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SPATIAL INTERACTION AT BUILDING PLINTH:

The Case of Mixed Use Buildings of Addis Ababa, Ethiopia.

A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment for the MASTER OF SCIENCE IN ADVANCED ARCHITECTURAL DESIGN

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ADDIS ABABA, ETHIOPIA

DECLARATION

I, the 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 university

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CONFIRMATION

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ABSTRACT

Strong building interaction with the public space has a great role in shaping social activities such as sitting, walking and standing. Especially on the ground floor the space created inside the building must interact with the public space (Camilo Sitte). This study aims to understand the strong spatial interaction of the public space at the plinth ground and lower level which has a great role in shaping social activities such as sitting, walking and standing and many more. The study is expected to provide the future building of Addis Ababa, which may encourage awareness among local developers and communities to do more in designing and enhancing the interaction at the ground plinth. On the other hand, the study also opened for further investigations. Spatial interaction at building plinth should be investigated and propose a design that can enhance the plinth on mixed use buildings through incorporating accessible ground floor spaces, well function space flow from private space to public space of the building, open public space, walking spaces, staying spaces with friendly activities for encouraging social interactions.

Case study buildings are selected based on exposure of the building in conjunction with the adjacent street and street should be ≥ 25 meters and between 15- 25 meters. Here, the study focuses only on the ground floor that is analyzed based on characters that are identified to influence the spatial interaction. In order to get a deeper understanding of what is happening; case study method is used in this research as a methodology. Different data collection techniques such as interview, site observation and mapping are used. Observation, documentations and drawing are summarized and interpreted through maps and tables. Finally, the analyzed data are presented with tables and pictures obtained during field study.

The study findings indicate that the existing spatial interactions at building plinth of the mixed use buildings of Addis Ababa faces lack of accessible ground floor spaces, well function space flow from private space to public space of the building, open public space, walking spaces, staying spaces with friendly activities for encouraging social interactions. In response to those findings, this study confirms the importance of ground floor, as a pedestrian in the city, feel comfortable, safe, and captivated by the details of what your eyes see. The design attitude of the architect is important to start designing from the street, not from the building. Need to design good and pleasant entrances and ground floors. Different functions should be included with in the ground floor. Flow space should describe the space that is produced from the flows of people, information and goods, rather than concentrating on the boundaries. Physical access should not be limited to entrance spaces. Visual connection with the surrounding should be considered.

Keywords: Plinths, Public realm, spatial interaction, human scale, activity

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ACRONYMS

AACPPO	Addis Ababa City Planning Project Office
AALRT	Addis Ababa Light Rail Transit
EBC	Ethiopian building code
ENHR	European Network for Housing Research
HVAC	Heating, ventilating, and air conditioning
RMIT	Royal Melbourne Institute of Technology
ULI	Urban Land Institute
US	United States

PART ONE

CHAPTER ONE

INTRODUCTION

CHAPTER ONE

INTRODUCTION

1.1 Background

Public life is the essence of urbanism. The city's ability to facilitate movement, commerce, democracy, innovation and creativity resides in the currents and eddies of human beings at the boundary of public and private space, where homes, jobs, shops and civic buildings touch streets, parks and plazas. In a good urban neighborhood, the ground floors of the buildings work symbiotically with the surrounding sidewalks and public spaces. Together they provide a continuous network of pathways and experiences that are active, safe, comfortable and engaging. A good city requires solutions as varied as its fabric and its people and must constantly invent new ones (Grant, 2014).

The issue of the urbanist is devoted to the building side of that symbiosis. Because as it turns out, making the ground floor of urban buildings work is quite a tricky problem, and one that is far from resolved. It is tangled in tensions between policies and markets, cars and people, codes and desires. New ways of living which are the global housing crisis, new advances in digital sharing, the proliferation of slums and the increasingly keen need for social housing are reshaping our very idea of the home so that working and socializing have generated new policies and different, more adaptable spaces. A roll-up door can turn a street side loft within a parking podium from residence to store, to production space and back. Today's designers, builders, artists and entrepreneurs, steeped in urbanism, are blurring the lines among uses and the spaces they inhabit and getting away with it (The Urbanist, 2014).

As urban populations boom, the pressure for buildings to do more with less increases, and as successful design for mixed-use development comprises more than cramming as much as possible into one building. It must be considerate of the needs of its future occupants as well as its impact on its surroundings and how the wider neighborhood can profit. When a mixed-use building or development seamlessly adapts to its context, the combined effect is greater than the sum of its parts. Some benefits include stronger neighborhood character and better integration with city services (Urban Hub, 2018).

However, in recent years Addis Ababa has been flooded by a different kind of architecture, one that is basically incompatible with the pedestrian oriented environment necessary to a central city. These entities studies are necessary on how new types of buildings or retrofitting on the existing ones could be successfully incorporated into a present functional urban setting. Consequently, mixed use buildings should be the mix of art; business and retail all come together. They also should be human scaled at the sidewalk level that people may engage with different activities.

1.2 Problem statement

Mixed use buildings in Addis Ababa are becoming the dominant building types in the city, where a lot of people flow, to do their commercial and noncommercial activities. Despite this fact, the people are lacking an interest to stay in the building, to have access through the building face and also walk, sit and stand by at the buildings for a long time. This lack of interest can be clearly observed by looking to the mixed-use buildings in the city.

Strong building interaction with the public space has a great role in shaping social activities such as sitting, walking and standing. Especially on the ground floor the space created inside the building must interact with the public space (Cattaneo, 2000). In addition, according to Urban Hub, 2018 in their mixed use building article noted, the mixed use building has to be comfortable to the users and has to respond or reflect the surrounding community.

Maintaining how mixed use buildings are one important aspect on making the city image in mind, the author anticipates that, investigating the spatial interaction at building plinth behind the lack of staying and walking interests in the mixed use buildings in Addis Ababa, is a critical issue to be studied. That is, to propose a design that can enhance spatial interaction problems at the plinth on mixed use buildings.

1.3 Objective of the study

1.3.1 general objective

The major objective of the research is to investigate spatial interaction at building plinth and to propose a design and a design catalogue with a number of building typology that is informed by the research output for enhanced spatial interaction at building plinth on mixed-use buildings.

1.3.2 Specific objectives

To achieve the general objective, it is important to: -

- a) To assess design theories established in enhancing the spatial interaction at building plinth.
- b) To assess the contribution or limitations of local building regulations towards seamless spatial interactions.
- c) To examine the major causes of inhibited spatial interactions
- d) Explore preference of the spatial interaction at building plinth.
- e) To suggest possible design solution that reflects design theories and principles that are found to improve the interaction

1.4 Research question

- a) What are the major elements that support the spatial interaction of a building?
- b) What is the contribution of building regulation in creating spatial interaction building plinth in case of mixed use buildings?
- c) What are the users and professionals' preference of on spatial interaction at the building plinth in case of mixed use buildings?
- d) What are the major causes creating inhibited spatial interactions?
- e) How can it resolve the existing interaction problem?

1.5 Significance of the study

Today there's still a need to connect buildings to the street with a vibrant façade and plinth. This not only applies to new buildings and their ground floors, but also to the redevelopment of existing buildings. The transformation of many historic structures shows that the city always changes. The need to adapt and design good and attractive plinths is necessary for the city dweller (The City at Eye Level, 2012).

This study is important to address the spatial interaction at building plinth. There are different reasons why it becomes a priority issue of this study. one is the city shouldn't only offer a well-designed place but also a place for experience with active plinth, the experience can be positive, but if the ground floor is a blind wall, the experience on the street level is negative.

This study can have its own contributions, academically as well as socially. In the academic context, it defines the theoretical and contextual concepts of spatial interaction between the building and the outdoor activities. It gives advancement to the local knowledge of spatial interaction at building plinth, behind the lack of shopping, staying and walking interest in the area through the inhabitants' eye. It distinguishes design solutions and enhancements which are specific to the study area. In addition, the study will benefit to recommend the missed considerations on building regulation.

Further, this study provides the future building image of Addis Ababa, which may encourage awareness among local developers and communities to do more in designing and enhancing the spatial interaction at building plinth. On the other hand, the study will also open up new areas for further investigations.

1.6 Scope

The existence of a building in a given place has its own significance in shaping the manmade and natural environment around it. It has a profound impact on the surrounding beyond the intended purpose. But this research focuses only, about the plinths in the city, the ground floors that

negotiate between the inside and the outside, between ‘public’ and ‘private’. The buildings to execute the research are selected based on their physical location relating to the streets nature and their function.

1.7 Limitation of the research

The study has faced to different limitations that have influenced its extensiveness. Some of them are: the lack of related thesis books within the Addis Ababa University library. Due to time and money constraints the study area is limited to only on the ground floor that is analyzed based on characters that are thought to influence the spatial interaction the most. But the recommendations and design guidelines are expected to be applied to other similar building types.

1.8 Organization of the paper

The paper is organized in to two parts. Part one organized in to eight chapters. Chapter one introduces the background of the study, the statement of the problem, the research objectives and questions, the significance of the study, the scope and finally the organization of the paper. Chapter two is concerned on literature review. Chapter three is practical guideline of the research issue. Methodology of the research is discussed in chapter four. This chapter presents the selection of method and the design of such method to the way it can address the research objectives. Chapter five presents the case study buildings. The study result is analyzed and presented in chapter six. The discussion of the study is under chapter seven. The conclusion and the recommendations are included under the last chapter.

The proposal is under part two, in this part, conceptual design solutions are distinguished; proposed design images, drawings and details are presented in reference to the conceptual design objectives.

1.9 Operational definition of terms

Plinth: - is a base or platform that's used to support structures above the ground. Here it represents the whole ground floor spaces.

Public realm: - Public realm should not be seen in isolation but in the context of its building face, their uses and its location in a wider network of public and private space.

Spatial interaction: -involves a wide range of flows between spaces: these include human movements.

Human scale: - Humans interact with their environments based on their physical dimensions, capabilities and limits.

Public space: - is a social space that is generally open and accessible to people. Roads, public squares, parks and beaches are typically considered public space.

Private space: - is the area surrounding the site territory which mostly regard as compound of the building.

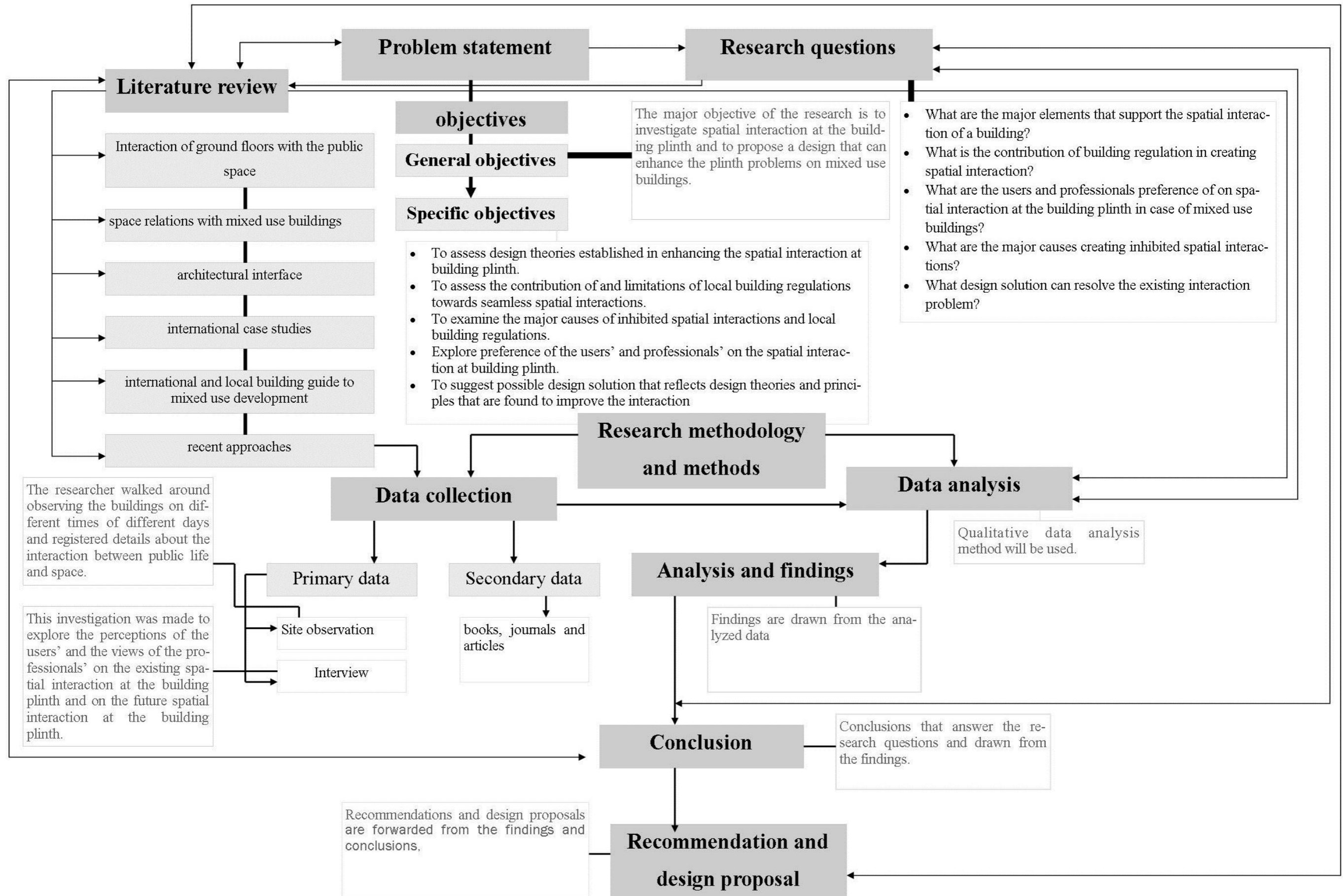


Figure 1: Research design. Source: prepared by the author

CHAPTER TWO

LITERATURE REVIEW

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

As this research tries to investigate the spatial interactions at building plinth of mixed use buildings, the literature has included six major areas. These are theoretical concepts of interaction of ground floors with the public space, the facade and the architectural interface which is more conceptual understanding of space as a social entity.

2.2 Plinth

Active plinths of the buildings and the arrival of human scale streets create a dynamic and safe urban realm. Different renowned researchers and urban planning thinkers have defined plinth based on the evaluations of public domain quality. Those are Jan Gehl and Jane Jacobs whose thoughts are discussed here under:

2.2.1 Jan Gehl

As Jan Gehl stated market forces and related architectural trends have gradually shifted focus from the interrelations and common spaces of the city to individual buildings, which in the process have become increasingly more isolated, introverted and dismissive. Many old cities were established as pedestrian cities, and some continue to have that role where topography has made car traffic impossible, or where the economy and social networks are still based on foot traffic. Whether people are enticed to walk around and stay in city space is very much a question of working carefully with the human dimension and issuing a tempting invitation.

He mentioned five basics in order to have active plinth. The first one is lack of understanding and respecting the human scale impacts on the great majority of new cities and built-up areas. Buildings and city spaces grow increasingly larger but the people who are expected to use them are as always small. The challenge is that the principles of good human scale must be a natural part of the urban fabric in order to invite people to walk and cycle. For many reasons, in future people have to build many large complexes and buildings with large dimensions and many stories. But neglecting the human scale is never an option. The human body, senses and mobility are the key to good urban planning for people. All the answers are right here, encapsulated in our own bodies. The challenge is to build splendid cities at eye height with tall buildings rising above the beautiful lower stories.

The second is wide variation in functions provides many points of exchange between in and out and many types of experiences. Shops, restaurants, monuments and public functions can be logically placed where people are likely to be passing by. Walking distances seem shorter that

way and the trip more of an experience. People get the opportunity to combine the useful with the pleasurable and all by foot.

The third idea is the treatment of the building's edges, particularly the lower floors of buildings, has a decisive influence on life in city space. This is the zone you walk along when you're in town, and these are the frontages you see and experience close up and therefore intensely. This is where you enter and leave buildings, where indoor and outdoor life can interact. This is where city meets building. The edge along ground floors is also a zone in which doors and exchange points between inside and outside are located. The edges provide the opportunity for life in the buildings or immediately in front of the buildings to interact with life in the city. This is the zone where activities inside the buildings can move out into the common space of the city.

The fourth basic is the façade. We experience close-up the rhythms of the façade, the materials, colors and people in or near the buildings and they largely determine whether our walk is interesting and eventful. For city planners there are heavy arguments in favor of concentrating on ensuring active and interesting ground floors along important walking routes. In terms of visual and other types of experience, all building elements except façade play a far less significant role. Walking in the city leaves ample time to experience everything that ground floors have to offer and to savor the wealth of detail and information. Walks become more interesting and meaningful, time passes quickly and distances seem shorter. However, where there are no interesting edges or where ground floors are closed and monotonous, walks seem long and impoverished in terms of experience. The whole process can become so meaningless and tiring that people give up walking altogether.

finally transition between private and public space, these transition zones between must be carefully articulated in order to clearly distinguish between what is private and what is public. Changes in pavement, landscaping, furniture, hedges, gates and canopies can mark where public space ends and fully or semiprivate transition zones begin. Height differences, steps and staircases can also mark the transition zone, providing critical prerequisite for the important function of soft edges as the link between inside and out, between private and public. Only when territories are clearly marked can the private sphere afford the degree of protection that people need to make contact with others and contribute to life in the city.

2.2.2 Jane Jacobs

She pointed out how the dramatic increase in car traffic and the urban planning ideology of modernism that separates the uses of the city and emphasizes free-standing individual buildings would put an end to urban space and city life and result in lifeless cities devoid of people.

For the first time in the history of man as a settler, cities were no longer being built as conglomerations of city space and buildings, but as individual buildings. Modernists rejected the city and city space, shifting their focus to individual buildings.

2.3 Inside and outside space relationship

Fundamental act of architecture define space by separating one space from another and basically requisite of this act is creating differentiation of inside and outside. In beginning of time, architecture had this tendency to enhance shelter and habitation by inside and give over movement and utilization of natural environment to outside; but inside and outside doesn't exist without each other. This essential relationship served by elements like openings and visual accesses had been improved by time. Functional approach to external walls, doors and windows is necessary but it is not enough for human desire space (Shahlaei, 2015). 'Inside', as the opposite to 'outside', can be defined as "being in or to the interior of something, the inner side, surface, or part of something" (Collins, 2003). Outside can be defined as "being outside a specified thing or place; out of doors or similarly the external side or surface of something". The outside is generally associated with the environment, the great outdoors. The environment can be defined as "the external conditions or surroundings in which people live" as well as "the natural world of land, sea, air, plants, and animals" (Collins, 2003).

2.3.1 Facade

Outside surface belongs to the city, the two sides of a building facade should each perform for the side it faces—one for the inside and the other for the outside. Closer consideration of the facade reveals a number of different functions. First of all, it is the face of the building after all; the word 'facade' comes from the Latin *facies*, which means face. the facade acts as a physical filter a complex regulatory system to make the inside of the building comfortable and a social filter. A successful dwelling allows the occupant to regulate its psychological and social functions as well as its air conditioning and heating. This combination of aesthetic, physical and social functions makes the study of the facade a complex undertaking, requiring sociological as well as architectural insights. "It may be impossible to study objects without references to humans." the physical filter and the social filter are aspects of the facade, with special reference to the two functions located nearer the outside the social filter and the face. The social aspect of the facade, no matter what it looks like, is always the element used by the occupant to regulate the degree of contact he wants with the outside world. Machiel van Dorst, who has devoted a great deal of research to the built environment, argues that "The occupant's need to interact with his living environment depends on how he feels or what he is doing at the time. A dwelling with interfaces that move from private to public scenarios enables him to regulate this interaction." Some fundamental laws for Man and his environment are summarized by Dorst (Dorst 2005, p.85) The most important are:

- Man constantly wants to be able to intervene in his environment;
- Man strives towards attaining his own territory;
- Man needs contact with the natural environment.

As the occupant's needs may vary, one must be able to control the environment or the environment must be versatile enough to meet the different requirements. The facade is the first layer between the inside and the outside space. It may be a simple wall, or it may be spatially

differentiated. The spatially differentiated facade represents a very interesting interface between inside and outside. The user of the space can make contact with the outside world through the window, but people can also step right into the facade in a sense. These differentiated zones in the facade create private-to-public transitions for the occupant. Such ‘privacy zones’, as van Dorst (2005) calls them, are not always clear cut or immediately recognizable in spatial terms, but they are implicitly present for the occupant. Inhabitants feel a shared sense of privacy on their own walkway or in their own street. Hence, the transitions from public to private and vice versa are fluid, moving more or less between the following zones: Public; a collective outside area like a communal garden or a drive-in; a collective inside area like a walkway or the stairs; a semi-private zone like a bench on a walkway; and finally a private outside.

It is important that the elements used to indicate the switchover between private and public be able not only to act as a barrier but also and more specifically to invite contact with the outside world. A bench on the walkway or pavement can, for instance, invite social interaction, while flowerboxes can act as a buffer against inquisitive passers-by. Safety, in turn, is closely related to the idea of territory. There is no denying that safety is becoming increasingly important to the people. This aspect emerged in particular from the research that Dorst conducted on neighborhood livability. He realized that if the territorial border is readable, people will use the zone much more than if it is not readable (Dorst, 2005). There are various ways in which a facade can be used to prevent or promote visual and aural contact. As Jan Gehl mentions in his study on ‘living between houses’, there are elements that function as a threshold and others that invite interaction (Gehl 1978 p.50). The border between the two is fragile. Large horizontal and vertical distances are a natural barrier. Barriers can also be perceived in elements that are not transparent and are too high to look over. A short distance can invite interaction, as can elements like benches which are placed in a communal or semi-private zone. These elements create some extra space within a layer, e.g. within the floor space of a walkway. The important thing is that these spaces should be visible. The conclusion can be drawn that transitions from the public to private are important, but likewise need clear boundaries. An important factor in this is to offer people different possibilities for intervening, changing, or using.

2.4 Architectural interface

One of the early concepts of syntax, from the social logic of space, is architecture seen as an interface. This is sometimes interpreted as on one hand a singular transition between ‘private’ and ‘public’, or more gradually as a transition from ‘public’ urban space towards more and more private space on the other (Y O Kim, H T Park and K W Seo, 2013). Within syntax research, the idea of ‘interface’ ranges from specific interpretations such as the interface maps (Hillier and Hanson 1984, 104-105) to more conceptual understanding of space as a social entity that interfaces between inhabitants, and inhabitants and the public, to recent discussions of purview interface (Peponis, 2012).

2.4.1 The principle of layering

Layering of the facade means the addition of several material layers, relatively close to each other, to form an element. In primitive societies, people fashioned walls for their dwellings from woven cloth and mats (Semper 1851). Later, when these protective elements were replaced by solid walls, the woven structure still formed an important layer inside the brick wall. As a result of this switch in material the original wall made out of cloth became the artificial wall, the decoration. This is one of the first examples of layering of the enclosure. In architecture today layering is more complex. Architectural layering can occur in every spatial dimension. According to A.C. Schultz, “Layering lives by the plurality of the single elements and their reaction to each other”. Schultz identifies two types of architectural layering: material layering in which several material layers, relatively close to each other, form an element; and spatial layering in which different spaces and zones, horizontally or vertically adjacent or overlapping, create an overall impression characterized by depth, dynamism or transparency. Spatial layering is mainly applied to internal spaces, but can also be used –alongside material layering. The layers offer a transition between inside and outside, between the private and public spaces. A façade which can offer a variety of spatial layers will not so rapidly fall victim to the time factor as a spatially single-layer envelope (Birgit, 2006).

2.5 Public spaces and users

Lars Gemzøe in his book, “People and public spaces” (2008), has categorized users of open public spaces in to five user groups (Gemzøe, 2008). One, “The everyday users”, peoples that lives and works in the area of focus. Two, “The passers-by” or the pedestrians in transit; they are peoples in passing through the area. Three, “the recreational visitors”; which are in use of the area in relation to recreation and pleasure. Four, “The visitors or customers” are peoples that visit the functions in the area. There are also “visitors to planned activity”, peoples which are in visit of the area in relation to social events (Gemzøe, 2008). Jan Gehl in his book, “Life between Buildings” (2011), has categorized public space activities in to three major activity types: necessary activities, optional activities, and social activities. Each of these places very different demands on the physical environment.

Necessary activities include those that are more or less obligatory – going to school or to work, shopping, waiting for a bus or a person, running errands, distributing mail – in other words, all activities in which those involved are to a greater or lesser degree required to participate. The occurrence of the activities in this group is influenced only slightly by the physical framework. These activities will take place throughout the year, under nearly all conditions, and are more or less independent of the exterior environment. The participants have no choice.

Optional activities only take place under favorable exterior conditions, when weather and place invite them, if there is a wish to do so and if time and place make it possible. Most of the pleasant recreational activities that take place outdoors are found precisely in this category which

includes such activities as taking a walk to get a breath of fresh air, standing around enjoying life, or sitting and sunbathing. Therefore, a wide range of optional activities start to occur when a place and situation invites people to stop, sit, eat, play, and so on.

Social activities are all activities that depend on the presence of other people in public spaces. Social activities include children at play, greetings and conversations, communal activities of various kinds. Passive contacts, that is, simply seeing and hearing other people is also a social activity. Simply put, a social activity takes place every time two people are together in the same space (Gehl, 2010).

Table 1: public space and users Source: Adapted from Gemzøe, L., 2008. People and Public Space.


