asphalt paved)
P2 - pathway 2 (stone paved)
P3 - pathway 3 (Concrete paved)

	3. RAMPS	Shager Park	Yeka park	Kolfe park	Anbesa gebi park	Addis ketema park	Ethio cuba friendship park		ECA park	Peocock park	Behere tsige park
							R1	R2			
3.1	Minimum width of the ramp is 0.90m.	√	√	NA	NA	NA	√	√	√	NA	NA
3.2	Slop and gradient of the ramp does not exceed 5% slope.	√	√	NA	NA	NA	√	√	×	NA	NA
3.3	At most in every 10m, at every change of direction and the top and bottom of ramps there is a landing.	×	×	NA	NA	NA	×	×	√	NA	NA
3.4	The landing has a minimum length of 1.20m and a minimum width equal to that of the ramp.	×	×	NA	NA	NA	×	×	√	NA	NA
3.5	The ramps and landing surfaces are firm, unobstructed and slip resistant.	√	×	NA	NA	NA	√	√	×	NA	NA
3.6	A protective handrail at list 0.40 m high is placed along full length of the ramp. For a ramp more than 3m wide, an intermediate handrail is installed.	×	×	NA	NA	NA	×	√	×	NA	NA
3.7	There are a colored textural surface indication with a strip less than 0.60m at the top and bottom of the ramp to alert and guide visually impaired people as to the location of the ramp.	×	×	NA	NA	NA	×	×	×	NA	NA
3.8	There is a provision of adequate drainage system on the ramp.	×	×	NA	NA	NA	×	×	×	NA	NA

Table 8: Field survey accessibility compliance evaluation for ramps at the 5 recreational parks in Addis Ababa

√ - comply with the guideline **× - don't comply with the guideline** **NA – Not applicable (facilities not available on the park)**

EC Park – R1 – Ramp 1 (cobble stone paved)
R2 - Ramp 2 (Terrazzo tile paved)

	4. STAIRS	Shager Park			Yeka park		Kolfe park	Anbesa gebi park	Addis ketema park		Ethio cuba friendship park	ECA park		Peocock park		Behere tsige park
		S1	S2	S3	S1	S2			S1	S2	S1	S1	S2	S1	S2	
4.1	Where there is a stair there is a ramp.	×	×	×	√	×	NA	NA	×	×	√	×	×	×	×	×
4.2	The minimum width of the stairway is 0.90 m for one-way traffic.	√	√	√	√	√	NA	NA	√	×	√	√	√	√	√	√
4.3	The minimum width of the stairway is 1.50 m for two-way traffic.	√	×	×	×	×	NA	NA	√	×	√	×	×	√	√	√
4.4	The minimum width of the stairway is 1.50 m for two-way traffic.	√	×	×	×	×	NA	NA	×	×	√	√	√	√	√	√
4.5	For every stairs that cover a minimum of 2.50m there are landings.	√	√	√	√	√	NA	NA	√	×	√	√	×	√	√	√
4.6	The length of the landing is at least 1.20 m extending along the full width of the stairs.	√	√	√	×	√	NA	NA	√	×	√	√	×	√	√	√
4.7	Either there The stair has no Nosing or the nosing is flush or rounded and Is not projected more than 40 mm.	√	√	√	√	√	NA	NA	√	×	√	×	√	×	×	×
4.8	A flight of stairs that contains two or more risers have a continuous handrail on both sides. For stairs more than 3m wide an intermediate handrail is provided.	×	×	×	×	×	NA	NA	×	×	×	√	×	×	×	×
4.9	Textural marking strip less than 0.60m wide is provided at the top and bottom of the stair and intermediate landings to alert visually impaired people as to the location of the stairs.	×	×	×	×	×	NA	NA	×	×	×	×	×	×	×	×
4.10	Landings, treads and nosing are slip-resistant and free of projections.	√	√	×	×	×	NA	NA	×	×	√	√	×	×	×	×

Table 9: Field survey accessibility compliance evaluation for available Stairs at 7 recreational parks in Addis Ababa

√ - comply with the guideline **× - don't comply with the guideline** **NA – Not applicable (facilities not available on the park**

Sheger Park – S1 – Stairtype 1 (stone paved) Yeka Park – S1 – Stair type 1 (stone paved) Anbesa Gebi Park – S1 – Stair type 1 (stone paved)

S2 - Stairtype 2 (cobble stone paved)

S3 –Stair type 3 (Terrazzo tile paved)

S2 - Stair type 2 (Terrazzo tile paved)

S2 - Stair type 2 (Terrazzo tile paved)

Ethio Cuba Park – S1 – Stair type 1 (stone paved)

S2 –Stair type 2 (Terrazzo tile paved)

S3 – Stair type 3 (cobble stone paved)

Peacock Park – S1 – Stair type 1 (Asphalt paved)

S2 - Stair type 2 (stone paved)

S3 - Stair type (Concrete paved)

Peacock Park – S1 – Stair type 1 (Asphalt paved)

S2 - Stair type 2 (stone paved)

S3 - Stair type 3 (Concrete paved)

	5. SEATING FACILITIES	Shager Park		Yeka park			Kolfe park		Anbesa gebi park	Addis ketema park		Ethio cuba park	ECA park	Peocock park		Behere tsige park		
		SE1	SE2	SE1	SE2	SE3	SE1	SE2		SE1	SE2			SE1	SE2	SE1	SE2	SE3
5.1	Seats and benches are located to one side of pathways or connected with main circulation path and mounted on a firm and level base.	×	×	√	×	×	×	×	√	√	×	√	×	√	×	×	×	×
5.2	Seating platform are at allowable surface gradient.	√	√	√	×	√	√	√	√	×	×	√	√	×	×	√	√	√
5.3	Seating facilities are provided at a regular intervals between 100m-200m.	×	×	×	×	×	×	×		×	×	√	√	×	×	×	×	×
5.4	Seats and benches has a minimum of 1.50m allowable circulation space around them or has a minimum of 1.20m available space at list at one side of the seat/ bench for wheelchair users.	×	√	×	×	×	√	×	×	×	√	√	√	×	×	×	√	×
5.5	Seats and benches has a suitable back support and arm to allow for easy transfers, with an approximate height between 0.405m to 0.46m above floor level.	×	√	√	×	×	√	×	×	√	√	√	√	×	×	×	×	×
5.6	There are Orientation and information signage in or around the seating space.	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
5.7	The height of a Picnic tables is between 0.75 m and 0.90 m and the minimum depth under the table should be 0.60 m.	×	×	NA	NA	NA	NA	×	NA	NA	NA	NA	NA	NA	NA	NA	×	NA

Table 10: Field survey accessibility compliance evaluation for seating facilities at the 9 recreational parks in Addis Ababa

√ **- comply with the guideline** **× - don't comply with the guideline** **NA – Not applicable (facilities not available on the park**

Sheger Park – SE1 – Seat type 1 (stone paved)
SE2 - Seat type 2 (cobble stone paved)

Yeka Park – SE1 – Seat type 1 (stone paved)
SE2 - Seat type 2 (Terrazzo tile paved)
SE3 - pathway 2 (Terrazzo tile paved)

Kolfe Gebi Park – SE1 – Seat type 1 (stone paved)
SE2 - Seat type 2 (Terrazzo tile paved)

Addis Ketema Park – SE1 – Seat type 1 (stone paved)
SE2 - Seat type 2 (Terrazzo tile

Peacock Park – SE1 – Seat type 1 (Asphalt paved)
SE2 - Seat type 1 (stone paved)

Beheretsige Park – SE1 – Seat type 1 (Asphalt paved)
SE2 - Seat type 1 (stone paved)
SE3 - Seat type 1 (Concrete paved)

	6. WASTE RECEPTACLES	**Shager Park**	**Yeka park**	**Kolfe park**	**Anbesa gebi park**	**Addis ketema park**	**Ethio cuba park**	**ECA park**	**Peocock park**	**Behere tsige park**
6.1	Waste receptacles are mounted on firm level pads.	NA	NA	NA	×	×	√	×	NA	×
6.2	Height of Waste receptacles do not excide 1065mm height from the ground to its top.	NA	NA	NA	×	×	√	√	NA	√
6.3	Waste receptacles attached to a pole or lampposts did not face the line of pedestrian flow so as to minimize collisions.	NA	NA	NA	√	√	NA	√	NA	√
6.4	Waste receptacles are clearly identified by suitable signs and/or a contrasting colour so that people with limited vision may easily identify them.	NA	NA	NA	×	×	×	√	NA	×

