TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

PULCHOWK CAMPUS

THESIS NO: 076/M.Arch/014

Urban Aesthetics and Streetscape – A Case of NGO Road in Narayangarh, Chitwan

by

Rachana Dahal

A THESIS

SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR

THE DEGREE OF MASTERS IN ARCHITECTURE (M.Arch.)

DEPARTMENT OF ARCHITECTURE

LALITPUR, NEPAL

September, 2022

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DECLARATION

I hereby declare that the thesis entitled "**Urban Aesthetics and Streetscape – A Case of NGO Road in Narayangarh, Chitwan**" which is submitted to the Department of Architecture, Pulchowk Campus, Institute of Engineering, Tribhuvan University in partial fulfilment of the requirements for the degree of Masters in Architecture (M.Arch.) is a research work carried out by me, under the supervision of **Prof. Dr. Sudha Shrestha**, between April 2022 to September 2022. I declare that the work is my own and has not been submitted for a degree of another University.

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Acknowledgement

Foremost, I would like to convey my sincere gratitude to the entire supporter who helped me in doing this thesis. I would like to acknowledge and express my warmest thanks to my supervisor Prof. Dr. Sudha Shrestha for her kind support and valuable ideas which made this thesis possible. Her guidance and suggestions carried me through every stages of writing thesis. I am quite appreciative of having this platform in department of architecture, IOE. The timely guidance, support, assistance advice and the efforts made by teachers helps this thesis complete.

I am so grateful to Ms. Asmita Khanal (Architect/Urban Planner) and Office of Bharatpur Metropolitan City for providing the required information and even for guiding with the suggestions during my thesis. Also, I want to thank all the respondents for their respond during survey.

I feel very blessed to have a supportive family members and their support and encouragement means a lot. Last but not the least, I would also like to thank my colleagues for giving a clear idea whenever I doubt writing the thesis.

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Abstract

Today's environment of the city incorporates various components that influence the quality of life, have an emotional impact on people: the buildings and constructions, landscape, panorama of the city, historical traditions, culture, environment, climate, and many other factors. This thesis is an attempt of in-depth study of the urban aesthetics and streetscape of NGO road in Narayangarh. The focus of the thesis lies in studying the elements of streetscape and building facades through the perspective of human experience, ideas, behavior and attitude. The objective of research is to explore the urban aesthetics and streetscape, identify the major problems and understand the people's perception towards existing conditions. The goal of thesis is to provide guidelines which may be used by the city providence, property owners, and developers in shaping the urban aesthetics and streetscape. The method applied for this research is mixed method i.e. qualitative and quantitative thus research falls on pragmatic paradigm. The methodology followed is case-study methodology and it involves the two types of sampling (one with houses and one with people) for fulfilling the purpose of research. Study is limited to literature review, field survey, direct observation and questionnaire survey where the urban aesthetics and streetscape definition, urban form, streetscape elements, façade elements, guidelines etc. are studied. Study concludes that there is the diversity in building type, material, construction, height, color, etc. Streetscape elements are not sufficiently provided which has caused the problems in pedestrian as well as vehicular user. From the result of questionnaire survey, majority of respondent are not satisfied with the existing condition of NGO Road in Narayangarh. The major problem is traffic, traffic congestion, lack of aesthetic considerations and streetscape elements has created the degradable visual image of the place as well unsafe pedestrian and vehicular movement. For a healthy design, it is essential for a sensitive concern of design guidelines in the developing place. Eventually, beauty is in the eye of viewers and if they feel comfortable, safe, attractive, enjoyable, and eye relaxing view, it is considered as aesthetically pleasing. Accordingly, a convenient and secure pedestrian route may eventually be used as a "tool" to draw tourists to the area. Therefore design guidelines have been proposed for better development and aspire to both renovate and solve current issues of NGO Road and its surrounding area.

Keywords: Urban Aesthetics, Streetscape, urban street, Buildings, Design guidelines

TABLE OF CONTENTS

List of Figures

List of Tables

Acronyms and Abbreviations

BMC	Bharatpur Metropolitan City
CCT	Complete Communities Toolbox
DUDBC	Department of Urban Development and Building Construction
PMC	Pune Municipal Corporation
BDP	Bandipur Development Project
BECTP	Bandipur Eco-Cultural Tourism Project
MTMP	Municipality Transport Master Plan
VTPI	Victoria Transport Policy Institute

CHAPTER 1. INTRODUCTION

1.1 Background

A city is composed of numerous tangible and intangible elements. Elements such as natural setting, land-use, circulation system, built form and people's behavioral pattern are more articulated which contributes towards urban aesthetics (Mowla, 2011). Urban aesthetics is concerned about the planned development of urban meaning through the coordinated organization of hypotheses or relationship between spatial objects (Lefebvre, 1977). The use of all the senses, not just the visual, is required for a real artistic experience, which is also more sensual than logical. Along with its looks and sounds, city's character is made up of its smells, sounds, and even tastes. Its attractions include individuals, their attire, vehicles, flowers, trees, and fountains. A city has a hidden history that influences its aesthetics. A city is not, and probably not even primarily, its architecture (Burchard, 1957).

Streetscape, which refers to urban roadway design and circumstances as they influence local inhabitants and street users, is the appearance or vista of a street. Term "streetscape" is also described as the visual representation of a street's physical space and its numerous components, like pedestrian way, bicycle lanes, trees, public transportation stops, medians streetlights, and signs (Patandianan & Shibusawa, 2019). Streetscaping acknowledges that people use streets for variety of activities, including but not restricted to transportation of motor vehicle. Streetscape design is increasingly understood as a technique for enhancing livability and traffic safety in urban areas (Harvey & Hall, 2015).

The urban environment is changing, as the process of urbanization is advancing. The common parameters of urban environment standards are also being altered. These changes have generated the need to research the modern way to the arrangement of city's visual environment. (Meseneva, 2020). Today's environment of the city incorporates various components that influence the quality of life, have an emotional impact on people: the buildings and constructions, landscape, panorama of the city, historical traditions, culture, environment, climate, and many other factors. In order to establish a flexible, adaptable urban environment, it is critical to consider modern trends in advertising, architectural, landscape, lighting, color, art and monumental sculpture while arranging the urban environment today (Meseneva, 2020).

Chitwan District is one of 77 districts of Nepal, located in Province No. 3 and Bharatpur, in the southwest corner is the country's fourth-largest metropolis. Bharatpur developed as the nodal city of Nepal from the history, has developed infrastructure and is the third most visited tourist destination after Pokhara and Kathmandu. The urbanization process is rapid and imbalance compared to regional context (BMC, 2020). Bharatpur's largest business area is Narayangarh, a major transportation and commercial hub in Nepal. Majority of the shopping area is located in Narayangarh. In chitwan, human movement has had a huge impact. Contrary to most of the cities of Nepal, Bharatpur is effective sufficient to attract the in migration within the city and the drifting populace is also too high in metropolitan city area (BMC, 2020).

Figure 1.1: Narayangarh Bazar with view of Mountain, Hilly and Terai

Source: (pinterest.com, 2020)

Originally inhabited by Tharu people, locals estimate that there are roughly equal numbers of Tharu and other ethnic groups nowadays. (Linnard, 2007). With the change in way of life, standard of living, socio-economic conditions, and even the people's perception, the urban structure could not remain the same and thus transformed gradually (BMC, 2020). It is one of the fastest-growing cities in Nepal and a central trading area, located in the heart of Bharatpur. Narayangarh, also known as Narayanghat, is located on the bank of Narayani River and is surrounded by bustling crowds, busy streets, and ferry activity. That is why Narayangarh, a portion of Bharatpur, is so well-liked due to its advantageous location in terms of cross-country travel. The Mahendra Highway connects with the Narayangarh-Mugling Highway, the main road that connects through the hills to Pokhara and the capital Kathamandu. NGO Road is one of the most used road by the visitors who came to visit the Narayani river. The route is well-known for the people living in Narayangarh

and is regularly used to visit famous temples like Harihar Mandir, Bhagwati Mandir, etc. People's flow is still high and it is the main route to reach to Narayani beach and can see the glimpse of heavy crowd during morning and evening for entertainment as well as commercial purpose. Because of this, the various urban changes have also been found during the different phases of development.

Figure 1.2: Aerial view of NGO Road from different historical timeline

This thesis will provide some perspective of peoples on the notion of urban aesthetics and streetscape of the Narayangarh, the emerging city. It is now time to direct attention to the unmet potential of downtown providence, and, in particular, the NGO road study area. This research will provide an in-depth urban aesthetic and streetscape analysis of the study area. The goal of thesis is to develop design guidelines which may be used by the city providence, property owners, and developers in shaping the urban aesthetics and streetscape. This will also provide some specific guidance regarding elements, dimensions, and attributes of urban aesthetics and streetscape that architects, planners and designers can use in the modern, especially in metropolitan areas, to carry out this goal. Design Guidelines will show how the study area could be enhanced to better utilize the circumstances already present in the downtown areas. This study aims to settle the issues and make the valuable architectural and historical significance of urban streetscape, which make it a unique place in Narayangarh.

1.2 Statement of the Problem

The visual and mental experience of city dwellers has been affected for many years by the hideous nature of architecture, buildings, and cities. Unbalanced building placement in an uninspiring urban environment and repetitive replication of the same buildings without variation are recognized as signs of poor aesthetics. Aesthetic issues are becoming more prevalent in developing cities, and they include designs which are unresponsive to the choices and values of ordinary people, excessive visual congestion caused by billboard use, uncontrolled urban growth, and others. Streets and city spaces are considered poor aesthetically, if they are insignificant and do not

reflect social or environmental dimensions as wanted by city dwellers (Venturi, Brown, & Izenour, 1989). Urban aesthetics also has to do with environmental challenges like traffic and pollution in cities. In fact, bad behavior such as littering cities or abusing the streets can have a detrimental effect on how attractive cities are to look at.

1.2.1 Situation of Bharatpur, Narayangarh

In the case of Narayangarh, this city is facing such above mentioned problems. The disharmonious organization of the buildings and streetscape has caused the impact on visual as well as mental disturbance on city dwellers. Cities all over the world endeavor to illuminate their urban aesthetic problems. Most urban road of Narayangarh lacks good streetscape which has a negative impact on people's behavior & aesthetic aspects of urban environment. Similarly, rapid growths of population & increasing provisions of infrastructures have caused a tremendous increase in the urban functions too.

Figure 1.3: Putalibazar, Narayangarh 1970 (Left) and 2017 (Right)

Source: (Facebook.com, 2020)

1.2.2 Traffic problem

One of the major problems of Narayangarh including NGO Road, is narrow street causing traffic congestion. It is due to poor road network and planning. It lacks to accommodate ever-increasing traffic. Limited budget for road construction and maintenance further hinders poorly maintained roads and inadequate road management. The haphazard manner often adds to already problematic traffic jams. Also, haphazard parking of bike and cars have caused the problem of unsafe walking and the visual unpleasant effect too.

Figure 1.4: Problem of parking in the street of NGO Road

1.2.3 Problem of building condition

The fast growing urbanization in Narayangarh also requires higher need for shelter and infrastructures. Generally, the migrated groups of people buy land and build houses in open spaces. However, majority of these buildings and infrastructures are not planned, poor and erratic housing patterns have been produced. New houses built in Narayangarh without proper planning have caused the aesthetic as well as functional effect in the urban form as well. Similarly, the maintenance of building is also very poor. It is because most of the buildings are rented and the owner lacks their intervention towards own buildings and the negligence of public sector also created these problems.

Figure 1.5: Buildings in Narayangarh, Chitwan

1.2.4 Problem of street facilities

Another major problem is poor street facilities. Most of the road in Narayangarh as well as NGO Road lacks facilities such as lighting, sign & signage, furniture, trace receptacles, pedestrian way, etc. These problems have caused unsafe riding as well as walking which also affects in the traffic jam and causes various accidents.

Undoubtedly, it is essential to incorporate aesthetic and streetscape guidelines in the urban environment. In fact, there are urban design guidelines and land use plans in Nepal but the challenges are in implementation (Ruszczyk, 2020), similar case in Narayangarh. There are numbers of public realms that are not well facilitated,

including streetscape, pedestrian interaction between road and buildings, building design and type, height, furniture, parking spaces, open spaces, etc. On the other hand, the application of guidelines has been the major problem in the city due to the lack of consciousness in the people and the authorities. Apart from this, the haphazard building form and unmanaged streetscape has created people to think about the urban aesthetics for better urban environment.

1.3 Rationale of the Research

The erratic urban situation has withdrawn concern of people towards the impact it has made on various fields for which numerous sorts of research are being conducted. Within the early twentieth century, people seem at slightest be consoled that the aesthetic of modern architecture appeared to be safe (Chayka, 2020). However, the extreme modernization with the lack of urban design concept has driven people to live in more over the bluntness and sophisticated environment. Unappealing forms, shapes, and styles in architecture are just a few examples of unbalanced urban aesthetics. These are the areas that the planner and architect have the most control on. As this project's goal is to focus on modern directions, these problems of aesthetics and streetscape could be solved to make city more pleasing from this study.

In the context of Nepal, there have been very limited projects on the aesthetics and streetscape in urban area. Specially, after the establishment of local government, the research has been done mostly on the urban planning and streets. Urban development has been focused broadly in the city but urban design has not been addressed. None of the researches address the effect of urbanization on the city aesthetics and streetscape of Narayangarh, Bharatpur Metropolitan City has been cited. It clearly signifies that proper guidance for aesthetics & streetscape in urban road is needed, so that it could stop haphazard city growing and deterioration of visual image of city. The review of the several pieces of literature therefore very clearly indicates that this is relatively an area that has not been given due to attention by the researchers. Similarly, the research that explains how the human perception affects the urban aesthetic and streetscape is yet to be done. Therefore, this research has been chosen to withdraw the conclusion on how people are facing the urban problems and how the aesthetic and streetscape guidelines can be applied in the urban design. Therefore, this research is justified since it fills the research gap and also will be helpful for the future reference. Furthermore, this research will particularly help architect and designer to incorporate

design guidelines to address the issues that are the major problem in the urban street of Narayangarh.

1.4 Research Objectives

The research limits to the following objectives:

The main objective:

- To explore the urban aesthetics and streetscapes in case of NGO Road in Narayangarh

The specific objective includes:

- To address the problem rising in urban aesthetics and streetscape of NGO Road
- To understand the people's perception/ experience towards existing condition
- To develop the design guidelines that will pave the way for development and solve the problems.

CHAPTER 2. LITERATURE REVIEW

2.1 Urban Design

Urban Design is known for the process of modifying the physical environment for life in cities, towns, and villages. It is the art of creating spaces and is concerned with how things are arranged, how they seem, and how they work (Urban Design, 2015). It entails designing structures, clusters of buildings, spaces, and landscapes as well as providing the procedures necessary for effective development. Planning, development, architecture, landscape architecture, engineering, economics, and other fields are all involved in urban design. It operates on ranges of sizes, from the massive size of urban structure (planning, zoning, and infrastructure networks) to small scale of street lights and furniture. Urban design can be used to plan the land use, infrastructure, physical form, and even a socio-demographic view of city when properly integrated into policy and planning systems. It mainly focuses on the planning and administration of public space, often known as the "public environment", "public realm", or "public domain", as well as how people utilize and interact with these spaces.

Figure 2.1: Urban Design- Activity, Architecture and Buildings

Source: (barefootplanning.com, 2020)

Urban design marks how the people view and use their surroundings. People care about the appearance, feel, and livability of their neighborhoods and urban design tools are the most useful tools for a planner to fulfill this demand. To achieve this, urban designers need to have extensive knowledge of how the physical environment affects people's perception and actions. This requires them to be aware of cultural norms and preferences, societal economics, and practical uses of the environment. In general, a good urban design project takes into account both the conditions inside project's limits and the recommendation's impact on the surrounding area. Meanwhile, such initiatives should inspect how the suggested actions connect to the people's past experiences. Urban design methods are useful for tackling regional,

landscape-scale objectives as well. Urban design is frequently assumed to simply address urban design aspects, like park, street, or town center (Owen, 2020).

Urban design has a big impact on a place's social, cultural, economic, and environmental results (Urban Design, 2015):

- Urban design can have an impact on a locality's socioeconomic makeup and economic success by encouraging local enterprises and entrepreneurship, luring residents, lowering housing and commuting expenses, and ensuring fair access to employment opportunities, amenities, and services.
- Urban design determines the natural and constructed environments within which certain structures and infrastructure are located and establishes the physical scale, space, and ambiance of a location. As a result, it has an impact on the sustainability results and the equilibrium between natural ecosystems and developed settings.
- Urban design can impact social and cultural effects of a community, including how people interact, move through space, and use it.

Although urban design is frequently presented as a single "project," it is actually a lengthy process that is ongoing. Places have distinct qualities and identities due to the layering of different construction and infrastructure types, ecosystems, communities, and cultures.

2.1.1 Elements of Urban Design

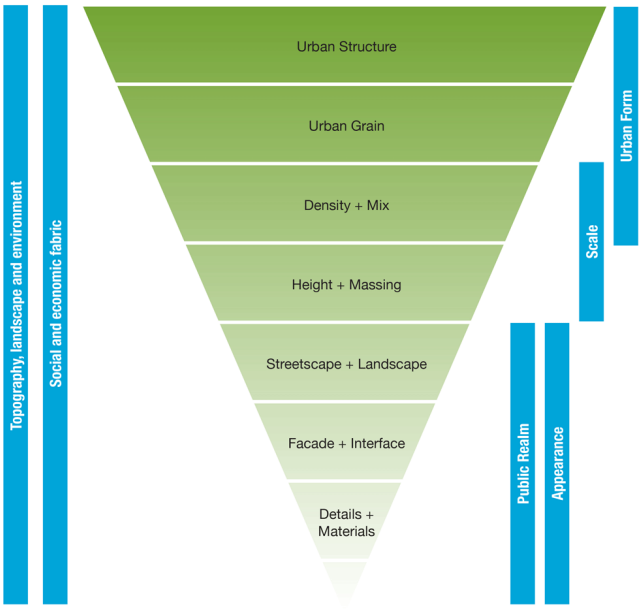


Figure 2.2: Elements of urban form from macro to micro

Source: (Urban Design, 2015)

Urban Structure:

It represents the general structure of area, town, or zone, demonstrating the connections between different constructed forms, ground, natural surroundings, activities, and open spaces. It includes more extensive systems like transportation and infrastructure networks.

Urban Grain:

The ratio of open space to developed form, the type and degree of parceling out or dividing up an area. For instance, a "fine urban grain" could be a network of tiny or intricate streetscapes. It considers modes of transportation, physical connections and movement between locales, and the hierarchy of street kinds.

Density and Mix:

It is the pace of progress and the variety of applications (such as residential, commercial, institutional or recreational uses).

Height and Massing:

It is the size of buildings in terms of their height and floor area, as well as how they interact with the nearby streets, buildings, and other land features. Site coverage, solar orientation, and the building envelope are also included. Height and massing influences the amenity of streets, spaces, and other buildings by creating a sense of openness or enclosure.

Streetscape and Landscape:

It is the design of Landscape, microclimate design, shade design, and planting are all included in the design of public areas like streets, open spaces, and paths.

Façade and Interface:

Building ties to the land, the street, their surrounding structures (such as alignment, setbacks, and boundary treatments), as well as the architectural appearance of their facades (extensions, openings, decorations and materials).

Details and Materials:

It is the selection of details, workmanship, texture, color, durability, sustainability, and handling of materials, as well as the close-up appearance of objects and surfaces.

It comprises asphalt, lighting, signage, and street furniture. It helps people feel comfortable, safe, and enjoy public spaces.

Public Realm:

The design and administration of public space, often known as the public realm or public domain, as well as how this is perceived and used, are major topics in urban design. The natural and manmade environments that the public uses on a daily basis, such as streets, parks, plazas, and public infrastructure, are included in the public realm. Privately held area can also influence the end product in some ways, such as the size and mass of nearby structures or lands that are seen from public space. The lines between the public and private spheres can occasionally become hazy, especially when privately held space is used for public purposes.

Topography, Landscape and Environment:

The landform topography, watercourses, and flora and fauna, whether native or introduced, are all included in the natural environment. It is frequently referred to as "green infrastructure" and might take the shape of rivers and streams, lakes, woodlands, parks and recreational areas, streetscapes, or personal gardens.

Social and Economic Fabric:

The social features of the urban form, such as culture, involvement, health, happiness, as well as a community's potential for production and level of economic prosperity. It includes elements like social engagement, support networks, demography, and life phases.

Scale:

It is a building or space’s size, mass, and perception. The height, breadth, and depth of a building are measured in bulk in relation to other neighboring buildings, the road, setbacks, and nearby open space. For instance, it may look "out of scale" if a large structure is positioned among numerous smaller ones.

Urban Form:

It is how a built-up area is organized. This configuration is made up of a variety of factors, such as how close together buildings and its uses are, which uses are positioned where, and how much of the nearby natural environment is included in the built-up area.

2.1.2 Urban Design Guidelines

Design guidelines are collections of advice on how to implement design principles to deliver a satisfying user experience. These criteria are used by designers to critique how to apply ideas like intuitiveness, learnability, productivity, and consistency so they may create eye-catching designs and go above and beyond user expectations (Esser, 2021). Design guidelines give advice on how to apply principles and suggest ways to turn principles into regulations. (Wit, 2019).

The urban design guidelines are the arrangement of design allegation and imagery that edify the preferred design components and features that influence the development. Urban design incorporates activities like architecture, planning, design, and landscape architecture. The Urban Design Guidelines states that new buildings, despite being of the present, have a duty to thoughtfully adapt to their setting and current patterns of development (sfplanning, 2020). Urban design allows for the observation of a building's orientation, street design, windows, and frequent usage tendencies.

Design principles and design rules frequently confuse design guidelines. However, design principles are not meant to represent universally applicable fundamental truths. (Wit, 2019) . Building bye-laws are the collection of guidelines under which a building should be constructed. The regulations specify coverage, height, architectural design, and safety measures to safeguard structures from fire and other threats, as well as natural disasters like earthquakes. (TEAL, 2020).