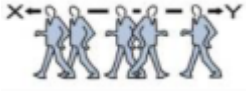

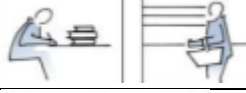

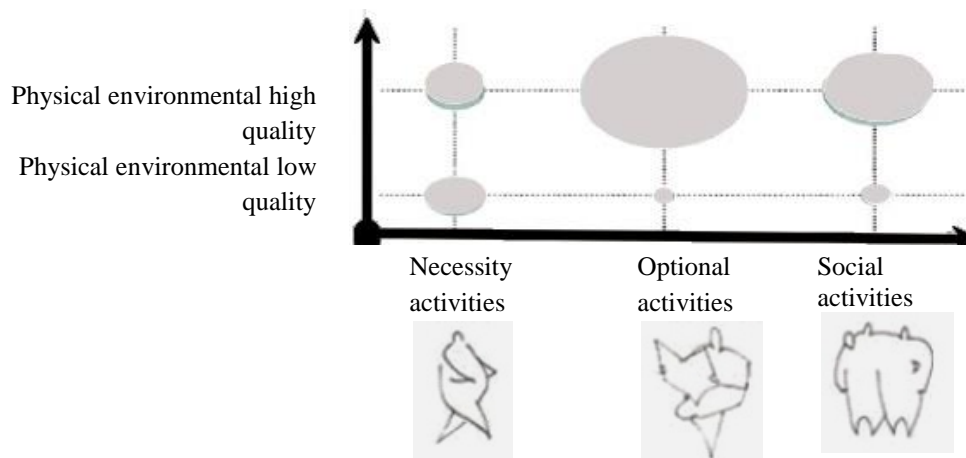
Public space and user	
The everyday users	
The passer by	
The recreational visitors	
To get service	
Daily transit activity	

Table 2 : The outdoor quality and outdoor activity graphical relationships. Source: Adapted from Gehl, J., 2010. Cities for people.



Therefore, when the outdoor areas quality is poor only strictly necessary activities occur and on the other hand when outdoor areas are of high quality, necessary activities take place with approximately the same frequency to the optional activities. When people happen to be in the same space moving about social activities tends to occur naturally.

2.6 International case studies

Two international case studies are discussed in this chapter of the research. The case studies are Via Vallejo mixed use building in Mexico and Landscape folly /Reading room project.

2.6.1 CITYWALK

Select CITYWALK is a 1.3 million sq. ft. air-conditioned, vibrant and upscale destination shopping center. This is a part of an overall complex of three floors of office space, Cinemas, apartments and well planned business district. It has a character of an enclosed shopping mall, with outdoor plaza and landscaped park.

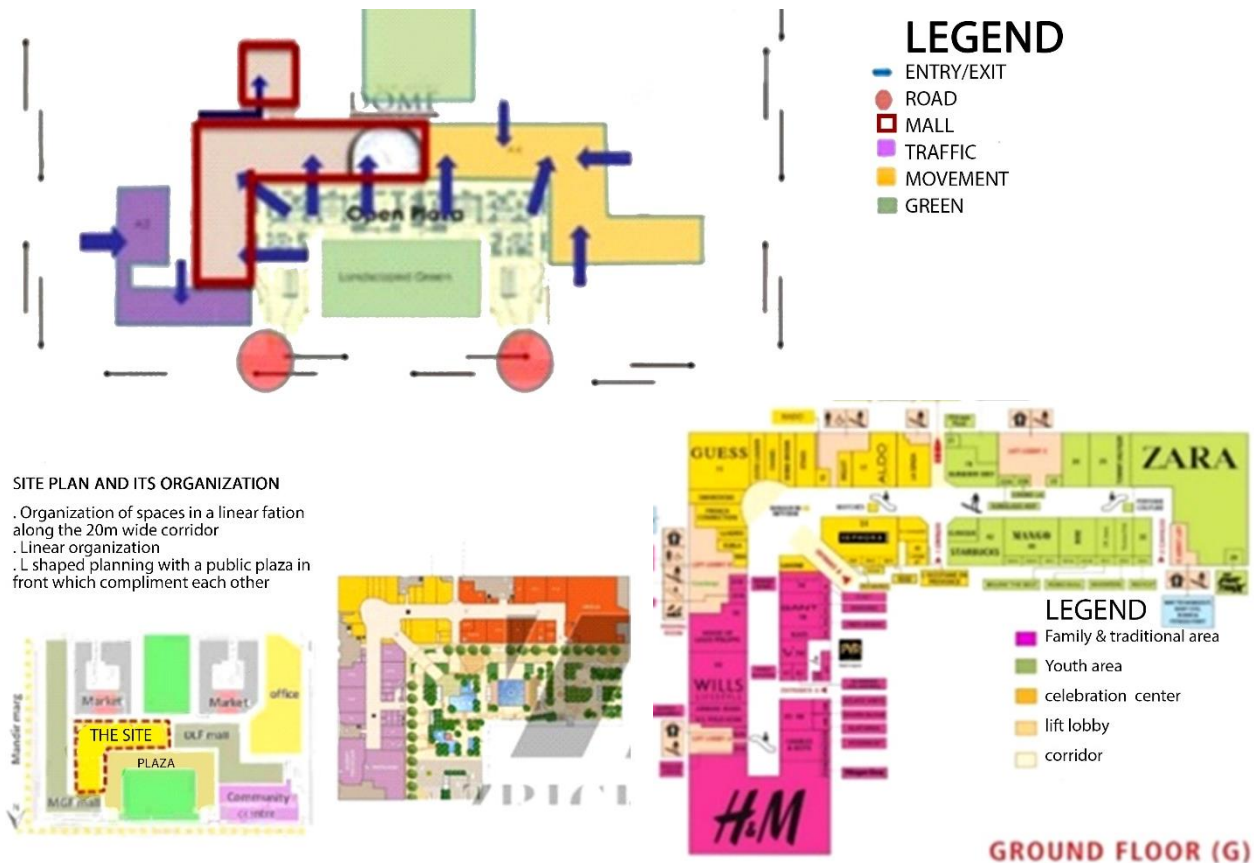


Figure 2: International case studies Select CITYWALK Source: [http://www. Select City walk.](http://www.SelectCitywalk.com) accessed in 11/5/2013.

It is easily accessible through public transport. Style of architecture has aesthetic quality / visual impact elements reminiscent of vernacular architecture like the free-standing walls, fountain plays a very important role in catching the eyes of the shoppers to stop by it and spend some time around it. At the upper level on the front facade, space has been provided for advertisements which are visible from a distance governing the external elevation; half dome shaped structure catches the attraction of visitors, which is visible from the road. Organization of spaces in a linear fashion along the 20 m wide corridor with a public plaza in front which compliment each other.



Figure 3: Character of the building (Source: "Delhi Shopping Centre, Shopping Mall and Restaurants in New Delhi, Places to Shop in Delhi". Select CITYWALK India. Retrieved 13 August 2019)

Landscaped outdoor open plaza for art exhibitions & performances with statues & sculptures placed all around the landscaping. sitting spaces is created all over the landscaped area more use of pots for plants and terrace garden is being used as outdoor seating for the cafe situated on the second floor. Seating spaces created all around the open spaces outside the mall the plaza provides a pleasant and sitting for rest, relaxation with pedestrian pathways extending into green space with special features like open air theatres, water bodies, fountain and breathtaking landscaping.

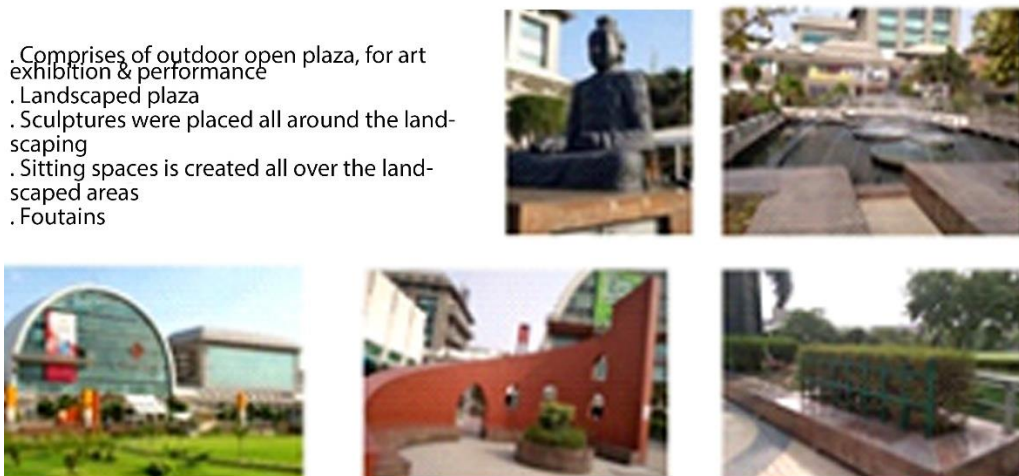


Figure 4: Landscaping (Source: "Delhi Shopping Centre, Shopping Mall and Restaurants in New Delhi, Places to Shop in Delhi". Select CITYWALK India. Retrieved 13 August 2019)

The design of the mixed-use responds to the site in relation to the users. The interactive spaces walkway space, public space, an outdoor park surrounding the building make the place lively and bring about the social interaction to the building.

2.6.2 Landscape folly /Reading room project

The second case study is a landscape folly, a structure ostensibly sited in a park as a place for reading, which allows investigation of the geometry of enclosure. Rather than acting as an intermediary buffer between inside and the outside, the plinth here are claimed to comprise a fundamental place of architectural experience.

The project arose from a project set by Prof. Mark Burry. That explored interests in parametric form and the telescoping perspectives of M.C. Escher's 'The Print shop' in the design of a small park structure to house the act of reading. The exercise led to consideration of the geometric limits of enclosure of inside-outside space. This balance of 50% internal and 50% external was then blurred by diffusion and reflection on the boundary and heightened by the inclusion of a substantial landscape figure within the implied external volume. Freed of constraints for weather-tightness, the reading room project enables examination of the minimum geometry that denotes enclosure.

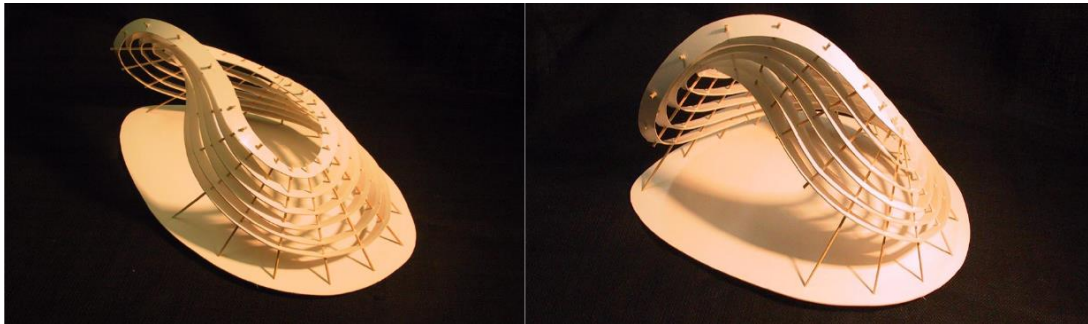


Figure 5: Reading room project, Model 40*30cm (Source: Skinner, P.R, 2003)

Escher's mathematical geometries promoted consideration of the Mobius strip as boundary of space. Although the Mobius strip topologically has no internal or external surface, but is a continuously twisting loop, spatially it can be seen to define a contained volume and, if appropriately scaled, can be experienced as semi-enclosed space. The structure can thus be inhabited, although sense of enclosure is elusive as the surface twists continuously from external to internal faces. The structure is constructed of blades perpendicular to the surface. These blades appear edge-on and visually minimal in places before twisting perpendicular to the line of sight and closing down the view. The 50/50 inside-outside space is thus enclosed by a 50/50 internal-external surface that would read as 50/50 open and closed. Shifting sunlight and shadow further enhances ambiguity of enclosure.

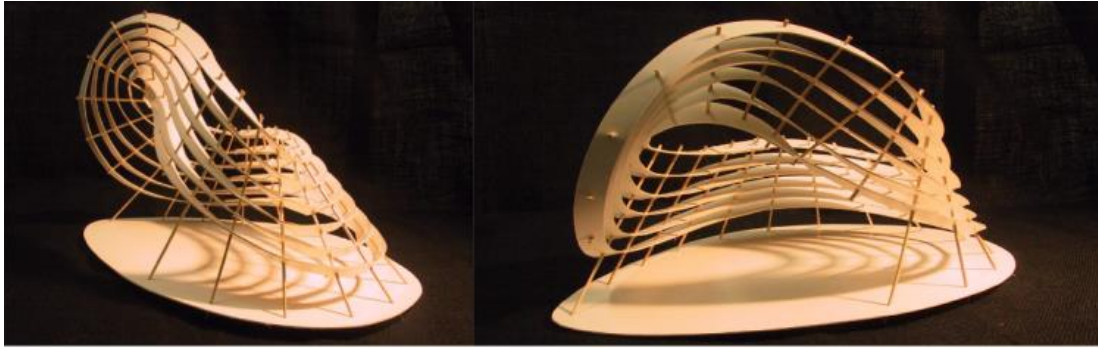


Figure 6: Reading room project, Model 40*30cm (Source: Skinner, P.R, 2003)

Minor changes to the mobius geometry leads to significant formal variation. It is not intended that exploration of this geometry will lead to architectural application beyond that of the folly. The experiment does however have certain elegance as it suggests a limit state at which concave form becomes internal space and convex volume becomes external space (Skinner, P.R, 2003). The aim of this paper is to demonstrate the viability of the idea of ambiguous plinth as a focal concern and generator of architectural design. Unlike the rules of language that place notions of inside and outside in structural opposition, within the spatial logic of architecture it is possible for one to merge seamlessly into the other, and, it is argued here, for them to coexist simultaneously. This project is a different approach to achieve the transition between inside-outside and public-private spaces within form.

2.7 International guide to mixed-use buildings

The review is on Australia mixed-use buildings guide, this guideline preferred, because not only this city systematically improved the conditions for city life and pedestrian traffic, it has also recorded the development and can document changes and growth in city life in step with the guide carried out (Gehl, 2010)

A city development plan and building code of Australia

As this research tries to investigate the spatial interactions at the buildings plinth of mixed use buildings reviewing site and building design configuration, building appearance, corner sites, building entries, street level building design, pedestrian access, safety and comfort, signage and on-site facilities and services is essential.

Configuration

To secure an allotment of appropriate location, size and shape to accommodate functional and desirable mixed-use development the key design principles are: -

- Clearly define spaces for pedestrians, utilities, service, parking and storage areas
- Establish links with the public realm
- Site buildings close to and oriented towards the street
- Provide covered walkways, outdoor seating and landscaping where possible
- Create a walkable context that is stimulating, legible, comfortable and safe for pedestrians

Building appearance

To design the building façade to express the different functions of the building and to enhance the character and diversity of the streetscape the key design principles are: -

- The façade treatment reflects the activities carried out within the building, whilst respecting the size, appearance and proportions of existing adjoining buildings
- Provide ground floor façades that are rich in detail and interesting for pedestrians
- Integrate each use in a manner that achieves a seamless appearance
- Plant and machinery used by non-residential activities are integrated within the building or are suitably screened
- Vehicular entrance openings are integrated within the design of the building
- Suitable relationship established with nearby heritage buildings

Corner sites

To define the corner location of a building as a focal point and landmark the key design principles are: -

- Incorporate features such as corner entrances, decorative windows, built elements and tones to highlight and reinforce the corner

Building entries

To provide distinctly identifiable entrances for each use within the mixed-use development and to promote a sense of recognition and ownership the key design principles are: -

- Clearly identify the primary entrance of a mixed use development and distinguish it from secondary entrances
- Design entrances to be clearly visible from the street frontage, readily identifiable from public areas, to be well-lit at night and with clear numbering

Street level building design

To create mixed use development that invigorates street activity and contributes to a pedestrian-friendly environment the key design principles are: -

- Locate active uses such as shops and cafes at the front of the building
- Maximize active use of the public realm, such as outdoor dining
- Provide an appearance of several smaller buildings at ground level to generate an area which is welcoming and pedestrian-friendly
- Design windows at street level which are of a size that respects the human scale
- Incorporate shop front windows, display cases and other elements along side streets to provide visual interest to façades

Pedestrian access, safety and comfort

To provide occupants and visitors with clear, safe and convenient access to areas within a mixed use development the key design principles are: -

- Provide separate access to public and private areas, allowing each area to function independently and providing greater security for all occupants
- Design buildings to provide casual surveillance of access ways, entries and driveways

- Provide adequate lighting of all pedestrian access ways, parking areas and building entries. Lighting should be on a timer or movement detector to reduce energy consumption
- Avoid the creation of obscure order alcoves, which might conceal intruders. Provide clear lines of sight and well-lit routes throughout the development, including stairwells, hallways and car parks
- Where a pedestrian pathway is provided from the street, allow for casual surveillance
- Vehicular movements are separated whenever possible, and all pedestrian movements are segregated

Signage

To use appropriate signage to identify each use in the mixed use development in a manner this respects the scale and design of the building; the key design principles are: -

- Integrate signage into the architecture of the building
- Apply signage at a scale appropriate to pedestrian level
- Clearly display street number and entrance/ egress and design to complement the architectural style and streetscape
- Place well-proportioned signage on window fronts perpendicular to the shop front below the canopy or at the level of the canopy
- Avoid visual clutter

On-site facilities and services

To provide facilities and efficient, comprehensive services to ensure the comfort of users with minimal impact on adjacent precincts the key design principles are: -

- Locate loading facilities at the rear of the development and parking for large sites in the basement
- Ensure that ground level parking enhances the streetscape and pedestrian environment
- Provide community schemes for each land use and level of the building
- Design parking areas to take into account multiple uses and the need to provide separate parking areas for each use in some circumstances.

Conclusion

Public realm is vital as humans are focused in meeting other people, in that realm the human scale is important as well as the street and public spaces, this all is provided by the spatial interaction at building plinth. The more a city has of the urban public realm, the more successful the city will be in the long run. When discussing spatial relations in architecture one cannot forget to mention the spatial interaction with the surroundings should be visible in many public buildings like: modern shopping centers, museums, and other public utility objects.

CHAPTER THREE

CONTEXTUAL REVIEW

CHAPTER THREE

CONTEXTUAL REVIEW

Building regulations on mixed-use buildings

Review the mixed-use building regulations is essential to investigate spatial interaction at building plinth. The regulations are stated locally Ethiopian building code of standards Guidelines and Addis Ababa main city center urban design guideline. Within them, the cases which are contextual to the issue of plinth are reviewed here under.

3.1 Ethiopian building code of standards

Building spatial design

Under Ministry of Urban Development & Construction revised in 2013, stated various issues regarding building, setbacks, accessibility, planting and landscaping authorities is also mentioned the issues as one of the reasons for the preferable and non-preferable spatial interactions at the building plinth.

Building

- Locate active uses such as commercials 30% and residence 70% at low density mixed residence areas.
- Locate active uses such as commercials 40% and residence 60% at medium density mixed residence areas.
- Locate active uses such as commercials 50% and residence 50% at high density mixed residence areas.

Setbacks

- The major streets ≥ 25 meters buildings are proposed to have a minimum of 3m building setbacks from the property line.
- The streets between 15- 25 meters buildings are proposed to have a minimum of 2m building setbacks from the property line.
- The streets ≤ 15 meters buildings are proposed to have a minimum of 1m building setbacks from the property line.

Accessibility

- When a building, or portion of a building, is required to be accessible, accessible routes within the site shall be provided from public transportation stops, accessible parking and accessible passenger loading zones
- All floors that are not intended for storage and service activities shall be accessible.
- Streets or sidewalks should be provided to the accessible building entrance.
- At least one accessible route shall connect accessible buildings, accessible facilities, accessible elements and accessible spaces that are on the same site.

- When a building, or portion of a building, is required to be accessible, an accessible route shall be provided to each portion of the building, to accessible building entrances connecting accessible pedestrian walkways and the public way.

Planting and Landscaping

- All buildings shall have on-building and off-building planting amounting in aggregate area to at least 15% of their lot area.
- All new buildings and additions over 50m shall be landscaped. Such landscaping shall be completed within one year from the date of occupancy of the building.
- Front yards required by this code shall be completely landscaped, except for those areas occupied by access driveways, walls and structures.
- All nearby street-side yards shall be completely landscaped, except for those areas occupied by utilities, access driveways, paved walks, walls and structures.

3.2 Addis Ababa Main City Center Urban Design Guideline

Most importantly, it illustrates the comprehensive guidelines concerning the city center as a whole. Detailed analysis of conceptual frameworks with supportive guiding principles & elaborates planning and urban design proposals both at the main City Center level & at district level. The guide line prepared in five district areas which are the main city center in Addis Ababa (the action area Churchill district, National Theatre district, Cherkos district, La Gare district, & Filwoha district). Chapter four discussed on case study of mixed use buildings in Addis Ababa, two of them are found at National Theatre District for the reason that this section focus on National Theatre District only, so that it will be an input to analyses the cases.

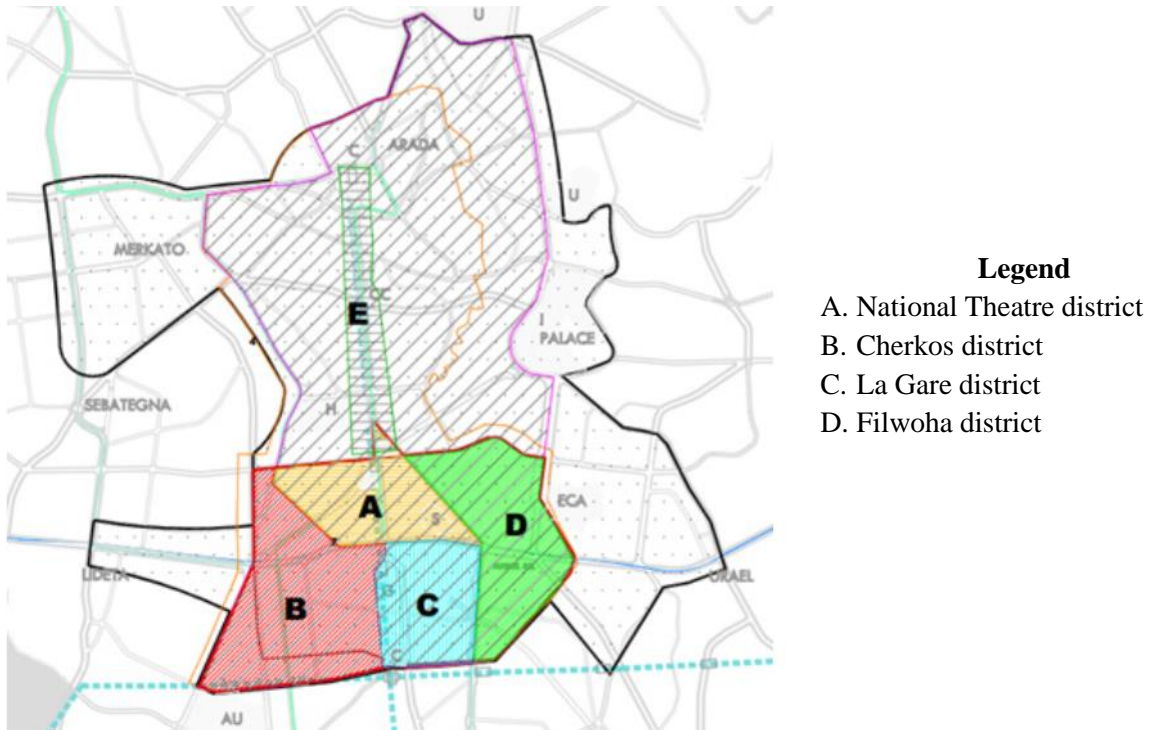


Figure 7: Main city center districts (Source: Addis Ababa Main City Center Urban Design Guideline)

Since the research is under consideration about the spatial interactions at the buildings plinth, the review here will be on civic life and interaction, street / public realm interface, commercial corridors, urban arcades, set-back treatments, facade treatment, ground floor treatment, obligatory building lines and architectural style/building typology.

Civic Life and interaction

There are obligatory tips here; they are

- Spaces where people can pause take the time and interact and implementing the stations, pocket areas, public locations overlooking the street is mandatory,
- Breaking dead walls and forming interactive surfaces is mandatory,
- New developments are not allowed to create dead wall (not allowed to create walls with no visual connection, not interactive surface).
- The existing buildings surrounded by their open public spaces can provide a sense of continuity through the attached memories.

Street / Public realm Interface

- The exterior design of portions of buildings within the first two stories shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment,
- The design of the amenity zone should provide a physical and psychological buffer to pedestrians through appropriate use of features such as street trees, street furniture and street lighting,

- Utilities should be located underground whenever feasible to reduce conflict with pedestrian movement and improve the aesthetic character of the pedestrian realm,
- Sidewalks should provide a direct and continuous pedestrian network that connects blocks and buildings to each other while accommodating the needs of all range of users, including elderly, those with disabilities, and young children,
- Use materials to clearly signify and prioritize pedestrian circulation over vehicular circulation,
- Locate street furniture within the interface zone in areas of high activity where people are expected to congregate, such as at transit stops, building entrances, in plazas, and close to retail or entertainment areas,
- Use buildings, landscaping features, furnishings, cafes and patios, fences, plazas, and urban open spaces to define the interface zone, create a sense of three-dimensional containment to the streetscape,
- Design buildings to promote walkability through building façade design, including providing weather protective elements such as canopies or umbrellas. These elements should provide adequate vertical clearance of the sidewalk within travel zone,
- The design of building interfaces and facades of the lower portions of buildings should relate to the architecture of the rest of the building and should demonstrate a unified overall building design,
- A predominance of glass which assures transparency between interior activities or products and pedestrian activity on the streets and sidewalks is very important to the vitality of the pedestrian environment,
- Where creating a new façade through construction of an infill building within an existing building context, interface design and building facades should respect the general pattern of street and façade design found in the surrounding context,
- Benches should be placed perpendicular to the street edge to create pocket pedestrian spaces
- Shade-providing canopy trees, placed at a maximum distance of 10m center to center, should be planted on the sides of the streets, medians and setbacks where trees are needed. Exceptions shall be permitted to accommodate street furniture and bus shelters.