Table 11: Field survey accessibility compliance evaluation for available Waste receptacles at 5 recreational parks in Addis Ababa

- comply with the guideline **× - don't comply with the guideline** **NA – Not applicable (facilities not available on the park**

	7. PLAY EQUIPMENT	Shager Park	Yeka park	Kolfe park	Anbesa gebi park	Addis ketema park	Ethio cuba park	ECA park	Peocock park	Behere tsige park
7.1	Play equipment are connected with an easy accessible route with a minimum width of 1500mm.	×	×						×	×
7.2	Either Play equipment are found at allowable surface gradient or there is a provision of a ramp.	√	√						×	√
7.3	Play equipment such as swings and slides have a transfer platform and a grab bars to assist mobility impaired users. The transfer platform have a minimum height range between 280mm-455mm from the ground surface.	×	×						×	×
7.4	There are Orientation and information guide in or around the play equipment.	×	×						×	×
7.5	Play equipment are clearly identified by suitable signs and/or a contrasting colour so that people with limited vision may easily identify them.	×	×	NA	NA	NA	NA	NA	×	×

Table 12: Field survey accessibility compliance evaluation for available Play equipment at 4 recreational parks in Addis Ababa

√ - comply with the guideline **× - don't comply with the guideline** **NA – Not applicable (facilities not available on the park**

	8. SIGNAGE	Shager Park	Yeka park	Kolfe park	Anbesa gebi park	Addis ketema park	Ethio cuba park	ECA park	Peocock park	Behere tsige park
8.1	Accessible space and facilities are identified by international symbol of accessibility.	×	×	×	×	×	×	×	×	×
8.2	There are Directional signs that indicate the type and location of available facilities.	√	√	√	×	×	×	×	×	√
8.3	There are directional signage were change in direction exist,	×	×	×	×	×	×	×	×	×
8.4	There are directional signage were change in level occur.	×	×	×	×	×	×	×	×	×
8.5	Information panels are placed at a height between 0.90 and 1.80.	×	×	×	×	×	×	×	×	×
8.6	colour of signs are clearly distinguishable.	×	×	×	×	×	×	×	×	×
8.7	Signs are supplement by a text in embossed letters or in Braille available next to information signs.	×	×	×	×	×	×	×	×	×
8.8	Lettering size in signage are proportional to the reading distance.	×	×	×	×	×	×	×	×	×

Table 13: Field survey accessibility compliance evaluation for Signages at the 9 recreational parks in Addis Ababa

√ - comply with the guideline **× - don't comply with the guideline** **NA – Not applicable (facilities not available on the park**

	9. SAFETY CONSIDERATIONS	Shager Park	Yeka park	Kolfe park	Anbesa gebi park	Addis ketema park	Ethio cuba park	ECA park	Peocock park	Behere tsige park
9.1	Excavations and road-works are fenced with a minimum height of 0.95m for Safety reasons.	NA	×	NA	NA	NA	NA	NA	NA	×
9.2	Min height 0.15m Guards for change in level of more than 13mm.	×	×	√	√	×	×	×	×	×
9.3	Manhole and drains and grating are placed outside the pedestrian pathways.	×	×	×	×	√	√	×	×	×
9.4	Overhanging vegetation are clipped to a minimum clear height of 2.00 m.	√	√	√	√	√	√	√	√	√
9.5	There are tactile warning markings on the ground around the obstruction with a minimum width of 0.60m outside the projected area.	×	×	×	×	×	×	×	×	×

Table 14: Field survey Safety considerations evaluation check list for Pathways at the 9 recreational parks in Addis Ababa

√ - comply with the guideline **× - don't comply with the guideline** **NA – Not applicable (facilities not available on the park**

	10. PLANT MATERIALS	Shager Park	Yeka park	Kolfe park	Anbesa gebi park	Addis ketema park	Ethio cuba park	ECA park	Peocock park	Behere tsige park
10.1	**L**andscape materials, trees, shrubs, and plants are with a variety of color, texture, and fragrance.	×	×	×	×	×	√	×	×	√
10.2	Planting beds adjacent to busy pedestrian walks have a defined edge with a minimum height of 100mm above the ground surface as an aid to a person with visual limitation.	√	√	√	×	√	√	√	×	×
10.3	Raised planting beds are provided considering the sensory experience for a person with visual limitation or the touch of a person using mobility aids.	×	×	×	√	√	×	×	√	×
10.4	Raised planter beds are provided to a height of 460mm to allow easy access by persons using mobility aids.	×	×	×	×	√	×	×	×	×
10.5	Plants with thorns or heavy berries are planted away from active pedestrian location.	√	√	√	√	√	√	√	×	×
10.6	Overhanging branches of trees or shrubs, located over walkways or paths are trimmed until a minimum clearance height of 2500mm.	√	√	√	√	√	√	√	√	√

Table 15: Field survey accessibility consideration around plant materials at the 9 recreational parks in Addis Ababa

√ - comply with the guideline **× - don't comply with the guideline** **NA – Not applicable (facilities not available on the park**

	11. **PARKING**	**Shager Park**	**Yeka park**	**Kolfe park**	**Anbesa gebi park**	**Addis ketema park**	**Ethio cuba park**	**ECA park**	**Peocock park**	**Behere tsige park**
11.1	There are designated parking facilities for wheelchair users.	×	NA	×	×	×	×	NA	×	×
11.2	The number of accessible parking spaces is sufficient.	×	NA	×	×	×	×	NA	×	×
11.3	The designated parking spaces are wide enough 3600mm x 5m.	×	NA	×	×	×	×	NA	×	×
11.4	The parking spaces are marked by the international symbol of accessibility.	×	NA	×	×	×	×	NA	×	×

Table 16: Field survey accessibility compliance evaluation for available parking spaces at 7 recreational parks in Addis Ababa

√ **- comply with the guideline** × **- don't comply with the guideline** **NA – Not applicable (facilities not available on the park**

For further reference and a detailed read, the standards used in the above table can be accessed online from the following websites.

1. *http://disabilityaffairs.gov.in/upload/uploadfiles/files/Harmonised%20guidelinesd%20released%20on%2023rd%20March%202016_compressed.pdf.*
2. *https://www.toronto.ca/wp-content/uploads/2017/08/8fcf-accessibility_design_guidelines.pdf. Accessed February 6 2017)*
3. *https://www.academia.edu/36784080/UNNATI_Barrier_Free_Built_Environment_Guidelines*
4. *https://www.un.org/esa/socdev/enable/designm/AD1-04.htm*
5. *https://dphhs.mt.gov/Portals/85/publichealth/documents/FCS/ADA%20Regs.pdf*
6. *https://cpwd.gov.in/Publication/aged&disabled.PDF*

Appendix C

Questionnaire V

ይህ ለአዲስ አበባ ዩኒቨርሲቲ ለላንድስኬፕ አርክቴክቸር ትምህርት ክፍል የድህረ ምረቃ ማጠናቀቂያ መመዘኛ እንዲሆን የተዘጋጀ የጥናት መጠይቅ ነው፡፡ የዚህ መጠይቅ ዋና አላማ በአዲስ አበባ ውስጥ የሚገኙ አረንጓዴ የመዝናኛ እና የመናፈሻ ቦታዎች ለአካል ጉዳተኛ ሰዎች ያላቸውን የተደራሽነት መጠን ለማወቅ ነው።

ጥናቱ የታሰበለትን ግብ እንዲመታየእርስዎ ትብብር እጅግ አስፈላጊ መሆኑን ተረድተው መልካም ትብብርዎን ስላደረጉልኝ በቅድሚያ አመሰግናለሁ።

በዚህ መተይቅ ላይ ማንነትዎ ስለማይገለጽ ሃሳብዎን በነጻነት መግለጽ ይችላሉ፡፡

<u>ክፍል አንድ/ ግላዊ መረጃ</u>

1. ፆታ ሀ. ወንድ ለ. ሴት
2. እድሜ
   ሀ. ከ 20 በታች ለ. 20-30 ሐ. 30-45 መ.45-60 ሠ. ከ 60 በላይ
3. አዲስ አበባ ውስጥ ምን ያህል ጊዜ ኖረዎል?
   ሀ. 2 አመት በታች ለ. ከ2-5 አመት ሐ. ከ5አመት በላይ

<u>ክፍል ሁለት/ የአረንጓዴ የመዝናኛ ቦታዎች ተደራሽነት</u>

4. አዲስ አበባ ውስጥ የሚገኝ አረንጓዴ የመዝናኛ እና የመናፈሻ ቦታ ላይምንያህልግዜያሳልፋሉ?
   ☐በጣምብዙ ☒መካከለኛ ☐ትንሽ ☐በጣምትንሽ ☐ምንም

   መልስዎምንምከሆነእቦኮትንምክንያቱን ይጥቀሱ
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5. የአረንጓዴ የመዝናኛ እናየመናፈሻ ቦታዎች ሲሄዱ ምን ማድረግ ያዘወትራሉ?