Conversely, urban design standards are not requirement for zoning. However, design guidelines are intended to be flexible enough at various phases of the development review process based on site-specific conditions. Guidelines should be utilized in combination with the Official Plan and Zoning Bye-Law. There are particular specifications and limitations in Zoning Bye-Law, for instance:

- Building dimensions and setbacks
- Potential use of land (such as residential, retail, offices, etc.)
- Plot sizes and dimensions
- Parking space

2.2 Aesthetics and Architecture

The term "aesthetic" as used in architecture refers to a certain design aspect or style that adds appeal and pleasure to any type of architectural construction. Moreover,

aesthetics is founded on taste and the evaluation of human sensory perceptions. Our perception of the surroundings has a big impact on how we judge the aesthetics. In other words, the connections that specific design features, qualities, and spatial layouts elicit inside us may be a wonderful source of aesthetic enjoyment. When making an aesthetic judgment, form, materials, color, lighting, and spatial organization each have important significance. These meanings may have a historical attachment to an individual or may represent a shared relationship of a cultural group (Edward, 2007).

In the context of aesthetic, architecture is the act of expressing perception of things that are possible via art and design, objects which appearance has a specific purpose, and of doing so in order to achieve that objective, while having aesthetics purposefulness (Edward, 2007). In architecture, the three criteria that Vitrivius (15 bc) used to define good architecture as vestas (beauty), utilitas (utility), and firmitas (firmness) are the primary issues in connection with aesthetics. These characteristics of architecture have recently been identified as form, function, and construction. Regarding this, Vitruvius declares that the architectural piece which has certain characteristics that distinguish it from others or qualify it as an Aesthetic design are:

- Beauty (Exterior form)
- Functionality/Utility
- Firmness/Construction
- Unity

2.2.1 Beauty

In an architectural context of "first" perceived experience, beauty in relation to form advocates tangible outward outlines that tie the overall picture of an architectural item together. The term is frequently used to describe a clearly definite structure, how an exhibit is presented, and how those elements combine to create either all or a portion of a picture in a way that is consistently pleasing to eye (Ching, 2007). Aquinas, a philosopher, stated that beauty is not an unproven concept; he defines beauty as which satisfies when people view and feel something. When these things possess beauty-enhancing qualities like finesse, neatness, rhythm, balance, proportion, and brilliance or clarity, they satisfy the viewer. Thus, architects that seek to develop a way of design with the intention of enhancing the outer shape and a sense of investigation into the complete portion are aware of the unpredictability of beauty (Edward, 2007).

2.2.2 Functionality (Utility)

In the context of architecture, function refers to the incarnation of an idea, and the definition of structural interfaces within objects, transmitting a physical or informational function to form-related elements. If a structure best serves the purpose intended for "The Use of the Building," then it has served its purpose. The sort of personality that stems from a building's function or the inspiration behind its design or creation is the most fitting in terms of architecture. An architectural component or element utility is an aesthetic in and of itself since a design's beauty extends beyond its scale, shape, and proportion and includes its realistic significance, i.e. function (Edward, 2007).

2.2.3 Firmness/Construction

This demonstrates how effectively a concept or idea in architecture is constructed or understood. When walls and other building components are constructed during the construction process, quality workmanship is crucial to the final aesthetic value. The use of high-quality materials, effective building methods, and durability are crucial for ensuring that the perceived beauty or aesthetic value of an architectural design remains constant over time (Edward, 2007).

2.2.4 Unity

Every different component of an architectural aspect is properly positioned in relation to each other to create a pleasing composition. The idea of unity implies that the entire design is harmonious. If there is unity, every minor component must be retained in situ and reduced to just assisting the big units in their functions in the growth of the system (Edward, 2007).

2.3 Urban Aesthetics

A great city's aesthetics combines visual and other sensory clues to create a cohesive whole. Great cities have had beautiful gateways and beautiful magnets for the general public. Historically, they have been used mostly for daytime effects and slow pedestrians. Cities, or at least major cities, have histories, and historical locations have distinct aesthetics. A wide-ranging view of peaceful historical development can be found in cities like Paris or London, while others like Athens and Rome wear their proudest jewels in their magnificent ruins. Cities like Helsinki bear the impressive memories of numerous distinctive occupations in architectural form that have not

been destroyed. For many, the historical aesthetic may primarily be a memory-based aesthetic (Burchard, 1957).

Figure 2.3: Blue Back Square in West Hartford
Source: (Wikipedia, 2022)

"On the other hand, the aesthetics of the city influences in a very powerful way the soul and character of a city" (Mowla, 2011). Cities have populations with many ethnic groups and dialects. In fact, street voices vary greatly from country to country. Cities also have scents. Cities are similar to people in that they cannot forget their past. Some towns have sidewalk cafés, while others don't; some have arcades, or umbrellas, or shades; and some have mosaic pavements, which provide a different aesthetic than cobblestones or asphalt. Some feature attractive street lighting or signage. Some have rejected plants while others favor flowers everywhere. For some, their chimney pots are their claim to fame. Some of them have lovely gardens. All of these elements enhance a city's appearance, but the majority of them are the product of tradition and time (Burchard, 1957). To appreciate and comprehend history without bowing down to her is a fundamental and insurmountable challenge for the modern urban aesthetic. Today, the danger of showing servility is lower than the risk of showing contempt (Burchard, 1957). Cities take a long time to develop, and order or regularity is not the only factors that contribute to a beautiful urban aesthetic; in fact, they may be the least effective.

'Built environment' is a simplistic title, of credible service for complex assemblage of various construction (roads, buildings, traffic system, utilities, man himself etc); each one produced within particular conditions and according to various regulatory (including ideological) and financial structures. Moreover, the constructed environment is expensive, difficult to change, space-specific, and has a lengthy lifespan. This suggests that the set of various elements that comprise the urban landscape and aesthetics must function as an ensemble (Mowla, 2011).

Apparently, urban life is defined by some amenities, but it is also summed up by the concepts of measure, proportion, harmony, balance, and power. Recognizing the significance of shape is crucial to creating a balance between what urbanism entails generally and aesthetics in particular since shape, aspect, and architecture of the buildings, structures, and constructions in an urban area are what everyone notices (Mowla, 2011).

Kelvin Lynch's (1990), urban aesthetics and city image theory are both articulated in terms of:

i) curiosity in the potential link between psychology and the urban setting
ii) a penchant for the aesthetics of metropolitan settings
iii) ongoing uncertainty regarding how to assess a city
iv) desire to persuade city planners to give more consideration to residents' actual experiences with a city and how those experiences should affect city policy.

Lynch's second expression, which specifically addresses urban aesthetics, was described relatively early in his essay titled "The Image of the City," which identified five components: the path, the edge, the district, the node, and the landmark. These are well-known, but when broken down into its three aesthetic components-identity, structure, and meaning-those become more obvious (Lynch, 1960).

Some cities are most well-known for the specific structures they contain, not for themselves as cities. However, there are also cities of exceptional beauty that lack buildings of the highest caliber or in which the few such structures that do exist have little overall aesthetic effect. There are three main types of urban aesthetic considerations during the planning process (Burchard, 1957). These are formal aesthetic, symbolic aesthetic and sensory aesthetic. Experience is necessary for maturity in planning in order to see past these obstacles.

2.3.1 Formal Aesthetic

This includes appreciating structures and shapes within the environment for their own sake. This aesthetic paradigm views the geometric quality of the environment as the dominant or important factor (Burchard, 1957).

2.3.2 Symbolic Aesthetic

This is about the pleasure-enhancing implications of patterns formed from the environment. It needs to do with feelingly experienced pleasure as a result of the quirks or particular landscape of the built environment. The built environment is a symbolic message; acknowledging this, either consciously or subconsciously is related to people's feelings and attitudes towards the environment and themselves (Burchard, 1957).

2.3.3 Sensory Aesthetic

This is a significant aesthetic especially for relating people's responses to the environment. According to several authors, the built environment's symbolic connotations become clear when urban designers and architects place an emphasis on formal aesthetic. Therefore, it is obvious that the combination of these considerations is required to achieve the aesthetically integrated approach to urban planning (Burchard, 1957).

2.4 Aesthetic Expression

Aesthetic emotion is the understanding that confirms the value attributed to the object. Lynch (1960) created a cognitive map (figure 2.4) that uses the five components of pathways, edges, districts, nodes, and landmarks to explain the perception of a city. A commercial street may also be described using this approach. Path denotes the street's route; Edge, the buildings and open space on each side; District, the blocks that line the street; Nodes, the street plazas and crossings; and Landmark, the individual street emblem (Shan, 2014).

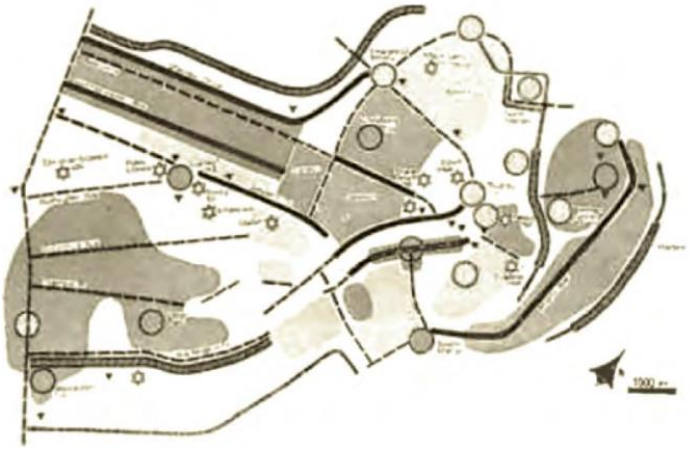


Figure 2.4: Cognitive map drawn based on interviews about Boston

Source: (Lynch, 1960)

2.5 Aesthetic Space

People may more easily form an intuitive mental picture of the street with the aid of an aesthetic interface that is visible and touchable, and an aesthetic space that intelligently supports experiences and activities on the street (Shan, 2014).

2.5.1 Positive Space & Negative Space

Space is an elusive idea. Negative space is unfathomable and shapeless, like the amorphous detritus that has been left behind surrounding structures, whereas positive space is somewhat confined, often has a clear, defined shape, and quantifiable, reasonable limits. Positive space is thoughtfully developed and prepared for usage, whereas negative space is left naturally. In the street, if there are any empty spaces, adding a specific purpose can turn them into positive spaces. Streets can be designed with a concave-convex relationship with a minor tilt for activities and public purposes (Shan, 2014).

2.5.2 Motion Space & Static Space

Spaces on the street can be classified as either motion space or static space depending on the condition of the users. While static space is used for sitting, observing, having a discussion, waiting for someone, eating, and other activities, and motion space is utilized for moving about, playing games, and other activities. Motion space on the street includes the car lane, the bicycle lane, and a portion of the sidewalk; static space includes the bus station, the buildings next to the road, and a portion of the front of buildings. The design philosophies of the two spaces are different. Benches, tree shades, and lighting fixtures may be required for the stationary space on the sidewalk. It must be simple to locate a static area on the street for dining or using the restroom. In contrast, a mobility space has to be wide and flat with no obstructions. Differentiating between spatial dimension, pavement type, elevation height, and other factors can illustrate the shift between motion space and static space. Although the sidewalk, bicycle lane, and car lanes are all areas of movement, the needs of the users of these three lanes are different, necessitating a distinct separation between them (Shan, 2014).

2.5.3 Street Plaza

A street plaza is a unique static area that plays a crucial part in the architecture of the roadway. In street design, a visual break is typically required to stop the infinite

distant. A street plaza of any size may be used to break up a straight and seemingly unending roadway, and the plaza itself transforms into a landscape distinct from the linear street area (Shan, 2014).

2.6 Aesthetic Landscape

2.6.1 Landscape for viewing

In terms of perspectives, there are two categories for street landscape. One is the landscape as seen from the outside, such as by people walking along the street and taking in the architecture. The other is the view from within, such when customers at a restaurant look out the window while they are eating. Due to the fact that the structures on either side of Commercial Street are primarily for public use, they are permitted to have large windows to improve the permeability between inside and outside and to create a space conducive to eye contact. In reality, greater views from inside and outside may enhance the scenery as well as make those stores more appealing to bring in business chances (Shan, 2014).

2.6.2 Sculpture

A unique and engaging piece of street art can be found in public spaces. The public aesthetic property may be seen in the street or square. A streets culture and character may be emphasized by sculpture, which also brings a beautiful landscape into the street. The sculptures serve as both a landscape and a reminder of the city (Shan, 2014).

2.6.3 Green Landscape

In terms of ecology, green, or the vegetation in public spaces, is important. The hue of trees also evokes feelings of calm and serenity in the visual sense. Green also helps to clean the environment and the air because it is a part of a natural landscape. Street trees are often grown in a line with equal spacing from one another. Greater street trees can be grown and shortened to offer more shade if there are more green places available. Vertical green, which includes trees, bushes, flowers, and grass, is a new trend in green landscaping, however it costs more and requires more advanced equipment. A comfortable and natural environment on the street may be created by adding a green wall to a building's façade or by utilizing green wall instead of fences between separate roadways (Shan, 2014).

2.6.4 Color

Due to the abundance of components and business signs, Commercial Street has many different colors. People feel thrilled by warm hues like red, pink, and yellow while feeling tranquil by cool hues like blue and purple. In order to contrast with the warm colors used on commercial streets to draw attention to side boards, banners, and ads, it is preferable for the pavement and building colors to be chilly (Shan, 2014).

2.6.5 Night Landscape

The daylight illuminates everything, making the street's exterior space appear more clear than its inside. The windows and lighting are the brightest objects at night because it looks as though the street vanishes in the darkness. Numerous lit windows in the evening resemble stars in the sky and provide an image of a nighttime street. Modern structures are always made of steel and glass, and the translucent windows suggest bright nighttime illumination. Therefore, windows must be taken into account while designing a building's façade for a beautiful nighttime view (Shan, 2014) .

2.7 City's Personality

The city that we love or loathe is the culmination of all these things: its sounds, smells, people, clothing, vehicles, and animals; it is also the entirety of its markets, sidewalks, trees, blossoms, water, and sculpture; its clean or polluted air; its abundant or obscured sun; the color of its sky; its landscape; and its way of life and history. When a city is fortunate—and this does not always occur—it has an architecture that has embraced and appreciated all these non-architectural factors. When we combine all of them, the image of a certain city quickly comes to mind, as any exercise in naming cities will show. The majority of us will be able to name cities like Bangkok, Benares, Hong Kong, Kyoto, Kathmandu, Nuremberg, Florence, Venice, Athens, Cairo, Caracas, or Honolulu as well as major global capitals like Rome, Berlin, Paris, London, Stockholm, and Tokyo with an immediate and moderately reliable response (Burchard, 1957).

2.8 Connection

Most people feel a feeling of affiliation with the place including visitors and local traders. Contemporary urban trends however have somewhat weakened the place identity further diminishing place attachment held by the residents. The quality of

space also gets affected by the Sensory Experience which plays a crucial role in shaping the space identity and leads to satisfaction of users.

- **Viewscape:** It refers to a visual association between a person and the spatial configuration of urban and landscape elements. It is the public scenery in which a structure, site, or landmark is located. It highlights the elements like district, edge, pathway, nodes, landmark, form, color, size, diversity, and legibility etc.
- **Soundscape:** A soundscape is a sound or series of sounds that develops naturally in or as a result of an immersive environment. It is an effective tool for assisting people in relating to their environment.
- **Touchscape:** A distinct feeling of place can be created via material relations. It has components that are harsh, chilly, rough, dry, and other qualities.
- **Smellscape:** It refers to all of the smells that can be employed to enhance one's perception of an urban setting.
- **Tastescape:** The tastescape, which consists various flavors such as sweetness, bitterness, saltiness, sourness, and others, can be difficult to incorporate into urban environments.

A multisensory experience improves how people interact with the environment. A combination of sight, sound, texture, smell and other helps us perceive the environment better and build better connections with the space (Scott, 2021).

2.9 The City's Approaches

The dominant and personal image is not unimportant for a city's aesthetics. The traditional methods of approaching an image were casually and from the ground level of a street, the sea, or a river. Every skyline has an own regional and specialized feature. Therefore, the city's entrance was crucial from a strategic and aesthetic standpoint (Burchard, 1957). Very frequently, the most glitzy method was adopted by tourists rather than locals.

A cityscape must be a sculpture in the round, exquisite from all angles, including above and below, rather than a bas relief as it was once the case. It must be compatible with a range of approach and viewing speeds, such as three miles per hour to more than three hundred.

2.10 Buildings and Building Aesthetics

The most prominent aspects of urban architecture are buildings since they create the city's street boundaries and shape and articulate space. Buildings with good architecture and groups of buildings all contribute to the atmosphere of a location. It should take into account the site's physical context and features, support the public realm and public life, and be of the highest possible quality in terms of building concept, design, materials, and construction, scale, size, and proportion of building, open spaces, and environment, among other things (Shrestha, 2021).

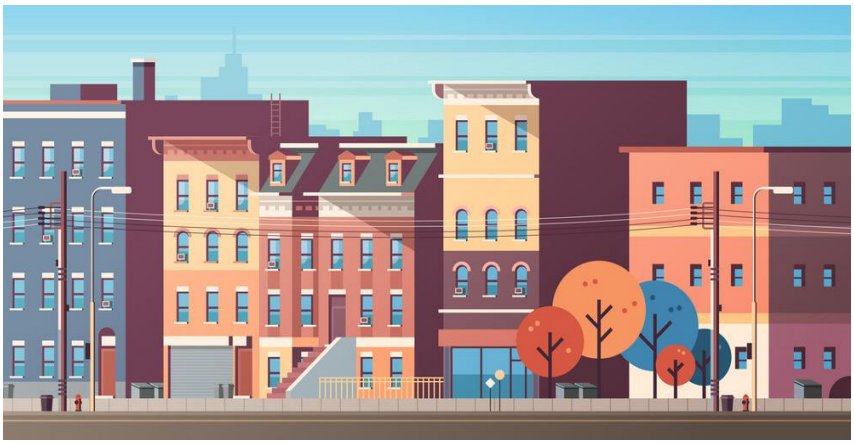


Figure 2.5: Building Composition

Source: (Google.com, 2022)

Aesthetics is a discipline of philosophy that deals with inquiries into the origins and manifestations of aesthetic beauty or flavor. The application of a building includes the combined effects of a building's shape, color, reliability, unity, movement, scale, texture, emphasis, proportion, space, alignment, contrast, symmetry, pattern, decoration, culture, and context. This is why one of the most important factors in architecture is a building's aesthetics. Ideally, buildings should be constructed to comply with all laws governing safety, serviceability, durability, and aesthetics, as well as to ensure adequate structural performance during the service life. Understanding the general principles of degradation within the many levels of a structure, including the elements, components, façades, and the entire building, is crucial. Changes in the appearance of materials can vary depending on the kinetics of the reactions linked to the material resistance and the severity of the degrading agents (Sandak, 2020).

The knowledge of contemporary trends or patterns to employ particular types of materials is a crucial aspect that shouldn't be overlooked while constructing buildings. In this instance, the drive to pursue particular aesthetics will serve as the inspiration

for façade changes rather than a reliance on how well they perform while in use. The ability to judge aesthetic quality and the associated knowledge of "beauty" has changed through the years and will do so in the future. Be that as it may, there aren't many characteristics that are universally regarded as appealing in the built environment. It takes expert use of materials that are suitable with the surrounding environment for a structure to become noteworthy. Considering knowledge and best practices offered by architects, designers, investors, and builders should serve as the foundation for confidence on their suitable selection, usage, and maintenance (Sandak, 2020).

2.11 Facades and Frontage Zone

The streetscape's liveliness is significantly enhanced by the commercial usage and building facades on the path. Storefronts that excite attention, attract visitors, and promote walking, buying, dining, and gathering are signs of a prosperous downtown. Despite having a beautiful streetscape, a street may still be unpleasant to pedestrians if there is little activity to encourage them to continue walking through the downtown area. Building frontages are crucial to a successful streetscape in this way (Retherford, Wahrgren, & Ziegler, 2019).

Figure 2.6: Building facades

Source: (thoughtco.com, 2019)

The streetscape, pedestrian contact with the road and the building (frontage), building type, building height, street furniture, parking spots, open spaces, etc. are only a few examples of public worlds (public facilities). The building façade should adhere to aesthetic consistency, and the visual quality of the urban road should be balanced with

consideration of design unity (Zulestari, Hasriyanti, & Ruslan, 2018). As an aesthetic booster of urban space and a connection between existing buildings, the development should be balanced with the quality of road space. The user's comfort and security will be significantly impacted by this link (Retherford, Wahrgren, & Ziegler, 2019).

2.11.1 Building Façade Components

Facade is a visual expression or depiction of a variety of emerging features. Building facades in urban architecture are not only two-dimensional but also three-dimensional so that they can depict each building in the general public (city) or the other way around. Due to this, the following building facade elements have been identified:

a. Gate and Entrance

There are several gradations of anything labeled "public" when one enters a building from the direction of the road. The entrance's placement and architectural significance reveal the building's purpose and duty. A transition from the exterior (public half) to the inside (private part) is marked by the entryway (interior). The entryway is a component of the building's residents' self-expression. Sometimes the building's role and demonstrative purpose are communicated by the entry position. The route leading from the gate to the building creates a virtual line that serves as the composition's datum. Here, it is possible to see if the balance that results is one of absolute symmetry or just geometric equilibrium.

b. Ground Floor Zone

The most important urban component of the facade is the ground floor zone. The main urban component of a façade is the base of a building, or the base level. The usage of material for this zone must be more durable than that for other zones since it pertains to the transition to the soil. In urban life, the ground level has a particular significance. Because people tend to gravitate toward this area the most, the bottom level frequently transforms into a shopping center and other commercial enterprises.

c. Windows and entrances to buildings

Doors and windows are viewed as unrestricted spatial units. The fact that there are openings from a building's interior to its exterior allows for a greater perspective of urban life. To emphasize the door's role as a barrier separating the inside of the building from the outside, its placement on the building is crucial. Windows serve as a source of light for interior areas, namely the impact of light penetration on interior

areas. The window offers views both inside and outside the structure since it is a building opening.

d. Guardrail (railing)

When there is a threat in a space, it is necessary. If there are social agreements about the usage of space, the guardrail is also a physical barrier that is employed.

e. Roofs and Building Endings

There are two different kinds of roofs: flat roofs and alpine-style roofs. This facade's fixed roof is viewed as the building's border with the sky. The building figures and façade rows that form the city's skyline may be viewed not only as a physical barrier but also as a repository for the collective and private memories of its residents.

f. Signs and Ornaments on Facade

Signs are anything that business owners, organizations, offices, banks, restaurants, and others place in front of buildings. They can appear as billboards, information boards, and adverts. Other than serving as an aesthetic feature of the structure, ornamentation on commercial buildings also serves as an attraction or kind of advertising meant to draw in customers.