Commercial corridors

- The design of buildings, particularly the ground floors should be open, accessible & inviting to the public,
- Continuous commercial corridors should be created by providing various types of retail services. Regarding this, street level building use alteration is needed for existing administrative buildings,
- Design the street space to be a destination to the public & enhance businesses via providing all the necessary amenities: seating, shading, art, trash receptacles, water features, mini-plazas, shade trees, umbrellas etc.

Urban Arcades Guidelines

One of the distinctive features of the Biherawi Theatre area is the presence of urban arcade, which enhance comfort and provide protection to pedestrian from adverse climatic condition (direct sun light and rain).

- Preserve the existing street walls while comfortably integrating these features into the existing streetscape,
- Ensure that active uses are placed along the recessed street level, street dining & extension of inside activity is allowed to the half width of the arcade, the other half should be left for circulation,
- Incorporate mezzanine floors (where appropriate), for spaces which have 5m height, the arcade height should end at the first floor slab, provided that the first floor slab line should be extended from National Theater upper arcade line,
- Arcade lighting should thoroughly light the interior of the arcade, with no dark area within the arcade,
- The alignment of the arcades must be kept continues with the existing buildings,
- Along Churchill south the arcades are strongly recommended to have similar character & height with the existing ones (pure geometric shape, stone cladding, rhythmical placement and high ceiling).

Set-back treatments

- Some of the major streets (Yohannes Street, Sengatera Street, and local road behind Telecommunication Building) are proposed to have a minimum of 5m building setbacks from the property line to provide mini plazas,
- At corner sites, the front setback should increase the using chamfer or round for visual connectivity as well as other public use,
- As indicated on the building line map, the front setback along Churchill South and the local streets should be Zero,
- Setback treatments should integrate sustainable techniques for irrigation and lighting and make use of native planting materials for a low-energy and low-maintenance amenity
- Underground structures are discouraged under the setback area.

Facade Treatment

- Opaque and highly reflective glass and uninterrupted blank walls are discouraged. Long continuous facades should be articulated with architectural elements, preferably with local elements,
- Identifiable break between different uses with in building floors should be provided, both vertically and horizontally,

- The scale, size, proportion, and pattern (solid to void ratio) of openings should reflect, not directly imitate, the character of historic buildings in the national theatre area, preferably punched and horizontal ribbon windows,
- To respond for the local hot mild climate excessive use of curtain wall is discouraged, especially towards the west, south-west and east,
- To allow visual permeability towards public realm, the opening proportion of the building facade facing the street shall at least be 30%,
- To comply with the color of the existing fabric, the color of buildings is recommended to be chosen from cream and gray with their respective hues and saturations,
- Avoid building facades, in all building, which has a rear look. Each side of the building should be designed purposefully,
- Preferably, the building components shall vary in character as it goes from base, tower and the top section. Building base (plinth) should be distinct and provide scale and character at the street level through appropriate detailing integrated with the whole building design,
- The roof lines should be designed in a way to give distinctive character of a place. Large expanses of flat roofs and exposed mechanical elements are discouraged.

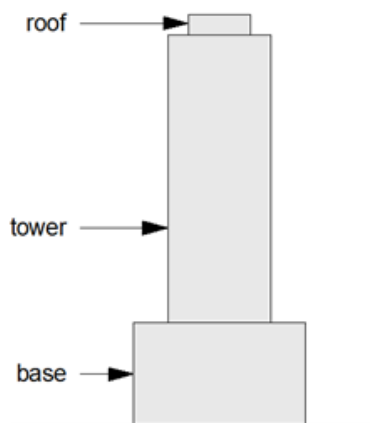


Figure 8: Massing (Volumetric Parts of a Building)(Source: Addis Ababa Main City Center Urban Design Guideline)

Ground floor treatment

Permanent awnings and canopies compatible with the building architecture are encouraged.

- The main building entrance should be read differently from retail fronts,
- To animate the public realm of the city, the portion of buildings right next (and relatively close) to the street should be dedicated for commercial activities. Mainly the lower few floors,
- Ground floors should be treated differently, preferably below floor level, using heavier materials (stone, brick, concrete, etc.) which are dominantly seen in national theatre area,
- Ground floor wall openings should be 75% transparent. Blank walls facing the sidewalks or public areas are discouraged,

- The ground floor (and active frontages above ground floor) should have a clear vision glass for maximum Transparency. Tinted or mirrored glass is discouraged. To attract visual interest, ensure spacious public interface, to allow usage of mezzanine floors, height of ground floors is recommended to be 5–5.5m,
- To end up with the harmonious built fabric, the existing characters such as arcaded walkway, cantilevers, and relaxing ground floor height are recommended to be used.

Obligatory building lines

- To create a distinct street character that are comfortable and protected for pedestrian, the red lines which represent setback along the curb stone (the edge of vehicular right way) should be respected as indicated on the map. It is totally restricted to deviate a centimeter from these lines. In this case, the yellow lines the ample arcade walkway should be provided at the ground floor and the space above the arcade should be dedicated for private use as compensation.

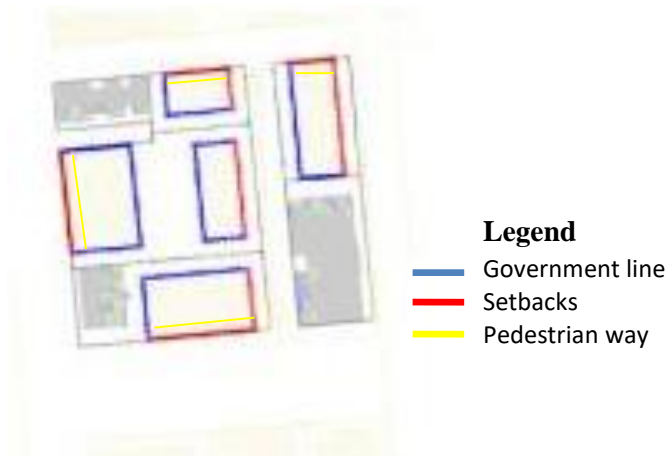


Figure 9: Proposed Building line (Source: Addis Ababa Main City Center Urban Design Guideline)

Architectural style/building typology

- As it is the most visible part of the building, the tower should be designed with distinct feature to enhance the visual interest of the area. The tower should preferably have slender massing, elegant proportions and appealing look to the skyline,
- To provide human-scale and pedestrian friendly environment, the bases of the towers should be articulated with different design elements,
- To ensure efficient use of space and strong street definition, relatively maximum two smaller adjacent buildings could share the common wall,
- To minimize the oppressive effect and the visual bulk of large buildings, the scale and massing should be broken down.

conclusion

Assess the mixed-use building regulations is important to examine spatial interaction issues at building plinth. Reviewing various issues regarding building, setbacks, accessibility, planting and landscaping on the guide lines help to develop contextual parameters to analyze case study buildings. The main purpose of building codes and guidelines are to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings. Building codes underpin the work of architects, engineers, builders and developers. Architects and engineers must ensure their building designs meet or exceed the minimum, legally-mandated code requirement for a particular authority. Setback stated at the two guide lines at Ethiopian building code of standards and Addis Ababa Main City Center Urban Design Guideline are setting rules on different base and thoughts, one at Ethiopian building code of standards setbacks set according to street width whereas at Addis Ababa Main City Center Urban Design Guideline setbacks set according to the ground floors how they should be open, accessible & inviting to the public in some areas like along Churchill Street and the local streets are Zero setback. As conclusion Ethiopian building code of standards have general standards but it still needs to breakdown standards into districts to address skipped thoughts on distinct façade treatment, ground floor treatment and different setback treatments.

CHAPTER FOUR

RESEARCH METHODOLOGY AND METHODS

CHAPTER FOUR

RESEARCH METHODOLOGY AND METHODS

4.1 Choice of research method

In order to get a deeper understanding about what is happening case study method is used in this research as a methodology. The case study method is qualitative in nature and can provide detailed descriptions of a real-life situation in a real life context. These casestudy provides much more detailed information and also allow one to present data collected from multiple methods (i.e., surveys, document review, photograph, and observation) to provide the complete story. Data was collected from primary as well as secondary data sources.

Primary data sources

Primary data is collected through detailed field observation on spatial interaction at the building plinth which involves, photographing, mapping, informal interviews and drawings were the Primary data sources.

Secondary data sources

Documented data which are related to the regional overview and to the spatial interaction at building plinth issues of the city were the secondary data sources. Those data are referred and collected from books, journals and articles etc.

4.1.1 Sampling and Respondents

For each mixed-use buildings case studies, the study used 10 participants according to time and budget allocated thus: 115 participants; of those, two respondents were key informant from municipality 2 design professionals in the practice and one assistant of Addis Ababa Main City Center Urban Design Guideline. The questionnaires prepared for each group of the key informants were based on their specific knowledge to the context. The other, 110 respondents were from the user groups of the chosen mixed-use buildings that were performing their specific activities (like, shopping, working, entertain....) in the mixed use buildings spaces; and each of them had responded to all sections of the questionnaire.

The research was carried out with 110 users 10 respondent for each case study building of different age, gender, income and occupation groups who came from different neighborhoods and which were available in case buildings during the data collection times. It was also with 5 key informants. Age groups of the respondents were in categories of (13-17), (18-24), (25-65) and (65 and above). In view of the fact that the goal of the research is to investigate spatial interaction at building plinth and to propose a design that can enhance the plinth on mixed use buildings, the sampling took more from the users of necessary activities and optional activities; the activities which are in big necessity of the space quality.

4.1.2 Data collection techniques

The questionnaire for the investigation of the existing spatial interaction at building plinth and the preferences were prepared in 2 types: interview and site observation. The key informants from municipality, design professionals in the practice, supervisor of Addis Ababa Main City Center Urban Design Guideline and the users were made to respond to the interview part. The author has been available on each site to collect data from site observation.

Interview

This investigation was made to explore the perceptions of the users' and the views of the professionals' on the existing spatial interaction at the building plinth and on possible future spatial interaction at the building plinth. Semi- structured interviews were used to the users; whereas key questions and unstructured discussions were made with the professionals from the municipality and supervisor of Addis Ababa Main City Center Urban Design Guideline. The data collection with the users and design professionals was conducted in each corresponding of the study site, but with the key informants it was conducted in their offices. All interviews were conducted face to face; and the letter of support the researcher had from her study University-Ethiopian institute of Architecture, Building construction and city development (EiABC), Addis Ababa University, was sufficient to create the degree of trust needed to establish first contact. In every meeting with interviewee, the researcher began with the introduction of herself and the objective of the study followed by the perspective needed from each interviewee.

Site observation

The researcher walked around observing the area on morning and afternoon times of 14th, 17th and 19th of June; 24th, 25th and 28th of December and registered details about the interaction between public life and space. Photos were also taken along the street to note problems and potentials on the way. This approach was conducted by the researcher's direct visual contact with the study site, taking pictures and videos, and sketching to grasp the overall situations.

Mapping

Mapping is done to answer the where question. It is usually used to indicate where people are standing and sitting. The researcher walked around and also observed the street from the second and above floor of a building along the street and indicate on a plan where people are standing and sitting. Locations are drawn on the plan at different times of day and on different days of the week and weekends using different symbols to represent different activities which are latter combined layer on layer to provide a clearer picture of where people like to walk, stand and stay.

4.1 Selection of cases

The research will be conducted in different scenarios, based on the relationship of buildings with streets. In order to answer what preferable and non-preferable spatial interactions exist at building plinths, it is essential to study interaction between the street and the building takes place (The city at eye level, 2012). Streets in cities serve many purposes besides carrying vehicles, and

city sidewalks the pedestrian parts of the streets serve many purposes besides carrying pedestrians. A city sidewalk by itself is nothing. It is an abstraction. It means something only in conjunction with the buildings and other uses that border it, or border other sidewalks very near it. The same might be said of streets, in the sense that they serve other purpose besides carrying wheeled traffic in their middles (Jane Jacobs, 1961).

4.2.1 Conceptual frame of mixed-use building relation with the street

In Addis Ababa active street life happen at places where people shop, meet, walk and work. At those areas Streets and buildings has strong relationship, hence ground floors of the buildings work symbiotically with the surrounding sidewalks and public spaces, that is why regulations for buildings incorporate rules for facade position, windows and setbacks allowed means of access of traffic and limitations of building height.

In doing so, the aim is to identify case studies with the criteria on;

- Exposure of the building in conjunction with the adjacent street
- Street should be ≥ 25 meters and between 15- 25meters.

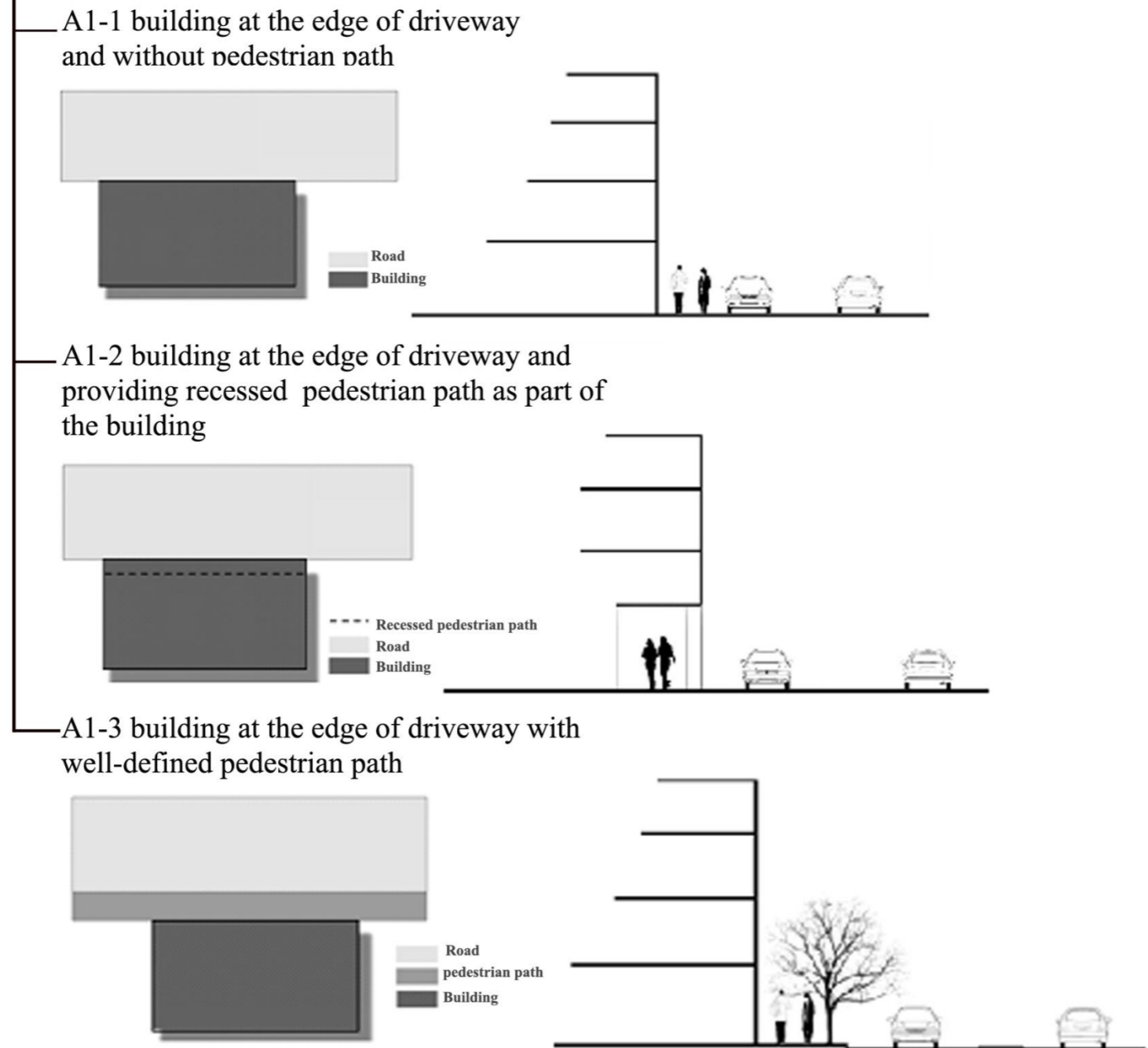
Based on the criteria mentioned above mixed use buildings are classified into three, thus are:

- A. Linear Mixed use buildings (as referred to streets, sidewalks and setbacks)
 - Buildings along the street edge, having one main active facades facing major street.
- B. Corner Mixed use buildings (as referred to streets, sidewalks and setbacks)
 - Buildings placed at the intersection of two streets, they have two main facades facing the major street.
- C. Island Mixed use buildings (as referred to streets, sidewalks and setbacks)
 - A type of building surrounded on all sides by streets and they all are commercial buildings.

Their detailed description and subcategories under them are illustrated as follows:

A. Linear mixed-use building

A1 On-street mixed-use building : Buildings along the street edge, with no setbacks. It has three categories which discussed below.



A Building at the right side of Ras Hotel



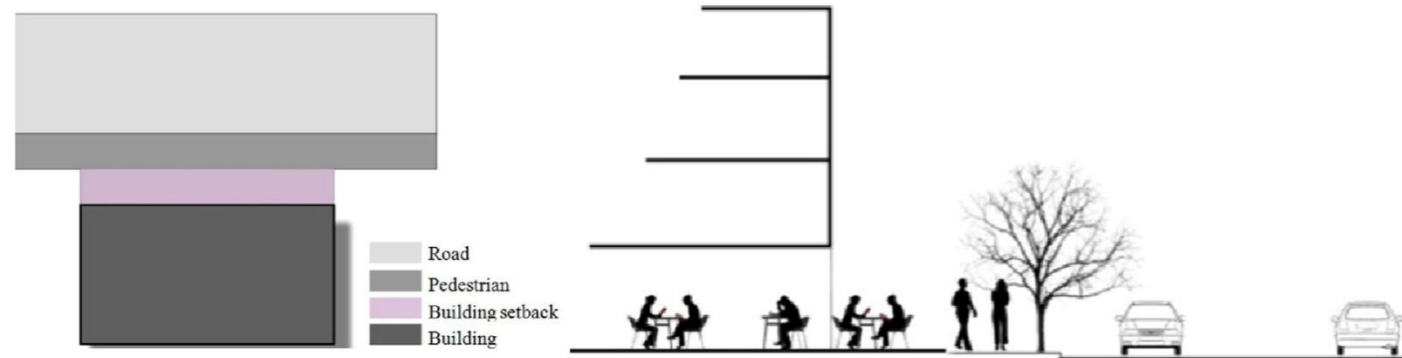
Case study building/Flamingo Building

Figure 10: Conceptual frame of A1 On-street Linear mixed-use building

A. Linear mixed-use building

A2 Off-street mixed-use building : Buildings along the street edge, with setbacks. the distance from the pedestrian street varies from building to building ranging from 3 to 15m.

A2-1 building at the edge of street with well-defined pedestrian path and setbacks.

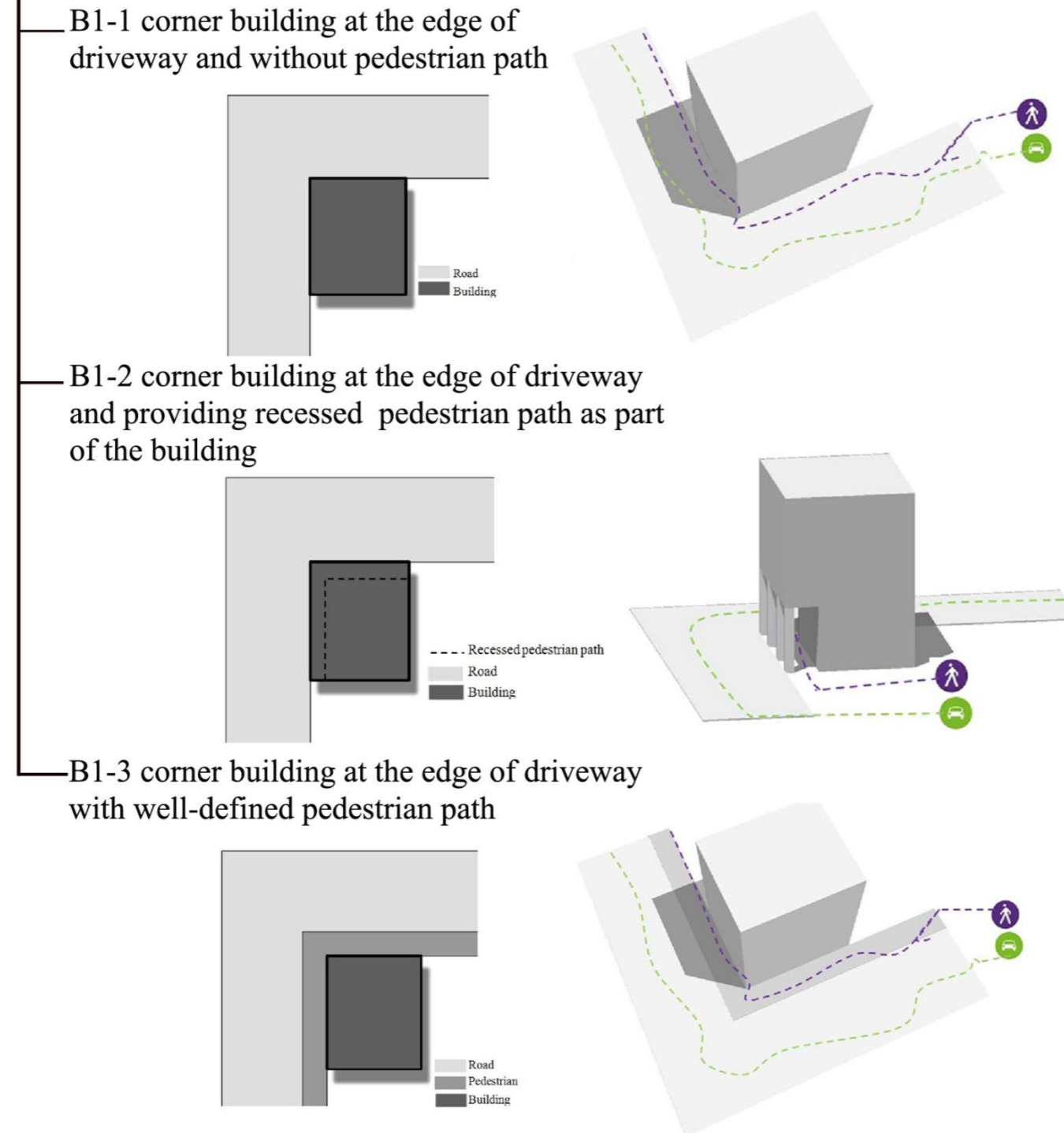


Case study building/Yeha commercial center

Figure 11: Conceptual frame of A2 Off-street Linear mixed-use building

B. Corner mixed-use building

B1 On-street mixed-use building : corner Buildings along the street edge, with no setbacks. It is also category in to three which discussed below.



Case study building/Ye Bego Adragot Hints



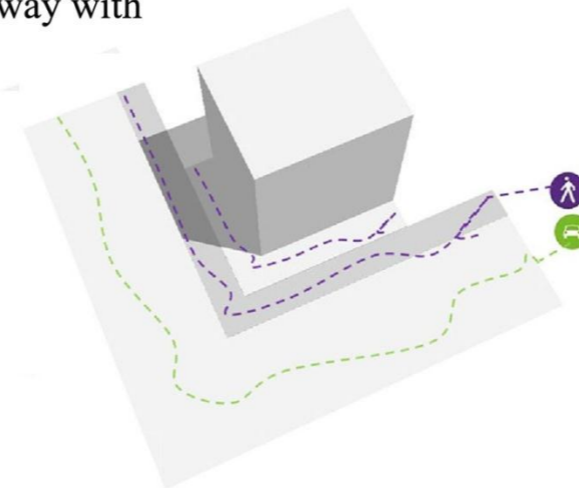
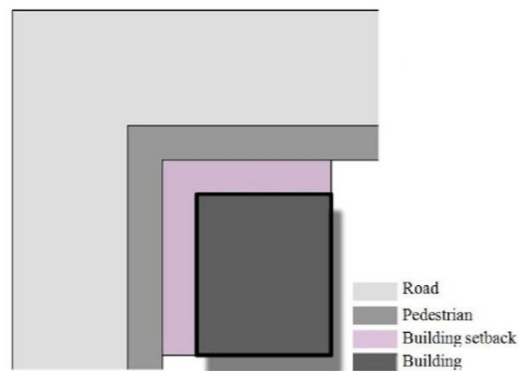
Case study building/Tenna Kebede Building

Figure 12: Conceptual frame of B1 On-street Corner mixed-use building

B. Corner mixed-use building

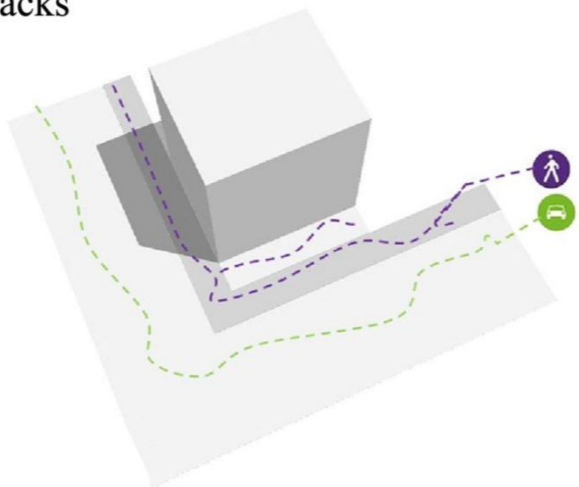
B2 Off-street mixed-use building: Corner buildings along the street edge, with setbacks, the distance from the pedestrian street varies from building to building ranging from 3 to 15m

B2-1 corner building at the edge of driveway with well-define pedestrian path and setback



Case study building/Finfinne Building

B2-2 corner building at the edge of driveway with well-define pedestrian path and setbacks at one side of the building.