   ☐ተፈጥሮን ማድነቅ ☒ከራሴ ጋር ጊዜ ማሳለፍ ☐የምግብእናየመጠጥአገልግሎት ማግት

   ☐ከሰዎች ጋርለመገናኘት ☐ ስፖርታዊ ክንውኖች ላይ መሳተፍ ☐ መጽሃፍ ማንበብ

   መልስዎሌላከሆነምንዓይነትተግባራትንማከናወንያዘወትራሉ?
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6. የአረንጓዴ የመዝናኛ እናየመናፈሻ ቦታዎች ማየት ለተሳናቸው ሰዎች ምቹ ናቸው?

   ☐እዎ ☒ይደሉም

   መልስዎአይደሉምከሆነእባኮትንችግሮቹንይዘርዝሩ
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7. በ አረንጓዴ የመዝናኛ እናየመናፈሻ ቦታዎች ውስጥ ማየት ለተሳናቸው ሰዎች የተዘጋጁ አገልግሎቶች አሉ?

☐አዎ ☐ የሉም

መልስዎየሉምከሆነምን ምን አገልግሎቶች እንዲካተቱ ይፈልጋሉ?

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8. የአረንጓዴ መዝናኛ እናየመናፈሻ ቦታዎች መግቢያ ማየት ለተሳናቸው ሰዎች ምቹ ናቸው?

☐ አዎ ☐ አይደሉም

መልስዎአይደሉምከሆነእባኮትንችግሮቹንይዘርዝሩ

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9. በአረንጓዴ የመዝናኛና የመናፈሻ ቦታዎች ውስጥ ያሉ የመተላለፊያ መንገዶች ማየት ለተሳናቸው ሰዎች ምቹ ናቸው?

☐ አዎ ☐ አይደሉም

መልስዎአይደሉምከሆነእባኮትንችግሮቹንይዘርዝሩ

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10. በአረንጓዴ የመዝናኛ እናየመናፈሻ ቦታዎች ውስጥ ያሉ የመቀመጫ ቦታዎች ማየት ለተሳናቸው ሰዎች ምቹ ናቸው?

☐ አዎ ☐ አይደሉም

መልስዎአይደሉምከሆነእባኮትንችግሮቹንይዘርዝሩ

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11. በአረንጓዴ የመዝናኛ እና መናፈሻ ቦታዎች ውስጥ የሚገኙ የገንዘብ ማውጫ ማሽኖች፣ የህዝብ ስልኳች፣ የቆሻሻ መጣያዎች እና የመሳሰሉት የህዝብ መገልገያ መሳሪያዎች ማየት ለተሳናቸው ሰዎች ለመጠቀም አመቺ ናቸው?

☐አዎ ☐ አይደሉም

መልስዎአይደሉምከሆነእባኮትንችግሮቹንይዘርዝሩ

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12. በአረንጓዴ የመዝናኛ እና መናፈሻ ቦታዎችን ሲጠቀሙ አደጋ ደርሶቦት ያውቃል?

አዎ☐ ☐ አያውቅም

መልስዎአዎ ከሆነእባኮትን ምክንያቱን ይጥቀሱ

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13. አዲስአበባበሚገኙየአረንጓዴ የመዝናኛ እና የመናፈሻ ቦታዎችማየት የተሳናቸው ሰዎች በተመለከተ ሊካተቱ ይገባል የሚሉት ነገር ካለ እባኮትንይግለጹ

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14. በመጨረሻአዲስአበባበሚገኙ የአረንጓዴ የመዝናኛ እና የመናፈሻ ቦታዎች ማየት ለተሳናቸው ሰዎች ያላቸውን ተደራሽነት በተመለከተከላይካለውመጠይቅያልተጠቀሰሀሳብ ካለ እባኮትንነፃሆነዉመጥቀስይችላሉ።

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Appendix D

I. **Semi structured interview 1- For Addis Ababa plan commission**

Park one: personal information

1. Gender ----------
2. Educational qualification ----------
3. Work position ----------
4. Work experience ----------

Part two:

1. Is there a policy or a standard regarding the accessibility of parks in Addis Ababa for people with disabilities? And do you follow the implementation of the policy and standards?
2. If yes what measures have you taken so far?
3. If no what is restricting you from following the implementation of the policy and standards?

II. Semi structured interview 2- For Addis Ababa river basin and green area development agency management staffs

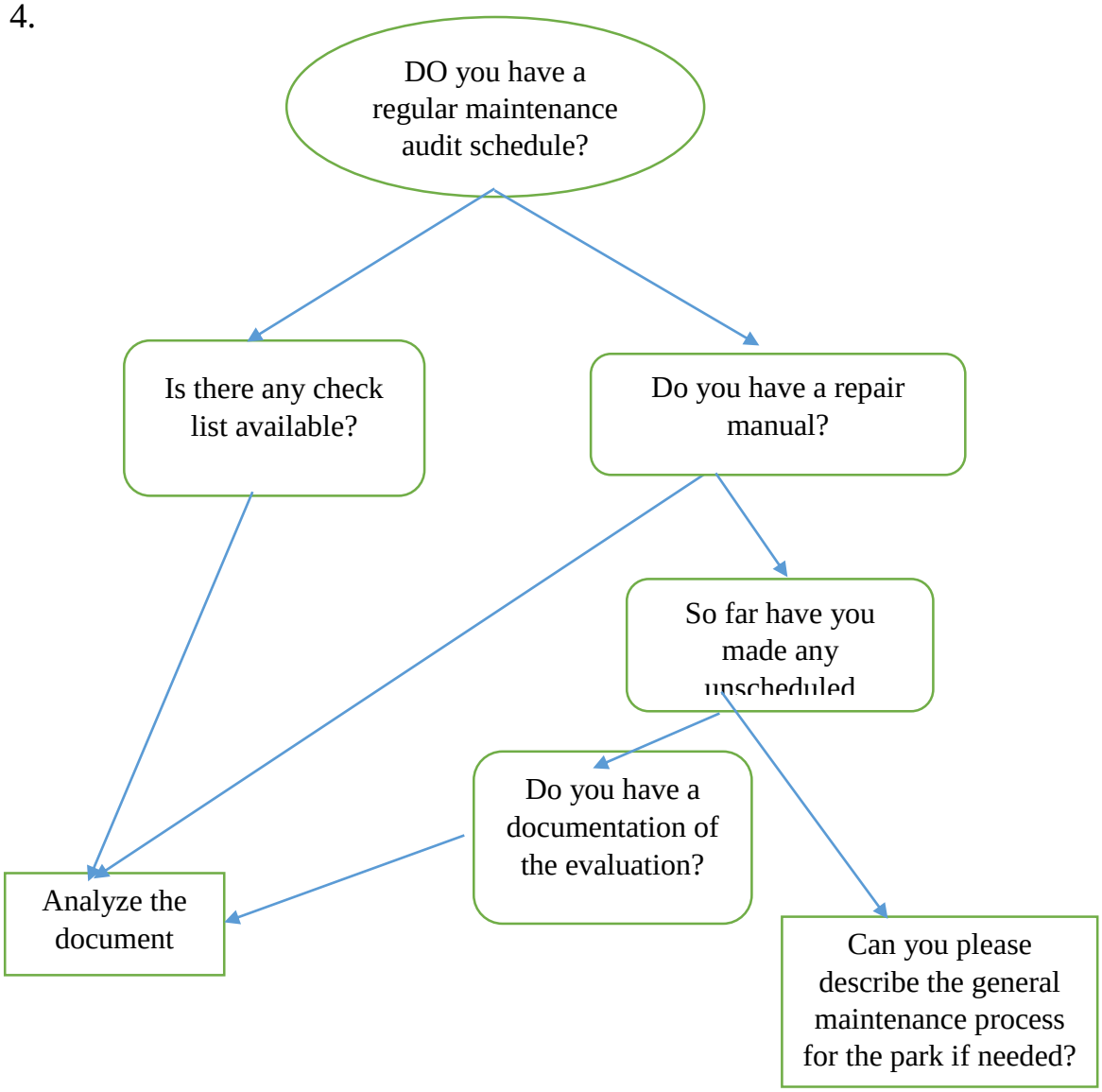
Park one: personal information

1. Gender ----------
2. Educational qualification ----------
3. Work position ----------
4. Work experience ----------

Part two:

1. Is there any access provision in the existing recreational parks for people with disabilities?
   1.1. If yes what are this provisions?
   1.2. If no why are there any provisions?
2. Have you ever made a design modification or repairs to the recreational parks ever since the park start giving service?
3. If yes have you tried to incorporate accessible provisions for people with disabilities while modifying or repairing the park?

4.



5. What challenges are you facing concerning accessibility provision issues to people with disabilities in the existing recreational park

Annexes

Accessibility Assessment and Improvement of Recreational Parks in Addis Ababa for People with Disabilities

Author, Kalkidan Wondaferew Engidawork
Advisor, Aziza Abdulfetah (PhD Candidate)

Addis Ababa University, Ethiopian Institute of Architecture, Building Construction and City Development (EiABC), Masters in Landscape Architecture, Addis Ababa, Ethiopia.

Abstract: People with disabilities have the right to live independently and participate fully in all aspects of life. They have the right to access the physical environment and other public facilities and services open to the public on an equal basis with others. Nevertheless, due to unfavorable conditions of different natures, people with disabilities who live in Addis Ababa have a limited opportunity to access public facilities and services as equal as others. One of the public facilities that manifest this problem is the limited access to urban parks. Due to design skills or poor management issues, most of the facilities and elements in the parks are whether damaged, obstructed, or miss placed and cause disabled people to have limited access. Hence, this research paper focuses on assessing the accessibility extent of the recreational parks in Addis Ababa for people with mobility and visual impairment and also recommending possible access improvements. To achieve the main objective of the research, the accessibility level of the recreational parks, factors that affect the accessibility level of the recreational parks, and improvement practices to increase the accessibility level of recreational parks are studied.

Currently there are 19 functional parks in Addis Ababa, out of which nine recreational parks that can serve a larger population are selected to be assessed in this research. A survey research method with mixed qualitative and quantitative methodologies is employed. Data collection techniques such as field observation, survey questionnaires, and formal interviews are used. In the field observation, the nine recreational parks' accessibility is evaluated using different parameters of accessibility compliance observation checklist.

From the data collected and analyzed the results show that, as measured against the international accessibility standard, the recreational parks studied have a very low accessibility level for people with disabilities. The low level of accessibility is associated with physical barriers imposed in most recreational parks. Uneven surface flooring and obstructed entrance spaces, narrow, rough, and slippery circulation pathways, Steps without an adjacent ramp, lack of curb ramps in grade changes, and absence of textural marking strip and handrails on stairs, and grade change are some of these physical barriers. Besides the physical barriers, the lack of accessibility consideration for people with disabilities when the parks are designed, inadequacy and lack of implementation of the accessibility standards and design guidelines put in the park development manuals, and lack of regular maintenance and professionally skilled officials to follow-up the maintenance procedures are some of the factors that affect the accessibility of the parks.

To improve the accessibility level of the recreational parks for people with disabilities, this study recognizes the need for improvement from simple maintenance to modifying and redesigning the inaccessible features of all the park components and infrastructures. The study also recommended responsible bodies such as architects, planners, park administrators, and management staff to play a vital role in increasing the accessibility level of the parks.

Keywords: Accessibility; Barriers; People with disabilities; Recreational Parks

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1. Introduction

An accessible built environment has been recognized as a core element for the realization of a society based on equal rights. It provides citizens with independence and the means to pursue an active social and economic life (EC Expert Group on Accessibility, 2003). Although the right to access the built environment is universal, the opportunity to access the built environment is not (Eoin , et al., 2012). Many people with disabilities are faced with barriers that exclude them from participating as equal citizens. These barriers can be attitudinal, societal as well as physical and affect people with different impairments at different times of their lives.

In order to grant full accessibility for people with disabilities, the United Nations (UN) Convention on the Right of a person with a disability has been signed by all states in 2007 (UN, 2007). Article 9 of the Convention stipulates that persons with disabilities are to be enabled to live independently and participate fully in all aspects of life. This article required state parties to take appropriate measures to ensure people with disabilities access, on an equal basis with others, to the physical environment and other facilities and services open to the public in urban and rural areas.

As most member parties, Ethiopia also ratified the UN Convention on the Right of a person with disabilities in 2010. Since then different laws, policies, and standards have been enacted (International Labors Organization,, 2009). Different researches have also been conducted concerning access to the built environment.

In 2008 The Ethiopian Center for Disability and Development (ECDD) Association with the support of LIGHT FOR THE WORLD Austria, has conducted survey research on the accessibility of selected public buildings and services in Addis Ababa and 12 other towns (Aychesh , 2012). According to the survey conducted in Addis Ababa, from 600 public establishments, it was discovered only 10% of them are accessible and partially accessible by people with disabilities. Based on the finding of the survey the researchers have forwarded recommendations including; awareness raising for building owners, architects and urban planners over the need of accessible built environment, the state to oblige facilities and services to be accessible for a person with disability, and to implement building proclamations.

As the first in its kind regarding access to the built environment, the study conducted by ECDD has brought some remarkable achievements. It influenced many building owners to take the initiative and modified their premises and services in ways that accommodate the need of Disabled people, helps architects and urban planners to enhance their level of awareness on how to make their projects accessible and moreover it initiated the ministry of works and urban development to formulate rule and directives for the building proclamation 624/2009.

Even though accessibility of most building facilities by disabled people is still questionable, This study is highly encouraged by the ECDD study and the impact it has made in legislators, property owners, architects and planners and aimed to add up a knowledge regarding disabled people access issues into the built environment that has not been addressed by the study conducted by the ECDD, specifically to urban parks.

Just as equal to the other facilities and services in the built environment access to urban parks is crucial for people who reside in urban areas. They are one aspect of the built environment that is of great importance in the daily lives of individuals. Besides environmental benefits through their effects on negating urban heat, offsetting greenhouse gas emissions and attenuating storm-water (Anna , 2003), parks have a capacity to bring people together, engaging individuals from different social grouping that may not normally interact (Andrew , et al., 2015). Urban parks offer possibilities for increasing social activity, improving community cohesion and developing local attachment especially for certain groups who are particularly vulnerable to social exclusion: like people with disabilities (Leah , 2014). In addition, access to urban parks offers direct health benefits

such as; psychological wellbeing, reduced stress, obesity, stroke, cardiovascular symptoms, and respiratory disorders. It also improves mental health, concentration capacity, quality of life, overall mortality, and longevity (Cecil , et al., 2013).

Besides, international and national human rights law including the constitution of Ethiopia has recognized for everyone to have the right to live in a healthy environment. In many literatures, it's written one of the best ways to live in a healthy environment for a person who lives in an urban area is to have access to urban parks.

Considering the tendency to overlook people with special needs special people with disabilities, special consideration is deemed necessary by local and international stakeholders to ensure equitable and safe access to such public spaces.

2. Problem statement

Accessing parks in a day to day life has numerous benefits such as engaging in physical activities, social interaction, reduce stress, depression, mental illness and provide people opportunities contact with the natural environment (World health organization, 2016). For people with disabilities, who are much more likely to be venerable from such mental and physical ailments, the opportunity to access parks is imperative in establishing a healthier and active life.