2.11.2 Composition on Building façade

The façade of the building itself is greatly influenced by changes in sociocultural civilization. The variety of the building façade display is a transformation of different architectural components that occur sometimes. Ching (2007) asserts that the equipment’s physical appearance that is being changed is the subject of alteration and a change in how components in the building façade include the form, scale, color, texture, location, orientation, and visual inertia.

a. Geometry: Incorporates geometrical ideas into a built environments field or item, triangle, circle, rectangle, and its variants.
b. Symmetry: It guides architectural planning toward a balance found in the built environment. The facade has to include "faces" that represent many intended solutions yet are still balanced within itself (by analogy with the human body). A little part in balancing the front and rear looks might be played by side view.
c. Depth Contrast: An innovative concept that considers the color, dark, and light contrasts that exist in the facade component. There are three levels of difference: extremely dark, dark, and brilliant.

d. Rhythm: Through repetitive patterns at both a big and small scale, it illustrates building components.
e. Proportion: In one of the facade elements, it is the comparison of one section to the other part. The constraints placed on the shape, the properties of the material, the purpose of the structure, or the manufacturing process are typically taken into account when choosing the percentage of structures.
f. Scale: It illustrates a comparison between the size of a building's or space's particular element and that of persons. Scale refers to the proportion utilized to establish the size and proportions of a façade feature on a structure.

2.11.3 Façade configuration elements

The following factors in a building's façade configuration might affect how it appears:

1. Space opening components, including doors, windows, BV, and ornamental opening components
2. Façade of building. components for opening spaces, such as doors, windows, BV, and decorative opening components
3. Use of the predominant facade material. For instance, a predominance of wood or glass will convey a cozy and familiar feeling.
4. Finishing methods and type for façades. A different image will be created by a facade that is completed with concrete exposes, natural stone, or paint. Conversely, exposed concrete will create the sense that it is warmer.
5. Color grading methods. One factor that is crucial for leaving an impact and shaping the observer's perspective is color (the person who sees it).

2.12 Streetscape

The term "streetscape" is used to describe the street's built and natural textures, and it is described as the street's design aesthetic and visual impact. The idea recognizes that a street is a common area where people can engage in a range of activities. Public spaces where people congregate are primarily influenced by streetscapes and their visual experience, which ultimately determines a community's aesthetic value, economic activity, health, and sustainability (CCT, 2012). The streetscape is one of the most crucial elements that contribute to a city's success and its ability to draw tourist, therefore it plays a significant part in shaping how people see cities. However, many cities lack the proper streetscape, which has a negative impact on their aesthetic appeal and, as a result, their standing on the worldwide scale (Rehan, 2012).

Figure 2.7: Streetscape

Source: (Gupta, 2022)

One of the things that attract customers to downtown retail locations is a well-designed streetscape. Streetscapes provide a place a context and a personality in addition to setting the mood. They designate areas for resting and loitering and offer welcoming spaces for strolling and walking. Good streetscape design clearly arranges spaces for mobility, relaxation, window shopping, dining, and other pedestrian activities to accommodate the many users of a city. Such streetscapes provide a sense of arrival and link destinations and activity hubs in a "way finding" manner. The improvement of streetscapes can have a number of positive effects on the economy, society, and environment (Retherford, Wahrgren, & Ziegler, 2019).

2.12.1 Urban Streetscape

Urban streetscape refers to urban roadway conditions and design that have an impact on nearby inhabitants and street users. It acknowledges that individuals engage in urban activities on urban streets, including but not limited to motor vehicle travel. These are an essential part of the public domain that contributes to the definition of a community's opportunities, social cohesiveness, economic activity, aesthetic quality, and identity-not only its mobility. Urban streetscape has a significant effect on how people perceive and interact with their urban community. Urban roads serve a variety of purposes, including accommodating vehicle, public transportation, bicycle, and pedestrian traffic, providing access to nearby structures and other attractions, and serving as linear parks. (VTPI, 2018).

2.12.2 Streetscape features contributing to urban design qualities

It's critical to understand which streetscape elements have a major impact on pedestrian activity from the standpoint of urban design practice and how to

operationalize such elements (Ewing, Hajrasouliha, Neckerman, Purciel-Hill, & Greene, 2015).

Table 2.1: Streetscape elements that contribute to the characteristics of urban design

Source: (Ewing, Hajrasouliha, Neckerman, Purciel-Hill, & Greene, 2015)

Urban Design Quality	Significant Physical Features
Imageability	Proportion of historic structures Courtyards, plazas, parks, and outdoor eating Important landscape elements Identifiable buildings
Enclosure	Size of the street wall ratio of the sky across Long vistas Proportionate to the sky head
Human Scale	Expansive sight lines All street elements, furnishings included Proportion of windows on the first floor Building height Small planters
Transparency	Proportion of windows on the first floor Percentage of active uses Size of the street wall
Complexity	Buildings Dominant building colors Accent colors Outdoor dining Public art

2.12.3 Elements of Streetscape

Sidewalks

Sidewalks serve as essential elements of roadway networks that are favorable to pedestrians, providing them with a safe, comfortable, convenient, and effective means of transportation. In addition, it serves as outdoor spaces for meeting and helps define the character of the neighborhood. Materials for sidewalks and walkways should be easy to maintain and slip-resistant (smooth for snow removal and resistant to buckling

and cracking). Surfaces must also be universally accessible. By including well planned and coordinated tree planting, lighting, and street furnishings, sidewalks should be created to offer pedestrians safe, aesthetically pleasing, amusing, and pleasant areas. A vital part of any streetscape is the pavement. Particular pavement, such as stamped or colored concrete, brick, or other unit paving, is frequently used into the design of sidewalks and pedestrian zones in special regions and downtown streets. To create a finished surface that is level, smooth, and simple to maintain, special pavement must be put.

Figure 2.8: Examples of sidewalks

Source: (CCT, 2019)

Street Corners and Curb Extensions

By placing benches and other site furnishings, curb extensions increase the pedestrian area, encourage social interaction, and offer a secure haven for those waiting to cross the street. They also provide pedestrians with reduced crossing distances. Extended street corners offer area for place-making elements like planting, furniture, cycling tracks, and better lighting in addition to the benefits of pedestrian crossing and traffic slowing. Specific pedestrian space is created with the use of raised planters, movable planters, landscaping strips, bollards, and seats. In a few places, connecting tiny plazas with street corner services can improve the public realm.

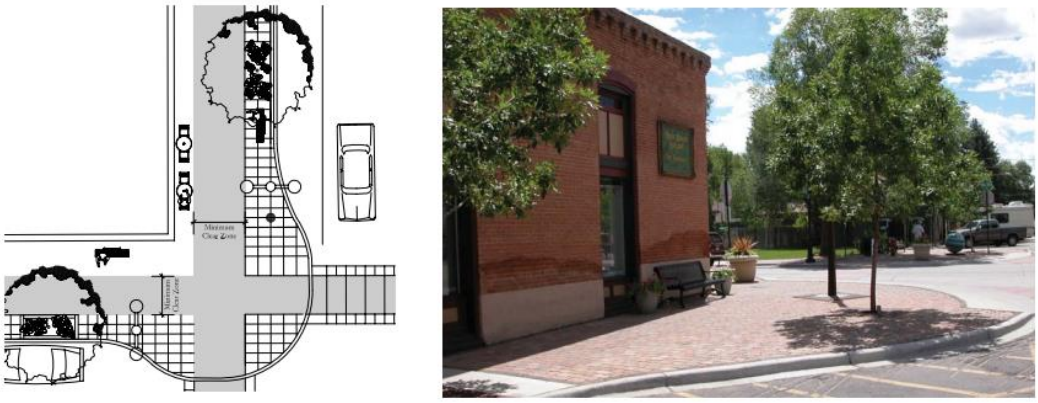


Figure 2.9: Examples of street corners and curb extensions

Source: (CCT, 2019)

Trees and Landscape Strips

Landscape strips are a great solution between sidewalks and roadways to provide a barrier from moving vehicles and street noise and help people feel more at ease walking along the street. To maintain visibility and sight distance at crossroads, driveways, crossings, and other crucial places, use low-profile shrubs and upward spreading trees. Urban sidewalk tree wells should be constructed next to the rear of the curb, away from the path of travel for those using the sidewalk. Tree grates near or inside of sidewalks must be top-mounted level with grade and have openings no bigger than 0.5 inches in diameter in order to comply with universal accessibility standards. Outside of the walkway's open area, planter's strips can be used to accommodate street furniture, signage, utility and signal poles, mailboxes, parking meters, fire hydrants, and other features.

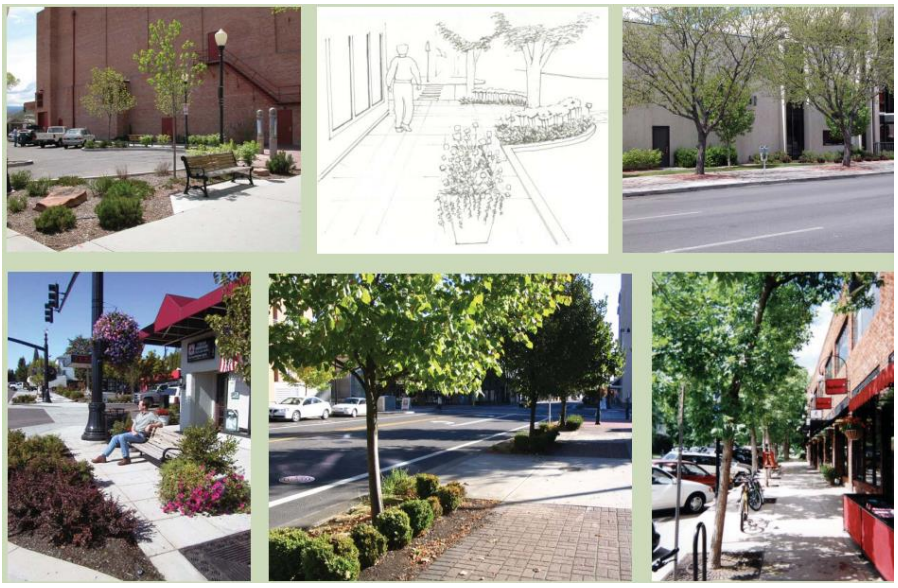


Figure 2.10: Examples of trees placement

Source: (CCT, 2019)

Planters: Moveable

Planters may help define and split spaces while adding color, texture, and interest to a cityscape. Planters that are strategically placed and well-maintained may offer interest all year long. Moveable planters can be used to define summer or seasonal dining areas as well as serve as temporary barriers for special event closures. Additionally, it aids in defining areas, main building entrances, and aesthetic value. Placement options for planters include lounging spaces, the boundaries of parking lots, pedestrian plazas, and areas with lots of furniture.

Figure 2.11: Examples of moveable planters
Source: (CCT, 2019)

Street furniture and Seating

In addition to offering much-needed comfort, waiting and resting places along walkways give people a place to gather, talk, and take in the scenery. Installing seats in the utility zone helps to prevent conflict and maintain clean throughways. Place seats in areas that are both visible and accessible. Place seats in locations with a lot of foot activity or where people are likely to gather. To help frame areas, group seats with plants and trash cans. In order to create small pedestrian areas, arrange seats parallel to the edge of the roadway wherever possible and space permits. Select street furniture that complies with the requirements and decor already in place.

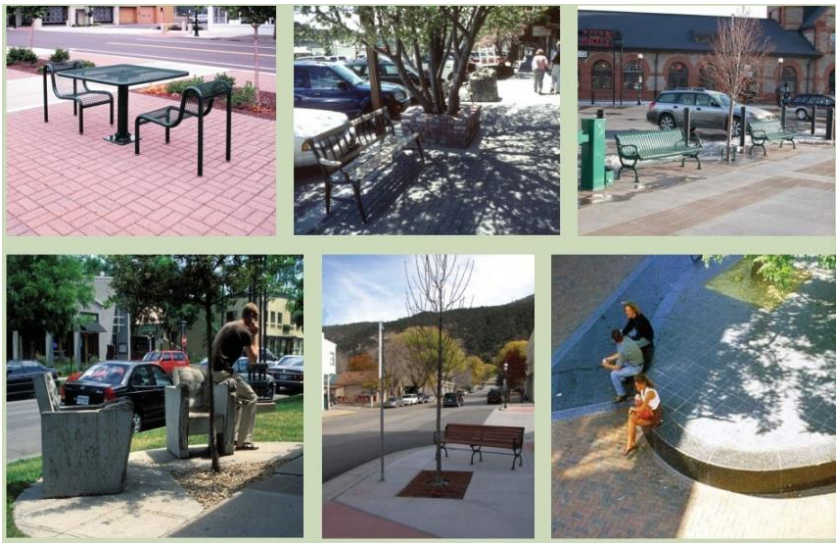


Figure 2.12: Examples of seating and street furniture
Source: (CCT, 2019)

Trash Receptacles

Areas may be kept tidy and appealing by having trash cans and ashtrays strategically placed. The most often used streetscape component, trash cans, should be placed in a handy location for foot traffic near benches, bus stops, and other activity hubs. Planters can be placed in seating areas, along parking lot edges, in pedestrian plazas, and in locations with a lot of furniture. Receptacles should be conveniently located for trash collection and upkeep. To keep the material dry and the pests out, lidded tops and sealed bottoms should be used.

Figure 2.13: Examples of trash receptacles
Source: (CCT, 2019)

Public Art

Public art may help create a distinctive identity, boost civic pride, reflect a significant cultural or historical event, and enliven common areas. Murals, banners, ornate or

distinctive signage, and sculptures are some examples of public art. Public art may be included into pavement patterns. Public art encourages foot traffic and humanizes a street's scale. Public art fosters communal pride, strengthens community identity, and enhances the visual surroundings.

Figure 2.14: Examples of public art
Source: (CCT, 2019)

Screening

Screening serves as an extension of the street wall and a visual barrier between the pedestrian and vehicular areas. Additionally, separating the two can increase public safety by separating public spaces from parking and circulation areas and by making grade alterations. Screening offers a clearly defined boundary that lessens the impact of parked cars while enhancing the cityscape. Walls, railings, and fences must be constructed from stone, brick, or metal. Wood and plastic fences are not recommended. Chain-link fence and bollards can act as a temporary or mobile impediment.

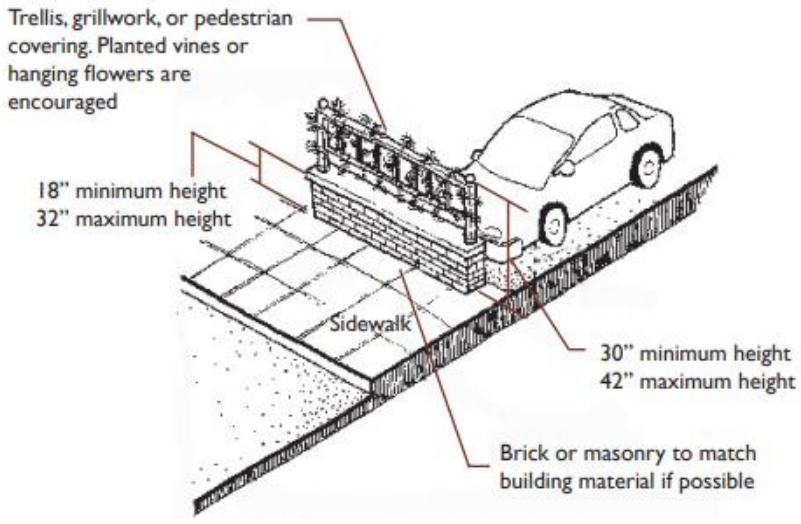


Figure 2.15: Screening
Source: (CCT, 2019)

Figure 2.16: Examples of screening
Source: (CCT, 2019)

Café Spaces

Outdoor cafes offer a bustling street presence and ideal settings for planned and unplanned social interactions. Indeed, café-style seating may be placed on narrow sidewalks. To ensure visibility at junctions, corner cafés should be placed against the building edge rather than at the outside border of the sidewalk.

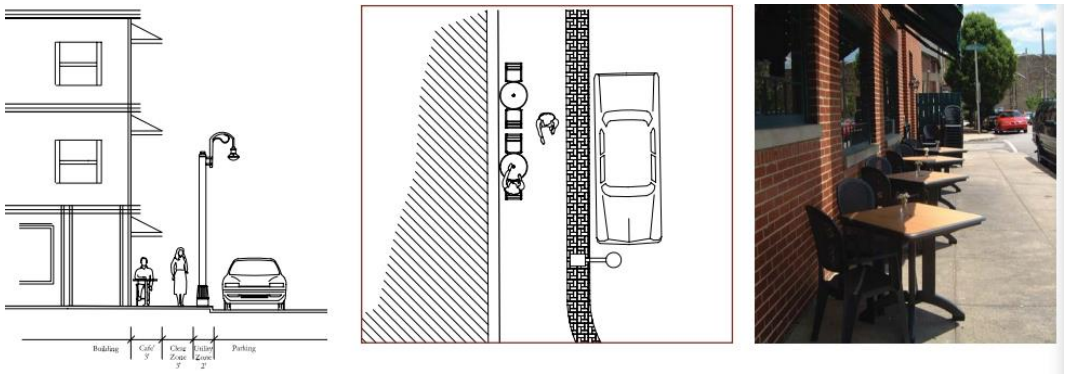


Figure 2.17: Examples of café spaces
Source: (CCT, 2019)

Special Event Spaces

The cityscape can be considerably improved by special event areas. The best event venues are those that augment current year-round amenities. During times when there are no events, the areas should remain inviting and lively. A versatile site design is necessary for special event venues to support a variety of events. Special pavement treatment, rollover curbs, and removable bollards should all be taken into consideration when designing roadways that could experience temporary closures for event space.

Figure 2.18: Examples of special events in street
Source: (CCT, 2019)

Fixtures/ Utility Zone

The fixtures/utility zone is situated right next to the street and acts as a barrier between it and the pedestrian travel area. It also provides a location for lights, poles, and signage outside the path of passage for pedestrians. To provide a clean zone for pedestrians, it is preferable to keep utility poles, lights, street furniture, etc. to one side of the roadway. However, care must be given not to "crowd" the zone. The visual environment is cleaner when garbage cans, newspaper boxes, and street furniture are distributed satisfactorily. Things shouldn't be arranged in the fixtures/utility zone so tightly together that they obstruct parking and the roadway. In order to allow for pedestrian access from the street, the edge must be sufficiently permeable.

Figure 2.19: Examples of fixtures/ utility zone
Source: (CCT, 2019)

Utilities

The effectiveness and upkeep of streetscape components are influenced by the placement and accessibility of utility sources. Provide electrical sources as an integrated part of the streetlight poles. Install irrigation in planters that will be there forever (in ground level and raised). Commercial-grade irrigation tools should be

installed. Incorporate water sources within the streetlight poles if hanging baskets are offered. To prevent disagreements, align utility lines with landscape plans.

Figure 2.20: Examples of utilities
Source: (CCT, 2019)

Lighting

A key component of the streetscape is lighting, which should help to create safe and visually appealing public areas. Ordinarily, urban streetlights are sufficient for illuminating adjacent sidewalks and pedestrian pathways. At junctions, building entrances, and passageways, additional illumination may be needed. Pedestrian-scale lighting is possible to install inside bollards, walls, structures, and pavement. Street lights positioned in plazas and special event venues should physically support banners, string lighting, and other seasonal decorations. For individual building owners, temporary illumination of roof lines, entryways, windows, street trees, and planters may provide visual attention and clarity and is a straightforward, inexpensive, and easily accessible option. Outdoor cafés are made more inviting and functional with the addition of table lights and lanterns in planters.

Figure 2.21: Examples of lighting
Source: (CCT, 2019)

CHAPTER 3. INTERNATIONAL CASES

3.1 Al-Khan Street, Tanta City, Egypt

Al-Khan Street is located in Tanta city's commerce and historical area. Al-Gaish Street, one of the city's principal axes, and the pathway that runs behind Al-Sayed Badawy mosque between that axis and that node are seen as having been expanded. It is connected to one of the city's most congested street ring roads that encircle the historic district. It is distinguished by a high level of commercial activity and traffic density. The historic center of Tanta has several values, the most significant of which are spiritual and religious; however, It is very valuable economically, has great architectural and urban significance, and can be restored to its previous splendor (Mehanna & Mehanna, 2019).

Al-Khan Street is approximately 210 meters long. Its width ranges from broad (starting at Al-Gish Street) to small (ending behind Al-Sayed Badawy mosque) at various points throughout its length (about 7 m). The finding is that the typical road width is 8.10 meters. Due to its breaking, it is also distinguished by shifting visual endpoints, which creates a difference in the want to feel bored-free while wandering inside it. While the street's second half ends at the mosque, it is inclined 10 degrees from the north-south axis to the east at its commencement in the direction of Al-Gomhoria Square. This increases the street's beneficial air currents, which lowers the temperature. People of all ages can travel to Al-Khan Street from a variety of locations, and it has resources accessible to communicate conveniently in various directions. Additionally, it has a respectable operational consistency as there aren't many cars and street sellers obstructing pedestrian traffic along the route, especially during peak hours.

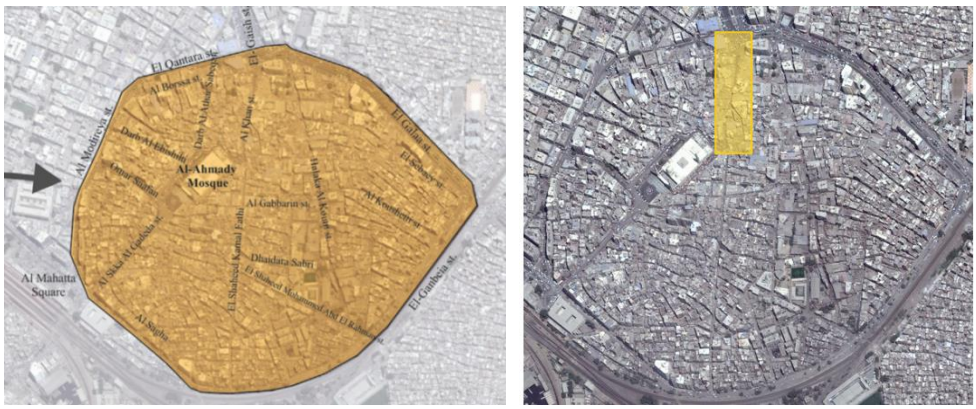


Figure 3.1: Al-Khan Street's location in Tanta City's historic district

Source: (Mehanna & Mehanna, 2019)

3.1.1 Entrances

Al-Khan Street has two main entrances, one from AlGomhoria Square and the other from behind the mosque, as well as several minor entries. Along with its main entrances, the street also benefits from side streets including Darb Alghelal and AlShorafaa streets.