Case study building/Bedilu Building

Figure 13: Conceptual frame of B2 Off-street Corner mixed-use building

C. Island mixed-use building

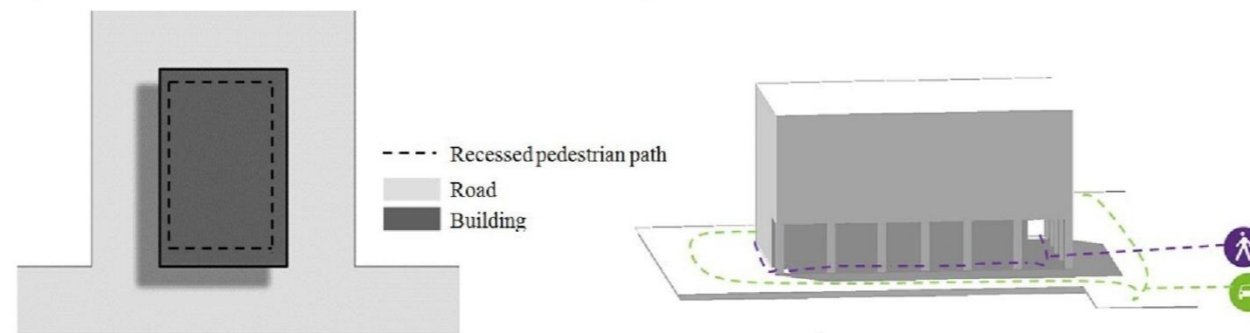
C1 On-street mixed-use building : Island buildings along the street edge, with no setbacks. It has three categories which discussed below.

C1-1 building at the edge of driveway and without pedestrian path



Case study building/Addis Ababa Commercial center

C1-2 building at the edge of driveway without defined pedestrian path but, providing recessed pedestrian path that ranges from one to four side of the building.



Case study building/'Dubai' Tera

C1-3 building at the edge of driveway with well-defined pedestrian path

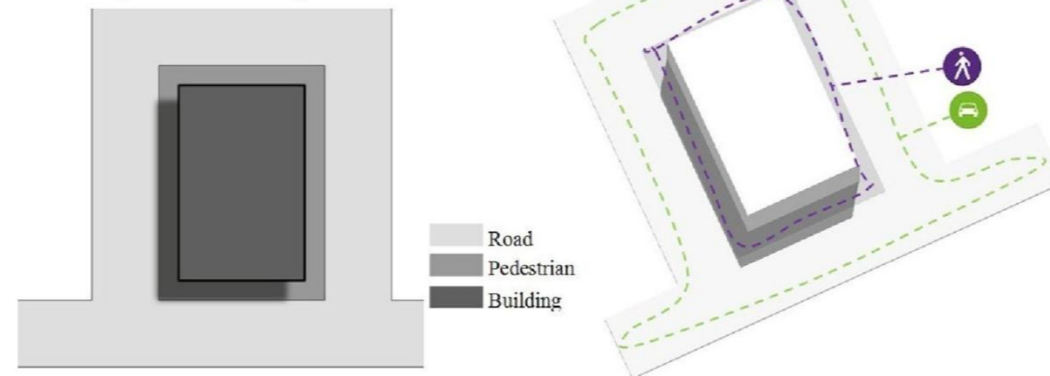


Figure 14: Conceptual frame of C1 On-street Island mixed-use building

In order to get relevant primary data for the survey, the author has given priority for the mixed-use buildings sites where she have been familiar and individuals in these mixed-use buildings whom she can approach. Other case study building selection parameter considered was the building which fulfill the previously mentioned scenarios. Furthermore, in order to see different scenarios of mixed-use buildings case studies who share related streets selected.

The fourteen scenarios which are illustrated above support to select existing mixed use buildings as a case study. From those scenarios A1, B1 and C1-3 are not presented here since, mixed-use building representing those scenarios are not available. Thus the paper sought to identify eleven potential cases that could be used to examine factors that contribute to spatial interaction at the building plinth and to learn lessons from Preferable and non-preferable spatial interaction.

4.2.2 Parameters to analyze

In order to select which are the preferable and non-preferable spatial interactions at building plinths, it is essential to study interaction that takes place between the street and the building (The city at eye level, 2012). Referring to literature review, ‘Cities for the people’ (Jan Gehl, 2010) and Jane Jacobs’s parameters developed at three layer set of criteria that should be part of each analysis and strategy for spatial interaction at the building plinths: building and street.

1. The building

- position in the urban fabric:-
whether the buildings are close to and oriented towards the street and create a walkable context that is stimulating, comfortable and safe for pedestrians.
- Human scale:-
whether buildings at ground level generate building welcoming and pedestrian-friendly? Is the base of the tower articulated with different design elements?
- Variety of functions:-
Is the building have wide variation in functions providing many points of exchange between in and out and many types of experiences?
- character of the architecture(façade):-
whether ground floor façade are rich in detail and interesting for pedestrians visually and building material whether it is solid blocking of inside space out or transparent between interior activities and pedestrian activity on the streets.
- transition from private to public and from public to private:-
Are buildings promoting walkability through building façade design, particularly the ground floors in order to be open, accessible & inviting to the public?

2. The street

- Parking facilities:-
Is vehicle-pedestrian circulation, create disruption, encumbrance, to make the building a non-preferable destination?
- Provision for sitting:-

How is the size of the walkway to accommodate different activities like Outdoor sitting area and street furniture more than free movement zone?

4.3 Data analysis and presentation Techniques

Study parameters are identified from literature review. Analysis of selected building is conducted. Qualitative data analysis method will be used. Observation, documentations and drawing are summarized and interpreted through maps and tables. Finally, the analyzed data are presented with tables and pictures obtained during field study. Data obtained from interview and site observation were matched with patterns and data from different literatures and break down to produce themes and findings. The findings were then presented in photo essays and explanatory textual reports. For the analysis of the qualitative data, content analysis was the one used to analyze the data collected through the interview. This analysis method helped “to observe the frequency of mentioning of particular [idea]”, to make objective conclusions, and “to identify specific characteristics of messages systematically” (Holsti, 1969).

The study has used for presentation technique software like Microsoft excel, MS Word and MS power point in editing of simple graphics. GIS was used to overlay, extract, rectify and produce maps of the study site from Google images of the city and from the city map. AutoCAD was used to prepare the 2D design drawings, and sketch-up was used to produce the 3D images. Then after, Lumion 3D rendering software used to render the 3D images. Finally, Photoshop was used for final renderings and exporting of image files.

This thesis paper is the output of the study and is submitted to Ethiopian institute of Architecture, Building construction and City development (EiABC), Addis Ababa University; in hardcopy and softcopy. This paper document contains maps, pictures, figures, tables, 2D drawings and 3D images in addition to the verbal expressions.

CHAPTER FIVE

CASE STUDY

CHAPTER FIVE

CASE STUDY

5.1 Case study buildings

Mixed use building cases were arranged into categories representing principal factors or lessons that can be learnt from them positioned in the urban fabric, human scale, variety of functions, character of the architecture (façade), transition from private to public, parking facilities and provision for sitting.

A1-2 A Building at the right side of Ras Hotel

Position in the urban fabric

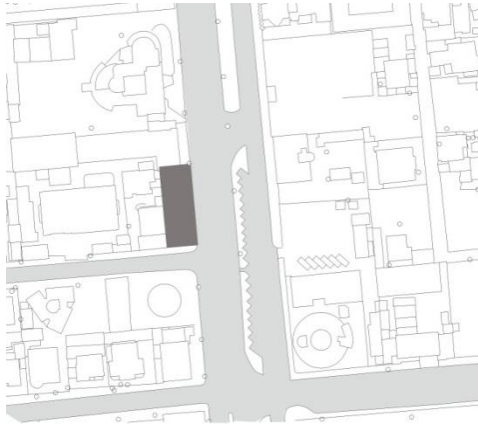


Figure 16: Location map of A Building at the right side of Ras Hotel

This building is next to Ras hotel building located along Gambia street. The street is occupied by different commercial activities, hotels and office buildings. The building is close to and oriented towards the street and creates a walkable context that is readable but lack continuity with arcaded walkway along Gambia street.

Human scale

The base of the building characterized with arcade to generate welcoming and pedestrian-friendly situation, thus allow pedestrians to access the building and pass by to adjacent areas.



Figure 17: Lower level view

Variety of functions

The ground and mezzanine floor functions are active uses, such as shops, pharmacy, cafes and street benders are there at the front of the building. Each functions accessed with their own entrance which elevates the interaction and hence renders the street more active.

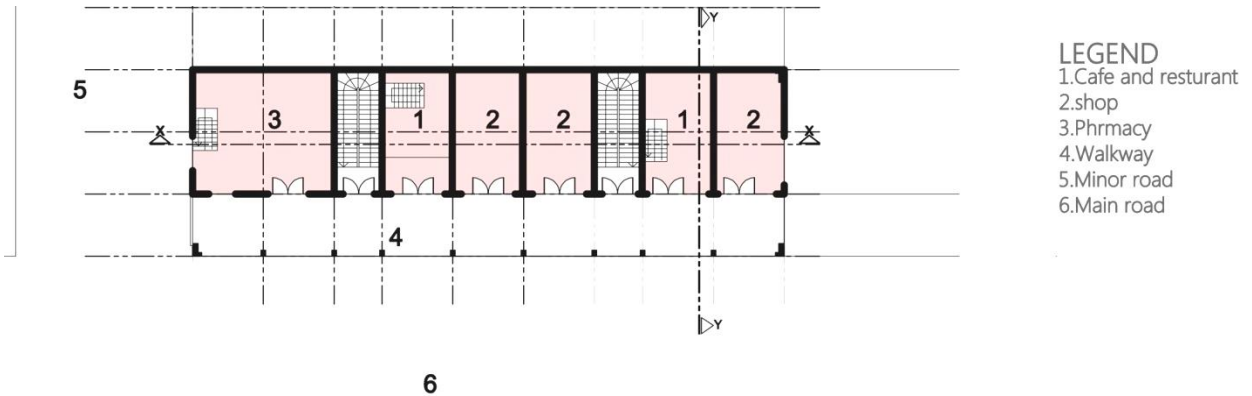


Figure 18: Ground floor pan

Character of the architecture(façade)

Ground floor façade is massive stone material with transparent glass material and rich in detail, interesting for pedestrians and incorporate front window functions.



Figure 19: Façade view

Transition from private to public and from public to private

Here pedestrian use the arcade space to pass through and use as walkway, since walkway doesn't exist at this area. Although the arcade is settled on elevated base that is easy to access the building along arcade rather than from the front.

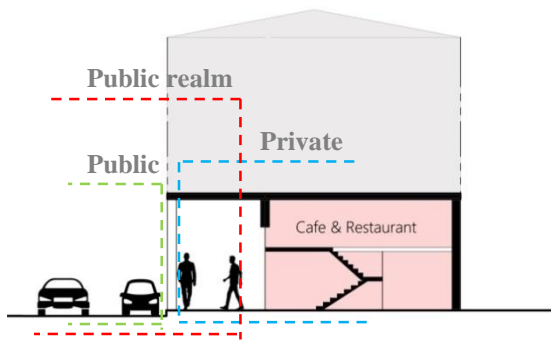


Figure 20: Section

Parking facilities

Parking facilities are not integrated within the building, thus the parking activity taking place at the front on the major street.

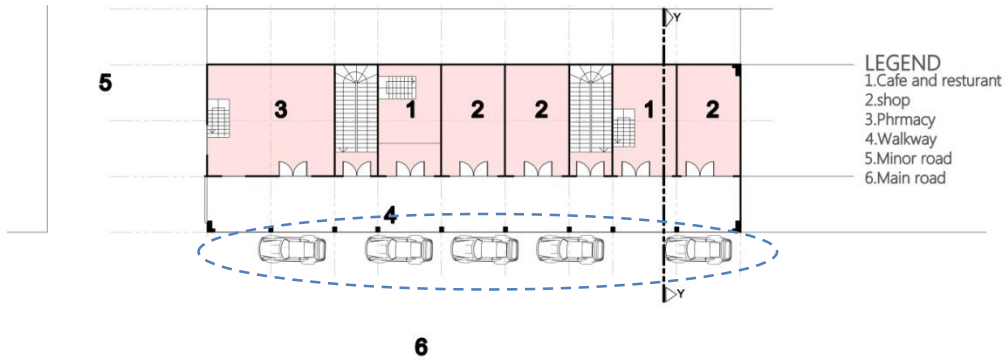


Figure 21: Parking area

Provision for sitting

Users sit at the arcades space while observing activities at the streets, see people shop, sit and drink.

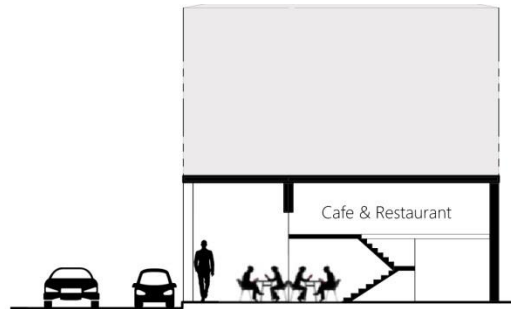


Figure 22: Outdoor sitting area

A1-3 Flamingo Building

Position in the urban fabric



flamingo located In the Northern part of Bole Road. The street is mainly aligned with hotels and office building. The building oriented towards the street and creates a walkable context for pedestrians.

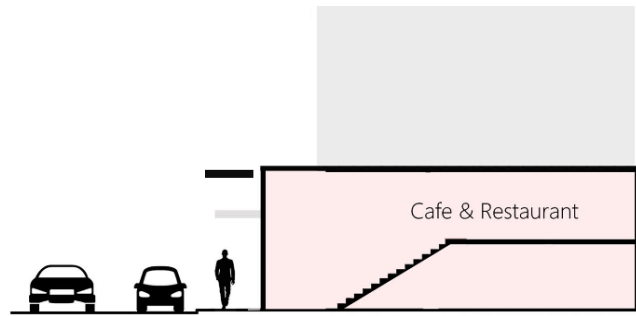
Figure 23: Location map of Flamingo Building (Source: Adapted from Re-discovering the 1960s architecture of Africa’s capital city- Addis Modern)

Human scale

The mixed-use multi-story residential building consists of a double story podium. The podium creates human scaled experience to pedestrians.



Figure 24: Lower level view



Variety of functions

Ground floor functions contain shops, café and restaurant, accessed all the way through pedestrian walkway. Each functions accessed through their own entrance.

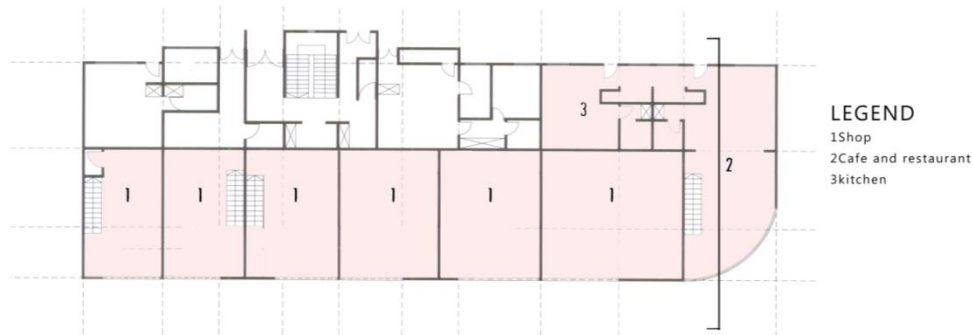


Figure 25: Ground floor plan (Source: Adapted from Re-discovering the 1960s architecture of Africa's capital city- Addis Modern)

Character of the architecture(façade)

The tower has balconies alternates their position on each floor, with solids and voids, recessed and protruded volumes, opened and closed elevations weaving into a complex pattern. The ground floor façade characterizes by transparent material but cover by protective metal grid



Figure 26: Facade view

Transition from private to public and from public to private

The ground and first floor podium positioned closer to the street edge creating close interior spaces at building frontage. These spaces can function as transition between the outside and inside space of the building.

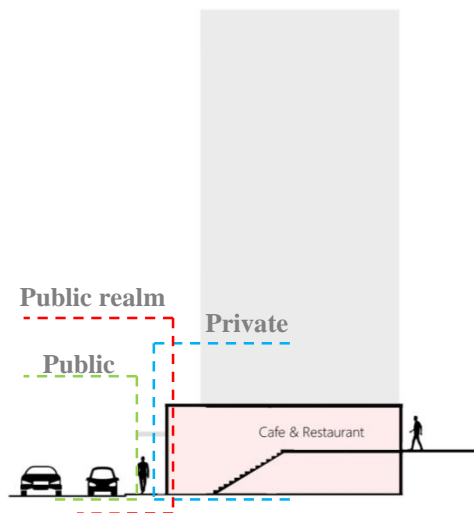


Figure 27: Section (Source: Adapted from Re-discovering the 1960s architecture of Africa’s capital city- Addis Modern)

Parking facilities

The parking facility are included in the building compound and visitors parking taking place at the right side of the building.



Figure 28: Parking area

Provision for sitting

At the ground floor café and restaurant is present which can easily be accessed on pedestrians path.



Figure 29: Outdoor sitting area

A2-1Yeha Commercial Centre

Position in the urban fabric

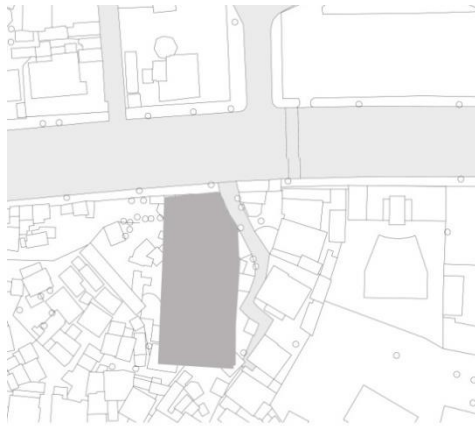


Figure 30: Location map of Yeha Commercial Centre

This building is mixed use building located along ras mekonen avenu and in front of stadium. The street is busy all hours in a day, occupied by different commercial activities, stadium, bus station and office buildings. Hence the building location being adjacent to taxi stations, impact on traffic mobility. Also a defined offset is there filling the gap between the street and the building.

Human scale

The ground and mezzanine floor of the building has a character of high ceiling and well defined entrance overstated by four round pillars, as a result it is engaging to experience the space and the function within the building.



Figure 31: Lower level view

Variety of functions

The ground floor functions are shops, cafe, bank, office, pharmacy and common toilet rooms. But they are not directly accessed from the pedestrian walkway because of the functions placement deep into the interior.

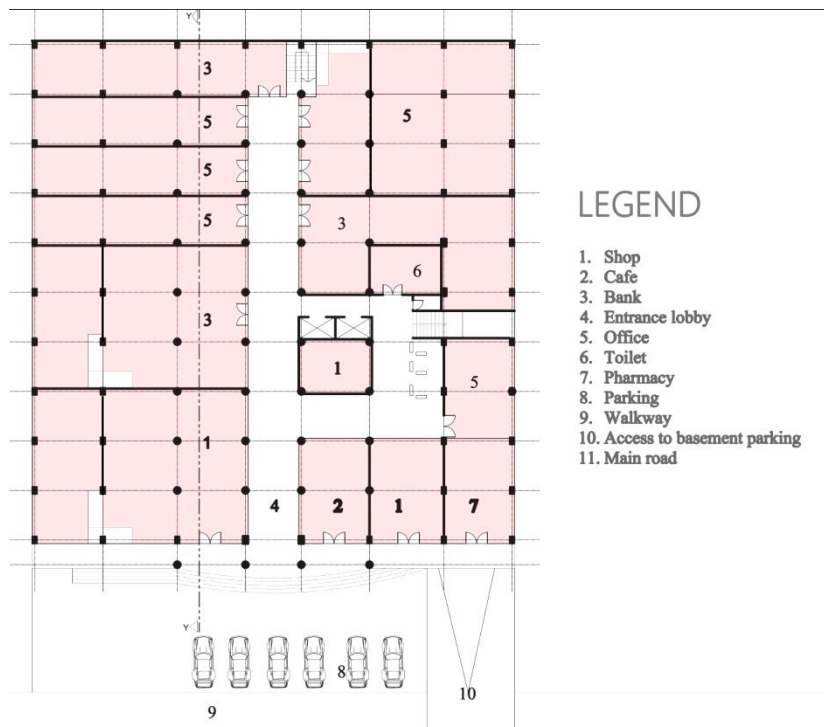


Figure 32: Ground floor plan

Character of the architecture(façade)

The ground and mezzanine floor has a character of recessed space which definitely distinguish from the tower, although large facades in particular must be divided into smaller sections for articulation with transparent material.



Figure 33: Façade view

Transition from private to public and from public to private

The Plinth is not only meant for shopping but also for other activities where people can enjoy, remain and discover every corner that are interesting for them. Here plinth is actually disconnected to sidewalks but creating a transitional space between the building and the defined offset to interact with people, street activities and visual interest to façade.

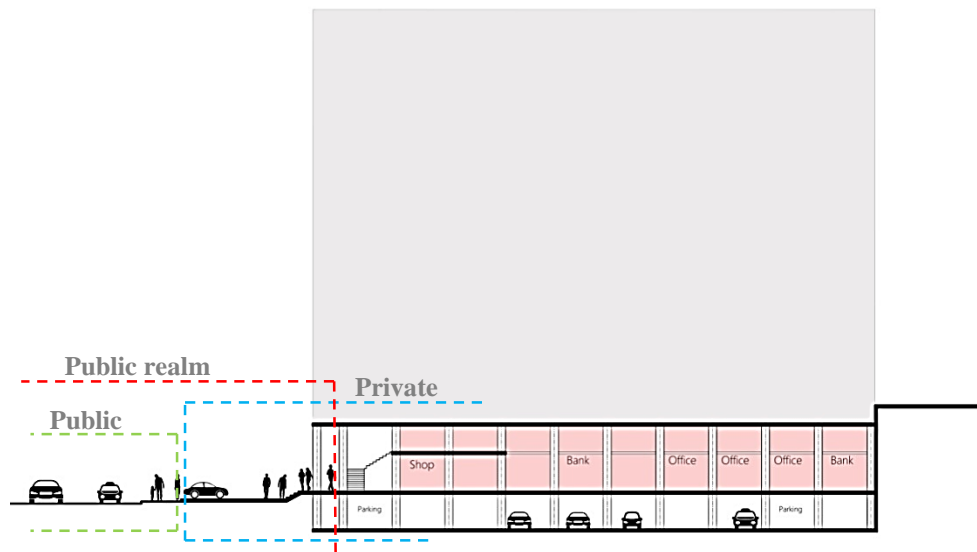


Figure 34: Longitudinal section

Parking facilities

Parking facilities are integrated within the building compound at the basement floor and on the space at frontage of the building used as parking encumbrance to site, crowded, asphalt surfacing, with no shading possibilities to sit but which could be a potential transitional space between the inside space and outside space.



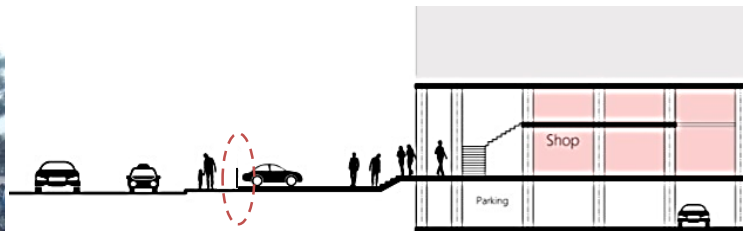
Figure 35: Parking area

Provision for sitting

In fact café is present at the ground floor of the building, but it is less interactive with pedestrian as it's far from pedestrian walkway. Street venders are on the street, since it is busy all hours in a day by different activities.



Figure 36: Outdoor sitting area



B1-2 Ye Bego Adragot Hints

Position in the urban fabric



Figure 37: Location map of Ye Bego Adragot Hints

Ye Bego Adragot Hints marks the two roads one from Filwiha to Mexico square and other is Gambia street, open space is there between the street and the building. The street is aligned by different commercial activities, hotels and office buildings.

Human scale

Building facade is richly detailed that constantly increase visual experience for pedestrians. Ground floor arcade also enhance pedestrian experience.



Figure 38: Lower level view

Variety of functions

The ground and mezzanine floor functions are shops, café and restaurants with outdoor services at the front of the building. Walking in or near the building is interesting and eventful. Each functions accessed with their own entrance.