However, due to unfavorable conditions of different natures, the majority of the people with disabilities are not getting the benefits most parks have to offer. According to the Addis Ababa Master Plan Revision Project Office (AAMPRPO, 2014), accessible urban green spaces in Addis Ababa are by far one of the lowest by any international standards. The preclusion of people with disabilities from accessing most parks in the city is the major area where this problem is manifested.

There are 19 functional parks in Addis Ababa. Most of them are used for recreational propose, but none has an arrangement fully accessible by people with disabilities. Due to limited design skill and poor management issues (Bisrat & Yordanos, 2016), most of the facilities and elements in the parks are either damaged, obstructed or miss placed (Biesrat & Yordanos, 2016).As visually impaired users are limited to navigate spaces without using a cane or mobility impaired user without using a wheelchair, all those damages obstructions and misplacements limit access to facilities of those spaces. Park facilities such as playgrounds, sports fields, water bodies, planting mediums or park elements such as west receptacles, seating furniture, drinking fountains and play equipment cannot be reached by People with impairment without compromising their safety. The barriers and limitations of access to the facilities and elements of the parks prevent people with impairment from engaging in activities and thus lead to social exclusion and marginalization. It also prevents their option of contact with the natural environment and forced them to live a stressful life.

The disengagement of people with disability from the natural world represents the disengagement of a significant proportion of society (Sensory Trust, 2017). According to (World Health Organization & World Bank, 2011), from the total population of Ethiopia, 17.8% are people with disabilities and 2.8% of them live in Addis Ababa. Therefore a considerable amount of attention should be given to study the extent of accessibility of recreational parks for people with disability and its improvement.

Thus this study intended to assess the accessibility extent of recreational parks in Addis Ababa for people with disabilities, particularly for those with mobility and visual impairment, and forward possible access improvement recommendations.

2. Materials and Methods

This research combines both qualitative and quantitative research methods. To gain detailed qualitative and quantitative data, a survey research approach is undertaken. To

assess the accessibility level of recreational parks in Addis Ababa for people with disabilities firsthand information is collected from mobility and visually impaired people on the accessibility of the recreational parks in Addis Ababa and the barriers they encountered while using the parks. Besides the survey-based questioner, a field survey is also conducted to physically assess the accessibility level of the recreational parks by using an accessibility compliance observation checklist. To identify factors affecting the accessibility level of recreational parks in Adds Ababa, management staffs of government offices primarily designated in the planning and management of the recreational parks were interviewed. Document review techniques are also used to indicate improvement practices that can increase the accessibility level of the recreational parks for people with disabilities.

Population and sample

The main sample population for this study particularly for the primary data collection is people with mobility and visual impairments and 9 selected recreational parks in Addis Ababa. To investigate the other dimension of the research objective Park management staffs are also taken as a sample population.

To sample mobility and visually impaired people, a clustered sampling method is employed. Two disability associations that have a permanent member of people with the two impairments were selected as a sampling frame. Ethiopian National Association of the Physically Handicapped (ENAPH) and Ethiopian National Association of the Blind (ENAB) represent the cluster population of the mobility impaired and visually impaired populations respectively. From the permanent members of Ethiopian National Association of the Physically Handicapped (ENAPH) and Ethiopian National Association of the Blind (ENAB), a total of 118 people with disability were sampled in this study.

To sample the recreational parks for the field survey, stratified and purposive sampling methods are used. The sub-cities of Addis Ababa (higher administrative clusters of the city) as a subgroups and samples recreational parks for the field survey one from each sub-city by using a purposive sampling method. 9 Recreational parks from 9 sub-cities are sampled to conduct the field survey and a total of 7 management staffs from AACGRBG-DAA and 1 representative from APC are also sampled to obtain data concerning the factors affecting the accessibility of the parks under survey.

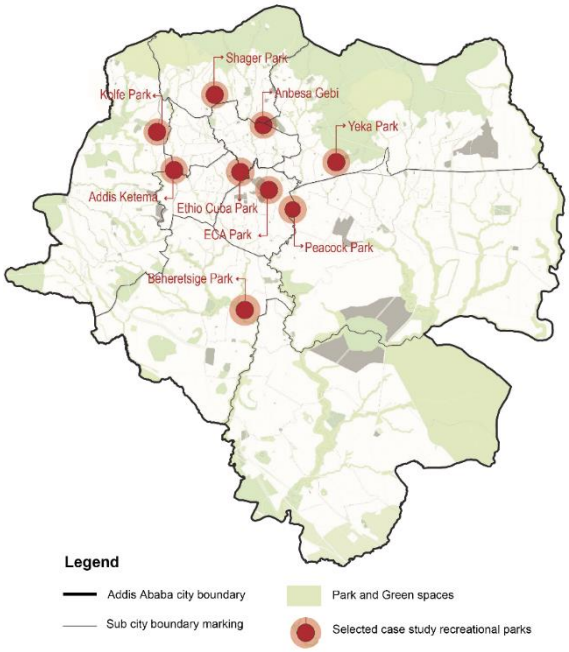

Figure 1. Map of the selected case areas (Source - map generated by the author)

Data analysis and presentation

Both quantitative and qualitative data analysis methods were employed. The data obtained from the survey question for people with disabilities were analyzed in both quantitative and qualitative data analysis methods. The quantitative data were analyzed through an interpretation of number and percentage and the qualitative data were analyzed through discussion and narration. Data from a field survey in the form of the checklist was analyzed through discussion and picture narration. The data obtained from an interview is also analyzed through narration.

3. Results and Discussion

3.1. Level of accessibility of the recrational parks with regard to PWDs

To assess the accessibility level of the recreational parks in Addis Ababa accessibility compliance of the 9 selected recreational parks were assessed based on the different park accessibility and design guidelines for people with disabilities. But before the evaluation is made first local and international accessibility standards and design guidelines documents concerning mobility and visually impaired people are reviewed thoroughly. Second, the local and international documents are compared to each other to select the best practice that can help to physically assess the implementation of those guidelines on the recreational parks under survey.

From local documents, two park design manuals prepared by urban planning, sanitation, and beautification bureau, and the federal democratic republic of Ethiopia ministry of urban development and housing, are reviewed. From international documents, six design guideline manuals, prepared in different countries are also reviewed.

When the disabled people access consideration in the local park design guidelines are compared with the international accessibility design guideline, the local design guidelines are found to be inadequate.

The international documents are intentionally prepared to address disabled people's access considerations in parks and other outdoor environments. They contain clear and concise technical requirements of infrastructures and facilities such as entrance spaces, walkways, ramps, stairs, site furniture, signage, etc. The local design guidelines manuals are prepared to guide the planning and design of park facilities in general, and disabled people accessed considerations are mentioned in a single section. Rather than giving detailed technical requirements the guideline generally encourages component authorities to ensure all parks to be accessed by people with disabilities and encourages park designers and managers to generally provide access to people with disabilities. Some of the guidelines stated in the local documents reviewed from urban planning, sanitation, and beautification bureau, and the federal democratic republic of Ethiopia ministry of urban development and housing are;

"Whenever possible try to go beyond minimum standards", "Incorporate accessibility in areas that present different levels of difficulty", "Plan for a continuous path of travel",

Thus, when compared with the international guidelines, the local design guidelines are found to be inadequate to measure the accessibility compliance of facilities and infrastructures in the recreational parks under survey.

Thus when the nine recreational parks in Addis Ababa are measured against the international accessibility standard the result shows,

		Shager Park	**Yeka Park**	**Kolfe Park**	**Anbesa gebi**	**Addis ketema**	**Ethio cuba**	**ECA park**	**Peocock**	**Beheretsige**
1.	Entrance	50%	60%	60%	80%	40%	60%	40%	60%	60%
2.	Pathways	33%	43%	71%	57%	43%	62%	71%	29%	19%
3.	Ramps	38%	25%				44%	38%		
4.	Stairs	50%	40%			25%	80%	45%	50%	50%
5.	seating facilities	36%	22%	29%	33%	33%	83%	67%	8%	19%
6.	Waste receptacle				25%	25%	67%	75%		50%
7	Play equipment	20%	20%						0%	20%
8.	Signage	13%	13%	13%	0%	0%	0%	0%	0%	13%
9.	Safety considerations	25%	20%	50%	50%	50%	50%	25%	25%	20%
10.	Plant materials	33%	50 %	50%	67%	83%	67%	33%	33%	50%
11.	Parking	0%		0%	0%	0%	0%		0%	0%
	Total accessibility compliance %	**30%**	**33%**	**39%**	**39%**	**33%**	**51%**	**44%**	**23%**	**30%**

Table 1: Accessibility compliance of the recreational parks in Addis Ababa

As it is shown in Table 1 above as measured against the international standard for disable accessibility, the maximum rank found is 51% while the minimum is 23% As this percentage gives a picture of the level of the park's accessibility as described by (Bright and Sawyer 2007), this is not the case in these parks under survey.