3.1.2 Traffic

Despite the fact that there aren't many automobiles on the street, it has been noticed that a variety of issues arise due to the street's narrowness, the presence of peddlers on both sides, and the increase in foot traffic, which has reached a density of around 4 people per square meter. The complicated pedestrian flow on the sidewalk forces people to use the street basin, which causes cars to get perplexed. As a result, having motorized traffic on the roadway creates several problems for both pedestrian and vehicle traffic. As a result, having motorized traffic on the roadway causes several problems for both the movement of automobiles and pedestrians.

3.1.3 Urban Structure

An analysis of the street's land use shows that the ground level is entirely commercial. In terms of building height, ground and one or two floors make up the bulk of buildings (43%), followed by ground floor alone (41%), whereas buildings that look out onto the street are frequently found to be in bad condition (about 53%), demonstrating a lack of care. This demonstrates the appalling state of the buildings on the street and the need for renovation. The majority of the buildings are skeletons, thus it is clear that their structural status is unaffected by the neighborhood's character. Regarding the street's business aspect, the study's commercial activities take place in stores that sell fabrics, apparel, domestic appliances, etc. It is therefore widely acknowledged that these activities are consistent with the proper utilization of pedestrian streets.

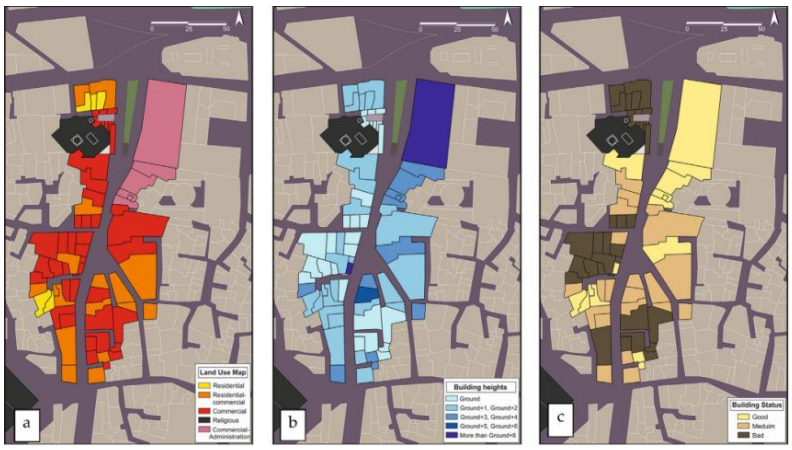


Figure 3.2: Urban structure of Al-Khan Street

Source: (Mehanna & Mehanna, 2019)

3.1.4 Visual Composition

The space layout:

The structures form the region, which is linear. The street's human scale is another characteristic. According to the different building heights along the path, the share of the street sector fluctuates. The marks may be located in the minaret of the mosque of Al-Sayed Badawy at the end of the street, inside the gateway leading to the mosque of Ezzalregal, and in the mosque of Al-Sayed Badawy itself. Generally, the roadway is disorganized and disorganized. The percentage of the street sector provides some shade in the street, and the ratio of the street's parts and the design serve to transmit ventilation. A series of towering buildings that follow the course of the sun serves to shield people from direct solar radiation.

Space Pattern:

It is an active, linear area that promotes movement and continuity and allows for a wide range of activities.

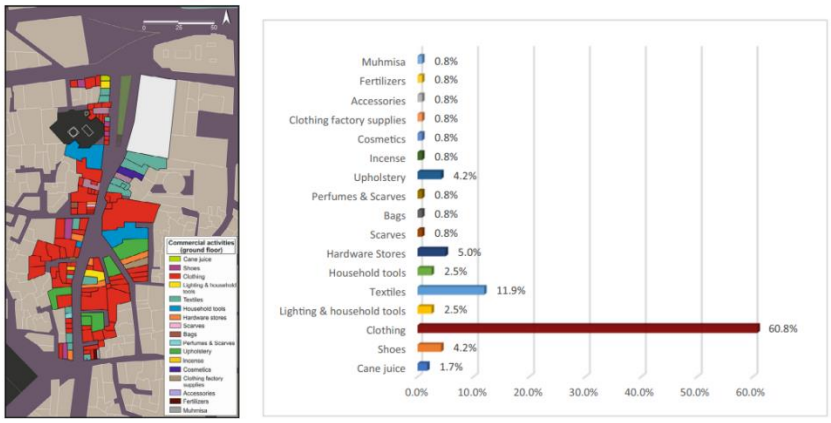


Figure 3.3: Commercial activities in Al- Khan Street and their percentage

Source: (Mehanna & Mehanna, 2019)

Furniture elements:

There are no spots along the roadway to sit or linger. The shops on each side of the street provide the majority of the lighting. The road is completely exposed, save for a few tiny trees at the Al-Gomhoria Square entrance. Parking places are 10 meters away from Al-Gomhoria Square and 100 meters away from Al-Sayed Badawy Mosque, respectively.

3.1.5 Problems in Al-Khan Street

Functional composition problems:

Composition may be seen in the dispersal of activities due to the lack of regulations governing usage as well as the disruption of vehicular and pedestrian traffic due to irregular pavement continuity and unusually high and low degrees of rise and fall.

Urban structure problems:

One problem is the deterioration of the urban environment, which is being exacerbated by the majority of commercial buildings. The relevance of the drive to replace them in the next years is made clear by the significant number of low-status and moderately-status structures. This is frequently in addition to the modern structures' lack of regional identity and spirit. In addition, the street's appearance suffers from a lack of clarity in the details of the street's components, particularly the floors, furniture, and natural elements, as well as the exploitation by shop owners of their portion of sidewalk as an expansion for their businesses, which forces pedestrians to cross the street. Because of this expansion of the storefronts and the abundance of booths, the entrances to the side streets are also small and difficult to discover. Last but not least, there is no rainfall drainage system on the roadway.

Visual pollution problems:

Booths, impromptu stores, the proliferation of street sellers, a lack of taste and uniformity in the colors of a few buildings, advertising billboards, and eye-distracting tints are all unpleasant changes in the urban environment that go against the values of the area.

Environmental pollution problems:

It is the outcome of the street's littering and traffic congestion (waste from commercial shops).

3.1.6 Street redevelopment of Al-Khan Street in the historic center of Tanta city

First Step

- Preserve the aesthetic value of the architectural and environmental components in the Al-Khan Street area of Tanta City's historic district.
- Recovering the spirit of the past while respecting and enhancing the historical characteristics of the historic structures that are located in the center of the ancient city.
- Upgrade and renovate the structures with all necessary rebuilding, and take down the badly deteriorating structures.
- Displaying the distinctive architectural design of the old buildings on the outside of buildings and storefronts
- Continue the district's current economic operations. Improve the area's social, health, and commercial characteristics to aid in the rehabilitation of the neighborhood.
- Adopt the crucial legal, financial, and administrative measures necessary to protect and conserve the aforementioned district, such as publishing the guidelines and requirements for dealing with heritage areas and their urban surroundings, passing laws that penalize offenders, and establishing regulations to govern the design and color schemes for shared shop signs.
- Resolve the difficulties with street vendors, remove booths, encroachments, and occupations, and provide them with alternate locations.
- Enhance the street's appearance in the following ways:
  - ✓ By using the same structural pieces throughout each operation, create a unified aesthetic. This will establish a visual rhythm and provide the impression that everything is organized into one framework.
  - ✓ Emphasize the individuality and character of the location while highlighting the uniqueness of the historical area to strengthen the sense of belonging among the locals.
  - ✓ Create urban green spaces within the business district to lessen environmental pollution caused by the influx of people and other activities.

Second Step

- Create a safe atmosphere for Al-Khan Street patrons within Tanta's historic district.

- It is suggested that it be converted into a pedestrian-only road in order to revitalize the neighborhood's economy and make it into a popular tourist destination.
- This choice also highlights the function of pedestrian pathways in old cities and communicates the value of public spaces and historic pathways for people participating in social, economic, and recreational activities.
- It is important to give elements like street and landscape furniture for pedestrian needs such as lighting, shade, and other necessities.
- They ought to fit in with regional customs and be aesthetically and practically suitable.
- There should also be a system for collecting rubbish from store owners and a system for rainfall drainage on the road.
- All laws requiring users to preserve the region's unique architectural style must be implemented and respected.

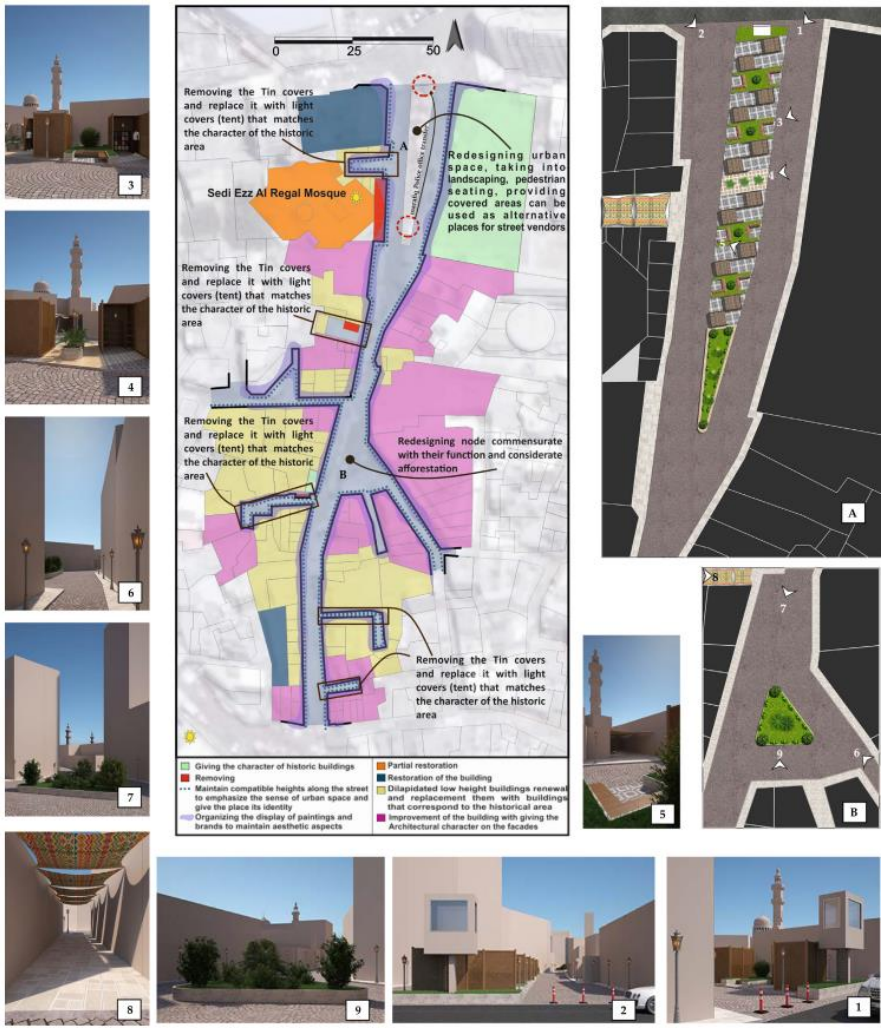


Figure 3.4: Proposed redevelopment of Al-Khan Street at the Historical center of Tanta City
Source: (Mehanna & Mehanna, 2019)

3.2 City of Salem, Massachusetts, US

The City of Salem is distinguished by its close-knit community, which is distinctive, and by its fantastic position. The city is situated in the stunning Willamette Valley, which has historically supported a wide variety of plant, animal, and human life due to its rich, fertile soils, forested hillsides, and humid climate. Salem's identity must reflect the region's agricultural, cultivating, and ecological past.

Figure 3.5: Downtown Salem within the regional Landscape
Source: (Retherford, Wahrgren, & Ziegler, 2019)

The Willamette River borders downtown Salem on the west, and it is a bustling center of activity encircled by a variety of locations, including parks, natural areas, civic centers, and residential districts with significant historical sites. Locals in Salem are proud of their downtown and the vibrancy and sincerity of their neighborhood. Downtown Salem serves as a hub for all of the community's social, commercial, and recreational activities.

Figure 3.6: Destinations and activity centers surrounding downtown Salem
Source: (Retherford, Wahrgren, & Ziegler, 2019)

3.2.1 Existing Conditions

The strolling experience in downtown Salem is enhanced by the numerous wonderful, human-scaled buildings (some of which are antiques), wide, open streets, and big awnings that offer weather protection. However, due to the wide roadways, there is a lot of traffic noise, which might make pedestrians feel vulnerable or uneasy, especially when crossing the street. Downtown offers several lovely attractions for pedestrians such as works of art, murals, store displays, and alleyways, downtown is a pleasant area to wander, meet up with friends, exercise, or enjoy a beautiful day outside of a cafe.

Materials and furnishings for the sidewalk:

Simple concrete walkways with black metal and wood furniture make up the bulk of the current streetscape materials and furnishings. Some places feature tile and brick pavement, remnants of an earlier streetscape design project that have deteriorated and require replacement.

Figure 3.7: Downtown Street

Trees and Plants:

The character and identity of downtown are fundamentally influenced by the street trees and flora. There are some mature trees in good condition and others fit suitably to urban conditions. Tree wells are often 6’ x 6’ wide, exposing roots that occasionally restrict pedestrian space and interfere with building overhangs. There is some mild flora in the cityscape, excluding street trees.

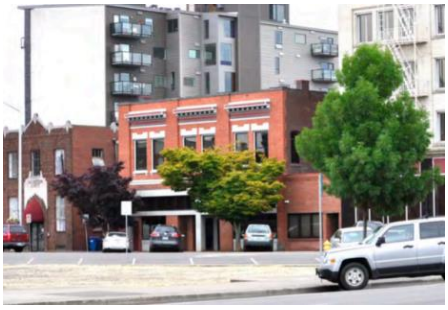


Figure 3.8: Vacant lot downtown and inconsistent tree planting

Businesses and Properties:

The sidewalk experience is mostly influenced by the buildings and businesses in the downtown area. Downtown is home to a range of establishments, including full-block malls, mid-sized cafés and restaurants, tiny, independent retail stores, and

Figure 3.9: Crosswalk at Front and State Street

autonomous, independent companies. It is unattractive for people to walk or stay on the sidewalks surrounding malls and larger businesses since they frequently have blank walls.

Gathering and Events:

A variety of daytime and nighttime activities and entertainment are available in downtown Salem. The experience of events can be greatly influenced by the sidewalk and gathering by developing relations from place to place and creating space for seating and gather.

Connecting Destinations:

Downtown streetscapes can create pedestrian pathways among important landmarks like Willamette University, the Capitol Mall, and Riverfront Park. A clear and consistent route between these locations is not currently provided by the streetscapes on State and Court Streets, and the Front Street crossing is deteriorated and ambiguous.

3.2.2 Public Process

The design team gathered information about community preferences for the image of downtown sidewalk spaces during the open process and solicited feedback on sample pictures. The project team then spent many months developing a framework for streetscape enhancements and designing streetscape designs. The Downtown Streetscape Plan was developed iteratively as a result of numerous opportunities for public involvement. The project team discussed its objectives and constraints, discovered how people utilize the sidewalks and other public areas in the downtown area, and gathered suggestions from the general public for a better streetscape in the future.

Participation:

More than 1200 people were made aware of the project and provided input along the way. About 70 people attended the first open house; attendance at the next three open homes varied from 40 to 60. Numerous individuals who had not attended prior gatherings attended the most recent open house as well. The free online open houses and surveys attracted 240–1240 participants. Improvements that developed a palette for regional flavor and uniformity and highlighted Salem's businesses and architecture

were of interest. There was a lot of enthusiasm for enhancing the downtown area with plants, trees, lights, and facilities to draw people of all ages.

Messages from the Community:

The method revealed a number of significant messages, and these messages directly influenced the plans for streetscape improvements. The following topics were frequently heard by the design team:

1. Put the safety, comfort, and experience of walkers of all ages and abilities as a top priority; concentrate on people, not automobiles
2. Remove any barriers, such as sandwich boards, trees, and other obstructions, off the sidewalk's primary roadway
3. Include design elements that kids will like.
4. Implement traffic calming measures to combat broad, loud roadways.
5. Increase the streetscape's amount of vegetation, lushness, and softness.
6. Offer streetscape features that complement the regional climate.
7. Highlight the commerce and attractions in your community and area.
8. Connection to the Capitol and Riverfront Park.
9. Make use of and revitalize empty places, including buildings, abandoned lots, and underutilized regions.
10. Honor the lanes.
11. Include art.
12. Include additional and various types of lighting.
13. Make room for both daytime and nighttime activities.
14. Ensure effective use of public parking garages and protect commercial parking on the street.

3.2.3 Design Guidelines

For Varying Sidewalk Width:

12’ or less

- The width of the pedestrian zone is always fixed at 6'.
- Planting/Furnishing Zone may be 5 to 6 feet wide.
- Planting/Furnishing Zone may be 5 to 6 feet wide.

13’ - 14’

- The width of the pedestrian zone is always fixed at 6'.

- The furnishing/planting zone's set width is 6'.
- Frontage Zone widths range from 1 to 2.

15’ or more

- The Pedestrian Zone always maintains a 6' width.
- The furnishing/planting zone is always 6' wide.
- Frontage Zone widths range from 3 to 8 feet.

Widths for Sidewalk:

The recommended designs for each streetscape type will be modified according to what is feasible at each place because sidewalk widths differ across downtown. The position of the curb is constant across all streetscape types. The Pedestrian Zone width will always be fixed if the sidewalk width does not match the normal width in the table. The second priority is the planting and furnishing zone. The Frontage Zone, which may be adjusted to meet available sidewalk widths, is the most flexible zone. Both the Frontage Zone and the Furnishing/Planting Zone may be lowered for extremely narrow sidewalks. The Frontage Zone and the Furnishing/Planting Zone may be broader than the width shown in the table on wider sidewalks.

Table 3.1: Sidewalk Width Table

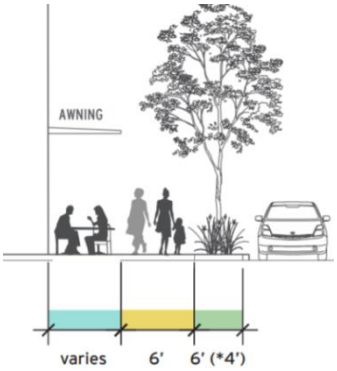
STREET TYPE:	FRONTAGE ZONE ↔ THIS WIDTH CAN BE CHANGED	PEDESTRIAN ZONE THIS WIDTH IS FIXED	FURNISHING / PLANTING ZONE ↔ IF NECESSARY, THIS WIDTH CAN ALSO BE CHANGED
PROMENADE	4′	9′	5′
CIVIC - COURT	2′	6′	6′
CIVIC - STATE	6′	6′	6′
URBAN	5′	6′	4′
PARKWAY	6′	6′	8′
FRONT STREET	6′	6′	8′

Landscape:

It is crucial to include landscaped sections in sidewalk designs because they act as barriers between pedestrians and oncoming cars, protecting the safety of more delicate sidewalk users like children. For traffic visibility and monitoring, bushes and grasses should not rise higher than 30".

Goals for Landscape

- Be relevant to the Willamette Valley's unique terrain.
- Establish a beautiful setting
- Create a vibrant setting
- Facilitate way finding
- Foster unity in a multicultural downtown
- Ensure simple upkeep
- Create a welcoming atmosphere all year round



Street Tree:

- Street trees are placed in flexible tree wells that are 6' wide and come in 6', 9', and 12' lengths, right next to the curb. Without harming current trees, some existing tree wells may be moved to implement this suggestion.
- On constrained sidewalks, a 4' wide tree well with adjustable length will make better use of available space and maintain a uniform Walking Zone and Frontage Zone.

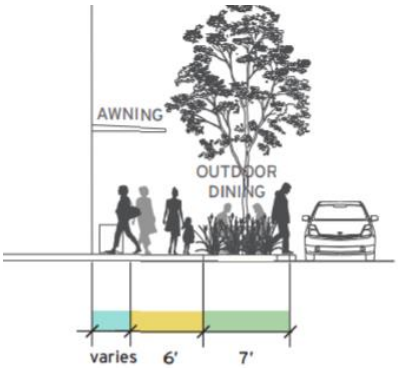


Figure 3.10: Alternate Street Tree Placement

- The sidewalk zones can be changed to fit the tree wells' current placement when trees need to be kept but their 6'x6' tree wells cannot be moved closer to the curb.

Street Furniture:

- The furniture should be arranged to encourage group conversation and sidewalk activity. The majority of the time, people feel most at ease while sitting on a sidewalk and taking in their surroundings. Seats can face the sidewalk in larger furnishing zones, and planted areas can act as a barrier between people and the street. People will most likely feel comfortable facing a tree planter with their back, the sidewalk to one side, and the street to the other if there isn't room for vegetation behind sitting. Trash cans and other street furniture are most frequently beneficial at intersections and midblock. In order to provide room for public seats, private furnishings should take up at least 50% of the paved surface when placed in the Planting/Furnishing Zone. To maintain a constant light level, pedestrian lights should typically be set equally apart from street lights.

Art Placement:

The Salem Public Art Commission (SPAC) actively participates in the selection and installation of art in the city center. Two suggested ways can help public art strategically enhance streetscape design:

- Place towering, vertical art pieces to represent the Civic corridor and downtown entrances. The State and Court Civic Streetscapes, as well as the intersections where they cross Liberty and High Street, are the areas that are advised for this. More public art was suggested to encourage a fascinating stroll on this pedestrian-scale roadway when it was discovered that people enjoy the beautiful bike racks on the sidewalk on High Street.
- Improve the bare walls of the inwardly-focused mall buildings with murals, and keep introducing high-caliber mural art in Salem.

3.2.4 Implementation

Alley Entrance:

The curb drop is moved to the north border of the bump out in the new alley entry design, which also continues the sidewalk scoring over the alley driveway to indicate pedestrian precedence. In order to offer a buffer for people sitting in the entry and room for young trees to develop, the alley entrance design includes additional seating in a community layout all around it. Additionally, the alley entry may have historical information or the names of nearby alleyways.