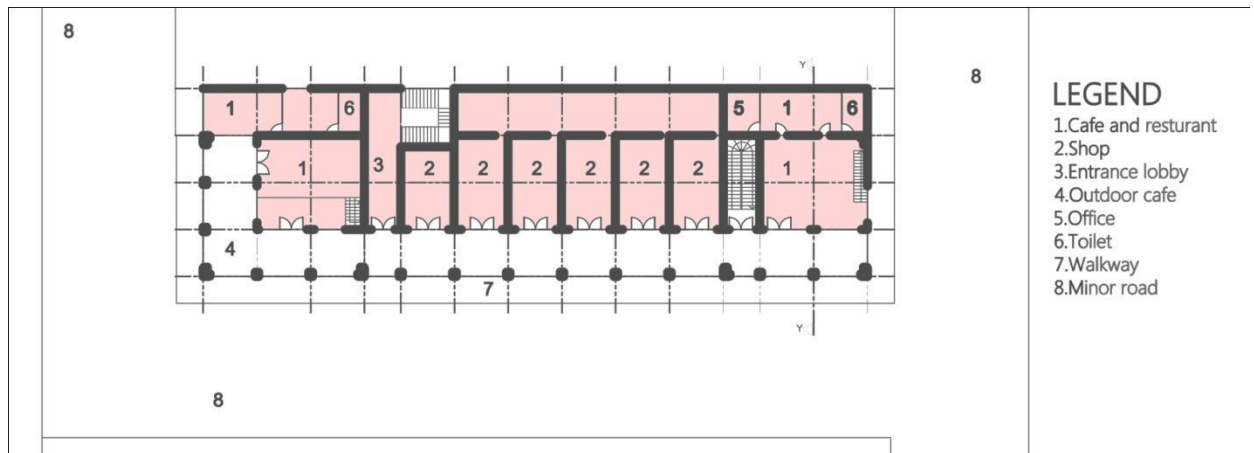


Figure 39: Ground floor plan

Character of the architecture(façade)

Here the façade center of attention is both on the quality of comfort for interior activity user and on the exterior activity user of the building. It has a character of massive stone structure with details and transparent glass material.



Figure 40: Façade view

Transition from private to public and from public to private

There is a transition of space which articulated by forming row of pillars and enclosed walls between the outside, the arcade space and the inside ground floor function.



Figure 41: Longitudinal section

Parking facilities

Parking activity takes place at the open space between the street and the building; since the scattered parking layout is well designed the parking will not exclude users from directly accessing the building at the front.



Figure 42: Parking area

Provision for sitting

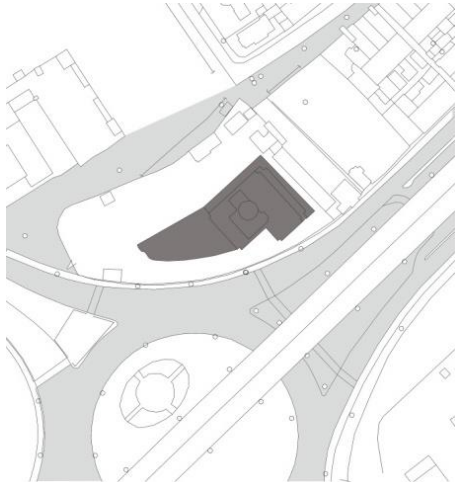
The outdoor functions are utilized, in view of the fact that the space is shaded and people sit to observe activities on street as well.



Figure 43: Outdoor sitting area

B1-3 TennaKebede Building

Position in the urban fabric



At the bole international airport along airport Road Tenna Kebede building set out as a modern building covered with glass curtain wall in front of overhang passages of ring road. The street is full of activity occupied by commercial activities, hotels and office building. The building oriented towards the street and provide setback to generate a walkable context for pedestrians, however building setback is not uniform.

Figure 44: Location map of Tenna Kebede Building

Human scale

The base of tower articulated with different functions and access to the buildings brings a feeling of unease, since the depressed space accessed by stair is obstruction for the building to be pedestrian friendly.

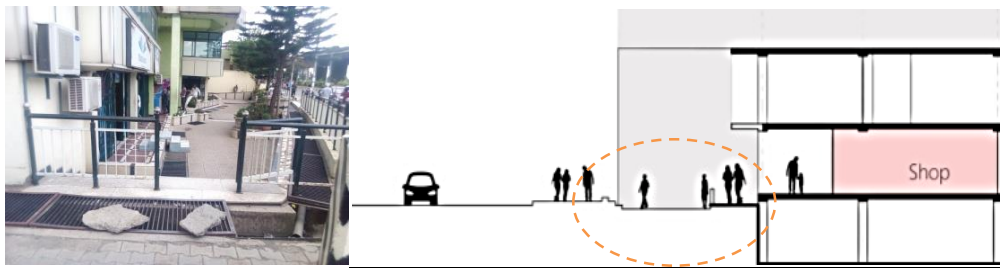


Figure 45: Lower level view

Variety of function

This mixed-use building utilizes ground floor for office, commercial space, bank, cafe and restaurant. They all add vitality to urban areas. The functions except the bank and the café all accessed with two entrance lobby.



Figure 46: Ground floor plan

Character of the architecture(façade)

The building appears as a light and translucent building; the skin-glass envelope covers the entire facade at ground floor. The glass material created transparency between interior activities and pedestrian activity.



Figure 47: Façade view

Transition from private to public and from public to private

The setback space provided at the front is one which relates the building to the street, as it is a fenced space it excludes pedestrians from using the building easily.

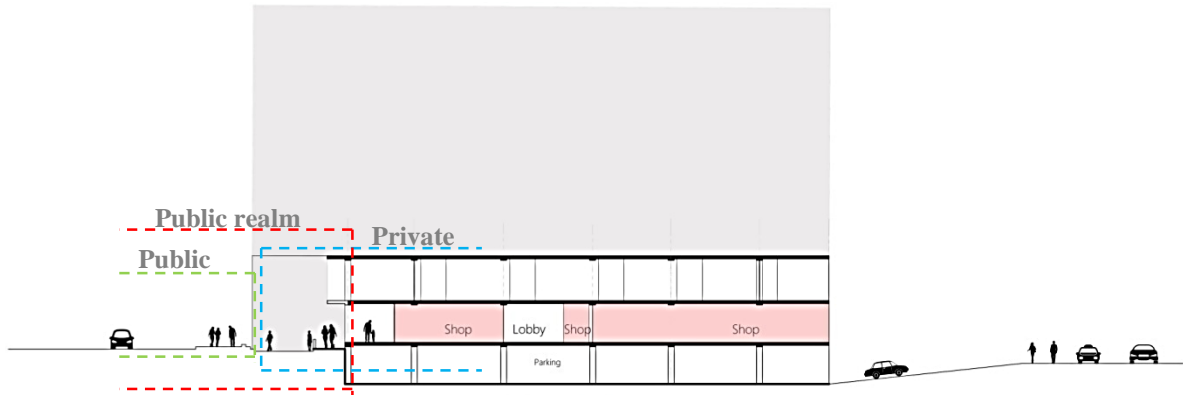


Figure 48: Section

Parking facilities

Parking facilities are integrated within the building at the basement floor and at the back surface parking. The open space at the back is undesigned parking area but, it could be a relief area for public from the busy roads bounding the building.

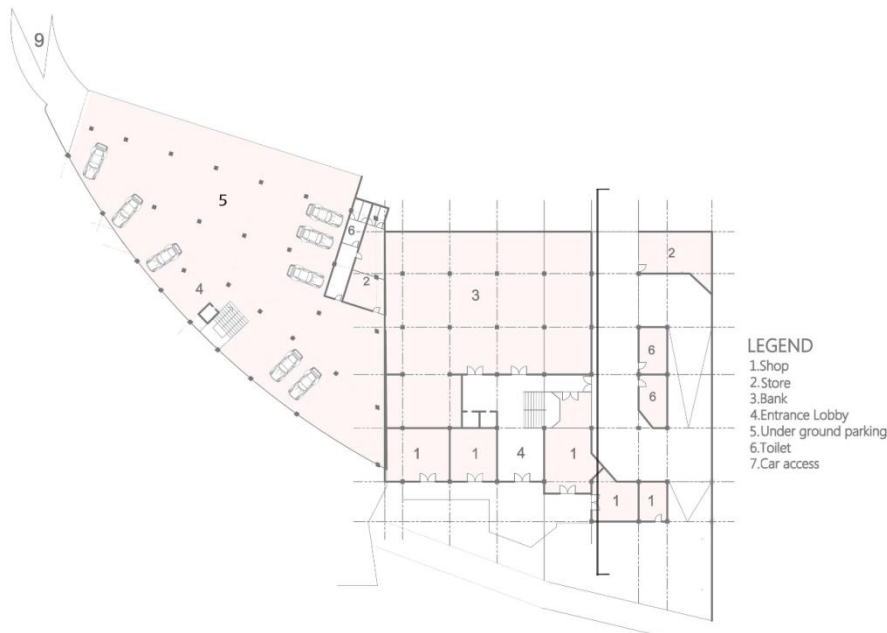


Figure 49: Semi-basement plan

Provision for sitting

At the ground floor of the building café is present and minimal outdoor service is given at the back side which lack potential to connect with pedestrian flow.



Figure 50: Outdoor sitting area

B2-1 Finfinne Building

Position in the urban fabric

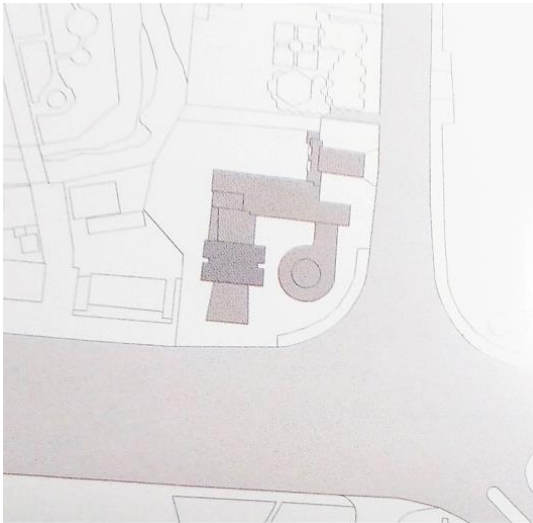


Figure 51: Location map of Finfinne Building (Source: Adapted from Re-discovering the 1960s architecture of Africa's capital city- Addis Modern)

The Finfinne building marks the intersection of two important urban arteries that evolved in the city, one stretches from Tor-hailoch in the east to Ayat in the west, and the other from Grand/Jubilee to bole international airport in the south. At the North East connection junction of these two main streets is the Finfinne building or rather buildings, as the complex is composed of various volumes.

Human scale

The different elements of the Finfinne complex moderate between the need for a large-scale landmark at a highly frequented urban node, and the small-scale pedestrian spaces required for accessing the various facilities.

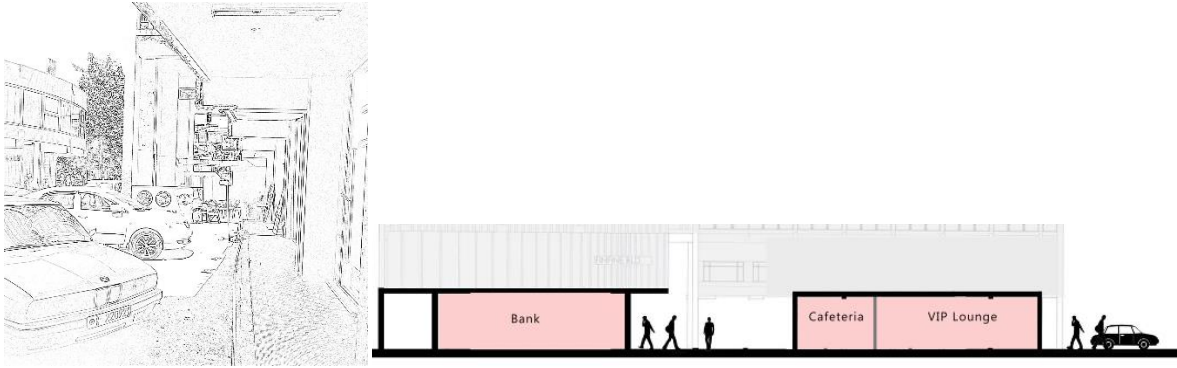


Figure 52: Lower level view

Variety of functions

At the corner of the two main streets round building ground and upper floor accommodates a café, restaurant, office and VIP lounge. At the back of the plot is a linear volume characterized by horizontal balconies for apartment units. Each functions accessed through their own entrance at the ground..

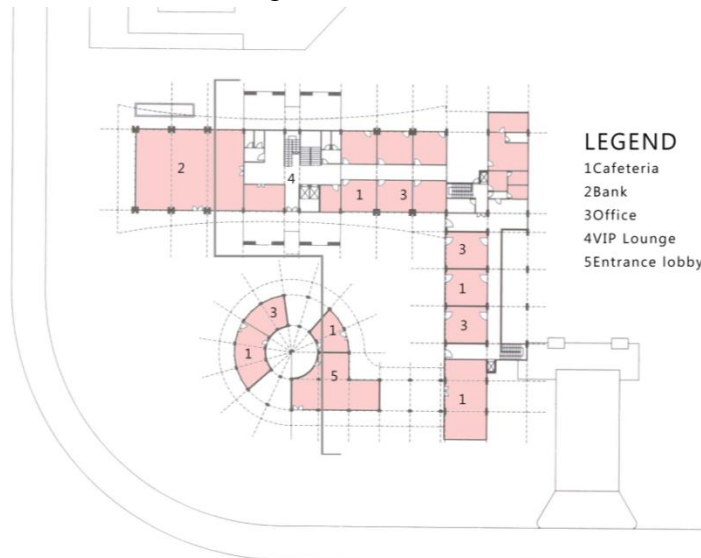


Figure 53: Ground floor plan (Source: Adapted from Re-discovering the 1960s architecture of Africa’s capital city- Addis Modern)

Character of the architecture(façade)

The high rise office tower faces south and wears a thin, veil-like sunshade created of rhythmically spaced vertical concrete fins, which emphasize the height of the building. Each volume houses different functions and is articulated with a special architectural character.



Figure 54: Façade view

Transition from private to public and from public to private

Each volume connects with the common space at the middle which could be in use as a transitional space between inside space and the outside surrounding.

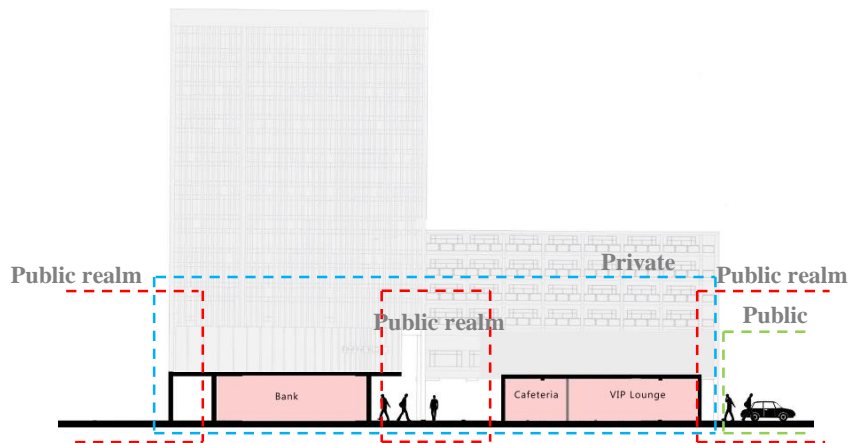


Figure 55: Longitudinal section (Source: Adapted from Re-discovering the 1960s architecture of Africa's capital city- Addis Modern)

Parking facilities

Parking facilities taking place at the common space in the middle, but their positions are scattered which need well designed parking space.



Figure 56: Parking area

Provision for sitting

café present at the ground floor of the building, it is well interactive with pedestrian path and people sit approaching the tree as a shade element.



Figure 57: Outdoor sitting area

B2-2 Bedilu Building

Position in the urban fabric



Built on the corner the main road from Mexico square towards the Ras Abebe Aregay street. The street is defined by distinctively financial buildings and pedestrian activity is high at the area.

Figure 58: Location map of Bedilu Building (Source: Adapted from Re-discovering the 1960s architecture of Africa's capital city- Addis Modern)

Human scale

The ground curved podium is independent of the shape of the upper floors as a result it, creates human scale and pedestrian friendly situation.



Figure 59: Lower level view

Variety of functions

The two volumes are arranged in an L-shaped and a beautifully executed spiral staircase connects the two parts. The ground floor accommodates commercial function, office and cafe. Each functions accessed through their entrance.

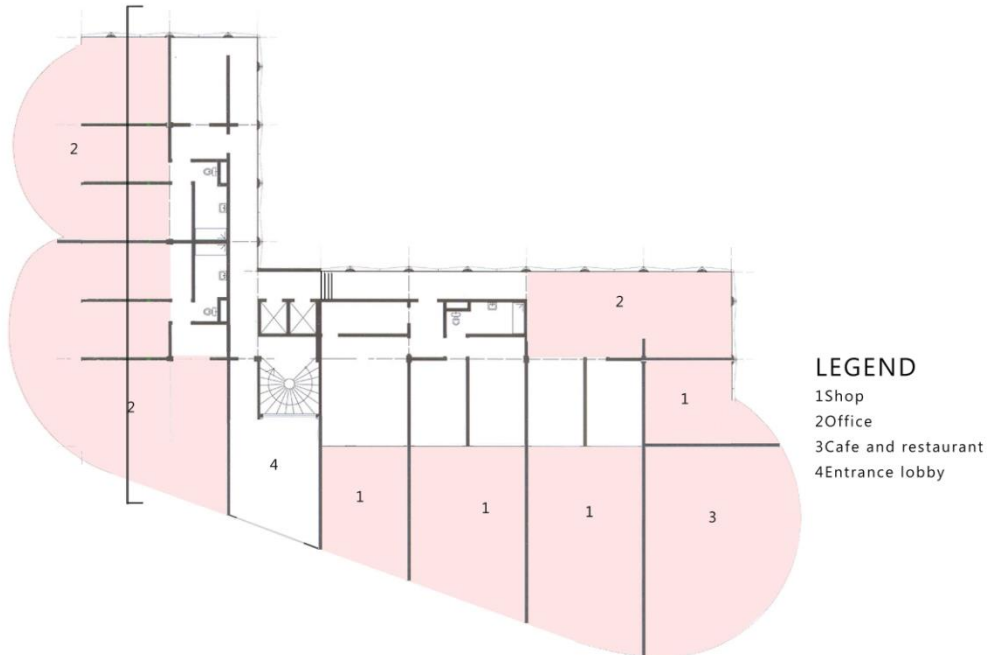


Figure 60: Ground floor plan (Source: Adapted from Re-discovering the 1960s architecture of Africa’s capital city- Addis Modern)

Character of the architecture(façade)

Bedilu building shows one of the most eye catching facades of the modern period in Addis. The load-bearing grid of smoothly executed concrete shapes is formed such that the edges of the large glass window in fills which are framed with fine brass profiles are slightly angled, thus resulting in a subtle octagonal outline.



Figure 61: façade view

Transition from private to public and from public to private

At the ground floor the building integrates with the street this integration gives a chance to interact with people and activities.

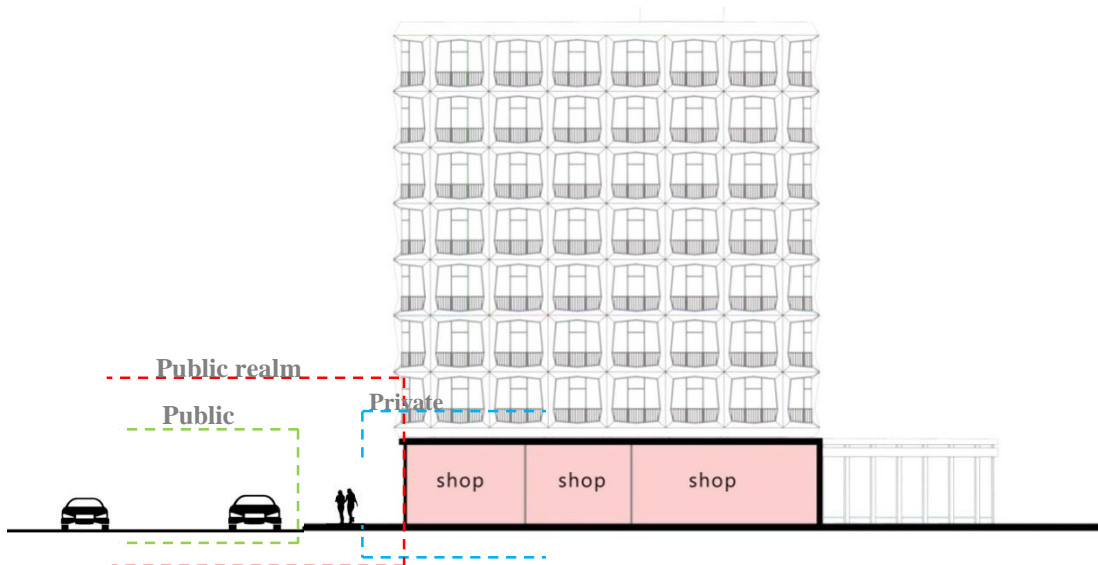


Figure 62: Longitudinal section (Source: Adapted from Re-discovering the 1960s architecture of Africa's capital city- Addis Modern)

Parking facilities

The parking activities are taking place at the back side of building compound.



Figure 63: Parking area

Provision for sitting

The ground floor function has active functions like café ,but lack outdoor sit to have more pedestrian friendly building.



Figure 64: Outdoor open area

C1-1 Addis Ababa commercial Centre

Position in the urban fabric



Addis Ababa commercial Centre is located in Merkato which is one of the largest markets in Africa and people all over Ethiopia come here for trading. The building sited on island site and building faces all streets. The streets bounding the building are full of commercial activities.

Figure 65: Location map of Addis Ababa commercial Centre

Human scale

The ground floor shops are recessed and inviting to walk through all side of the building but, shops over flood the walkway, the streets are very much crowded and not pedestrian friendly.

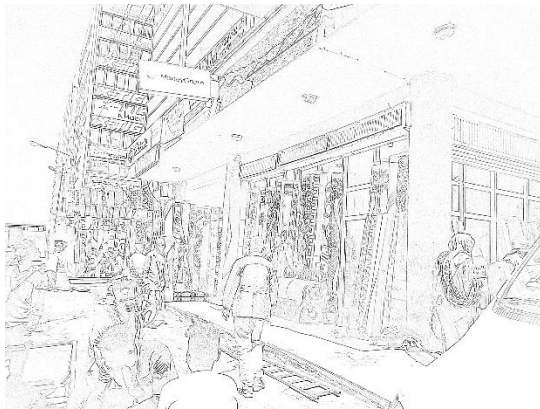


Figure 66: Lower level view

Variety of functions

The building has three volumes connected with bridges, in each volume units are shops, offices and basement parking provided. Each functions accessed through their own entrance.

SPATIAL INTERACTION AT BUILDING PLINTH

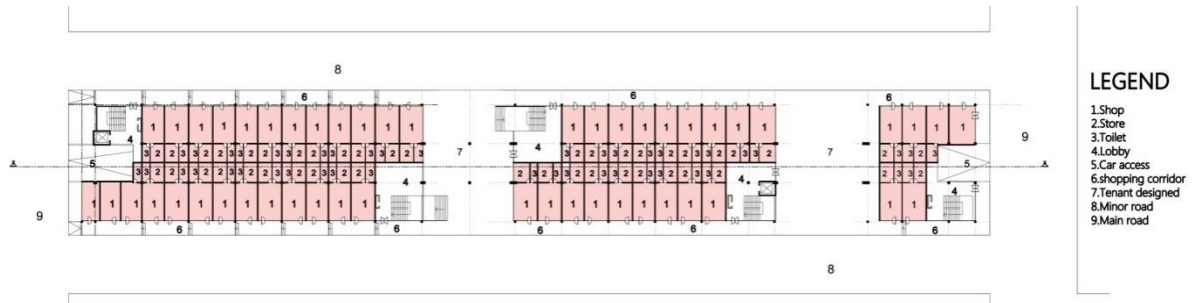


Figure 67: Ground floor plan

Character of the architecture(façade)

Through 3660m² plot area the building set with two bridges and easily legible units. The ground floor and active frontages above the ground floor (three floors) has a clear image glass for maximum transparency to attract visual interest.



Figure 68: Façade view

Transition from private to public and from public to private

The commercial corridor provided at the front is covered by cantilevered slab; it makes a distinction from the street to pedestrian walkway and used as a transitional space.

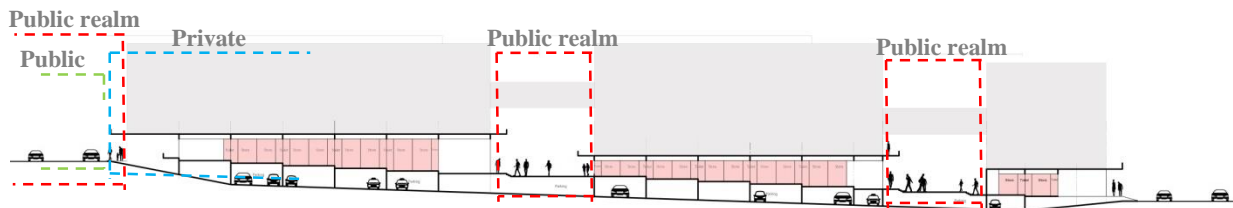


Figure 69: longitudinal section

Parking facilities

Parking facilities are integrated within the building at the basement floor.

Provision for sitting

Outdoor café is not provided at ground floor, but at first and second floor of the building café with outdoor sitting are provided.



Figure 70: Ground floor activity

C1-2 'Dubai' Tera

Position in the urban fabric



Figure 71: Location map of 'Dubai' Tera

'Dubai' Tera is one of the oldest commercial buildings located in Merkato. The building oriented towards the street with proper pedestrian setbacks. The streets bounding the building are full of commercial events.

Human scale

The building has arcade which is human scale detailing that considers pedestrian friendly environment.



Figure 72: Lower level view

Variety of functions

The ground and mezzanine floor functions are shops, and shop, cafes with indoor sittings only. Presence of blank facade at the back and right side are character with solid wall and metal doors only. All functions accessed with their own entrance.