For example; the accessibility compliance of entrance space in the 9 parks were evaluated by the required accessibility standards (See Appendix A), and the result shows that Yeka, Kolfe, Ethio – Cuba friendship, Peacock, and Bihere Tsige parks meet 60%, Addis Ketema and ECA 40 %, Sheger 50% and Anbessa Gibi 80% of the standards. However, a mobility-impaired person who uses wheelchairs cannot access Sheger Park at all just because the ground Outside is not the same level as the ground inside the park.

While in Yeka and ECA parks, because there is a level difference in the outside and inside park ground, alternative ramp access is provided for wheelchair users but when the ramps are evaluated by the required accessibility standards they have only complied with 25% and 38% of the standard respectively. Therefore even though there is access but it's of poor quality.

In addition, all the entrance in the 9 parks including entrance at Anbessa Gibi Park which has 80% accessibility compliance, has no tactile markings or orientation guides provided for visually impaired individuals making it difficult for visually impaired individuals to access the parks independently. As entrance spaces are the first components a person encountered to access any place including parks, it's a no brainer that the limited access to the entrance means limited access to the entire park and its facilities and components in general.

(**a**) (**b**)

Figure 1. (a) Entrance of Sheger Park; (b) Entrance of Yeka Park. (Source - Author)

Pathways in all the 9 parks were assessed with the required pathways accessibility standard (See Appendix A) and it was found that Sheger park has complied with 33% of the requirement, Yeka and Addis Ketema 43%, Anbessa Gibi and ECA 57%, Peacock 29%, and Biheretsige has complied with 19% of the accessibility requirement. However, even with this percent of accessibility compliance, pathways in Sheger, Yeka, Addis Ketema, Peacock, and Bihere Tsige parks are connected with a stair but no alternative ramps are provided for those using wheelchairs.

(**a**) (**b**)

Figure 2. (a) Steps in Pathways at Sheger Park; (b) steep and damaged Pathways at Peacock Park. (Source - Author)

Even though available pathways in Ethio - Cuba friendship parks have better accessibility compliance next to pathways in Kolfe Park, the pathways are at an elevated level with no protection handrail and are not safe for visually impaired individuals. Though the width and gradient of ramps found in these pathways did consider wheelchair users, there is no proper landing to rest or change direction for these users. With no proper landing and no handrail on the top, the bottom and side of the ramps make it unsafe for wheelchair users.

When all the parks are evaluated by the safety consideration to be taken for people with disabilities (See Appendix A), most of the safety issues are observed in the park's pathways. For example, in Yeka and Sheger parks open man-holes are observed on the main travel path, and in Addis Ketema, Anbessa Gibi and Ethio - Cuba Parks, trees are observed planted on the main travel path making it unsafe for visually impaired individuals.

(**a**) (**b**)

Figure 3. (a) Open manhole on the travel path at Beheretsige Park; (b) Tree planted on path of travel at Beheretsige Park. (Source - Author)

Pathways in all the 9 parks including pathways at Kolfe park which has better accessibility compliance, has no tactile markings or orientation guides provided for visually impaired individuals making it difficult for those individuals to access the parks independently.

From the field survey it is understood available park facilities such as seating spaces, waste receptacles and playgrounds in the 9 parks has complied with some of the accessibility criteria however except park facilities (seating spaces and waste receptacles) in Ethio - Cuba friendship and ECA parks, available park facilities in the rest of the parks are not connected with main circulation pathways thus they cannot be reached by mobility or visually impaired individuals.

(**a**) (**b**)

Figure 4. (a) Waste receptacles at Anbesa Gebi Park; (b) Play equipment at Sheger Park. (Source - Author)

Few of the park facilities in Addis Ketema and Peacock parks are connected with main circulation pathways, but since they are observed placed in a raised platform, they cannot be reached by mobility-impaired users.

The seating facilities placed adjacent to circulation pathways in ECA Park don't have a space provided for wheelchair users but has still complied with 67% of the standard. Just because space is not provided for wheelchair users, a mobility-impaired person cannot use the spaces. This problem is observed in all the parks except Ethio - Cuba friendship Park which complied with 83% of the requirements.

(**a**) (**b**)

Figure 5. (a) Seat placed in a raised platform at Peacock Park; (b) Seating at Yeka Park with no orientation guide. (Source - Author)

In all the 9 parks including Ethio Cuba Friendship and ECA Park with the highest seating and waste receptacles accessibility compliance, available pathways are not indicated with tactile markings or orientation guides provided for visually impaired individuals making it difficult for visually impaired individuals to access the facilities independently.

From the above paragraphs it can be understood that even though available park facilities in the 9 parks has complied with the standards at a certain percentage because most of them are not connected with the main circulation pathways with a properly constructed path they have low accessibility level for mobility-impaired people and the absence of guiding aid make it completely inaccessible for visually impaired individuals.

(**a**) (**b**)

Figure 6. (a) Elevated Path ways from adjacent landscape with no Protective rail or curb at ECA Park; (b) ramp with no landing and protective handrail at Ethio Cuba Park (Right). (Source - Author)

The parks with Available Parking spaces have not complied with any of the required standards that a parking space should consider for people with disabilities. The fact that

there is no dedicated parking space reserved for wheelchair users makes the area inaccessible by mobility-impaired wheelchair users when the parking is full of cars.

As discussed above and as the observation shows, all park components and facilities; entrance, pathways, landscape facilities such as seating facilities, waste receptacles, and play equipment, parking spaces, and planting spaces are not indicated in any signage that is made in consideration of people with disabilities. As signage is important for orientation and way finding especially for visually impaired people all the parks have failed in complying with that.

In addition important point drawn from the observation is, all the parks under survey have complied with the accessibility standards required for mobility-impaired people to a certain degree, but they have not complied with any of the standards set for visually impaired people.

Thus, as mentioned in the start of the dissection, even if the accessibility percentages can give a picture of the level of the parks accessibility, it's rational to say all the parks have lower accessibility level for people with disabilities, especially those who are visually impaired.

In addition to the site observation the data collected from questioner from 65 people with visual impairment and 53 mobility impaired people however from a total of 118 respondents with disabilities, 54 respondents (27.11% mobility and 18.64 visually impaired people) have never visited any parks in Addis Ababa while 64 has visited these parks. And from those who visited the parks, 28 respondents (13.55% mobility and 10.16% visual impaired people) barely spent their time in the recreational parks, According to the majority of the respondents who never visited the parks and those who spent less of their time in the recreational parks is because, due to the availability of parks near them and the barriers they face while visiting.

All the 64 respondents who have visited recreational parks in Addis Ababa have said they have encountered barriers at the different parts of the parks in Addis Ababa. 43 respondents (36% mobility and 31.2% visually impaired people) encountered barriers at entrance spaces, 55 respondents (45.3% mobility and 40.6% visually impaired people) at circulation pathways, 34 respondents (43.7% mobility and 39% visually impaired people) at seating facilities, and 41 respondents (39% mobility and 25% visually impaired people) faced barriers in areas of waste receptacles.

The barriers mentioned by mobility impaired respondents includes; damaged surface flooring at entrance, pathways, around seating spaces, slippery and narrow pathways, obstruction at entrance and pathways, unconstructed soft nature of grounds around seating spaces, and poor placement of seating facilities and waste receptacles. And the barriers mentioned by most visually impaired respondents includes; threshold at entrance gates and absence of information and orientation guiding around entrance spaces, Open man hole on path of travel, Unclipped tree branches on path of travel, and Absence of orientation or information guides and poor placement of seating facilities and park furniture.