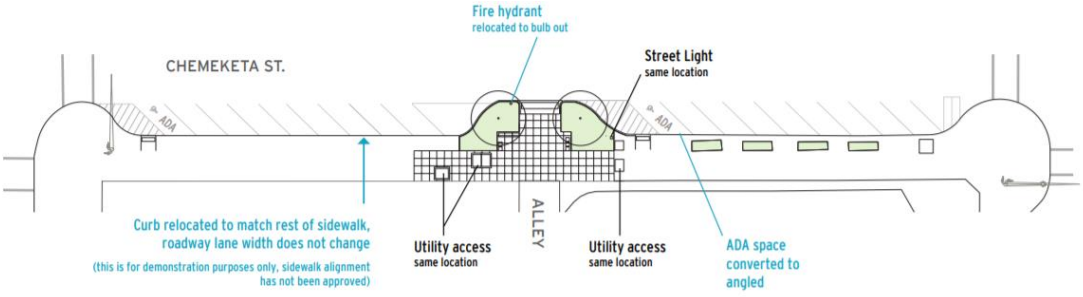


Figure 3.11: Existing condition of Alley Entrance

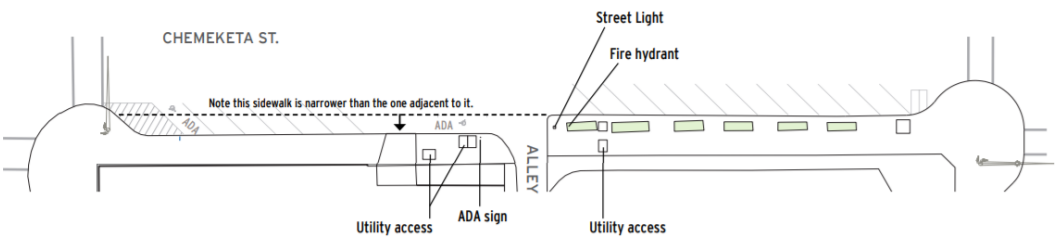


Figure 3.12: Alley Improvement of Alley Entrance

Civic Streetscape:

This example demonstrates how to mediate between varying sidewalk widths to produce a consistent walking zone if the sidewalk widths on either side of the alley are variable. Here, the frontage zone is the extra space that is made accessible to the west side of the alley when there is more space available than the planting and furnishing zone, which is also 6' wide.

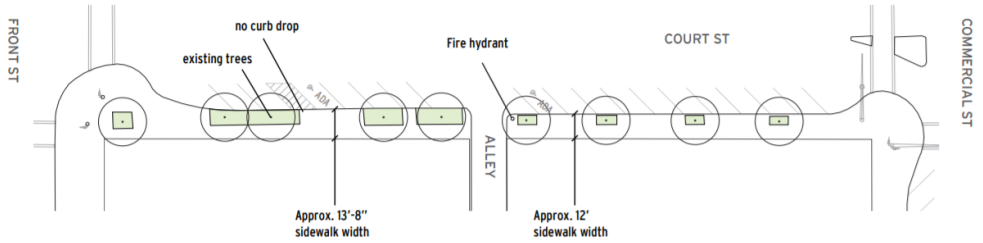


Figure 3.13: Existing condition of Civic Streetscape

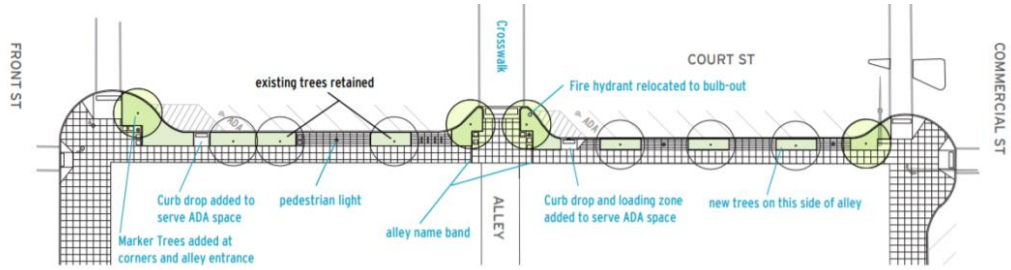


Figure 3.14: Improved Civic Streetscape Design

Promenade Corner:

The eating area is kept while the sidewalk is rearranged to provide room for organized public furniture such bike racks, chairs, lamp posts, signage, etc. and a distinct pedestrian zone for strolling. The furnishing zone may easily be distinguished from other zones because to its darker concrete and more precise scoring. The frontage zone should be used initially for outdoor eating, and the planting/furnishing zone should be used if the frontage zone is insufficient or additional room is needed. To guarantee that there is room for an equitable distribution of lighting, benches, bike racks, and other facilities that benefit downtown visitors who do not patronize a single company, at least 50% of the paved surface of the planting / furnishing zone should be set up for public use.

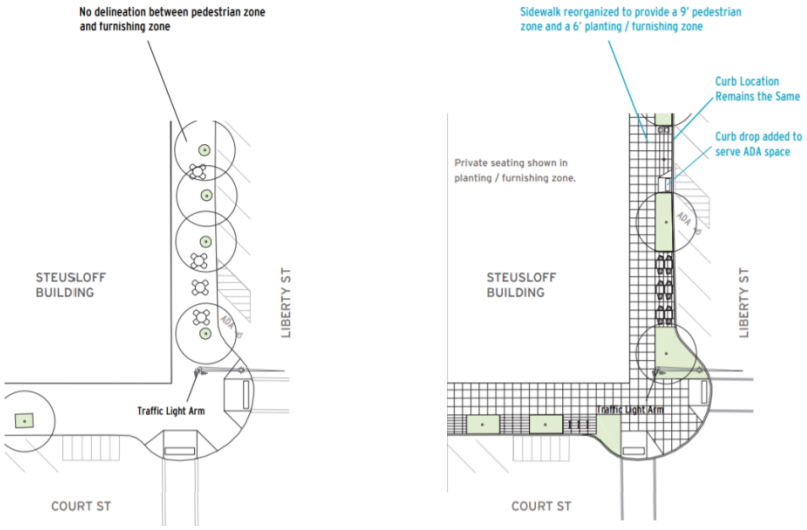


Figure 3.15: Existing condition (left) and improved Promenade corner (right) Streetscape Design

3.3 Guidelines for city of Cheyenne, Wyoming, USA

3.3.1 Sidewalks

- 3.0 feet is the suggested bare minimum clear travel distance on all sidewalks (required by the ADA for all accessible routes of travel.) This clearance, though, is only appropriate in areas with little pedestrian traffic. In most cases, a 3-foot-wide space is insufficient for usage by more than one person.
- 6.0 feet is the typical minimum width for downtown and high-traffic pedestrian zones.
- An 8.0-foot height clearance is required in pedestrian travel routes for mounted traffic signs and tree branches.

3.3.2 Street corners and curb extensions

- Maintain clear sight triangles to facilitate safe vehicular and pedestrian movement. 8.0 feet for tree branches in pedestrian walkways and 8" for mounted traffic signs.
- Within the sight triangle, bushes and elevated planters may not be higher than 2.0 feet.
- Sidewalks should have a minimum clear width of 3.0 feet on 8-foot sidewalks, 4.5 feet on 12-foot sidewalks, and 6.5 feet on 16-foot sidewalks for pedestrian traffic and safe street crossing.

3.3.3 Trees and Landscape strips

- 4.5 feet minimum width (check City standards for specific applications)

- Light and a tree to ensure that trees don't obstruct sufficient illumination, standard assignments must be synchronized. To minimize problems, try to place lights halfway between trees.
- City Forestry should authorize the tree species.
- The City Forestry department should authorize the tree species.
- Drip irrigation is highly advised.

3.3.4 Planters: Moveable

- Individual building owners have an easy, accessible, and cost-effective choice with moveable planters.
- Sidewalks must have a minimum amount of through space.
- Planters that are put close to walkways shouldn't slow down or clog up foot traffic.
- Construction on street corners shouldn't impair drivers' eyesight.
- Keep a 1.5 foot clearance from the rear of the curb to prevent collisions with automobile doors.

3.3.5 Seating

- Keep through zones clear if there is sitting near a sidewalk.
- To prevent conflicts with automobile doors, keep a clean 1.5 feet from the rear of any seating that is situated on the curb edge with its back to the roadway.
- Where possible, sitting walls should be between 12 and 20 inches high and 16 inches wide. The minimum width of the walls that allow seating from both sides is 30".
- Benches on street corners shouldn't obstruct drivers' vision.

3.3.6 Trash Receptacles

- Each corner should have at least one trash or ash container.
- If there is outside seating available, a mid-block garbage can should be taken into consideration for blocks with a lot of restaurants.
- A midblock garbage can should also be included in special event places (can be a temporary placement with a moveable receptacle).

3.3.7 Public Art

- In areas with limited space, public artwork can be installed in the utility zone, on street corners, or along curb extensions.

- Public art installations may be permanent or transitory.
- Old painted wall signs may function as works of art and ought to be preserved and improved wherever feasible.

3.3.8 Screening

- Fences and railings must be at least 30 inches tall and no more than 42 inches.
- There may be at least 70% free area in fencing and railing. A sturdy wall should be at least 18 inches tall and no higher than 32 inches.

3.3.9 Café Spaces

- 3.0 feet is the bare minimum practicable depth, which will accommodate a table and two seats parallel to the premises.
- 3.0 feet must be left unobstructed next to the sitting area for pedestrian circulation, with no obstructions or street lighting (bench, tree, planter, utility pole).
- Cafés situated at the curb edge do not have enough room on 8' sidewalks.
- When feasible, set up tables and chairs behind building awnings. Umbrellas must be at least 8 feet above the ground and may not impede pedestrian movement.

3.3.10 Special Event Spaces

- A roadway closure may have a significant impact on nearby streets. If a roadway is going to be blocked to provide a place for a special event, think about a traffic routing strategy.
- Make sure that utilities like lights and water are accessible enough.
- Make sure that water and electricity are sufficiently available.
- Place special event spaces close to or around locations that already have a lot of foot traffic.

3.3.11 Fixtures/ Utility zone

- While 3 feet is ideal, 2.5 feet is the usual minimum for this space.
- Group or reinforce street furniture, utilities, etc. to improve aesthetics and reduce pedestrian obstructions.
- Introduce several utilities on a pole system or multiple signs on one post where it is practical. Place furniture in a group along the planting strip or on one side of the main walkway.
- The landscape strip and this zone may be merged.

3.3.12 Utilities

- Create utilities in compliance with the Cheyenne Board of Public Utilities' design standards.
- Provide at least one water supply for maintenance and to water portable plants on each block and on either side of the street.
- When possible, place utilities away from the pedestrian through zone.

3.3.13 Lighting

- Depending on the situation, lighting levels along pedestrian travel paths should range from 0.5 to 2.0 foot candles.
- Lighting must be sized adequately for both people and cars and be functionally acceptable.
- To be in scale with the human body and to illuminate the area beneath the tree canopy, pedestrian-scale lighting need a light source that is situated relatively close to the ground.
- Compared to those for pedestrian travel routes, roadway light requirements must illuminate the road and call for significantly larger heights.

3.4 Old East Village, Commercial Corridor, London

Figure 3.16: Dundas Street (Old East Village), London

Source: (london.ca, 2020)

Old East Village is a crucial area for the history and future of London. The City of London has been working hard to revive the famous Dundas Street commercial district. The Official Plan for the City of London outlines the city's design and land use policies. The Old East Village residents, business owners, and property owners helped create the design manual, which has been made available with recommendations to direct future development. The final objective was to provide a foundation for supporting excellent architecture that will harmonize with existing buildings and realize the area's vision (london.ca, 2022).

Figure 3.17: Dundas Street

Source: (london.ca, 2022)

3.4.1 Vision

- Act as a focal point for the neighborhood of neighboring homes
- Provide products and services that the neighborhood community will find valuable and utilize
- Provide some products and services to a larger City market
- Provide a variety of purposes in the arts, entertainment, and culture
- Provide some social and health services, but not too many of them at street level
- Expand on a historic theme that emphasizes important heritage structures, and
- Promote a streetscape that is oriented toward pedestrians while leaving room for cars

The following sections make up the Old East Village Commercial Corridor Design Manual:

1. Façade Design
2. New Development
3. Patio Design

3.4.2 The building facade

Storefront (Ground floor):

- To encourage large display areas, maintain, repair, or restore existing entryway recesses (up to 3m).
- Minimize the depth of entryway recesses, where applicable.

Windows:

- Repair instead of replacing existing traditional shop windows
- Make translucent design elements as large as possible on a storefront's glass display windows. (Transparent glass windows must make up at least 60% of the linear frontage.)
- Paint window frames to enhance visual appeal and variation.
- Transparent glass should be used in place of darkly colored or textured glass to improve company visibility.

Sign band and Signage:

- The sign band should be made of high-quality materials like metal and wood.

- Reduce the sign band's height to increase the display and transom windows' dimensions.
- Refrain from projecting signage farther than 1.0 meters from the building façade.

Awnings:

- On a single structure with many stores, use awnings that are the same size, shape, and placement.
- Create inventive awning forms that go well with the whole structure.

Lighting:

- Install façade lighting on storefront facades to promote foot traffic at all times.
- Check to see that lighting fixtures are completely covered and made to minimize spill, glare, and light pollution.

Materials:

- Make use of components that enhance the corridor's historical character.
- Look into the possibility of adding either temporary or permanent artistic expression or features to façades.

Colors:

- Refrain from using more than three distinct colors on the façade; doing so may make the façade appear "busy" and disorganized, which may turn away potential customers or clients.

3.4.3 New Development

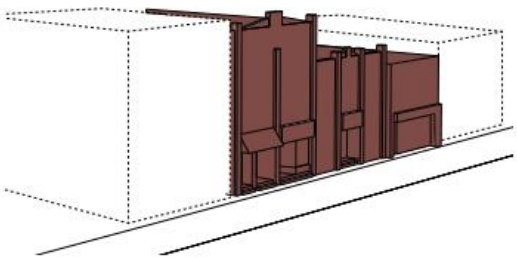


Figure 3.18: Diagram displaying new construction parallel to the street's built-in line
Source: (london.ca, 2022)

Building Location:

- Retain the current constructed line in mind while placing new structures to keep the street's visual flow and spatial confinement.

On-site Parking:

- Place all parking spaces in the backyard or in subterranean garages.
- To guarantee user safety, pedestrian access to parking sites should be made by well marked, well-lit, unobstructed routes.

Building Height:

- Create structures with a minimum of two stories throughout the commercial corridor, adding more stories at noticeable crossroads and entrances.

Orientation:

- Find the main entrances to the buildings facing the Dundas Street corridor.

Massing and Rhythm:

- Ensure a seamless height transition between nearby buildings, both new and old.
- Continue the horizontal and vertical proportions established by surrounding existing buildings
- Maintain the window rhythm and horizontal lines (datum lines, sign bands, cornices, etc.) on adjoining buildings.

Façade Design:

- The base, center, and top of any new structure should be clearly delineated.
- Adhere to the design standards used in existing structures.

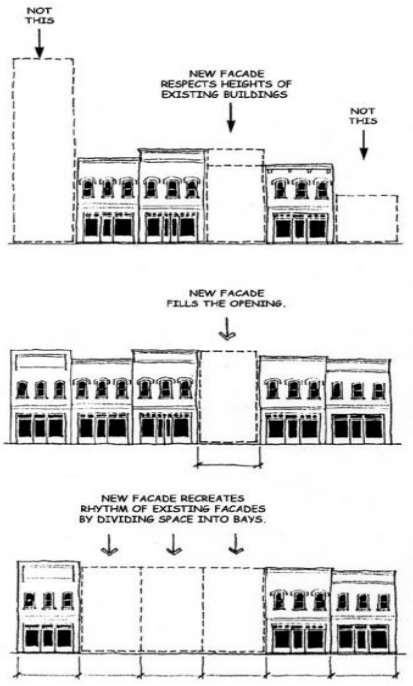


Figure 3.19: Diagram demonstrating how infill construction might try to match and retain the building massing of existing structures

Source: (london.ca, 2022)

3.4.4 Patio Design

Functionality:

- There must always be an open pedestrian lane of at least 1.5 meters
- Patios at corners will need a 3 m unobstructed path from the intersection's corner
- The patio entryway must be at least 1.2 meters wide .

Furniture:

- As long as they match the patio's furniture and stay out of the clearway, host stands are allowed on the patio
- Garbage cans are permitted in the patio as long as they are placed next to host stands

Fence and plantings:

- Patio fence needs to be 0.75–1 m high, with a low barrier bar that is 0.15–0.3 m high.
- Throughout the season, plants need to be kept alive, healthy, and growing.

Additional features:

- Lighting for the patio is allowed as long as it is contained within the patio's limits and does not obstruct the clearway.
- Heaters are allowed in the patio as long as their height is no greater than 3 meters.In the public right-of-way, site-specific paving or surface treatment is not allowed.

3.5 West Kalimantan, Indonesia

The study was conducted in the business district along Jalan Diponegoro, Jalan Agus Salim, and Jalan Gajahmada in the Benua Melayu Darat Administrative Village in the West Pontianak Subdistrict of Pontianak, West Kalimantan.

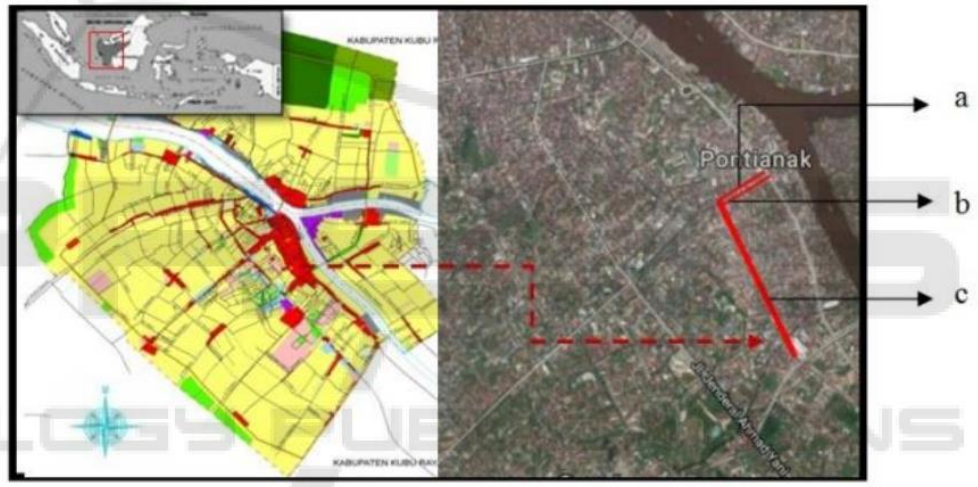


Figure 3.20: Observation location (a. Diponegoro Street, b. H. Agus Salim Street and c. Gajahmada Street, Pontianak City, West Kalimantan)

Source: (Patandianan & Shibusawa, 2019)

3.5.1 Facade Corridor Space Physical Identification Analysis Using Facade Elements

Diponegoro Street and Agus Salim Street facade components

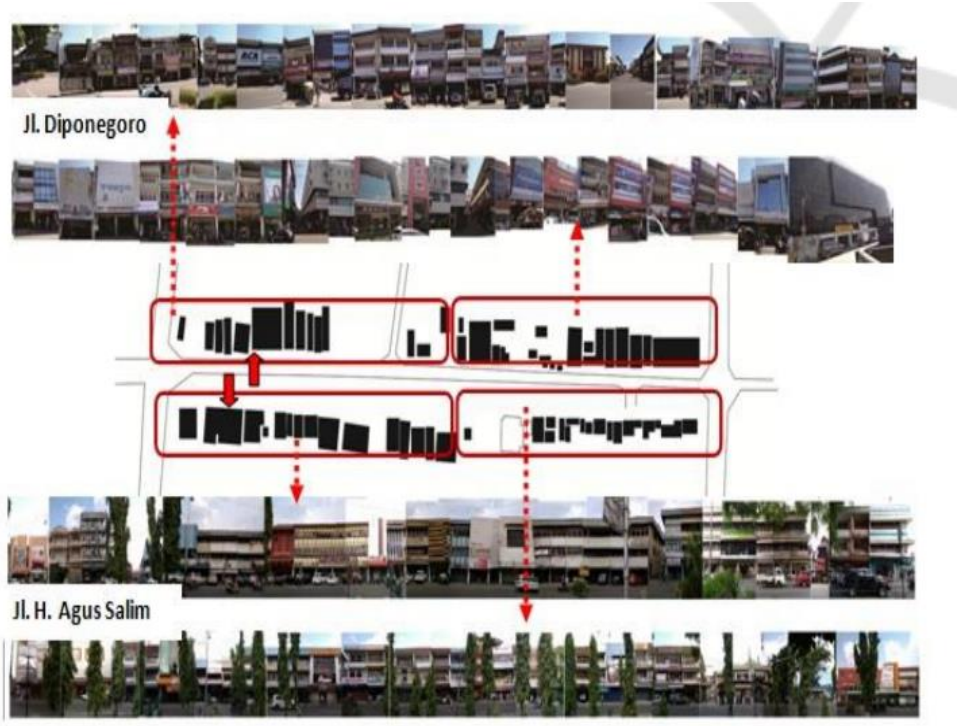


Figure 3.21: Serial vision mapping of elements façade

Source: (Patandianan & Shibusawa, 2019)

Gajahmada Street facade components

Serial vision was used to discover and evaluate façade components on the aesthetic appeal of road corridors.

Figure 3.22: serial vision mapping of Gajahmada Street's façade components

Source: (Patandianan & Shibusawa, 2019)

To aid in observation of the area's visual façade, the procedure of identifying facade components was done on both sides of the corridor.

Visual Quality Analysis of Corridors

- The same awnings with the same prominent height are included in storefront elements, but there are variations in width, material variety, and color.
- The building's entry is parallel to the road without any walls, but is highlighted by an increase in floor level as you approach the door.
- Rolling doors are made of iron, aluminum, and wood and have an average height of 3 meters. Their broad width varies depending on the width of the structure.
- The columns in the canopy serve as a strengthened primary gate to control traffic.
- Because the terrace, which serves as a connecting corridor between buildings, is right next to the road, it lacks a railing. For security purposes, several buildings include security grills on the second, third, and fourth levels.

- Since this is a business district, trading activities continue here well into the night, therefore illumination is crucial. The activity is visible at night in structures made of glass.
- Some lighting come from building signs or outside displays, while other lightings are used throughout the entire structure.
- Many buildings that serve as residences include landscaping and planting features on the second-floor balcony, but some other uses, such hotels, also use the notion of a green wall like in the building front.
- Signage The variety of building signs in terms of form, positioning, and proportions is one of the components in this domain.
- Some structures have a contemporary design and are made mostly of materials like glass, concrete, ceramics, and aluminum.
- In terms of proportion, there are a few buildings where the relationship between the many facade pieces has come to seem cohesive as a whole.