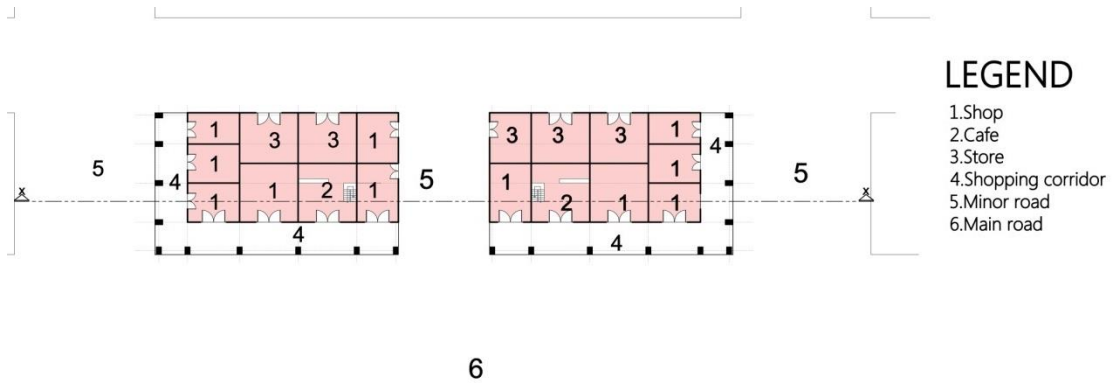


Figure 73: Ground floor plan

character of the architecture(façade)

Arcade scaled to human proportions and human use in order to reflect a space that is used to the social needs where only the front and right side of the building is actively used the rest are blind walls with the presence of closed stores, thus invaded by street vendors.



Figure 74: Façade view

Transition from private to public and from public to private

The arcades space promotes the transition of inside activities to the outside, thus contribute to an increased presence of people on the building.

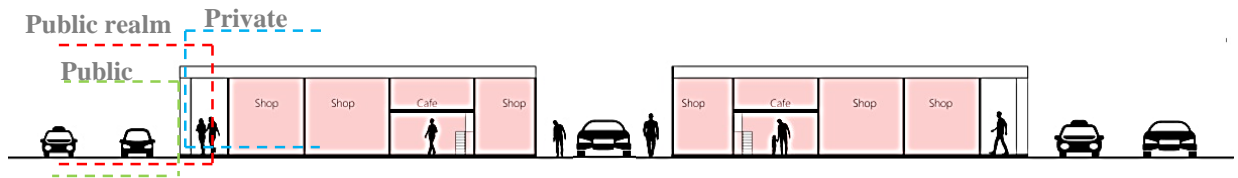


Figure 75: Longitudinal section

Parking facilities

Parking area is at the front of the building on the major street, thus deteriorate views to the building.



Figure 76: Parking area

Provision for sitting

There is a lack of appropriate provision of sitting space for the area. As a result, seating opportunities primarily depended on the presence of movable seats provided by cafés with outdoor sittings.



Figure 77: Outdoor sitting area

C2-1 Mars commercial centre

Position in the urban fabric



Figure 78: Location map of Mars commercial center

Mars commercial center is located in front of Tana commercial building in the heart of Merkato. The streets bounding the building are full of commercial activities.

Human scale

The commercial corridor at the ground is recessed and roofed by cantilevered slab, it has large number of small shop frontages and many doors are associated with higher levels of staying activity.

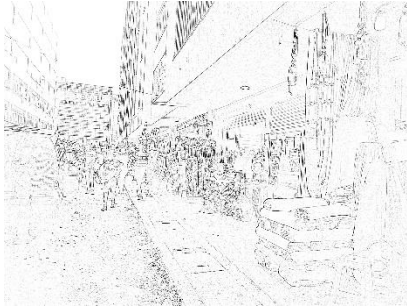


Figure 79: Lower level view



Variety of functions

The functions at the ground floor are commercial uses. The elevated commercial corridor accessed by stairs at the front side of the building that make obstruction for the building to be accessed easily, while at the back side of the building the entrance accessed easily.

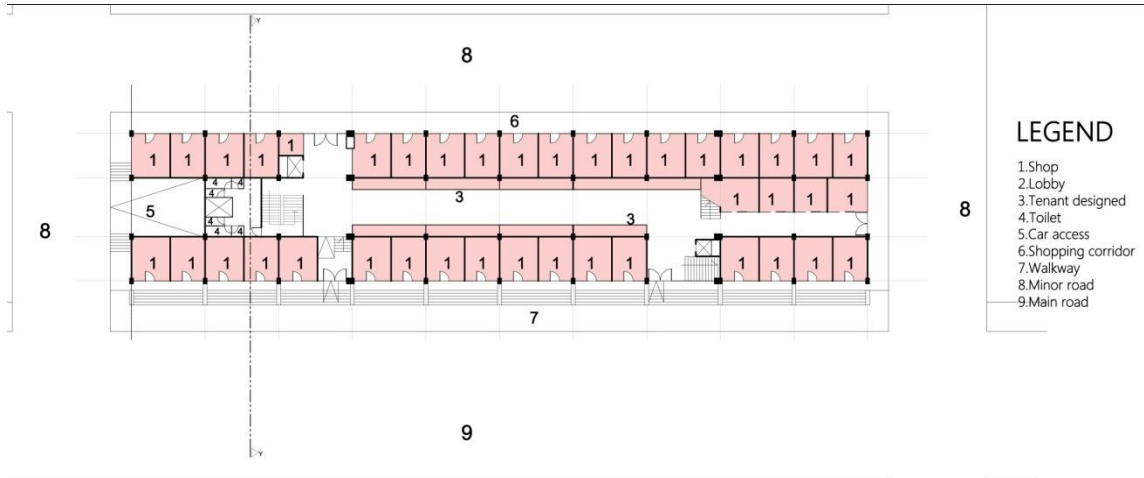


Figure 80: Ground floor plan

Character of the architecture(façade)

The ground floor volume is more transparent and recessed that encourage people to shop, the above seven floors are characterized by solid volume.



Figure 81: Façade view

Transition from private to public and from public to private

Right alongside the pedestrian walkway the building has commercial corridor as a transition space which promote the extension of inside activities to the sidewalk, and thus contribute to an increased presence of people on the sidewalk, through the extension of product displays from shops to the outside, and through the presence of street vendors.

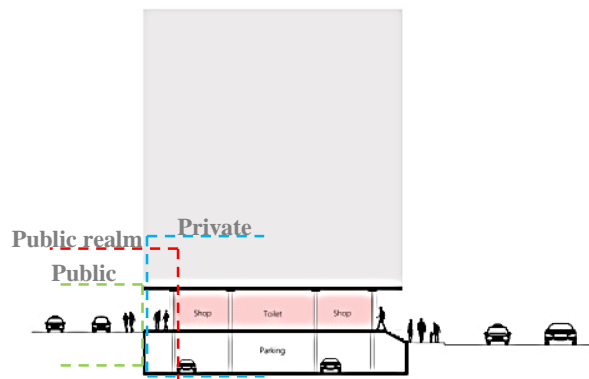


Figure 82: Section

Parking facilities

Parking facilities are integrated within the building at the basement floor.



Figure 83: Parking area

Provision for sitting

There are no cafes with outdoor sittings at ground floor, but people use the steps as a seating place to perform informal shopping.



Figure 84: Outdoor sitting area

C2-2 Tana commercial building

Position in the urban fabric



Figure 85: Location map of Tana commercial building

Tana commercial building is one of the oldest commercial buildings located in Merkato. The building is located on an island site and building faces all streets with proper pedestrian setbacks.

Human scale

The building has an elevated wide commercial corridor as a base and is accessed by stairs on the left and right side.



Figure 86: Lower level view

Variety of functions

Ground floor functions accommodate shops and bank accessed all the way through elevated commercial corridor.

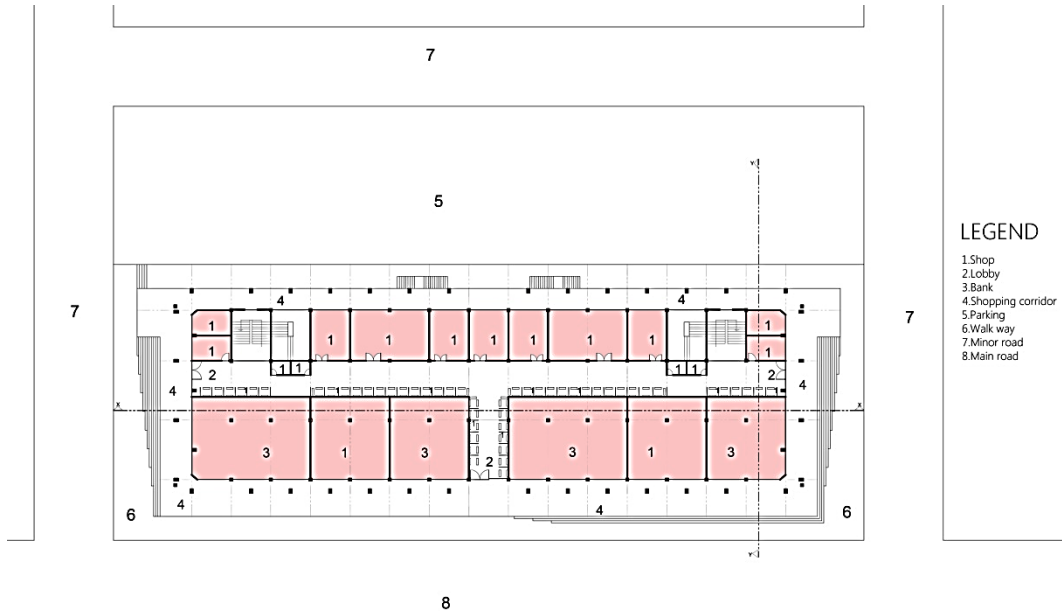


Figure 87: Ground floor plan

Character of the architecture(façade)

The ground floor facade is complex, particularly through the presence of articulations, like edges with recesses and steps which are preferred for seating, standing and staying activities. People usually sit or stand in these spaces to get out of pedestrian flow.



Figure 88: Façade view

Transition from private to public and from public to private

The boundary between inside and outside space is blurred by elevated commercial corridor and the steps at corner of left and right side of the building. The transitional space creates inside activities extended to outside, and different activities take place directly in front of the building.

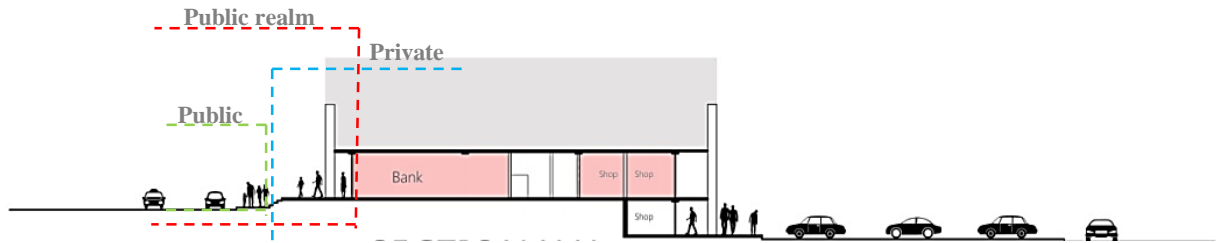


Figure 89: Ground floor section

Parking facilities

The parking activity is taking place at the back side of the open space in the building.



Figure 90: Parking area

Provision for sitting

people use the stairs as a seating space which provide opportunities for people to socialize.

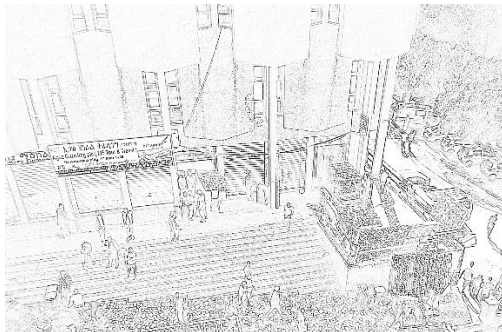


Figure 91: Outdoor sitting area

CHAPTER SIX

ANALYSIS AND FINDING

CHAPTER SIX

ANALYSIS AND FINDINGS

Under this section, all the study results through the data collection methods of the interview, case studies and site observation are analyzed and presented.

6.1 Analysis and findings explored through the interview

The results explored through the interview are analyzed and presented here. The users' answers to the question under (appendix I- part 1A); the key informants from municipality answer to the questions in the (appendix I- part 1B); the key informant from author of Addis Ababa Main City Center Urban Design Guideline(appendix I- part 1C); the key informants from the design professionals in the practice and users answer to the questions in the (appendix I- part 1D) are analyzed and interpreted to develop a general understanding on both the existing and future conditions of the spatial interaction at the building plinth.

6.1.1 Types of activities in case buildings

The data up on the users' answer to what was the purpose of their visit to the mixed use building during the interview. It is analyzed by grouping the experienced activities collected in the sampling of the interview, which are: "shopping", "other activities", "work" and "transit activities". Activities that are being practiced by users who were not using the mixed use building but passing through are grouped under the daily transit activities; those are like using the study area as passage from one neighborhood to another. Activities practiced by users who were visiting café or restaurant, banks and offices are categorized under the other activities. Activities practiced by users who came to work in the building are activities grouped under the work activity.

Table 3: Types of activities in case buildings

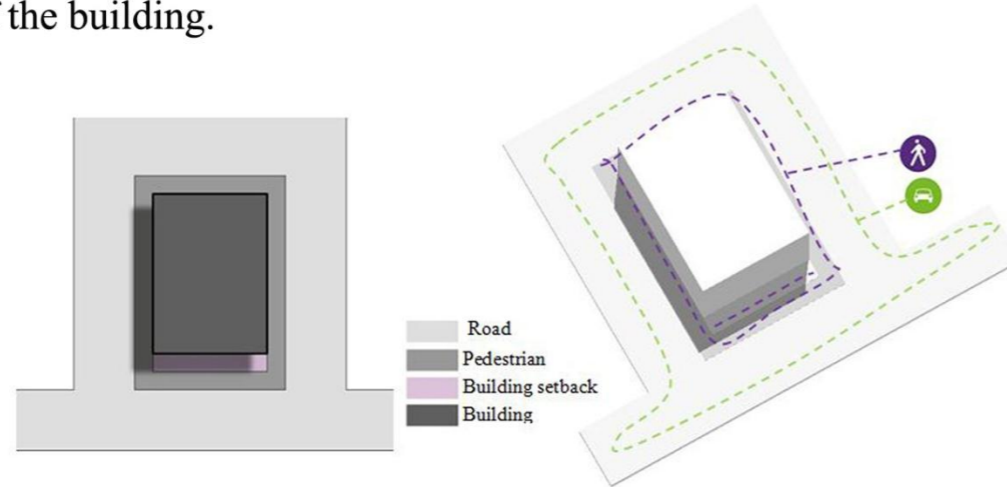
Types of activities in case buildings in %				
Case buildings	Shopping	Other activities	Working	Transit activities
A building at the right side of Ras Hotel	6.5	17	29	47.5
Flamingo Building	5	26	24.16	44.84
Yeha Commercial Center	18	28.89	10.11	43
Ye Bego Adragot Hintsä	11.7	33	13	42.3
Tenna Kebede Building	27	24.11	8.5	40.39
Finfinne Building	2	48	23.5	26.5
Bedilu Building	4.89	36	16.11	43
Addis Ababa commercial center	75	1	18	6
'Dubai' Tera	65	4	9	22
Mars commercial center	85	-	14	1
Tana commercial center	71	19	6	4

To begin with linear buildings A building at the right side of Ras Hotel, Flamingo Building and Yeha Commercial Center majority of the respondents were in the area to transit activities, in addition out of the respondents in corner buildings except Finfinne Building, Ye Bego Adragot Hintsä, Tenna Kebede Building and Bedilu Building majority respondents experiences were in the area to transit activities which indicates respondents lack attachment to the ground floor experiences or nothing inviting to those experiences. Whereas from the respondents in Finfinne Building, majority of the respondents were in their other activities. Island buildings Addis Ababa commercial center, Dubai Tera, Mars commercial center and Tana commercial center majority of the respondents were in their commercial activities.

C. Island mixed-use building

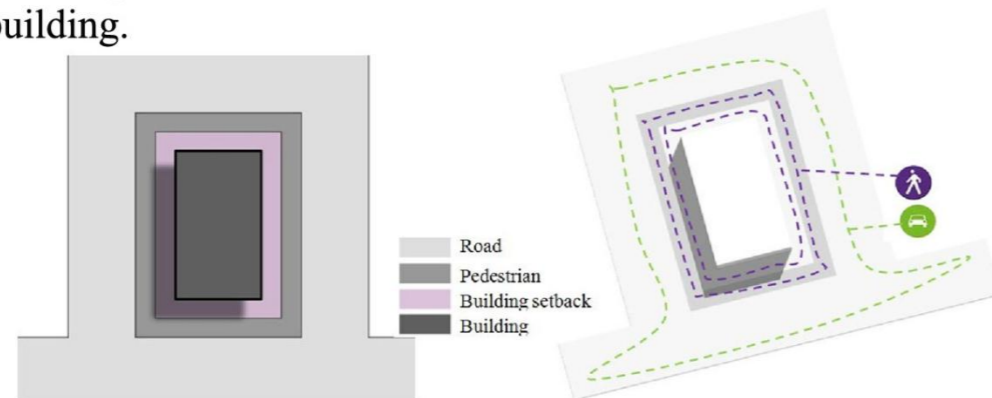
C2 Off-street mixed-use building: Island buildings along the street edge, with setbacks, the distance from the pedestrian street varies from building to building ranging from 3 to 15m

C2-1 Island building at the edge of driveway with well-defined pedestrian path and setbacks at one side of the building.



Case study building/Mars Commercial center

C2-2 Island building at the edge of driveway with well-defined pedestrian path and setbacks that ranges from two to four side of the building.



Case study building/Tana Commercial Buildin

Figure 15: Conceptual frame of C2 Off-street Island mixed-use building

6.1.2 The degree of visits made by the users to case buildings

This is summarized and analyzed responses of the users to the question- ‘How often do you visit this building? Hourly, Daily, weekly, monthly?’ The purpose of the investigation on this issue is to understand the reliability of users and their activities on the study area under (table3: Types of activities in case buildings).

Table 4: The degree of visits made by the users to case buildings

The degree of visits made by the users to case buildings			
Case buildings	occurrence of visit	Reason	%
A building at the right side of Ras Hotel	2-4 times a day	living area, work place	21
	daily	way to work	42
	Weekly	To visit functions like café, to walk and to pass by	37
	Occasionally	-	0
Flamingo Building	2-4 times a day	living area, work place, way to work	40.5
	daily	to pass by	42.5
	Weekly	to visit functions like café and office	17
	Occasionally	-	0
Yeha Commercial Center	2-4 times a day	work place	12
	daily	way to work	25
	Weekly	to pass by , waiting transport	42
	Occasionally	shopping, to visit functions like café, offices, bank	21
Ye Bego Adragot Hintsä	2-4 times a day	work place, to visit sidewalk cafes	13
	daily	work place, way to work and to pass by	48
	Weekly	shopping, to visit functions like café and to meet friends	39
	Occasionally	-	0
Tenna Kebede Building	2-4 times a day	work place, way to work	15
	daily	to pass by	51
	Weekly	to visit functions like café, offices, bank, meet friends	34
	Occasionally	-	0

The degree of visits made by the users to case buildings			
Case buildings	occurrence of visit	Reason	%
Finfinne Building	2-4 times a day	living area, work place, way to work	30
	daily	to pass by	21
	Occasionally	to visit functions like café, offices, bank	49
Bedilu Building	2-4 times a day	living area, work place, way to work	28
	daily	to pass by	58
	Weekly	to visit functions like offices, shop	14
	Occasionally	-	0
Addis Ababa commercial center	2-4 times a day	work place, to pass by	25
	daily	shopping, to pass by	34
	Weekly	Shopping	41
	Occasionally	-	0
'Dubai' Tera	2-4 times a day	work place, to pass by	38
	daily	shopping, way to work	39
	Weekly	Shopping	23
	Occasionally	-	0
Mars commercial center	2-4 times a day	work place	34
	daily	shopping, way to work	23
	Weekly	Shopping	43
	Occasionally	-	0
Tana commercial center	2-4 times a day	work place, to pass by	30
	daily	Shopping	43
	Weekly	shopping, church -pass by	27
	Occasionally	-	0

As the table shows, the respondents visit the study area at most daily and at least 2-4 times a day. The major raised users' activities of in those regular times are, such as way to work, shopping, and to pass by work place.

6.1.3 The users experience to case buildings

This is the data of users’ response to a question-‘What is your experience of this building?’

This is an investigation on the users’ perception of the case building to expose preferable and non-preferable spatial interactions at the building plinth.

Table 5: Users’ experience to case buildings

Users’ experience to case buildings			
Case buildings	Users’ experience	Reason	%
A building at the right side of Ras Hotel	Positive	shaded walkway and functional varieties	86
	Negative	no outdoor café to enjoy and lack of parking space	14
Flamingo Building	Positive	ease access to shop and café	69
	Negative	the café lack transparency	31
Yeha Commercial Center	Positive	functional varieties	43
	Negative	lack of outdoor café to enjoy	57
Ye Bego Adragot Hintsa	Positive	active frontages and functional varieties	88
	Negative	lack designed parking space	12
Tenna Kebede Building	Positive	functional varieties	34
	Negative	lack of active frontage and small scale shops	66
Finfinne Building	Positive	functional varieties and outdoor café to enjoy	63
	Negative	lack of small scale shops	37
Bedilu Building	Positive	ease access to ground functions	39
	Negative	lack functional varieties	61
Addis Ababa commercial center	Positive	functional varieties	69
	Negative	interception with vehicles	31
‘Dubai’ Tera	Positive	shaded walkway and provided café at ground floor	58
	Negative	lack of parking space and functional varieties	42
Mars commercial center	Positive	functional varieties	57
	Negative	obstacles to access the adjacent ground floor shops	43
Tana commercial center	Positive	functional varieties	49
	Negative	major space along is covered by bank and offices	51

During the data, collection respondents have been asked about what the positive and negative images in their visit of case buildings. In response to the question, the respondent considered shaded walkway, ease access to shop and café and functional varieties as major elements they like most and no outdoor café to enjoy and lack of parking space, the café lack transparency, lack

designed parking space, lack of active frontage and small scale shops, interception with vehicles, obstacles to access the adjacent ground floor shops and major space along is covered by bank and offices as major negative elements. Judging from these results, one could easily see that having ground floor café is more inviting, changes in pavement, landscaping and furniture can mark where public space ends and semiprivate transition zones begin.

6.1.4 The users and professional's future preference of mixed use building

This is based on the question on the spatial interaction at the building plinth. It helped to extract the users' chosen design characteristics by noting at the frequency of mentioning of a particular characteristic.

Table 6: The users and professionals future preference of mixed use building

The users and professionals future preference of mixed use building	
Case buildings	The preferred design attributes
A building at the right side of Ras Hotel	Active frontages, Defined parking area
Flamingo Building	Uses (more sidewalk cafes)
Yeha Commercial Center	Defined standing and seating spots on the open space at the front to make it more active. Integrating greenery (plantings for shading and to decrease the hotness)
Ye Bego Adragot Hintsa	well-designed parking layout
Tenna Kebede Building	Defined spots for street vendors shoe shiners, provide seating as waiting and staying spots, Removing the fenced area at the front that block the pedestrians from accessing the ground easily
Finfinne Building	Emphasizing the open space with quality public space like provide seating as waiting and staying spots
Bedilu Building	Uses more sidewalk cafes, Incorporate public space on the open space at the front
Addis Ababa commercial center	Incorporate cafes on the ground floor
'Dubai' Tera	Defined parking area
Mars commercial center	Removing the obstacle at the front that defines each shop entrance
Tana commercial center	Functional spaces like offices and banks should be kept in the upper floors

6.2 Analysis and findings investigated through the site observation

The study results of the author's investigation on the mixed use buildings conditions that can influence the spatial interaction at building plinth.

6.2.1 photo essay

SPATIAL INTERACTION AT BUILDING PLINTH



Figure 92: site observation on obstruction of access, street edge and street vendors

As the photo image shows, the author's investigation on the mixed use buildings at two parts one is obstruction to access the open space at the frontage of the building, however they are used to protect the building face from accident and to protect air-condition machine. The second is street edge and defined pedestrian path here the building setback, walkways and drive way are separated.

6.2.2 Mapping

Activities sitting, standing and walking were mapped on different days and times and layered together to indicate where people usually prefer to stay. The mapping was performed on morning and afternoon times on June 14th, 17th and 19th and performed on December 24th, 25th and 28th of 2019.

Note:

- Mapping is done by layering observation data from three days and some people tend to prefer similar (closely situated) spots however one dot will represent one up to three people. Therefore, the number of symbols on the map does not indicate the exact number of people, the location of the symbols is approximate.