In addition when asked about the accessibility of the recreational park that are found in Addis Ababa, out of the 64 respondents 90 (48% mobility and 42% visually impaired) respondents say they are not accessible for them.

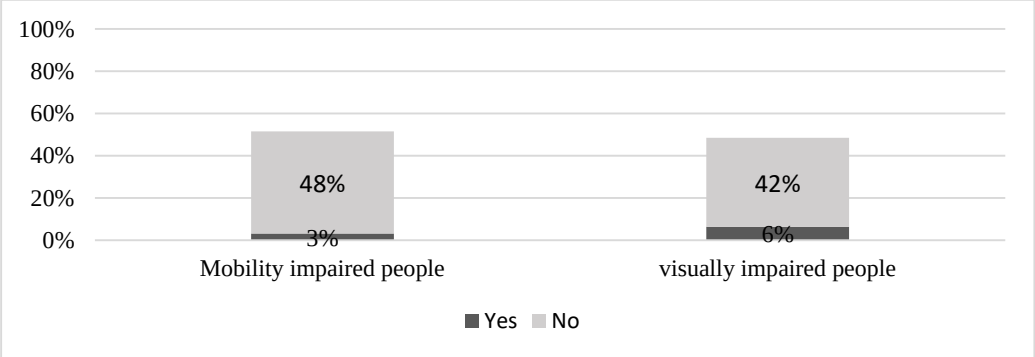

Figure 7. Recreational parks Accessibility by respondents

3.2. Factors affecting the accessibility level of the recrational parks with regard to PWDs

The universally acknowledged challenges of Stereotype views, lack of awareness and insufficient professional training to park managers, facility maintenance workers, and general design and policy-making professionals is one of an underlying problem in limiting access to public facilities in the physical environment (Simon, n.d.). These challenges have been observed in the surveyed recreational parks where park planners' and managers clearly describe their facilities are not serving the general public let alone people with disabilities.

This distinction between the general public and people with disabilities as seen by the park management staff indicates the existing perception of categorization and bracketing of societal groups which goes against the idea of equal accesses to all regardless of physical conditions.

The lack of awareness about physical impairments which leads to gross generalization plans and implements physical environments that discriminate and marginalizes people with disability. Furthermore, the lack of clear guidelines on design, maintenance, and repair of such facilities leads to a further decline in such facilities from being accessible.

The existing guidelines that have been reviewed and compared with the international accessibility standards, showed drawbacks such as ambiguous definitions and contents that are more advisory than prescriptive towards the procedures and standards such public facilities should adhere to before becoming operational.

Considering design preparations for the recreational parks, it was understood that most of the designs are not available for review and nearly all designs that are implemented clearly indicate no consideration has been put for people with disabilities. Inadequate knowledge and training backgrounds for professionals who are supporting the parks contribute significantly to the observed challenge in affecting the level of accessibility.

A complete shift of attention of responsible authorities to the parks planned to be developed in the future has also lead to limited budget allocation for the operation of the existing functional parks, which intern affects the maintenance procedure which directly related to the low level of accessibility of the parks.

Concurrent to design and policy-making professionals the poor skill set of maintenance and construction works who undertake upgrade and repair works contribute to the factors limiting access by not following design instructions and executing work to the poorest qualities.

3.3. Improvement o f the recratinal parks for an increases accessibility

In the literature chapter of this paper, it is discussed the first of many steps that helps to improve the accessibility of the built environment is to audit the facility's compliance with disabled accessibility standards. The audit helps to understand potential barriers, points of good or bad access, and identify areas of needs that are not catered for.

Accordingly as presented in the analysis chapter and discussed in the previous section, the accessibility compliance inspection of the selected recreational parks in Addis Ababa showed a low level of compliance when measured by the accessibility standards and design requirements.

Though the points of bad access are much greater than that of the good accesses in all the surveyed parks, the inspection has also identified where accessibility is catered.

For the points where bad access is provided, the observation rivaled most of the problems is associated with the design and maintenance of the facilities. Those which are associated with design of the facilities for example are; seating facilities in peacock parks that are placed in a raised platform to be accessed with a stair with no provision of an alternative ramp, ramps in Ethio Cuba park with no landings, manholes and open drains on main travel path in Yeka and Beheretsige parks, stepped entrance space at Sheger park with no provision of an alternative ramp, and entrance, pathways and other park facilities with no provision of guiding signs for visually impaired access. And some of the problems which arise due to lack of maintenance include; faded signage in Beheretsige to the point where it is unreadable even for a sighted person, obstructed and damaged pathways in Yeka, Beheretsige, and Peacock parks, and entrance at Yeka and Ethio Cuba parks, where a grass is grown on accessible ramps

To remove these problems especially those associated with the design of the facilities, modifying them to comply with accessibility standards might seem enough but as suggested by (Jenene, 2012) in the literature chapter of this paper the maximum level of accessibility can be achieved when the principles of inclusive and universal design concepts are applied. Even if these practices are best when they are applied in the initial design of the space, they also can be applied during modification and design repairs.

Accordingly, a sensory landscape concept can be applied as an equivalent practice with inclusive and universal design concepts. Because in the literature it is described a sensory landscape is a landscape design concept that considers accessibility for disabled people as a basic principle when designing or modifying landscapes to be accessible by all including people with disabilities. Not only these design principles allow spaces to be simply accessible but it provides different sensory opportunities that the disabled people may not normally experience.

From the field observation, it has revealed the accessibility level of the surveyed parks is very low especially for visually impaired people primarily due to the absence of guiding and tactile information that helps for their independent navigation. Even if the provision of guiding strips in/on travel routes is a mandatory requirement to reach the minimum accessibility level, the accessibility can be increased by implementing some of the sensory landscape design concepts (see Annex B). This practice especially increases the accessibility level of plant materials in the parks because the dominant feature of all of the surveyed parks is the plant materials. As seen in the field observation most plant materials in all the parks are provided for their shading. However, if sensory landscape design concepts are implemented the accessibility level of the plant materials by the people with disability can be increased. Besides shading, the plant materials can be accessed with touch, smell, hearing, and test by both mobility and visually impaired people.

A similar concept can be used to increase the accessibility of the pathways, seating facilities, playgrounds, parking spaces, etc.

In addition to accessibility improvement through design modification, continuous maintenance is another important aspect identified from the literature review. In the field observation, it is understood some of the park facilities have a low level of accessibility due to lack of maintenance. For example, the ramp at the entrance of Ethio - Cuba Park

was observed grown grass and the gate leading to the ramp is permanently closed because they are broken. Due to these reasons, mobility-impaired individuals cannot enter the park even to use accessible provisions. But with simple maintenance, a mobility-impaired wheelchair user can be enabled to access the park.

Besides this, as reviewed in the literature accessibility of park facilities to disables, not only can be ensured during design, when there's an addition, renovation, or repair but also by maintaining them so that they continue to be accessible. This concept should be stressed because in the field survey in the 9 parks in Addis Ababa, even though the points of bad access are much greater than that of the good accesses, the inspection has identified spaces where accessibility is catered. Not maintaining those to continue their level of accessibility has a danger of lowering the accessibility level form level they stay now. Thus even after the accessibility improvement, continuous maintenance is as essential as the modification and repairs of the inaccessible features to increase the level of accessibility.

4. Conclusions

One of the public facilities where access should not be restricted and highly contribute to better the health and social interaction of any person in the built environment are public recreational parks. Considering this and the right of people with disabilities to accesses any public spaces as equal as others, the main aim of this study is to assess the accessibility extent of recreational parks in Addis Ababa for people with mobility and visual impairment.

In the assessment process first accessibility Level of recreational parks in Addis Ababa for people with mobility and visual impairment is assessed. When evaluated against international standards for disabled accessibility, the accessibility level of the recreational parks for mobility and visually impaired people is found below average. The low level of accessibility of the parks goes beyond where neither mobility nor visually impaired people are spotted using one of the parks on the evaluation process.

Even though further research is needed past the spatial scope of this study, the physical barriers directly associated with the low level of accessibility have a clear contribution in limiting the motivation of people with disabilities to enjoy the spaces even before coming to the park. For example, the entrances of the assessed parks have no orientation guides provided for the self-navigation of visually impaired individuals and are also not accessed by mobility-impaired individuals due to the obstructed and narrow gateways. As the first component a person encounters to access space, it's a no-brainer that the limited access to the entrance means limited access to the entire park and its facilities and components in general.