3.5.2 Design Guidelines of Urban Aesthetic for façade elements of existing buildings

- Applying uniform doors and windows, both vertically and horizontally, to all building openings in order to comply to building functions without destroying the building's unique identity, especially in many structures.
- Reducing the amount of solid or vast field on the exterior to lessen the closed appearance. The usage of a translucent (void)-dominant facade component field will convey an air of openness and friendliness.
- By using building materials according to their functions and decreasing the size of building signs so it won't take over the entire building façade, the principle of solid void may be used to the building face to eliminate the usage of floor sheathings.
- Using the facade finishing technique in accordance with the building's original material to create harmony and unity with the neighboring structures.
- Applying color to revitalize buildings in line with concepts and building materials, since color is one factor that contributes to the impression and perception of an area in line with the purpose of the building in particular as well as the function of the area as a whole.

3.5.3 Observation

Table 3.2: Observation of Diponegoro Street and Agus Salim Street

Storefront Elements	
Doors	• The use of rolling doors with an average door width of 3 meters and doors made of wood.
Awnings	• Several buildings feature canopies that are 3 meters tall and 7 meters wide made of aluminum. • The wall's color is the dominant color. • Materials like concrete, plastic, and wood
Guard & Security Grills	• The structure lacks a guardrail. • Fence were on 2nd, 3rd , and 4th floor
Lighting	• Buildings only have lighting on the ground floor. • Each floor has lightings • No illumination (buildings without activity) • Building markings or signs are highlighted by lighting
Main Gate	• Directly connected to the road; no gate or access.
Exterior Display	• Building has no outside display features.
Landscape/Planting	• There are many plants inside the building, but none in front. • No garden; pavement that runs next to the road. • The second and third floors of some structures include plants
Signage Elements	
Building Signage	• Signage put above the entryway but not on the building's front
Window Display Signage	• Some structures have window displays
Mural Signage	• No signs for murals
Upper Level Elements	
Cornice	• Absent cornice. The second and third floors have cornice.
Windows	• Made of glass, with a straightforward style. rectangular form
Materials	• Some building walls are made of steel, along with concrete, ceramics, glass, and aluminum

Table 3.3: Observation of Gajahmada Street

Storefront Elements	
Doors	• Utilization of rolling doors with an average width and height of 3 meters • A wood product with a 2 meter width and a 3 meter height
Awnings	• Concrete canopies in a number of structures are 3 meters tall. • The wall's color is the dominant color. • Materials like concrete, plastic, and wood

Storefront Elements	
Guard & Security Grills	• The structure lacks a guardrail. • A one-meter-high fence surrounds the balconies on the second, third, and fourth floors.
Lighting	• Buildings only have ground-floor lighting. • The building's floors have lightings • No illumination (buildings without activity) • Building markings or signs are highlighted by lighting
Main Gate	• Directly connected to the road; no gate or entry. • Two columns support and direct the canopy's circulation.
Exterior Display	• An outside display consisting of metal, ACP, concrete, and wood that is built in accordance with the goods offered.
Landscape/Planting	• There are many plants inside the building, but none in front. • No garden; pavement that runs next to the road. • The second and third floors of some structures include plants
Signage Elements	
Building Signage	• Signage put above the entryway but not on the building's front
Window Display Signage	• Some buildings have window display
Mural Signage	• No signs for murals
Upper Level Elements	
Cornice	• Absent cornice. The second and third floors have cornice.
Windows	• Made of glass, with a straightforward style. Square form, traditional shape
Materials	• Concrete, ceramics, glass, aluminum, and some building walls are made of steel.

3.6 Urban Street Design Guidelines, Pune, (Regional)

3.6.1 Vision

To re-establish streets as active public area that encourage individuals to use all forms of transportation, including walking, for safe and responsible commuting.

3.6.2 Goals

- To create architectural standards for Pune street that put people before cars, restoring the city's streets to their former status as the most important and vibrant urban public domain.
- Integrate the functional requirements of all road users and stakeholders into the street design according to the importance, suitability, and requirements of each road user, making sure that the available road space is fairly distributed among all stakeholders.
- To build and propose streets that will ensure the safety of all drivers.

3.6.3 Guidelines for street elements

Footpath: Footpaths should be usable, tidy, safe for people to use, and free of impediments like parking spaces and utility lines. It should provide clear and unobstructed minimum walking zone of 2m horizontally with 2.4m vertical clearance and have should have tough and anti skid surface. Appropriate ramps should be provided at entry/exit of footpaths.

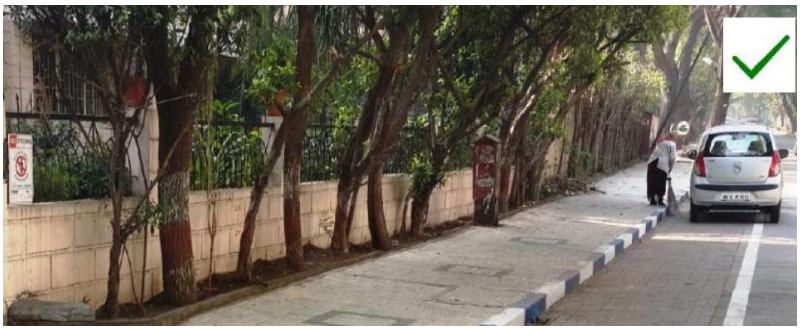


Figure 3.23: A footpath in Pune
Source: (PMC, 2016)

Cycle Track: Cycle tracks should be 100 mm above the level of the highway. A clear, unimpeded riding zone must be at least 2 meters wide for one-way traffic and 3 meters wide for two-way traffic, with a vertical clearance of 2.4 meters. The surface of the cycling lanes or tracks should be level and free from any impediments, such as

plant life or utility covers. For cycling tracks, asphalt or concrete are suggested surface materials. Blocks made of pavers shouldn't be offered.

Figure 3.24: Recommended cycle track segregated by verge

Source: (PMC, 2016)

Carriageway: Until a street changes its hierarchy, the width of the roadway should remain constant. Ideally Only at junctions might carriageway widths be altered. Any street's carriageway should be marked with yellow lines and reflecting cat eyes on them. Internal lanes should be identified by dashed white lines. There must be thermoplastic paint used for marking.

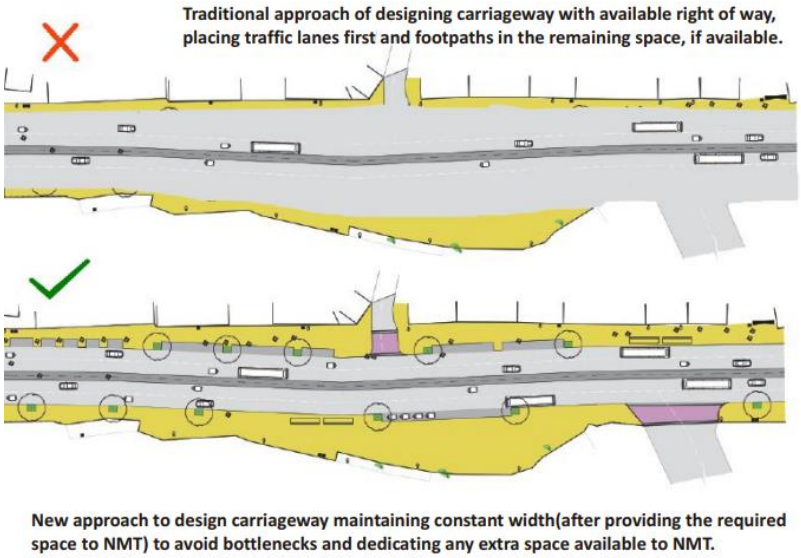


Figure 3.25Suitable approach of designing carriageway

Source: (PMC, 2016)

Parking: Parking on sidewalks, bike lanes, or other areas designated only for walkers and bicycles should be prohibited, and violators should face fines. It is advised to use permeable grass pavers in parking spaces, and appropriate notice should be included.

3.6.4 Guidelines for safety elements

Pedestrian Road Crossing: Depending on the surrounding land use, pedestrian crossings should be available every 150 meters. Zebra crossing is obligatory at all Intersection crossings. Tactile paving should be implanted in zebra crossings to guide disabled people.

Traffic Calming Measures: Distinct markings, signage, signals and proper lighting are mandatory. For every intersection on a street with a high pedestrian volume, such as a commercial street or a street with mixed use, curb extensions with material variety are advised.

Street Lights: Lighting should be planned such that it adequately illuminates both the pedestrian/cycle route and the automobile lane.

Street Furniture: Furniture should be made of a sturdy material that is also affordable and simple to maintain, safe to use, readily available for repairs and replacement, and visually beautiful. Street furniture ought to be suitable to use and have universal accessibility.

Advertisements: Advertisement boards should be placed such that it does not cause physical and visual obstruction to pedestrians, vehicular traffic as well as signage. It shouldn't have a negative impact on the aesthetics and beauty of the cityscape and the city in general.

3.6.5 Guidelines for multi utility zone:

Plantation: Trees shouldn't impede the movement of pedestrians or vehicles. To offer enough pedestrian clearance under branches, street trees should typically be erect and branched above 2.4 meters.

Utilities and services: The optimal location for utilities is beneath the verge separating the pedestrian route from the carriageway. In order to avoid obstructing pedestrian traffic, manhole covers and other obstruction-causing utilities should be placed within the sidewalk edge zone. In order to reduce maintenance requirements and guarantee future supply, utilities must be planned.

Storm water management: Swales should be at least 1 m wide and ideally follow a section of the road consistently. Parking lots, walkways, and any other non-vehicular route should all be covered in permeable pavers.

Garbage containers: Garbage bins should be more compact and covered. It should not be placed on footpaths or cycle tracks. Two Garbage containers in a radius of 500m are suitable.

Public Toilet: On mobility and feeder corridors, there should be one restroom provided every 1.5 kilometers. In order to be conveniently accessible and attractively integrated with the surroundings, public restrooms should be taken into consideration while designing roads.

3.7 Bandipur Eco-Cultural Tourism Project (National)

Bandipur is 80 kilometers east of Pokhara and 143 kilometers west of Kathmandu (tourist destination). It is located in Nepal's Tanahun District. It is a community located on a mountaintop with views of the Dhaulagiri and Annapurna ranges. It has a rich cultural history that the Newars of Bhaktapur brought with them. The Newars turned Bandipur into a significant stopping station on the trade route between India and Tibet in the late 1760s. From a little Magar village, Bandipur has grown into a thriving commerce hub. The Newars contributed their incredibly rich architectural tradition, which is a part of the current Bandipur. with the completion of the Kathmandu-Pokhara motorway in the 1970s, Trade severely decreased as Bandipur was left alone on its mountaintop. Besides, the Tanahun district office that was previously located in Bandipur was moved to Damauli. The lack of accessibility and loss of prominence of the town caused residents to relocate to neighboring places. Bandipur's commercial commerce and administrative operations fell out dramatically, turning the city into a ghost town (Dorji, 2019).

Figure 3.26: Bandipur location and image
Source: (Dorji, 2019)

The BECT project was primarily concerned with transforming Bandipur into a viable eco-cultural tourism destination. The two-year (2005–2006) initiative places a strong emphasis on the value of communication and involvement with the local community and project partners. The project, which is smaller in scope than the BDP and concentrates mainly on the development of tourism, is a component of urban revitalization. Perhaps as a result, there might be extensive public engagement and discussion. The project's efforts may be generally divided into five categories: publication, training, tourism, and promotion. Municipal Development Company of Hydra, Greece, Comune di Riomaggiore, Italy, and Bandipur Village Development

Committee, Nepal are the project's partners. Before the project's execution, various seminars and tours were undertaken with funding from the European Commission (Dorji, 2019).

3.7.1 Bandipur Eco-cultural Tourism Project

The main objective of BECTP was: "to develop Bandipur as sustainable eco-cultural tourism centre with a network of similar hill towns to revitalize, protect and promote their cultural and natural resources with programs that have replication values" (Ruska, 2012). The project was created as a long-term strategy for promoting new objectives. In this case, the Asia Urbs Programme, which was launched by the European Commission in 1998 as an attempt in decentralized (city-to-city) collaboration, supported the Municipality of Hydra (Greece) and Comune di Riomaggiore (Italy). The hamlet changes physically over the project time as infrastructure is built, and tourism-related knowledge grows as a result of workshops, trainings, and interactions with local residents. (Ruska, 2012).

Figure 3.27: Building and street in 2003 (left) and 2012 (right)
Source: (Dorji, 2019)

3.7.2 Project Activities

The two historic homes were renovated and made into lodging for visitors. Similar to this, a middle home was renovated and turned into a visitor's center. When the project required it, a total of 11 home owners submitted applications for rehabilitation. In contrast to the early stages of BDP, it takes a somewhat different approach to restoration. Along with the project team, the home's owners participated in the restoration. Both the Bimalnagar-Siddha Gufa (cave) and Dumre-Bandipur pathways were repaired. Local residents provided more than 200 hours of labor to rebuild the Dumre-Bandipur path. There have been improvements made to the Tundikhel region to make it a better spot for picnics and mountain views. Improvements were made to

the Thanimai temple on Gurungche Hill, and locals donated about 600 square feet of stone pavement for the paving of the Khadga Devi temple. Construction of the temple was supervised by the Bandipur Project subcommittee, the project team, and Khadga Devi Puja Samita. The three circular buildings in Ramkot were preserved and restored to use as visitor centers. With help from the project, the owners completed the repairs. Study and research were also done for the project's website and advertising materials. Potential excursions were investigated both inside and outside the town. Tour guide, trash management, and environmental management trainings were conducted (Dorji, 2019). `

3.7.3 Road as a way to Modernity

The existence of the road is the primary driver of the area's revitalization and modernization, but when looking at the situation from a wider angle, it is unclear if this will continue to be a beneficial development for most stakeholders or whether it will eventually cause conflict.

3.7.4 Implementation

The relevant local committee carried out the project under the direction of the project team. The local Siddha Gufa Development, for instance, repaired the stone pathways leading to Siddha Gufa. In order to successfully implement the project activities, many meetings with the local committees were organized. Some sessions with the local implementation committee involved the preparation of designs (Dorji, 2019).

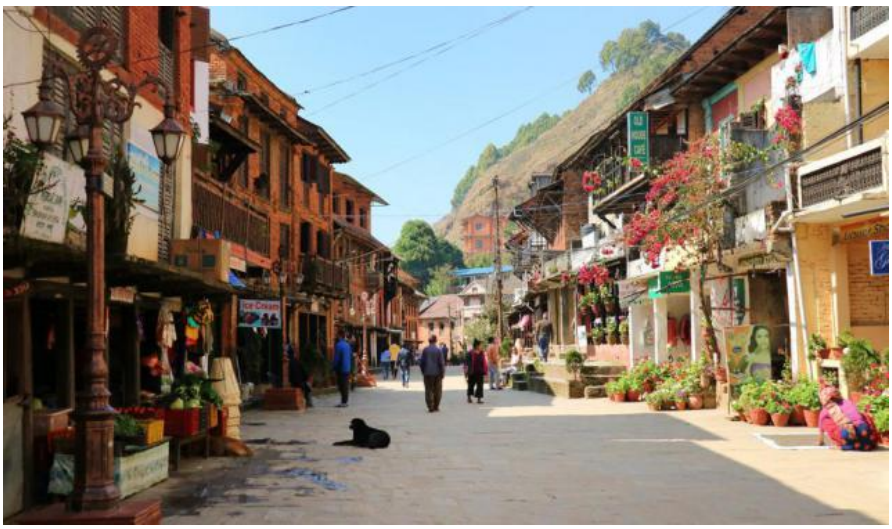


Figure 3.28: Present view of buildings and street in Bandipur
Source: (gpsmycity.com, 2022)

3.7.5 Conclusion

In order for urban redevelopment projects to be executed successfully and sustainably, projects emphasize the significance of public engagement. Through communication between project partners and community engagement, the Bandipur project is carried out methodically. There were various meetings and talks between the partners and the locals throughout the project's early stages. The whole people participated in implementation. Because several local user groups participated in carrying out the project's operations, a sense of ownership of the initiative has grown among the populace. The initiative was foresighted since trainings and seminars raised environmental consciousness. Participation in fairs conducted in many nations, as well as advertising boards and the distribution of booklets, were used to promote Bandipur as a tourist destination. Additionally, local teenagers received instruction on the value of tourism, heritage, and the environment (Dorji, 2019).

For the project to be successful, the project highlights the significance of meetings and conversations among the partners as well as with the public, cultural exchanges, site visits, trainings, and awareness campaigns (Dorji, 2019).

3.8 Revitalizing Bungmati: An Action Plan

It is located 10km south of Kathmandu and has its origin in medieval times. Its inhabitants are predominantly Newars. It is located inside the recently created Karyabinayak Municipality, has a population of about 6000, and is well-known for the main Machhindranath temple as well as for woodcarving and handicrafts. The earthquake 2015 damaged 900 out of 1114 houses, many families forced to live in temporary shelters (Amaya, 2016).

The goal of action plan was to support the recovery of the local community and the redevelopment of their assets. Therefore, the emphasis is on urban design strategies that embrace the genius loci, regional housing customs, and regional economics and heritage. The reconstruction of Bungmati was about place making, revitalizing urban space (the social and economic activities that characterize them so much included), and reevaluating the public realm while strategically incorporating technical solutions (Amaya, 2016).

With new infrastructure developments and rapidly extending urban tissue, building with local craftsmanship becomes difficult and generic concrete buildings are on the rise. A complete urban development strategy had to be thought out with the reconstruction of the existing fabric. The action plan had to apprehend the urban logics of Kathmandu Valley. As well, the required deep analysis of the existing situation needs intensive fieldwork that integrate mapping with interviews with local experts and other key respondents (Amaya, 2016).

Figure 3.29: Socio-spatial logics of a traditional courtyard house within the tissue of Bungmati
Source: (Amaya, 2016)

3.8.1 An action plan for Bungmati

To re-found and renew Bungmati three fundamental components were proposes: (1) a structuring public space figure; (2) pilot surveys; (3) a timeline for reconstruction. The action plan also acknowledges the fundamental value of indigenous typologies and construction techniques (Amaya, 2016).

Figure 3.30: A renewed public space

Source: (Amaya, 2016)

- Open space Network- Reinforcing the green structures and open spaces turn them into active landscape.
- Community waste water treatment- Decentralized community wastewater treatment systems were proposed as strategy to counter heavily polluted environment. By introducing small-scale reed beds around village, water can make use of topographical differences and be cleaned it goes through valley and reaches the river.
- Micro scale rainwater harvesting- Multiple rainwater collection points were integrated, all buildings should get an adapted system where rainwater is harvested separately.
- Urban tissue and public space- Water elements like ponds were integrated and of great importance for religious and water management.

- Public Route: A public route going from monastery to monastery was proposed as an instigator for public life and community redevelopment projects

3.8.2 A participatory trajectory

Reconstruction through a community-based procedure implies communication, moments of collective expression on the project and information-sharing. The part consists of the signing of a charter and community meetings during the project. The inhabitants were the protagonists when revitalization takes place (Amaya, 2016).

CHAPTER 4. RESEARCH METHODOLOGY

The urban aesthetics and streetscape of the NGO Road is explored through the case study methodology which involves the observation and questionnaires that focused on building facades and the streetscape elements. This study also involves perception/ experience of the people towards current aesthetics and streetscape, this research falls under qualitative descriptive research that aims to describe the current data-based problem resolution. The literature reviews is generated from the published articles, research papers and journals. Similarly, the research is also being done on the functionality of the streetscape in the study area that affects the urban environment and the city aesthetic as well. So the approach is inductive. This method also delivers data, examines it, and offers an interpretation of a current phenomenon.

4.1 Research Paradigm

The research topic is based on people's experience, interpretation and ideas which vary from the different perception of people. There are several ways of looking at this particular problem. The theme of research which is examining the direct observation, people's perception and their experience and also design guidelines as the solution for achieving the better urban environment could be approached from qualitative method that will give proper direction for analysis. Thus, the qualitative approach needs to be discussed in interpretive paradigm. Similarly, the quantitative analysis with a field survey is done using questionnaire as a guideline for fulfilling the research purpose. This generates numerical data which makes it a mixed method approach; hence the research falls on pragmatic paradigm.

The ontological claim of the research is "Urbanization has impacted on the urban aesthetics and streetscape". With the proper analysis of the factor leading to the impact of urbanization to the urban aesthetic and streetscape in meeting the present need of changing society, an impactful contribution can be made in the field of renewal of urban street.

Epistemological assumptions are based on the ampleness and authenticity of different sorts of information. This research intends to produce knowledge about the urban aesthetic and streetscape issues created by urbanization, understand the importance and application of the urban design guidelines in the city and seek to identify the valid source of knowledge. Accordingly, this research has proposed to look into the people's mind since it is the ultimate source of knowledge about applying guidelines

as the measure. Since, it depends upon the human experience, ideas, behavior and attitude, the research that generate an understanding this interpretation, this research also proposes to investigate these area for a valid source of knowledge.

4.2 Research Method

The method applied for this research is mixed method i.e. qualitative and quantitative method. Through meticulous observation and analysis of the cases under research, case studies assist in explaining both the process and outcome of a phenomenon by using both quantitative and qualitative data (Zainal, 2007). Since the study is based on theories, beliefs, experience, and observation, it extracts non-numeric data so the research falls on qualitative method. Also, questionnaire survey is done from which data's are extracted and statistical comparison is done which is the quantitative analysis. The data's are analyzed through numbers and statistics and also exploring the ideas and expression in depth. For statistical comparison, it requires the quantitative analysis that is conducted by interviewing people who are using that street and living in that area for years.

4.2.1 Sample Framing and Sampling

A sample is a smaller collection of data that a researcher selects from a larger population using a predetermined technique of selection. The members of the sample are called as participants or respondents. In most cases, it is impractical, expensive, or time-consuming to conduct population-wide research. Consequently, looking at the sample offers information that the researcher can use to understand the entire population. The source material or device from which a sample is taken is called a sample frame. The procedure through which a sample is extracted from a population is called sampling.

The research is done in the urban street named NGO Road in Narayangarh which involves two type of sampling (one with houses and one with people) for fulfilling the purpose of research. The research is based on probability sampling. The tentative number of houses along the street is around 100. So for the observation, sample size is taken randomly in a systematic method with interval of every fourth house in both rows. And, for the questionnaire survey, population is unknown. That is why, sample size is calculated taking confidence level of 93% and error margin of 7% using given formula;

Sample Size for Estimating Mean μ

Formula 6-5

$$n = \left[\frac{z_{\alpha/2}\sigma}{E}\right]^2$$

where $z_{\alpha/2}$ = critical z score based on the desired confidence level
E = desired margin of error
σ = population standard deviation

Using the formula, the sample size is obtained 138. The sampling type for questionnaire is simple random sampling.