Figure 93: Mapping-A building at the right side of Ras Hotel, Ye Bego Adragot Hintsa, Bedilu Building and Yeha Commercial Center

SPATIAL INTERACTION AT BUILDING PLINTH

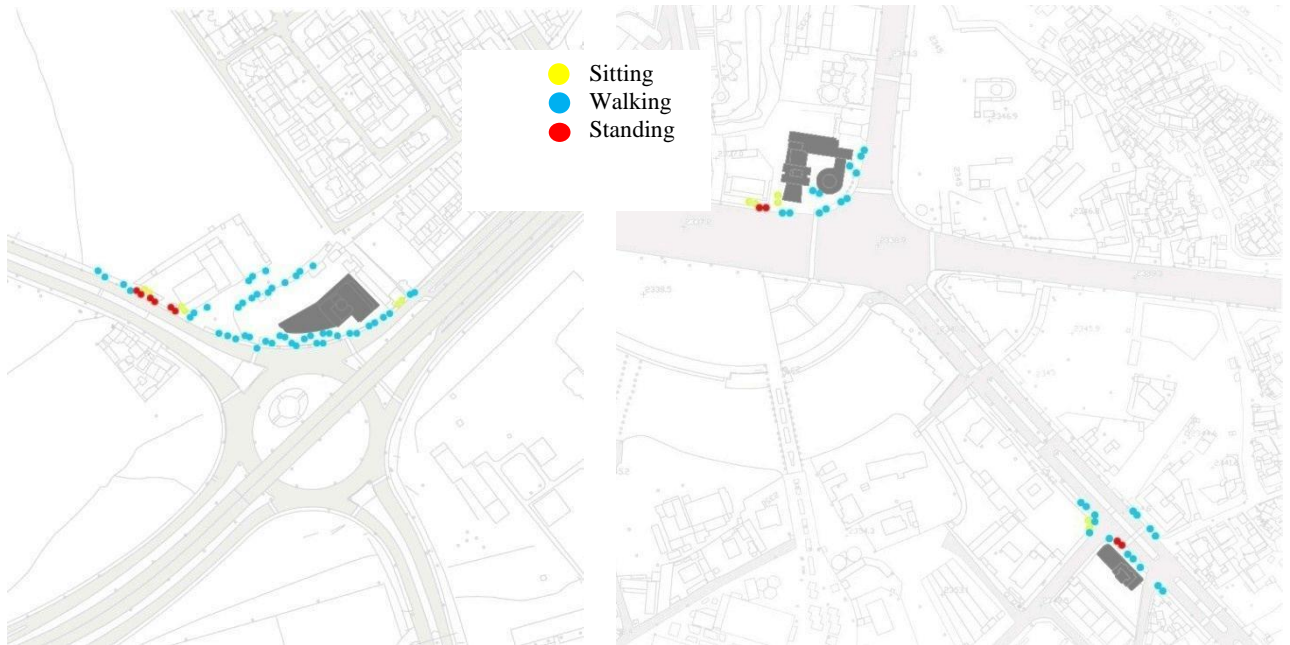


Figure 94: Mapping-Finfinne Building, Flamingo Building and Tenna Kebede Building

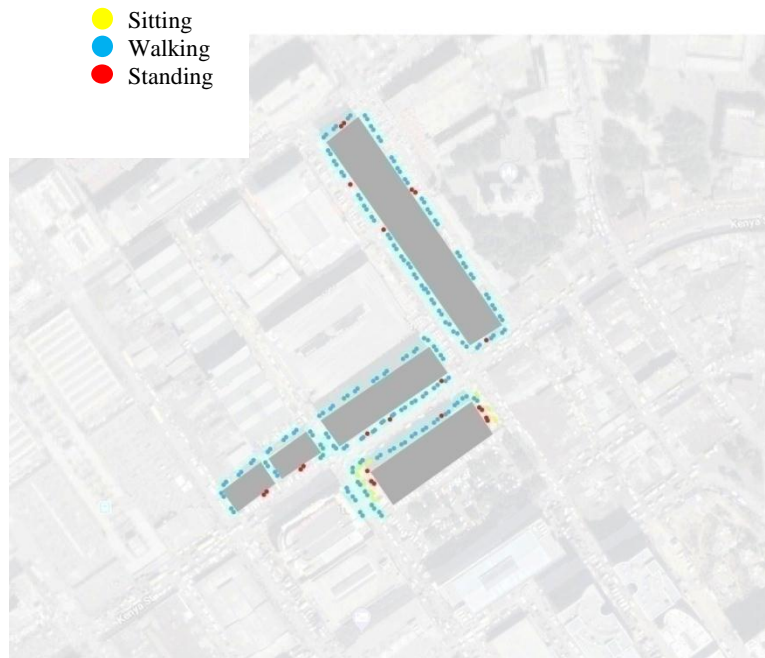


Figure 95: Mapping-Addis Ababa commercial center, Dubai Tera commercial center, Mars commercial center and Tana commercial center

Data from observations and photo essays shows at A building at the right side of Ras Hotel and Ye Bego Adragot Hintsu people walk to enjoy (slowly observing or talking in group and crossing or going to/from work, People were sitting using outdoor café/ waiting their friends. At Yeha Commercial Center data from Observations and photo essays indicates that people were either crossing or going to/from work and other (walking and standing looking for taxi, rushing out of a taxi) and people were also sitting around street vendors, largest portion of the people standing are the people waiting for a taxi or a bus. At Bedilu building, Tenna Kebede Building and Flamingo building people walk to cross and going to/from work, people were standing looking for taxi. At Finfinne building people were either crossing or going to/from work and people were also sitting under tree for shading. The four commercial center buildings (Addis Ababa commercial center, Dubai Tera commercial center, Mars commercial center and Tana commercial center) which located at Merkto a lot of people walk through the site at a fast pace and the streets are usually congested. Observations and photo essays shows that people are generally seen walking alone and in groups, and they do not linger or look around. People were either crossing or going to/from work and other (walking fast through people holding a bag/or not, looking for taxi, rushing out of a taxi) and the remaining were shopping (coming out of the shops, holding different goods/baggage).

6.3 Findings explored through case studies

The finding is reviewed from the analysis from the three layer set of criteria that should be part of each analysis and strategy for spatial interaction at the building plinths: context, building and street. In this section, all the analyzed data under the case mixed use building, interview and the site observation, findings are presented. The most preferred design attributes which are recommended in table (6) to be incorporated on the future design of the buildings are: active frontages, well designed parking layout, uses more sidewalk cafes, defined standing and seating spots on the open space at the front to make it more active, integrating greenery (plantings for shading), defined spots for street vendors shoe shiners, removing the fenced area at the front that block the pedestrians from accessing the ground easily, emphasizing the open space with quality public space like provide seating as waiting and staying spots, incorporate cafes on the ground floor, removing the obstacle at the front that defines each shop entrance and functional spaces like offices and banks should be kept in the upper floors. Final expectations of those all preferences are: to improve spatial interaction at the building plinth furthermore that can facilitate and establish links with the public realm, site buildings close to and oriented towards the street and create a walkable context that is stimulating, legible, comfortable and safe for pedestrians.

In general, the buildings have a city wide role, as mixed use building and as a landmark which supposed to be center of commercial and non-commercial activities where people meet and socialize. Despite this fact, the following critical issues are investigated regarding its existing spatial interaction at the building plinth situation. Those are; the lack of outdoor café, lack of

parking space, the poor walkability environment, the lack of public space, lack of active frontage, cafés lack transparency, lack of small scale shops, the lack of diversity in activities, obstacles to access the ground floor shops. It is due to those conditions that the physical environment of the building became discouraging to walk and stay. In other words, this is the condition that made the major uses and activities of building and streets to be only for passing by and the condition that made the users to be dependent on the indoor catering facilities such as cafes and restaurants for staying protection from diverse weather conditions.

All cases of the analyses show all listed case mixed use building need enhancement in various extent but the major percent to be enhance according to interview and site observation is Tenna Kebede building, the more perceived poor qualities are the spatial interaction at building plinth is ignorant and unease for pedestrians and the public realm in the context of Addis Ababa. It will be an example how one can enhance the current trending building plinth style in Addis Ababa.

The solution does not lie in demolishing existing buildings. It rather suggests an intervention that unused and underutilized space in the building should be used more efficiently. A possible solution would be to convert some of these spaces into productive public space and landscapes.

CHAPTER SEVEN

DISCUSSION

CHAPTER SEVEN

DISCUSSION

7.1 Discussion

In this chapter, all the study findings which are analyzed and presented individually are discussed and interpreted collectively; under the category of building and street, the case of different mixed use buildings in order to answer the preferable and non-preferable spatial interaction at the building plinths.

Building

Establish links with the public realm, site buildings close to and oriented towards the street and create a walkable context that is stimulating, legible, comfortable and safe for pedestrians. The style of buildings must work in harmony with the surrounding built fabric and open spaces to create attractive, livable environment. The edges provide the opportunity for life in the buildings or immediately in front of the buildings to interact with life in the city (Gehl, 2010).

- The case study building which face streets with proper pedestrian setbacks and provide continuity functions from the surrounding, that is to enhance the walkability of the district, to make visits more enjoyable, to make the district active at all times and to experience the district in an enjoyable and relaxing way.

This is a demand on a balanced mix of different user groups and activities and this is tied with the presence of people who can stay for a long time doing their preferred activities (Francis, 2009). It is about the presence of diversity in activities which are friendly and welcoming to all groups of people.

- As the case study buildings are at the major road of the city, a lot of users flow to the buildings for different activities. Despite this fact, (table: 4) shows the respondents visit the study area at most daily and at least 2-4 times a day. The major raised users' activities of in those regular times are, such as way to work, shopping, and for the purpose of daily transit to work. Those all show that, the highest range of activity took place in the case study buildings are the daily coming from and going to, which is an obligatory activity. In other words, majority of the users visit this area to perform their obligatory or routine activities. So, as of the illustration (table: 2) made by Gehl (2010), those case buildings are with low physical environment quality.

Changes in pavement, landscaping, furniture, hedges, gates and can mark where public space ends and fully or semiprivate transition zones begin. Height differences, steps and staircases can also mark the transition zone, providing critical prerequisite for the important function of soft edges as the link between inside and out, between private and public (Gehl, 2010).

- Findings from the case study buildings shows that, the structures which are obstacles to access the adjacent ground floor shops and offset space provided at the front is one which relates the building to the street, as it is a fenced space it excludes pedestrians from using the building easily. Between those offset spaces and the building, it is necessary creating a transitional space to interact with people, street activities and visual interest to façade.

Street

Public amenities are the availabilities of physical elements, such as: seating, shade trees, places offering food, bike racks, and bulletin boards, well designed and in the right place (Francis, 2009). Locate street furniture within the interface zone in areas of high activity where people are expected to gather together, such as at transportation stops, building entrances, in plazas, and close to retail or entertainment areas.

- Data from observation and photo essays observed that, other than the seats street vendors use for themselves and their customers, there are no public seats provided. As we can see from table (5), the case study buildings which are not provided with public space and outdoor café, which means there is nothing that attracts you to stay there. So you simply pass by to indoor catering facilities such as cafes, restaurants, hotels and so on.

CHAPTER EIGHT

CONCLUSION AND RECOMMENDATION

CHAPTER EIGHT

CONCLUSION AND RECOMMENDATION

8.1 Conclusion

This study was made to investigate spatial interaction at building plinth and to propose a design that can enhance the plinth on mixed use buildings. To do that, the study has investigated the existing interaction at building plinth; it explored the users' and professionals' preferences to propose a design solution that can enhance plinth on mixed use buildings.

The in-depth description of the respondents' show that pedestrians tend to prefer well defined spaces. Buildings provide walls that define the public realm. For this reason, it is generally better to place buildings close to the sidewalk, especially commercial spaces. The results confirm the importance of ground floor, or the city at eye level, as a pedestrian in the city, feel comfortable, safe, and captivated by the details of what your eyes see. Different functions should be included with in the ground floor. Flow space should describe the space that is produced from the flows of people, information and goods, rather than concentrating on the boundaries. Physical access should not be limited to entrance spaces. Visual connection with the surrounding should be considered.

Furthermore, respondents emphasize the provision of integrated open space with its surrounding providing activities sidewalk cafes or seats, walkways, outdoor seating areas and landscaping in the mixed use building areas. Also, in the users' and professionals' preferences to provide inclusive environment, more focus is given to the incorporated public space on the open space at the front and between buildings, defined parking area, emphasizing the functional variety.

In response to those findings, this study proposed a design for Tenna Kebede Building, which can enhance spatial interaction at building plinth additionally it, can facilitate and establish links with the public realm, site buildings close to and oriented towards the street and create a walkable context that is stimulating, legible, comfortable and safe for pedestrians. The designed building provides accessible ground floor spaces, function space flow from private space to public space of the building, open public space, walking spaces, staying spaces with friendly activities for encouraging social interactions. It gives an opportunity for the commercial activities of the building to be active and to street vendors to enhance the economy of the society.

8.2 Recommendation

Recommendations have been made for how to enhance and develop spatial interaction at the building plinth in mixed use buildings. This study has presented a scientific way of approaching spatial interaction at building plinth, the case of mixed use buildings in Addis Ababa. That is, by introducing how a research on investigation of the existing spatial interaction at the building plinth problems and on the future preferences can reveal the significant design solutions for the design of the mixed use building.

The following recommendations are forwarded based on the findings of the study.

- The study has produced a design for the enhancement of building ground floor which mainly influence the public right of way including the frontages of the buildings
- During the design period considering the fact that, creating places and situations that promote optional activity is one factor that increases the quality of open space. For instance open space provided with sufficient seating bench, shadings could make user to take longer time.
- Awareness creations workshops and seminars should be held between the governments, designers and owners to enhance and develop spatial interaction at the building plinth in mixed use buildings.
- The spaces should be designed to promote health; the designs must incorporate green spaces that improve mental health and reduce stress level.
- Throughout the process of developing these spaces, the public realm should be the priority. Designers and planners should consider the public realm in decision making, that way they will develop a sense of place and belongingness.
- The need to enhance and design plinths is necessary for the people, there's still a need to connect buildings to the street with a vibrant façade and plinth. This not only applies to new designed buildings, but also to the existing buildings.
- In this study, spatial interaction at building plinth is defined as a spatial attribute of private and public space, spatial interaction at the building plinth as quality of life at the city scale is another case for further research.

- Since the study focused only on ground floor of the building the data collected on the ground floor activities. However, in order to reach more detailed results, further research can be carried out on upper floors.
- This study included mainly respondents of those who were in the case mixed use buildings during the field survey times. However, in order to broaden the understanding of the users' perceptions about spatial interaction at the building plinth, and to reach more concrete and detailed results, further research can be carried out with the participation of larger respondent groups.
- Evaluate and incorporate researches about spatial interaction at the building plinth with the government's decision to make comprehensive guidelines concerning the city mixed-use buildings.

PART TWO

PROPOSAL

In response to those findings, this study proposed a design for Tenna Kebede building that can enhance spatial interaction at building plinth additionally that can facilitate and establish links with the public realm, buildings close to and oriented towards the street and create a walkable context that is stimulating, legible, comfortable and safe for pedestrians. The intervention will provide accessible ground floor spaces, well function space flow from private space to public space of the building, open public space, walking spaces, staying spaces with friendly activities for encouraging social interactions.

ANALYSIS OF THE BUILDING



undesigned parking area at the back, it could be a relief area for public activities.



There should be human scale detailing at the entrance that considers human senses.



undefined street vendors place.



Entrance accessed only using stairs which excludes handicapped users.



At rainy season those structures block the water intering into the ground floor.



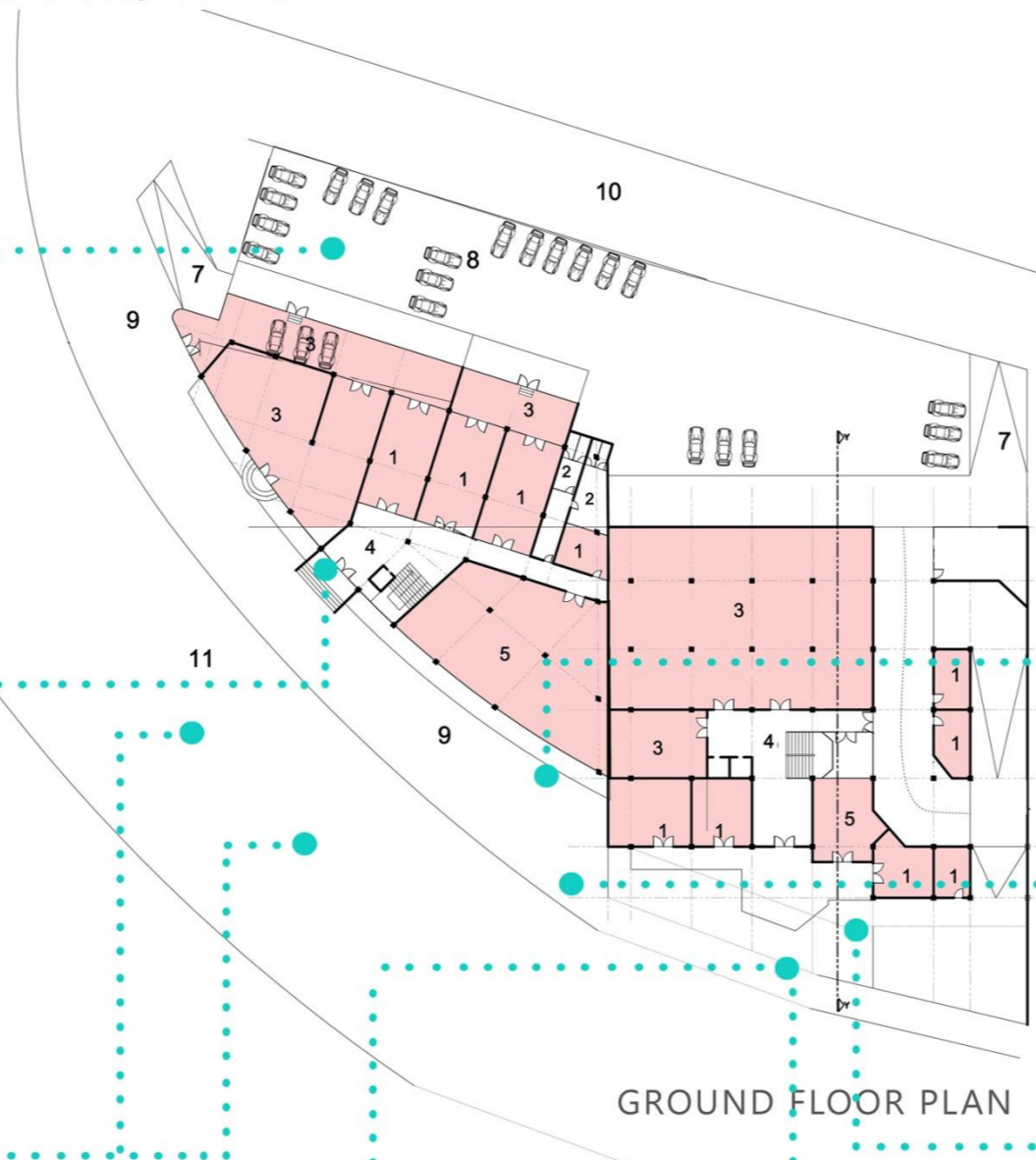
Obstructing structures usually used as standing place



Obstructing structures should be avoided or maintained to enhance an aesthetical look (fences)



the open space in front of the entrance is not preferred to be used by pedestrians.



LEGEND

- 1.Shop
- 2.Toilet
- 3.Bank
- 4.Lobby
- 5.Office
- 6.Fountain
- 7.Car access
- 8.Parking
- 9.Walkway
- 10.Minor road
- 11.Main road

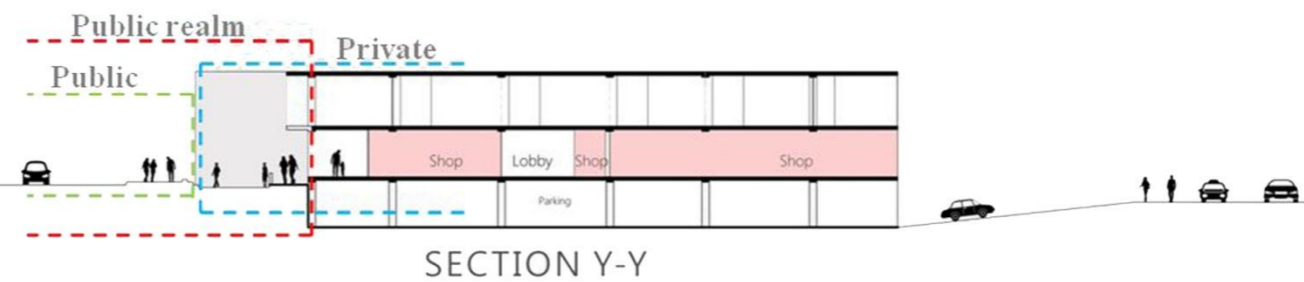
GROUND FLOOR PLAN

Figure 96: Analysis of the building

THE FOCUSED SPOTS ON THE BUILDING

the plinths, the ground floor that negotiate between the inside and the outside, between the public and the private.

Here, the study will be focused only on the ground floor that will be analyzed based on characters that are thought to influence the spatial interaction the most. This are the building (human scale units, variety of functions, character of the architecture/façade, transition from private to public and the street.



ANALYSIS THROUGH USERS PERSPECTIVE

This is the data of users' response to a question-'What is your experience of this building?' This is an investigation on the users' perception of the case building to expose preferable and non-preferable spatial interactions at the building plinth.

Good —functional varieties

Bad — lack of active frontage and small scale shops

ANALYSIS THROUGH USERS AND PROFESSIONALS PREFERENCE

This is based on the question on the spatial interaction at the building plinth. It helped to extract the user chosen design characteristics by noting at the frequency of mentioning of a particular characteristic.

—Planning Authorities should give careful consideration for poorly designed ground floors with low ceiling heights, lack of outdoor space, lobby space, and visitor parking.

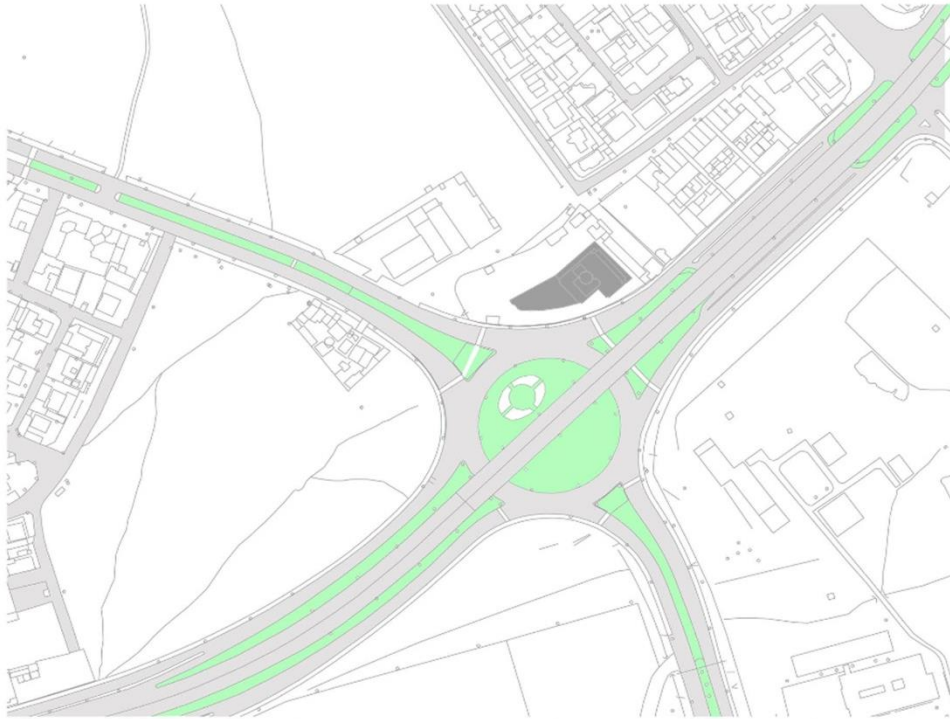
—Defined spots for street vendors shoe shiners, provide seating as waiting and staying spots.

—Presence of diversity in activities which are friendly and welcoming to all groups of people.

—provision of green area and seating for the purpose of waiting and staying

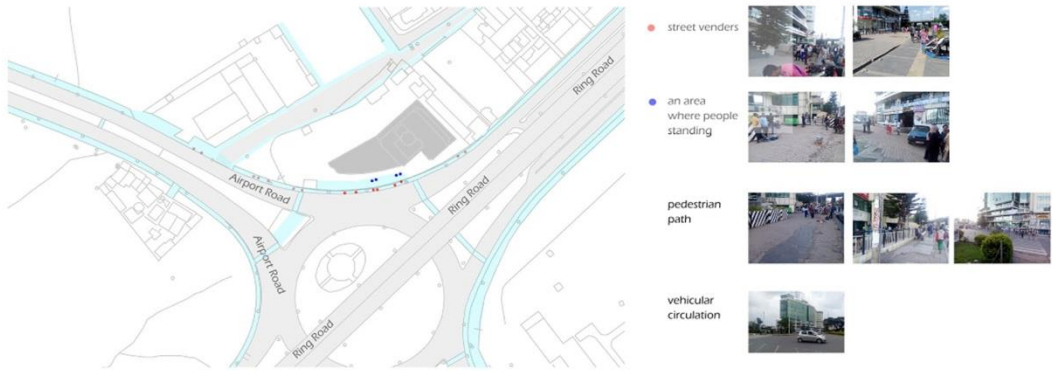
Figure 97: The focused spots of the building

ANALYSIS OF THE SURROUNDING GREEN SPACE



The spot is surrounded by street greenery and green public space that have different characters. creating a continuity between the street greenery, near by green public space and the TK building to maximize gran area.