Besides that, narrow, obstructed, uneven, and slippery circulation pathways, Steps without an adjacent ramp, lack of curb ramps in grade changes, absence of textural marking on stairs and grade change, Open-man hole and unclipped tree branches on the path of travel, poor placement of seating facilities and play equipment, and absence of orientation and information guides or signage throughout the parks play a significant role for the low level of accessibility.

In the second process of the accessibility assessment of the recreational parks, besides the physical barriers, other factors that affect the accessibility level of the recreational parks are also identified.

Although not found for documentation and further study, lack of accessibility consideration for the people with the impairment on the original design of the parks is one factor that lowed the accessibility level of the recreational parks. Narrow entrance gateways, steps with no adjacent ramp, seating benches placed in a raised platform, and circulation pathways with no tactile markings are all physical barriers that relate to a design that didn't consider the need of people with disabilities.

Inadequacy of recreational park accessibility standards and design manuals regarding people with disabilities, the failed implementation of the accessibility standards set out in the manual due to lack of follow up, and the absence of regular maintenance and professionally skilled officials to follow-up the maintenance paved the way for the low level of accessibility.

Furthermore, inadequate knowledge and training background of design and policy-making professionals, the poor skill set of maintenance, and construction works are other factors that affect the accessibility level of the recreational parks.

Despite the fact, to increase the accessibility level of the recreational parks for people with mobility and visual impairment, much work is not done under the current park management system.

The low accessibility level of the recreational parks is recognized by the responsible authorities, but due to the poor skill set of maintenance workers who undertake improvement and the limited budget allocation for the operation of the recreational parks makes the improvement attempt to be executed to the poorest quality. And it's clear no matter how the accessibility is, it will fail throughout its life span if responsible authorities do not allocate budgets for maintenance.

In summary, this paper concludes the recreational parks studied have a very low accessibility extent for mobility-impaired people and remarkably low accessibility for visually impaired people. It also concludes by recognizing the need for improvement from simple maintenance to the extent of modifying and redesigning the inaccessible features of all the parks' components and infrastructures.

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Appendix A

	Park infrastructure minimum design Standard	Remarks					
1.	1. Pathway	1		2		3	
		yes	no	yes	no	yes	no
1.1	Width of Pathway are in the range of 0.90m –S 1.80m						
1.2	Pathways are clear and obstruction free						
1.3	slop and gradient of pathway does not exceed 5% slope						
1.4	surface texture of pathways are smooth, continuous, non-slip and even						
1.5	There are Orientation guides in or on the circulation surface						
1.6	There are direction and information signage on and along pathways						
1.7	Grating opening in pathways are is perpendicular to pedestrian travel path						
1.8	Carb stones that separate pathways to adjacent landscape features has a minimum of 0.15m height						
	2. Ramps	1		2		3	
		yes	no	yes	no	yes	no
2.1	Where ever there is a stair there is a ramp						
2.2	Minimum width of the ramp is 0.90m						
2.3	slop and gradient of the ramp does not exceed 5% slope						
2.4	Ramps horizontal distance do not exceed 10m length						
2.5	At every change of direction and the top and bottom of ramps there is a landing in every 10m						
2.6	The landing has a minimum length of 1.20m and a minimum width equal to that of the ramp						
2.7	For a ramp more than 3.00m There is a protective handrail at least 0.40m high placed along full length of ramp						
2.8	The ramp surface is hard and non-slip						
	There are a textural indication with a strip less than 0.60m at the top and bottom of the ramp						
2.9	There is a provision of adequate drainage system on the ramp						
	3. Stairs	1		2		3	
		yes	no	yes	no	yes	no
3.1	Where ever there is a stair there is a ramp						
3.2	The minimum width of the stairway is 0.90 m for one-way traffic						
3.3	The minimum width of the stairway is 1.50 m for two-way traffic.						
3.4	the maximum riser of the stair is 0.15 m and the minimum tread is 0.30 m.						

3.5	For every stairs that cover a minimum of 2.50m there are landings						
3.6	The length of the landing is at least 1.20 m extending along the full width of the stairs.						
3.7	The stair Nosing is flush or rounded and Is not projected more than 40 mm.						
3.8	A flight of stairs that contains two or more risers have a continuous hand-rail on both sides.						
3.9	There are a textural marking strip less than 0.60m wide at the top and bottom of the stair and intermediate landings						
3.10	Landings, treads and nosing are slip-resistant and free of projections						
	4. Seating facilities	1		2		3	
		yes	no	yes	no	yes	no
4.1	Seating platform are at allowable surface gradient						
4.2	Seating facilities are placed outside the main circulation path						
4.3	Seating facilities are provided at a regular intervals between 100m-200m						
4.4	Seating facilities has a minimum of 1.50m allowable circulation space around them						
4.5	Seat materials are not significantly retain heat or cold						
4.6	Seats and benches has a minimum of 1.20m at both side of the seat for wheelchair users						
4.7	Seats and benches are approximately 0.45m above floor level						
4.8	There are Orientation and information signage in or around the seating space						
4.9	Picnic tables The height of a table should be between 0.75 m and 0.90 m and the minimum depth under the table should be 0.60 m						
	5. Public telephone booths:	1		2		3	
		yes	no	yes	no	yes	no
5.1	Phone booth ground platform are at allowable surface gradient						
5.2	The telephone counter is unobstructed with a 1.20mx0.85m allowing a parallel or a frontal approach						
5.3	There are Orientation and information signage in or around the phone booths						
	6. Garbage bin	1		2		3	
		yes	no	yes	no	yes	no
6.1	Garbage bins attached to lampposts did not face the line of pedestrian flow so as to minimize collisions						
6.2	Garbage bins have a contrasting colour so that people with limited vision may easily identify them						

	7. Lighting posts/poles	1		2		3	
		yes	no	yes	no	yes	no
7.1	Fixed poles have contrasting durable color marking strips at a height between 1.40 and 1.60 to						
7.2	The distance between guiding posts are around 1.20 m.						
	8. Signage	1		2		3	
		yes	no	yes	no	yes	no
8.1	Accessible space and facilities are identified by international symbol of accessibility						
8.2	There are Directional signs that indicate the type and location of available facilities						
8.3	There are directional signage were change in direction exist						
8.4	There are directional signage were change in level occur						
8.5	Information panels are placed at a height between 0.90 and 1.80						
	9. Obstructions	1		2		3	
		yes	no	yes	no	yes	no
9.1	Obstructions in the path way are placed along one continuous line						
9.2	Obstruction on the pathway surface are straight shaped and are a minimum of 0.10 raised platform						
9.3	There are tactile warning markings on the ground around the obstruction with a minimum width of 0.60m outside the projected area.						
9.4	Overhanging signs in accessible pathways are mounted at minimum clear height of 2.00m						
9.5	Overhanging vegetation are clipped to a minimum clear height of 2.00 m						
9.6	Undetectable obstacles mounted lower than 2.00m Project a maximum distance of 0.10m into the pathway.						
	10. Safety considerations	1		2		3	
		yes	no	yes	no	yes	no
10.1	Excavations and road-works are fenced with a minimum height of 0.95m for Safety reasons.						
10.2	Min height 0.15m Guards for change in level of more than 13mm						
10.3	Manhole and drains and grating are placed outside the pedestrian pathways						
10.4	Manhole are closed						
	11. Plant materials	1		2		3	
		yes	no	yes	no	yes	no
11.1	Landscape materials, trees, shrubs, and plants are with a variety of color, texture and fragrance.						

11.2	Planting beds adjacent to busy pedestrian walks have a defined edge with a minimum height of 100mm above ground surface as an aid to person with visual limitation.						
11.3	Raised planting beds are provided considering the sensory experience for a person with visual limitation or for a person using mobility aids.						
11.4	Raised planter beds are provided at a height of 460mm to allow easy access by persons using mobility aids.						
11.5	Plants with thorns or heavy berries are planted away from active pedestrian location.						
11.6	Over hanged brunches of trees or shrubs, located over walkways or paths are trimmed until a minimum clearance height of 2500mm.						