4.2.2 Data Collection

For data collection, questionnaire survey is done. A background and literature study is done to find out the variables for the questionnaire which fulfills the research objective. A set of close ended as well as open ended questions is prepared for the survey. The questionnaire consists of direct and indirect questions to know the people's perception and their experience.

4.2.3 Data Analysis

For data analysis technique, the answers obtained from observation will follow three steps:

1. Identification and evaluation of physical state of the area
2. Character valuation analysis methods as an approach to analyzing urban design
3. Triangulation analysis technique to check validity of data (empirical facts, theories and experts)

The data obtained from questionnaire survey will be analyzed through electronic devices. For statistical analysis electronic software's will be used such as Kobo Collect, Kobo Toolbox, SPSS, Excel, etc. (Kobo; tool for collecting data, SPSS, Excel, are tools for analysis).

4.3 Conceptual Framework

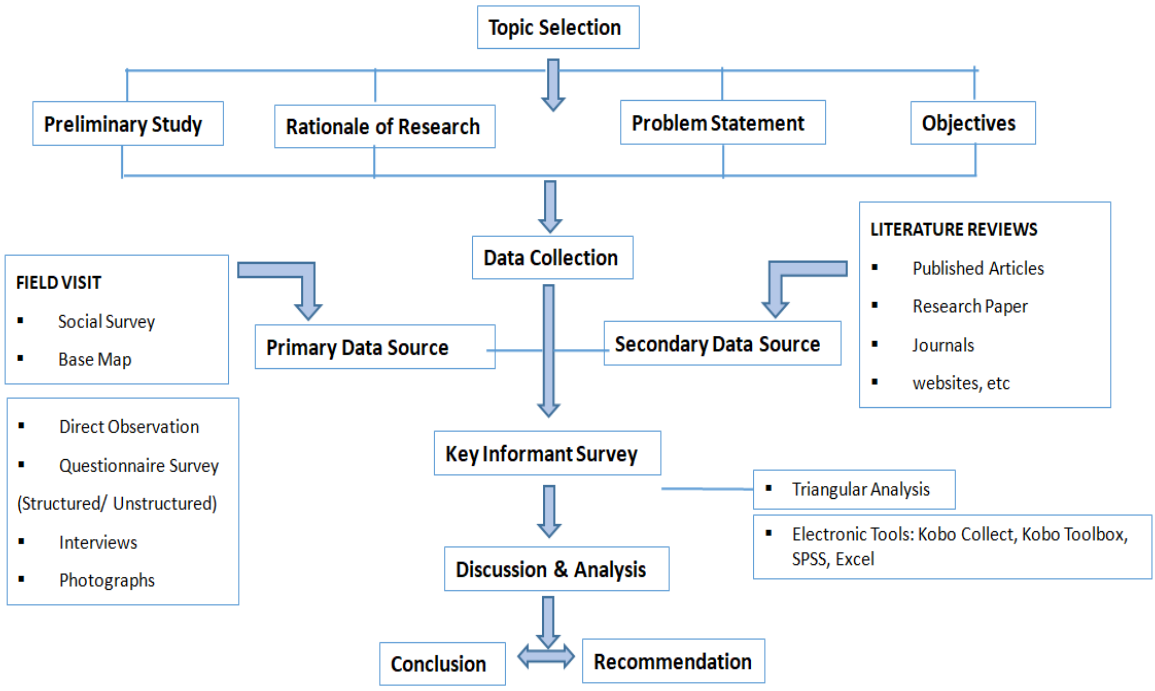


Figure 4.1: Flow Chart of Conceptual Framework

4.4 Scope and Limitations

The research focuses on the aesthetic and the streetscape of NGO Road in Narayangarh. The research aims to identify the existing problems, people's perception and then develop the design guidelines to solve the problem. The research is limited to the Literatures, case study intervention, field survey, direct observations and questionnaire survey. The interior of buildings are not taken into considerations. The observation limits to the building fronts and other three sides are not included. The sample size limits within the street users and surrounding residents and the key informant survey are done with selected respondents like the municipal engineer/ architect and DUDBC personnel.

4.5 Data Collection Process

Data collection is conducted through field survey, observation and questionnaires. Field surveys are performed to analyze the urban aesthetics & streetscapes in the NGO Road in Narayangarh, while the questionnaires are used to determine people's perception and their experience towards existing condition of the streetscape and shop fronts. Firstly, Whole Street is observed as for the organizing the time schedule, then street of 1.01km was decided to study. For the observation of study area, initially urban design attributes were studied in the street and for the detail observation of

building, every fourth house in both rows (total 30 nos.) were taken which is the obtained numbers using sampling formula and buildings were studied on the basis of different elements. Likewise, questionnaire survey was done with 138 people by asking questions to understand their perception and experience towards existing condition of the buildings and street.

CHAPTER 5. STUDY AREA

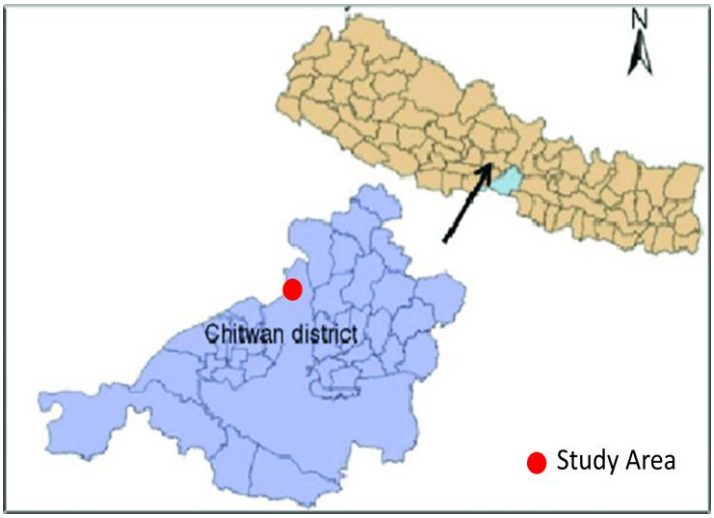


Figure 5.1: Study Area in the Map of Nepal
Source: (Sciencedirect.com, 2016)

Figure 5.2: Study Area: NGO Road, Narayangarh
Source: (Goople Earth, 2022)

NGO Road is the street connected to the National Highway i.e. East-West Highway. There is Narayani River to the left of street and the main market area to the right side. The path branched off from this main road are connected to Narayani River in left and market area in right. Some paths are graveled while some are block paved and some pitched with 3m & 4m width.

According to MTMP (2016/17) Report, 4 type class (Class A, Class B, Class C & Class D) were proposed for the development of road in BMC. The NGO Road lies in Class D type i.e. Main Tole Road, with 6-8m width. The road space was proposed to

be distributed to all road user equally with provision of green belt, cycle track and footpath. The main issue was social, economic and emotional loss of only plot of land/house owned by individuals along the narrow roads. As those decisions were made by limited group of political leaders and technicians, it was hard to go to the public with such decisions. (MTMP, 2017).

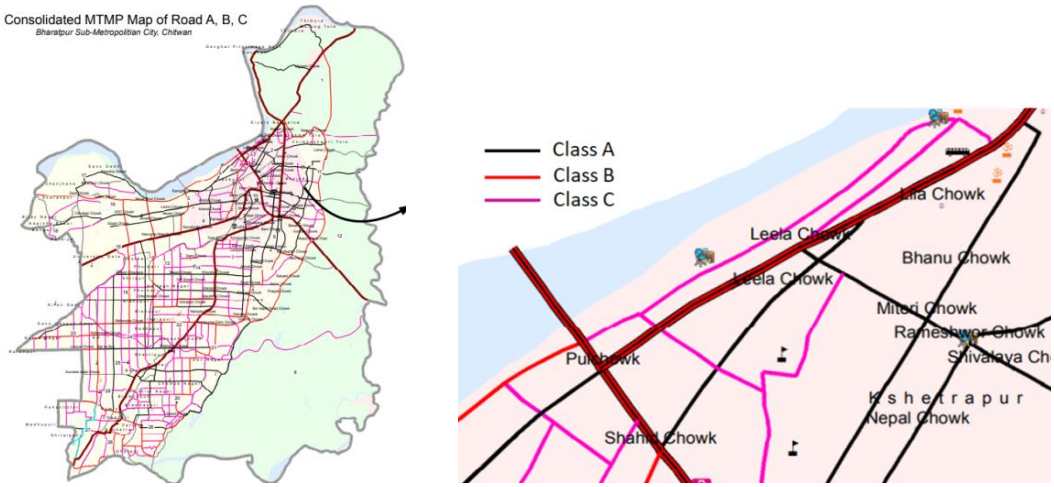


Figure 5.3: Proposed Plan of Road map

Source: (MTMP, 2017)

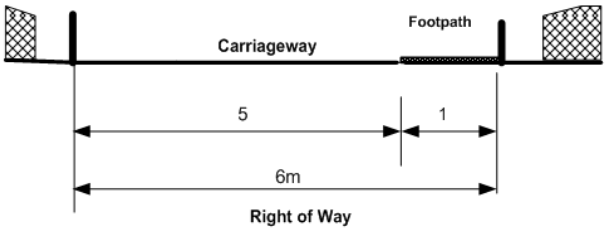


Figure 5.4: Proposed cross section of NGO Road (Class D) for right of way

Source: (MTMP, 2017)

The NGO Road is divided into different sections; Bhagwati Marg, Harihar Marg and Narayani Path. The reason to choose this area is strongly defined by its cultural and economical values. Since it directly connects to the Mahendra Highway, and the corridor reside along the Narayani River, people often like to visit the place and use the route for various purpose.

To the left of street there is Narayani Riverside and to the right of street there is main market area. The street is one of the busiest Road of Narayangarh but lacks the aesthetic value and street function which can have many opportunities in the future.

Figure 5.5: 1. Bhagwati Marg, 2. Harihar Marg, and 3. Narayani Path

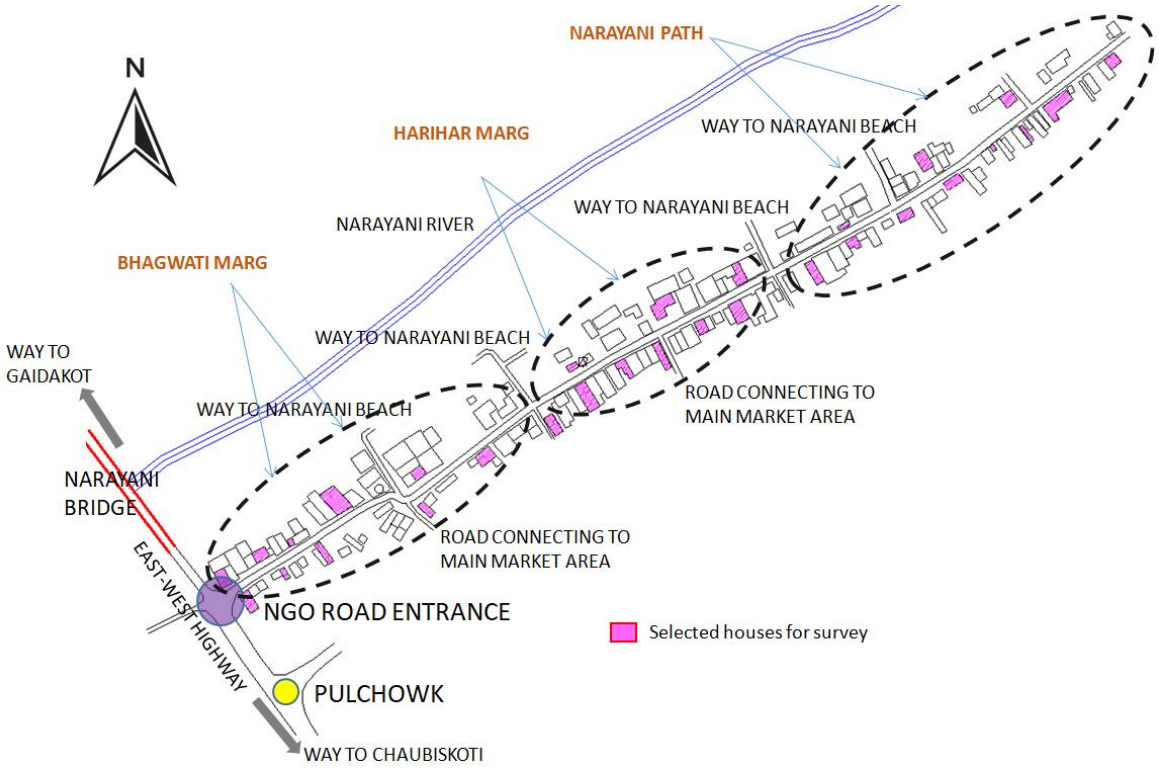


Figure 5.6: Raster Layout map of NGO Road and the buildings footprint

5.1 Land Use

The land use of street is mix-use which consists of various types of buildings and uses. The majority of uses for the site are for residential, commercial, office, and educational purposes. Some buildings are old and some are newly constructed. Streets are mostly utilized for commercial purposes, such as fast food outlets or retailers. A few residential structures have also recently been built using contemporary architecture and building materials. More diversity and commercial opportunities are brought about by the complication of land use, but it also leads to congested, high-density cities and conflicts between different social aspects. As a result, the way that land is organized needs to be changed so that commercial and other uses may coexist.

Figure 5.7: Land-Use map of NGO Road

5.2 Bye Laws of Narayangarh, Chitwan

5.2.1 Road Width

The minimum width of road connecting to the highway must be 8m, width between block to block road must be 6m and plot to plot must be 6m. Similarly, the turning radius for any type road should be minimum 3.5 meter.

5.2.2 Right of way (ROW)

The right of way is the distance from the center of the road to the setback line of the plot. The ROW must be at least 2.43m for any residential building or mixed building.

5.2.3 Set Back

The setback line for residential or mixed building with 10m height is 1.5m from right of way. Similarly, setback with from building opening or ventilation to the side of others plot is also 1.5m. Building without opening or ventilation to one or both side can leave no setback. For residential or mixed building with height more that 10m or equal to 17m, setback is 3m. Similarly, for the residential or mixed building with height more that 17m, setback is 5m. For institutional building, setback line should be at 5m distance from the right of way.

5.2.4 Open Space

For any residential or mixed building, the open space must be minimum 1.5m. For institutional building the open space must be 5m.

5.2.5 Ground Coverage (G.C.R)

For any residential or mixed building, GCR for the plot up to 80 square meters should be minimum 90%. Similarly, the plot area up to 250 square meters should be 70% and for more than 250 square meters should be at least 60%. For institutional, governmental or public building, minimum ground coverage is 50%.

5.2.6 Floor Area Ratio (F.A.R)

For any residential building, FAR is 1.5 and for mixed building FAR is 2. For institutional building, FAR is 1.6.

5.2.7 Plinth Level

The plinth height should be minimum 60 cm for residential and mixed building.

5.2.8 Floor Height

The minimum floor height for residential or mixed building is 2.75m. For institutional building the minimum floor height is 3m.

5.2.9 Building Height

The maximum building height allowed for residential building with GCR 70% is 12m, while the maximum building height for mixed building with GCR 70% is 15m. For institutional building with GCR 50%, maximum building height is 15m. If building height is more than 15m:

- It should have lift
- It should have fire hydrant and emergency exit
- Structural design is necessary

5.2.10 Plot Size

The plot area for the residential or mixed building must be minimum 102 square meters i.e. 6 Dhur. The plot width should be minimum 6m. For institutional building, the minimum plot area is 250 square meters.

CHAPTER 6. DATA COLLECTION

6.1 Observation

6.1.1 Urban Structure

According to an assessment of the street's land use, the ground floor is entirely commercial. The building's height is found three or four storey in Bhagwati Marg, while most houses are one or two storey in Harihar Marg and Narayani Path. The majority of the buildings that overlook the street are in bad condition, which demonstrates a lack of desire to maintain. This demonstrates the street's need for growth as well as how poorly maintained the buildings are. Regarding the street's business aspect, the study's commercial activities occur in stores that offer fabrics, apparel, household goods, and other items at retail prices, hotels, cafés, and other establishments. It should be highlighted that these actions are consistent with how pedestrian streets should be used.

Figure 6.1: Urban Structure in Bhagwati Marg

Figure 6.2: Urban Structure in Harihar Marg

Figure 6.3: Urban Structure in Narayani Path

6.1.2 Skyline

Buildings area found one to five storey which are human scaled. There are no taller buildings that creates unpleasant visual image of the street. But the planning of urban skyline is underdeveloped. Colors of buildings are variants from primary to tertiary colors. The overall structure of the area does not create visible pleasantness.

Figure 6.4: Building skyline toward west of street

Figure 6.5: Building skyline towards east of street

6.1.3 Space Pattern

It is a lively, elongated area that promotes mobility and continuity and allows for a variety of activities.

6.1.4 Movement Pattern

Street is being used by the vehicular as well as pedestrian movement. Public vehicles run through the small width (6m) street which has been a major problem of the street for the congestion. Occasionally, during the festivals, mahotsav, etc., street is used only for pedestrian movement so as to minimize the congestion on the road.

6.1.5 Connection

- **Viewscape:** Colorful buildings, Variety of wall texture, Religious flag, Gray and hard surfaces, unappealing commercial advertisement boards, strangled and unmanaged hanging electric wires running down the street thus causing visual pollution.
- **Soundscape:** Water flow from Narayani river, Ringing bell around temples during morning and evening time. Traffic noise pollution – honks and whistles, construction sounds, the cries of street hawkers.
- **Touchscape:** Stone and brick walls, Concrete walls, grey and hard surfaces, potholes and poorly maintained pavements.
- **Smellscape:** Mild scents of incense sticks and ghee lamps (diyo) around temple area, stench of petrol and diesel, traffic fumes and the bad smell of trash.
- **Tastescape:** The taste of cold, colorful gola, taste of hot tea, and chatpat panipuri at various junctions.

6.1.6 Observation of Buildings

For the observation, 30 houses were taken out of which 10 were from the Bhagwati Marg, 10 from Harihar Marg and 10 from Narayani Path. Buildings include various types such as residential, commercial, mixed, and religious buildings. Different elements of buildings were observed such as façade elements, building signage, roof, materials, structure, color etc.

Figure 6.6: Few Buildings from Bhagwati Marg

Figure 6.7: Few Buildings from Harihar Marg

Figure 6.8: Few Buildings from Narayani Path

Building Types:

From the observation, it was found that, there are various types of buildings type such as commercial, residential, mixed, religious, temples, etc. Some buildings are also for organization such as NGO, clubs, Guthi, etc.

Building Height and Width:

The heights of buildings were from one storey to maximum five storey. One storey buildings are generally residential or storage and more than one storey buildings are mixed. Some high are used for commercial purposes such as Hotel. Similarly, minimum width of building was found to be 4.7m while, the maximum width was 19meters.

Building Color:

Colors of buildings were variations in the site. All types of colors, primary, secondary and tertiary colors were found in the building exterior.

Architecture:

Almost all buildings were modern type except temples. Temples were traditional types with brick façade and tiered roofs.

Structure:

Buildings in the site were found to have different structures; RCC, Steel and some were temporary structures too.

Facade Elements:

Main Gate: Most of the buildings are directly connected to the road. Very few buildings have entrance gate and they were mostly residential or mixed (residential + retail) buildings.

Doors: The maximum commercial buildings have rolling shutter in ground floor. Some also have channel gate in ground floor. In the upper floors, the doors were found wooden/ net doors.

Windows: Windows were simple square shape with wooden material, aluminum and glass. Aluminum is mostly used in commercial buildings

Awnings: There were no awnings in doors and windows. Balcony covers it and also provides shade for the openings.

Balcony: Every multiple storey buildings have balcony with generally 1 meters width and 1 meters height.

Guard Rail: Guard rails were found in upper floors and roof. The heights of railings were generally 1m. Materials were mostly steel. Some have concrete post also called as Damaru.

Exterior Display: In some commercial building the exterior façade displays ACP. Almost every commercial building has billboards in front. In temples, there were inscriptions in wall.

Landscape: The landscape is mostly hard landscape with tiles, hexagonal concrete block pavers, etc. There were little plants and trees in the building fronts.

Planters: There were very few moveable planters in buildings especially in hotels. Plants are missing in other type of buildings. Also, there are no plants in balconies in upper floors of buildings.

Shading: Very few hotel buildings have shades. Other type of buildings does not have.

Lighting: There are exterior lightings in the ground floor and in the balconies of upper floors. There were no such displaying lights in the building.

Sign and Signage:

Building Signage: There is no signage in buildings. Temples were identified by Trishul.

Window Display Signage: There are signs shown in certain buildings' windows.

Mural Signage: None of the buildings have any mural signage. Some buildings have only advertisement.

Upper Level:

Roof: Most of the building have flat RCC roof, while some have CGI truss roof above it. Overhead tank and stair cover are in roof. And, very few buildings have plants or garden in roof.

Cornice: Only the temples and religious buildings have cornices in the building. Other types don not have cornices.

Windows: windows were made of glass, aluminum with simple regular designs.

Materials: The materials used in buildings are concrete, brick, steel, aluminum, CGI, concrete block, etc.

6.1.7 Observation of Streetscape

Street Activities:

Pedestrian and vehicular activities are active in this area. People visit this area for different purposes such as walking, eating, drinking, shopping etc. Pedestrian movement and activities are comparatively more in morning and evening time. People use this street for morning walk and also to visit temple in the morning. Likewise, during day time and office hour vehicular movement is found more. Public as well as private vehicles take this route to skip the traffic in main road. In the evening, people use the use for evening walk as well as eating and drinking. Mostly people use this route to reach the Narayani riverfront.

Event Spaces/ Activities:

Various events and activities are also held in this street during festivals or some occasions. There are various temples around this site. So many people visit daily to worship god in temple such as, Harihar Temple, Ram-Janaki Mandir, Bhagwati Temple, Ganesh Temple, etc. This place is also famous for yearly occasions such as Baisakh Sakranti, Maghe Sakranti, etc. Mela, mahotsav events are celebrated during these occasions and street food festivals are also held during these events. Similarly, Chitwan Mahotsav, Krishi audhogic mela, etc. are organized around one year gap in Narayani riverside for which people use this route. So during these events the street is very crowd with full of pedestrian as well as vehicles.