ANALYSIS OF THE SURROUNDING EVENT AND CIRCULATION



ACCESSEBILTY



Figure 98: Analysis of the surrounding green space

What is missing

- a) Limited access through building to the surrounding activities
- b) Lack active ground functions to invite people in to the building
- c) Lack outdoor sitting space
- d) Undersigned parking space
- e) Pedestrian lack connection to the ground floor
- f) Lack green area
- g) Structures protecting air conditioning machines, whereas blocking pedestrian to approach the building

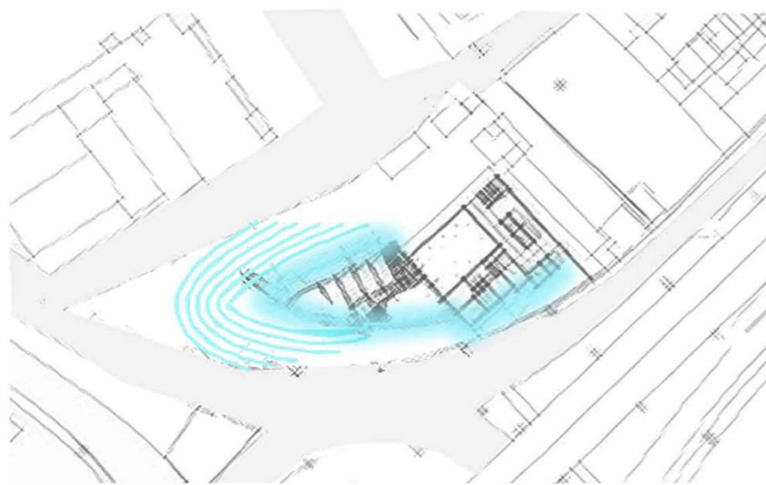
Aim

- a) Establish passageway through the building to connect building to surrounding activities
- b) Develop functions at ground floor should invite people in to the building
- c) Provide outdoor sitting space
- d) Design parking space
- e) Allow pedestrian connected to the ground floor
- f) Develop green areas to connect with the existing green area around
- g) Demolish obstruction structure and relocate air conditioning machines to basement floor

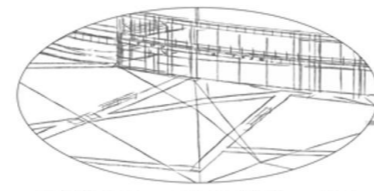
CONCEPT

The concept is about connecting dissociated elements that need to collaborate in order to solve the challenges building, pedestrian and user of the building face. Thus, it is about connection. The aim of the design is to stitch these elements firmly together.

The response will be
to stitch_ people with building
to stitch_ building with pedestrian activity



Accessibility



continuty conneting the facade to the outdoor functions



LEGEND

- 1.Shop
- 2.Cafe and restaurant
- 3.Bank
- 4.Entrance Lobby
- 5.Office
- 6.Toilet
- 7.Fountain
- 8.Bridge
- 9.Car access
- 10.Parking
- 11.Walkway
- 12.Minor road

ground floor circulation continuity conneting to the streets and conneting building to outdoor functions



- LEGEND
- 1.Shop
 - 2.Store
 - 3.Bank
 - 4.Entrance Lobby
 - 5.Under ground parking
 - 6.Toilet
 - 7.Car access

basement circulation continuity conneting to the streets and conneting building to outdoor functions

Type your text

Figure 99: Concept development

CONCEPT

Function continuity

Green continuity

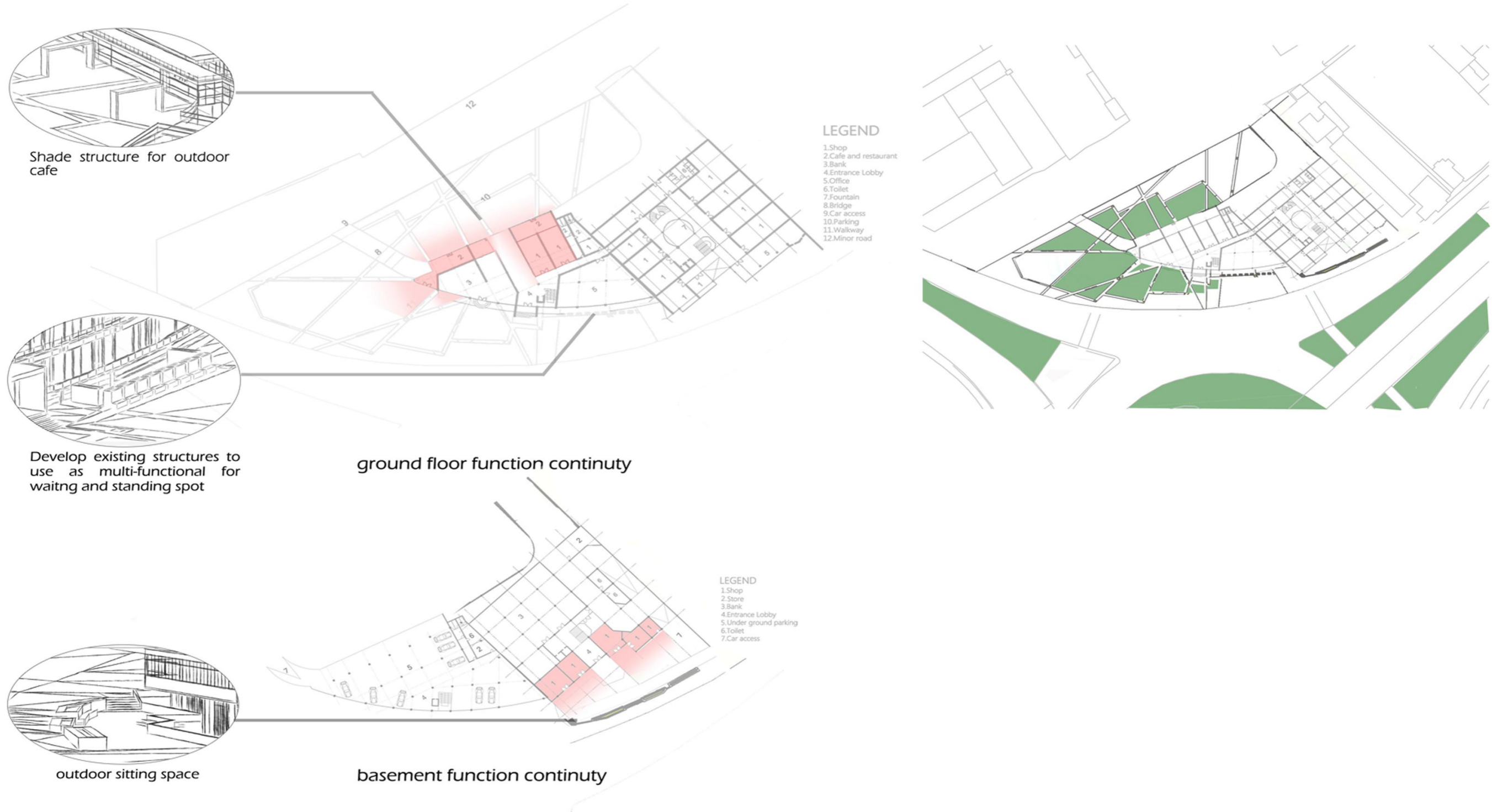


Figure 100: Concept development

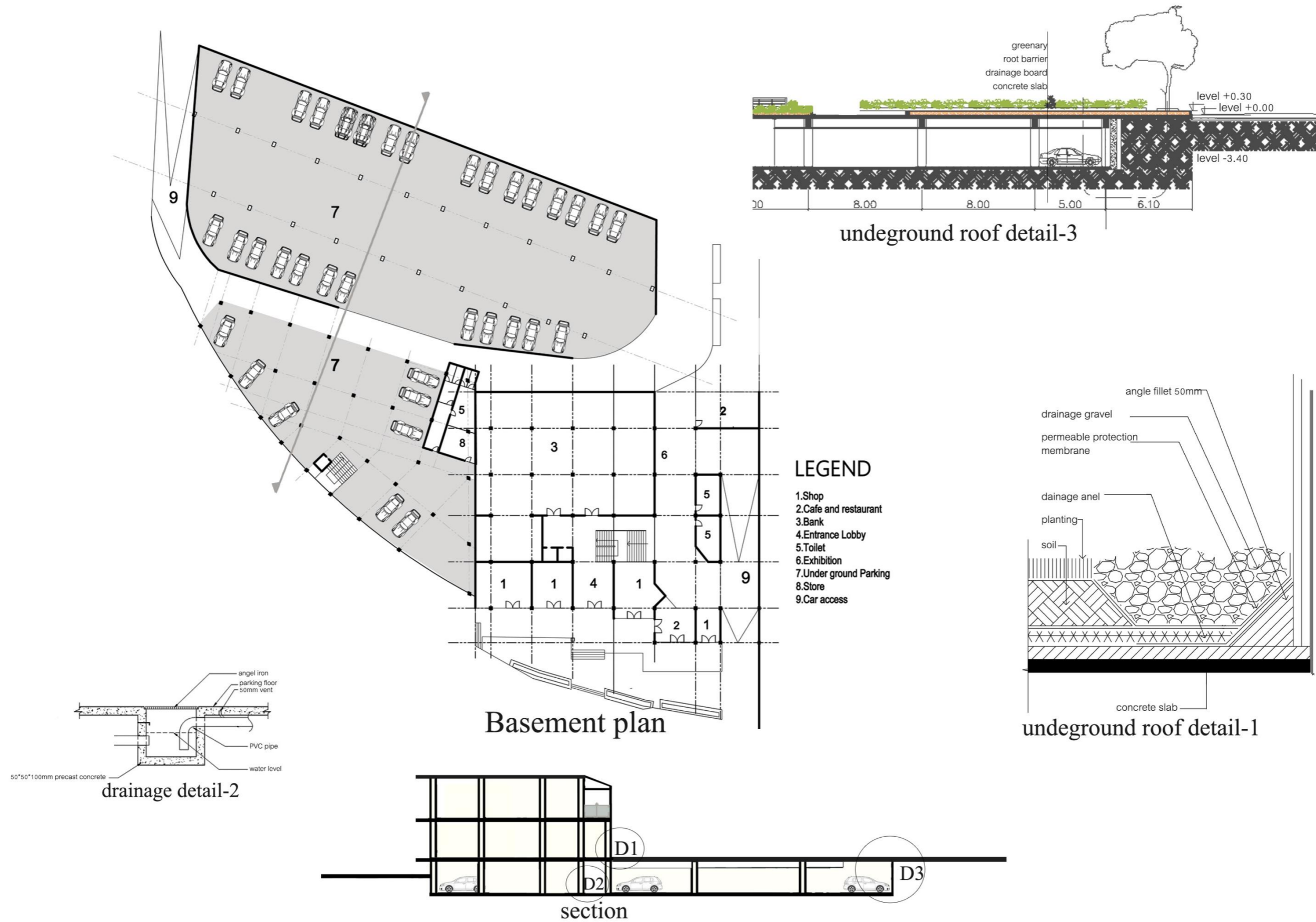
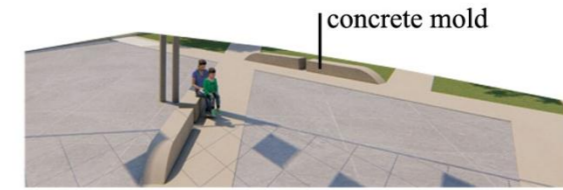


Figure 101: Basement plan and details



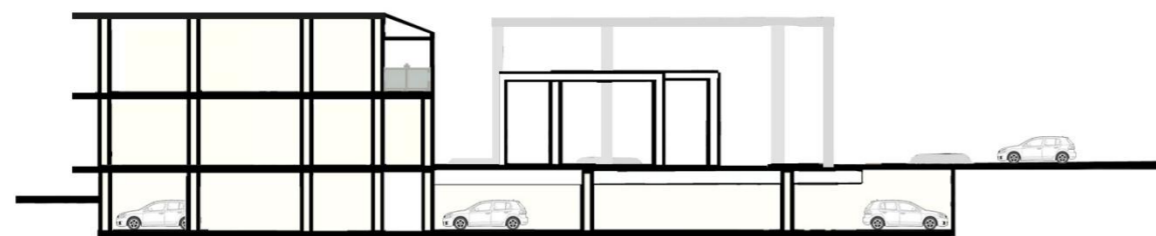
Ground floor plan



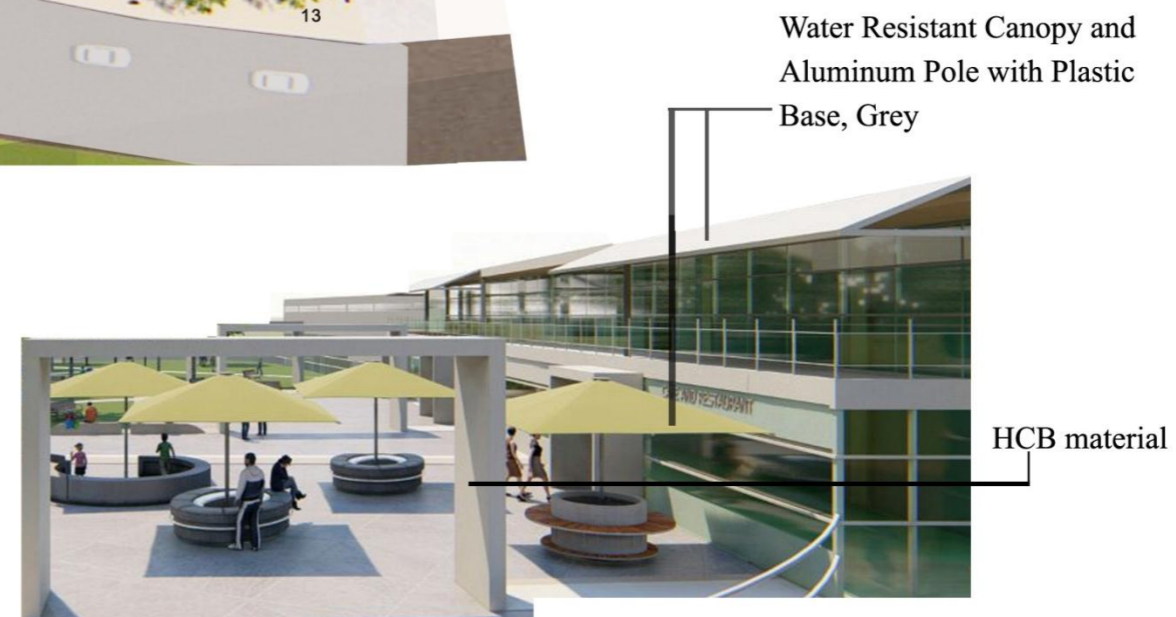
material specification

LEGEND

- 1.shop
- 2.cafe and restaurant
- 3.office
- 4.entrance lobby
- 5.toilet
- 6.exhibition space
- 7.under ground parking
- 8.store
- 9.car access
- 10.outdoor cafe
- 11.plaza
- 12.standing and sitting area
- 13.ramp
- 14.visitor parking
- 15.bridge
- 16.access for pedestrian



section



material specification

Figure 102: Ground floor plan and details



Figure 103: Before and after images of Tenna Kebede building



Figure 104: Before and after images of Tenna Kebede building

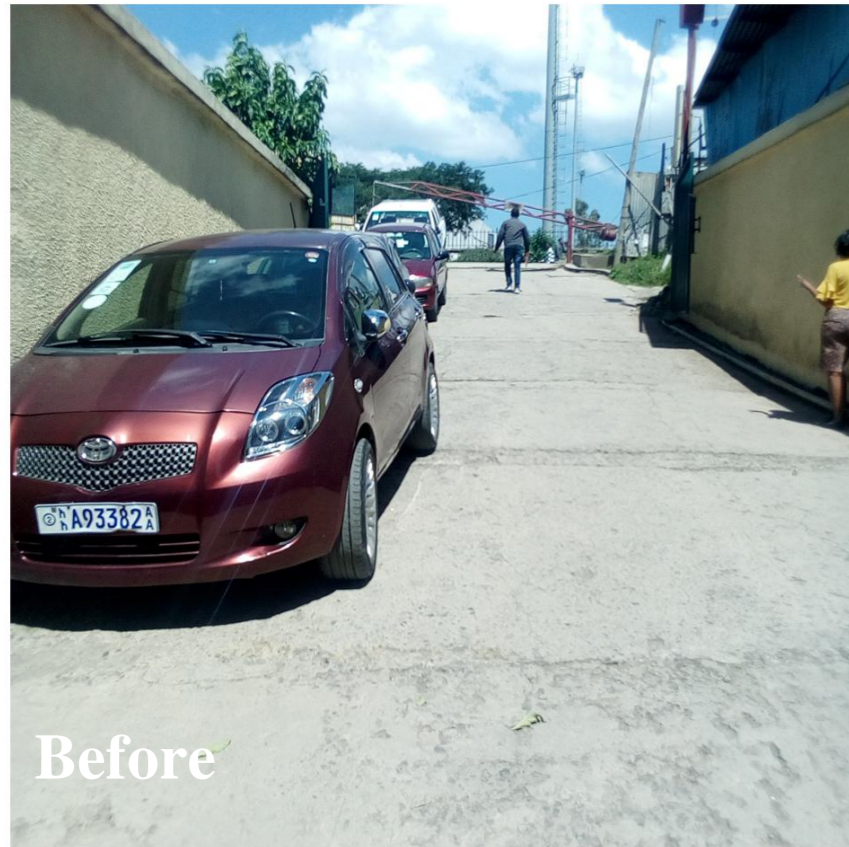


Figure 105: Before and after images of pedestrian path



Figure 106: Before and after images of parking space at the back side of building



Figure 107: Before and after images

Conceptual design objectives

- ❖ Should be human scale
 - There should be human scale detailing that considers human senses, movement speeds and behaviors.



Figure 108: Human scaled elements

- ❖ Should be inviting that welcomes friendly activities and enforces pauses.
 - Ground floors should be transparent or with displays that allow visual access both from the street and to the street for functions such as cafes.
 - Functional spaces like offices and banks should be kept in the upper floors, and functions that emphasize the sidewalk environment should be in the lower floors. This should be taken as building code and should be enforced by the municipality.



Figure 109: Indoor functions

- ❖ Should provide both visual and physical access
 - A space should offer good views
 - It should be free of obstacles that screen visual contacts
 - Street layouts should be configured to allow walkable access to public space for all users



Figure 110: Accessible and legible space layouts

- ❖ Should provide a walking environment
 - There should be sidewalks with plaza zone, pedestrian passing zone and street furniture zone.
 - There should be enough room for walking, clutter free and with good surface treatments.
 - Street furniture should be located for maximum benefit



Figure 111: Plaza

- ❖ Should maximize sitting and staying opportunities
 - There should be attractive edges that invite stays
 - There should be seating zones that provide sitting possibilities.



Figure 112: Outdoor sitting space and spaces for street vendors

- ❖ Should provide inclusive environment
 - Should respond to different cultures, age groups and to both gender groups.


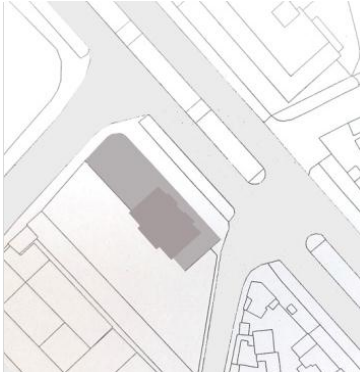




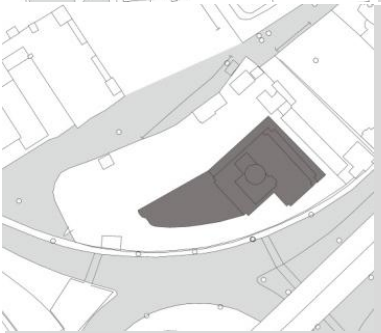
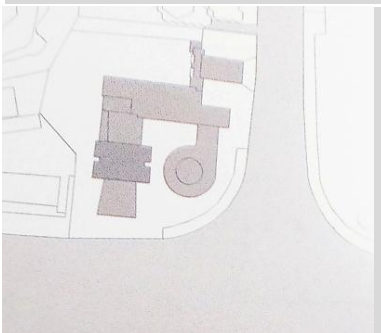
Figure 113: Inclusive environment




- ❖ design interventions that can be applied in the lower floors of the buildings (from an existing frontage that reject visual connection to a frontage that celebrate visual connection)

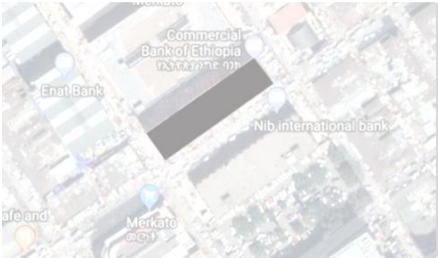



Figure 114 Suitable spaces for people to have view from building to the surrounding

A CATALOGUE FOR SPATIAL INTERACTION AT BUILDING PLINTH				
BUILDING TYPOLOGY	WIDTH (of street, setback and pedestrian walkway)	PROGRAM	GROUND FLOOR FAÇADE MATERIAL(majority)	DESIGN
1 	Street -34 meter Recessed pedestrians path - 4.5meter	Lack outdoor cafe to enjoy	Massive solid material(stone) with Transparent material(glass)	Active frontages, Defined parking area
2 	Street -22 meter pedestrians path -5meter	Ground floor café lack transparency	Transparent material(glass) but cover by protective metal grid	Uses (more sidewalk cafes)
3 	Street -25 meter Setback -12meter pedestrians path -4.5meter	Lack outdoor cafe to enjoy	Transparent material(glass)	Defined standing and seating spots on the open space at the front to make it more active. Integrating greenery (plantings for shading and to decrease the hotness)

A CATALOGUE FOR SPATIAL INTERACTION AT BUILDIN PLINTH				
BUILDING TYPOLOGY	WIDTH (of street, setback and pedestrian walkway)	PROGRAM	GROUND FLOOR FAÇADE MATERIAL(majority)	DESIGN
4 	Street -34 meter Recessed pedestrians path - 5meter	lack designed parking space	Massive solid material(stone) with Transparent material(glass)	well-designed parking layout
5 	Street -35meter pedestrians path – 3-5meter	Lack active frontage	Transparent material(glass)	Defined spots for street venders shoe shiners, provide seating as waiting and staying spots, Removing the fenced area at the front that block the pedestrians from accessing the ground easily
n 	Street -25 meter Setback -9-10meter pedestrians path -5meter	Lack small scale shops	combination of solid material(HCB) with Transparent material(glass)	Emphasizing the open space with quality public space like provide seating as waiting and staying spots

A CATALOGUE FOR SPATIAL INTERACTION AT BUILDIN PLINTH					
BUILDING TYPOLOGY	WIDTH (of street, setback and pedestrian walkway)	PROGRAM	GROUND FLOOR FAÇADE MATERIAL(majority)	DESIGN	
7		Street -30meter Setback and pedestrian path -5-9meter	Lack functional variety	Transparent material(glass) but cover by protective metal grid	Uses more sidewalk cafes, Incorporate public space on the open space at the front
8		Street -14meter	Interception with vehicles	Transparent material(glass)	Incorporate cafes on the ground floor
9		Street -14 meter Recessed pedestrians path -5meter	lack of parking space and functional varieties	Massive solid material(stone)	Defined parking area

A CATALOGUE FOR SPATIAL INTERACTION AT BUILDIN PLINTH				
BUILDING TYPOLOGY	WIDTH (of street, setback and pedestrian walkway)	PROGRAM	GROUND FLOOR FAÇADE MATERIAL(majority)	DESIGN
10	 <p>Street -14 meter Setback -7.2 meter pedestrians path - 4.5 meter</p>	Obstacles to access the adjacent ground floor shops	Transparent material(glass)	Removing the obstacle at the front that defines each shop entrance
11	 <p>Street -14 meter Setback -4.5meter pedestrians path - 4.5meter</p>	Major space along is covered by bank and offices	Solid material(HCB)	Functional spaces like offices and banks should be kept in the upper floors

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ANNEX

Appendix – I Data collection questioner forms

The questioner has four parts the purposes of the questionnaire are to:

- Seek to establish the extent of the perceived problem of spatial interaction at building plinth in mixed use building in Addis Ababa
- Understand to what extent it is a problem, and improve the understanding of the key factors that lead to this condition and possible solutions and lastly;
- for the completion of my MSc. thesis that I am doing in the department of Advanced Architectural design in Ethiopian institute of Architecture, building construction and City development (EiABC).

Part -1 Interview

A. For users

The questioner was formed of 8 questions, listed below. It focused on how users of the mixed-use building sees and experience the spaces and surrounding.

Respondent No: _____

- Gender: M _____ F _____
- Age group: 16-24 _____ 25-65 _____ 65+ _____

1. What is the purpose of your visit to this building and area? _____
2. How often do you visit this building? Hourly, Daily, weekly, monthly? _____
3. What is your experience of this building? _____
4. Do the buildings, their use, and their design make an attractive urban environment where you feel comfort? _____
5. What kind of environment would you prefer to when you walking to enjoy? _____
6. What do you think the function of this building has to look like at the ground floor? Can you describe it considering your needs to be satisfied? _____
7. What features of this building and area attract you? _____
8. What features of this building and area repel you? _____

B. For key informants from the municipality

The questioner was formed of 3 questions, listed below. It focused on physical conditions of mixed use buildings and Ethiopian building code standards.

Respondent No: _____

- Gender: M____F____
- Age group: 16-24____25-65____65+____

1. How do you describe the existing physical condition of mixed use buildings? Based on the function they provide on the ground, side walking, and public space amenities.
2. How do you describe the consideration of public life on designs of mixed use buildings in our building code standards? Is there any limitation/difficulty that can influence the design?
3. How do you explain the use of setbacks in buildings? Do you think they are fully utilized? If yes, how? If not, why?

C. For the key informant from authors of Addis Ababa Main City Center Urban Design Guideline

The questioner was formed of 3 questions, listed below. It focused on Addis Ababa Main City Center Urban Design Guideline.

Respondent No: _____

- Gender: M____F____
- Age group: 16-24____25-65____65+____

1. What was the intention of your study? Is there any limitation/difficulty that can influence the study?
2. What is the transformation of your study into actual directive and its role in shaping the main-city-center as anticipated?
3. What changes do you observe after your study on the spatial interaction at buildings plinth?

D. For key informants from the design professionals in the practice

The questioner was formed of a question, focused on public realm.

Respondent No: _____

- Gender: M____F____
- Age group: 16-24____25-65____65+____

1. What would be your considerations and what approaches do you have in place to respond to the interest of the urbanite? (Since urbanites experience their cities in ‘public realm’ which has a broader meaning than just ‘public space’; it includes facades of buildings and everything that can be seen at eye level).
2. How do you describe the consideration of public life on designs of mixed use buildings in your experience? Is there any limitation/difficulty that can influence the design?