Existing Conditions of streetscape elements:

Street Width & Material

Width of the NGO road is 6 meters which is black pitched and buildings are directly connected linearly to the street. Though road is connected to the arterial road, width of this street is small. And, the paths that are branched off from this road are off-road with 4 meters width in the left and black pitched 3 meters road in the right.

Figure 6.9: NGO Road view from E/W Highway (left) and path connecting from NGO Road to Narayani Riverside (right)

Sidewalk

There is sidewalk in both sides of the street which is 1meters. The material of the sidewalk is hexagonal concrete block pavers and is raised 5” from the road. In Bhagwati marg, there is small open drainage between the sidewalk and street while, in Harihar marg, there is the drainage cover seen in the sidewalk which means drainage is passed below the sidewalk.

Figure 6.10: Sidewalk condition

Cycle Trail

There is no cycle trail provided in the street which is essential.

Landscape

Very limited numbers of trees are found in the Bhagwati marg, while in Harihar marg, matured trees such as Pipal, Ashoka, etc. are found mostly around the temples surrounding in which chautara is also made. Apart from the trees, there is little greenery in the street. Some spaces are left open with no greenery. It shows that there is mostly hard landscape in the street and the soft landscape is needed.

Figure 6.11: Matured trees around temple area

Planters

There are very few limited plants left due to the less maintenance in the street which was initially planted by the Mahanagarpalika. However, small moveable plants have been installed by the hotels in front of their building, while many buildings are found without any plants or greenery.

Figure 6.12: Planter in front of Hotel buildings

Signage

There is the sign of zebra crossing, and turning in the black top road. There is no other signage found in the street even not the traffic lights, parking, etc. where congestion is the major problems of the street. Therefore, signage is needed in the street.

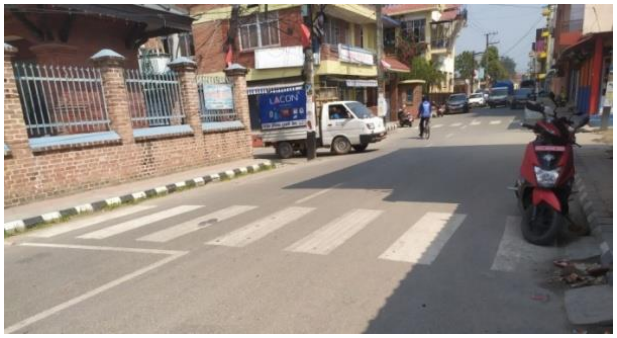


Figure 6.13: Road marking and Zebra crossing

Furniture/ Seating

There is no public seating in the street except some outdoor furniture of the hotels. So furniture as well as designed seating can be provided.

Figure 6.14: Seating in front of hotel

Public Art

No public art was found in the street.

Trace Receptacles

There is very few trace receptacles in front of retail shops. The garbage are found thrown in the street which makes the street dirty.

Figure 6.15: Garbage in the street corners

Street Lighting

Street lights are provided but the wires are much messed. It also sometime harms the birds. However, the solar lights are found installed somewhere and the light poles are in the process of removal. There are driveway lights (road studs) somewhere but missing in many places due to lack of maintenance. There is no pedestrian-scale lighting element integrated such as on bollards, on walls, on fence, etc.

Figure 6.16: Lightings

Shading

There are no shades in the street. In some places, hotels have provided shading which is not sufficient. It has caused many difficulties to the pedestrians.

Figure 6.17: Shading in Hotel building

Street Corners and curb extensions

There is no curb extension in the street. It can provide space for pedestrian and shorter crossing distance. Street corners are not provided with the pedestrian space.

Figure 6.18: Street Corners

Street Vendors

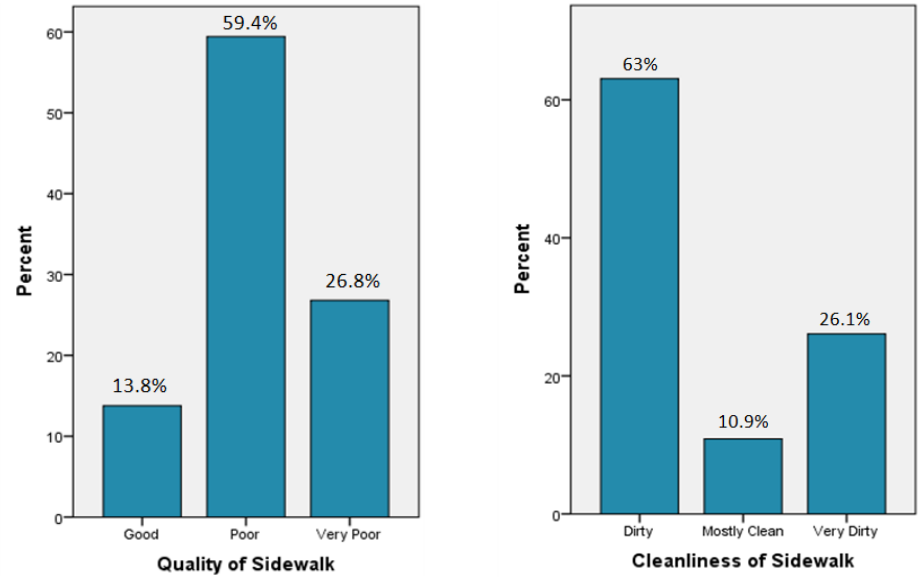
Vendors are spread in the street. They use Thela, Doko, etc for vendor purpose which is not good for the good streetscape. The unsystematic vendor shops has created traffic problem in the street. Also, pedestrians are facing problems, as vendors are occupying the street spaces. Thus, vendor space must be allocated properly.

Figure 6.19: Street Vendors

6.2 People's perception and experience:

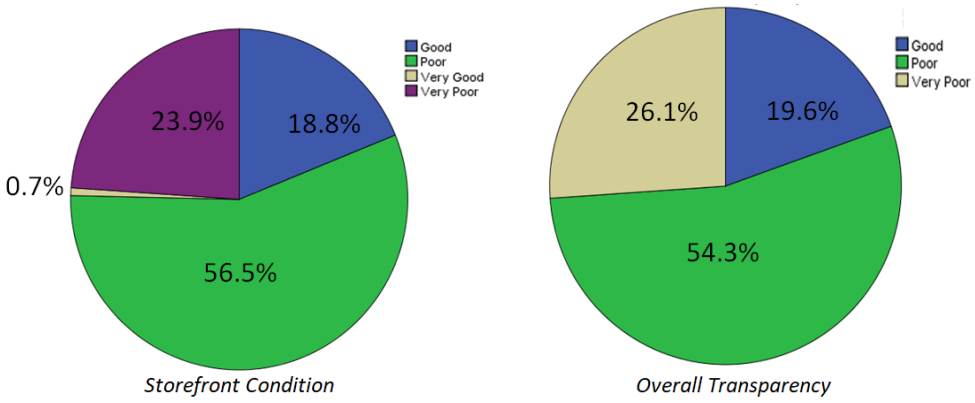
6.2.1 Sidewalk Quality and cleanliness

The graph below indicates that maximum (59.4%) people respond the quality of sidewalk as the poor. 26.8% people responded the quality as very poor and 13.8% responded good quality. Similarly, the cleanliness of sidewalk was also responded as dirty by maximum (63%) and very dirty by 26.1% people while 10.9% respond the sidewalk is clean.



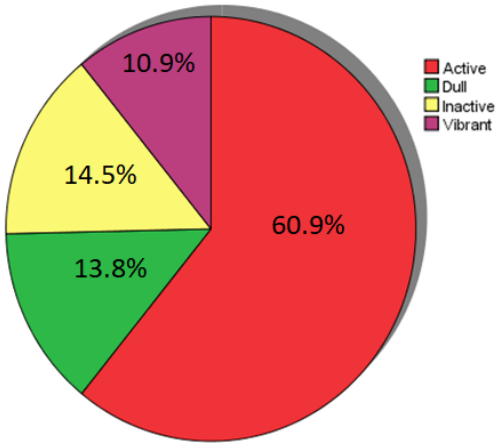
6.2.2 Storefront condition and transparency

The pie chart below shows that, 56.5% people responded the condition of storefront is poor. While 23.9% responded as very poor, 18.8% responded the condition as good and 0.7% responded as very good. Similarly, for the overall transparency 54.3% responded as poor, 26.1% responded as very poor and only 19.6% responded as good.



6.2.3 Vibrancy of built environment

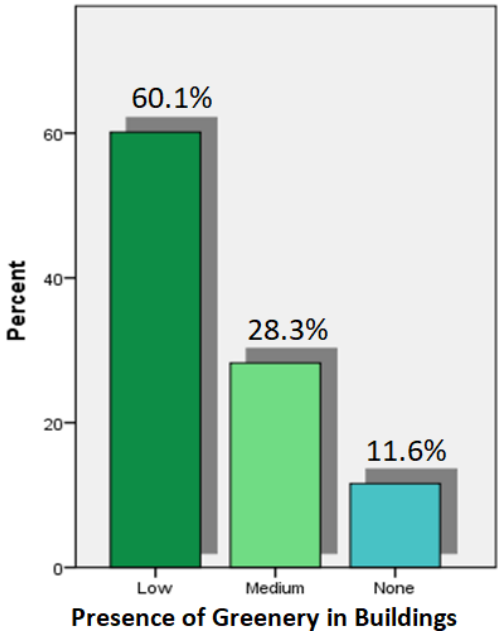
The chart below shows that maximum (60.9%) people feels the built environment as active area while 14.5% people feels inactive, 13.8% people feels dull environment and only 10.9% felt that the environment is vibrant.

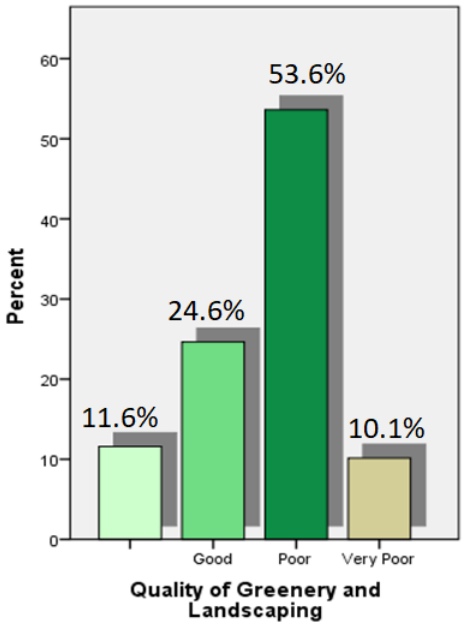


Vibrancy of Built Environment

6.2.4 Presence and quality of greenery in Buildings

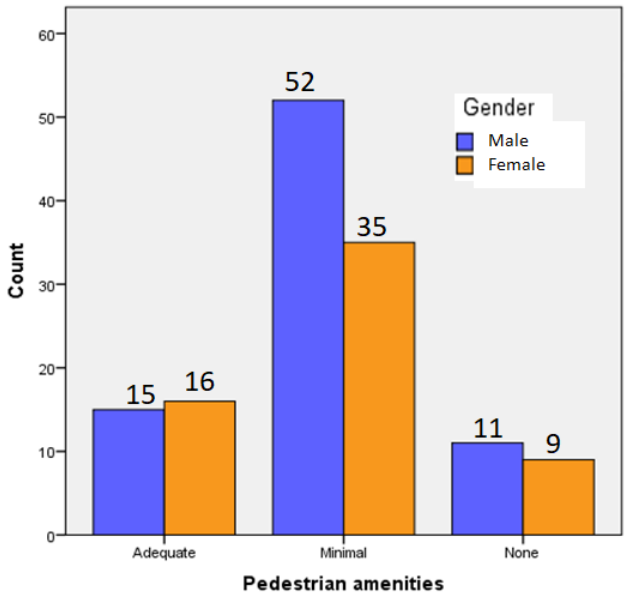
The graph below shows that 60.1% people responded low presence of greenery in the buildings while, 28.3% responded medium and 11.6%responded as none presence of greenery in buildings. In case of quality, 53.6% thinks poor quality while, 24.6% thinks as good, 11.6% did not responded and 10.1% thinks as very poor quality of greenery in the buildings.





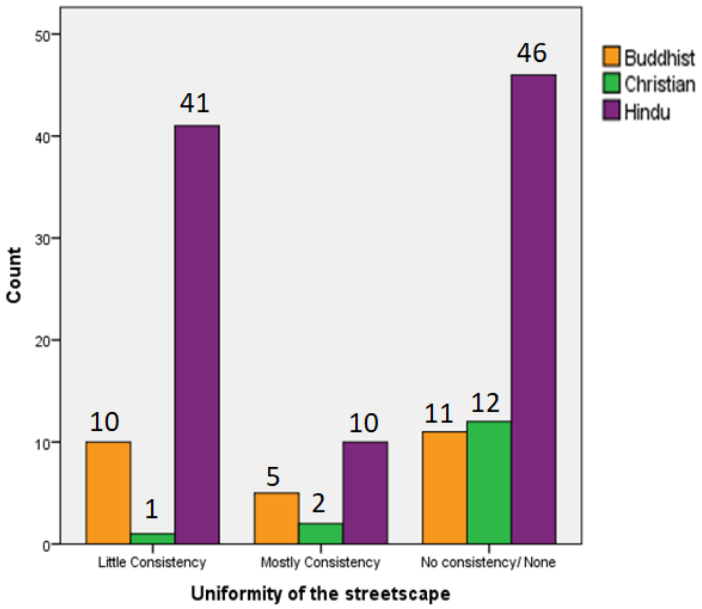
6.2.5 Pedestrian amenities in sidewalk

Graph below shows that out of 138 respondents, 52 male and 35 female thinks that there are minimal pedestrian amenities in sidewalk while, 15 male & 16 female thinks adequate amenities and 11 male & 9 female thinks there is none of good amenities in sidewalk for pedestrians.



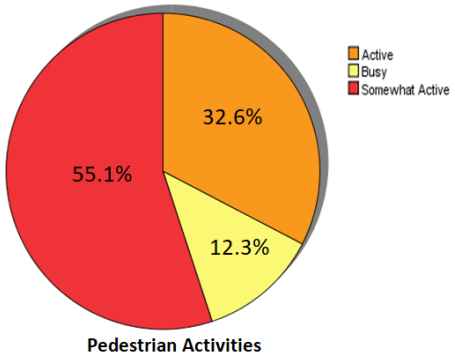
6.2.6 Uniformity of Streetscape

The below graph indicates that, out of 138 respondents, 46 Hindus, 11 Buddhist and 12 Christian believe no consistency in the uniformity of streetscape. However, 41 Hindus, 10 Buddhist and 1 Christian respectively believe there is little consistency in the uniformity of streetscape. Each 10 Hindus, 5 Buddhist and 2 Christian thinks mostly consistency.



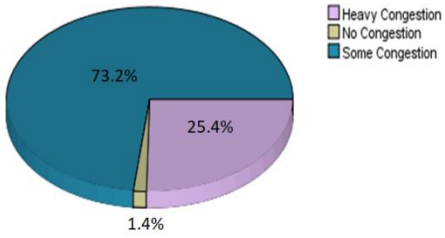
6.2.7 Pedestrian Activities

The pie chart below indicates that 55.1% people think the pedestrian activity is somewhat active while, 32.6% thinks pedestrian activity is active and only 12.3% thinks busy.



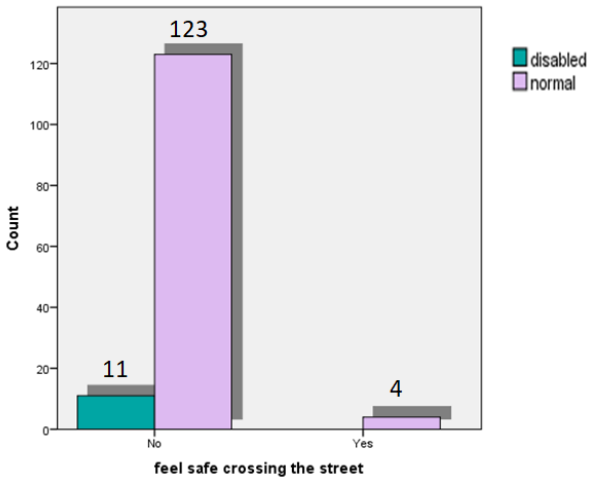
6.2.8 Vehicular traffic

The pie below represents the congestion according to people's experience in which maximum (73.2%) thinks that there is some congestion while 25.4% thinks there is heavy congestion and only 1.4% thinks there is no congestion.



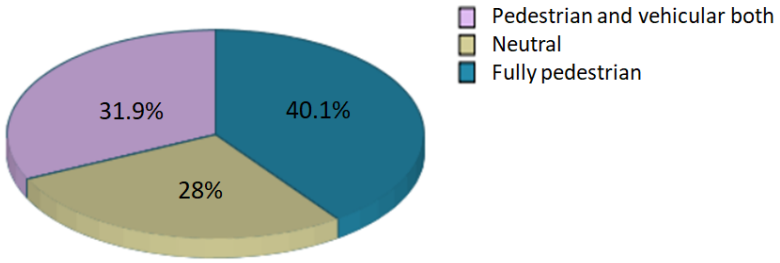
6.2.9 Safe crossing

Out of 138 respondents, both normal (123nos.) and disabled (11nos.) feels unsafe during road cross, only 4 normal respondents feel safe who also don't seem very confident.



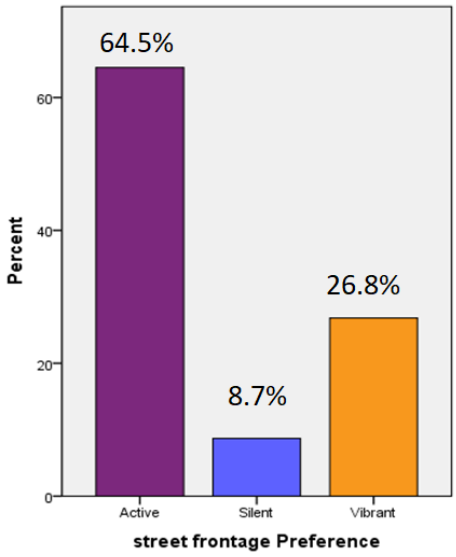
6.2.10 Preference for street type

The chart below shows that 40% prefer pedestrian only and 32% prefers pedestrian as well as vehicular access. While asking their interest, 28% prefers the allowance of private vehicles with pedestrian walking.



6.2.11 Preference for Street Frontage

The result indicates 40% (Commercial users) people wants the street frontage active, 38% (Commercial users) wants vibrant, 10% (Residential users) wants silent street frontage while 15% were confused.



6.3 Message from Community

By interviewing and asking the people about their experience and perception towards existing urban aesthetic and streetscape their messages has been collected. Following points are analyzed from the view of people living in that area from many years. These points can play an important role for the next process in developing the design guidelines of urban aesthetic and streetscape.

- Provide design guidelines for stop fronts that are practicable and long-term.
- Incorporate clubs in the street management system

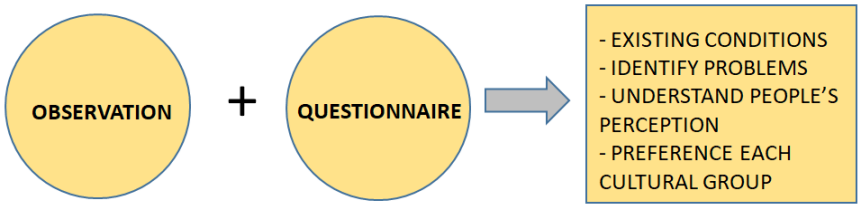
- Add street activities (day & night) to make more vibrant
- Add street facilities such as signage, lightings, proper sidewalks, dustbins, etc
- Add more greenery and plants to beautify the area
- Remove the store things from sidewalk and add shading to the shop fronts
- Provide amenities for disabled people such as signage, human scaled lighting, ramp, etc.
- Promote Cycle track since, many people in Narayangarh still use cycles
- Give importance to construct positive and charming image of the area
- Regular intervention from government is necessary
- Provide safe walking spaces with proper sign and signage
- Minimize the flow of heavy vehicles such as truck, mini-truck, tripper, etc.
- Prioritize the temple and temple area
- Replace the reflecting facade materials, etc.

6.4 Experts View

From key informant survey, views were collected towards urban trend and built form. Interviews were taken with Mayor, Architect/Urban Planner, Ward Head, Head of Traffic Management and Head of Road Division.

In the urban setting, greenery plays important role. So many trees and plants should be planted. Similarly, sidewalks must be human friendly for all age group, gender as well as disabled people. There are many problems regarding urban aesthetic and streetscape. For this, design guidelines only helps in solving the problems. It is very necessary and important to develop design guidelines which will help this city to make “One city one identity”. Design guidelines exist but difficulties lies in implementation. So literacy and public awareness is important to maintain the applied design in the urban structure, form and composition. Additionally, public participation helps most to represent the identity of city. So involvement of the public is important.

CHAPTER 7. DATA DISCUSSION AND ANALYSIS



From the observation of the existing buildings, streetscape condition and knowing the perception of people and their experience, visual quality of the place as well as major problems has been identified. From the data collection it is essential to understand the preference of each cultural group to make the city visually, sensually and sonically pleasant.

Aesthetics, building facade and streetscape elements plays a vital role in expressing street quality and visual image of the place. The result indicates that the area is an active and vibrant place that has many scopes and opportunities. Since, an appropriate architectural design of the buildings, street and its components can significantly improve quality of the street. Eventually, the building height, building elements, façade materials, and streetscape elements are the factors that directly affect the urban street. Crankshaw (2009) states, "If streetscapes are well-planned, then they can provide a sense of comfort and security for users". Street formation and accompanying activities are the two key indicators. Additionally, well-planned streetscapes can encourage a sense of community spirit and connection among locals (Torbey Council, 2007).

7.1 Overall Visual Quality Analysis of Buildings

Given that humans are always surrounded by visual stimuli, visual quality is a crucial aspect of human existence. Our perceptions, attitudes, and overall worldviews are influenced by visual quality. This idea demonstrates the varying degrees of people's ideas and aesthetic admirations of various things, such as views, objects, landscapes, etc.

From the above data collection, It has been discovered that the majority of structures are in the contemporary style, with glass, concrete, and aluminum being the most common building materials. This indicates the diversity of building materials and also in colors, height, openings, entrances, etc. Similarly, majority of buildings are RCC structure with CGI truss roof above RCC roof. The truss roof is constructed above

RCC roof to control direct heat radiation but this has dominated the original shape of building in the whole area. As a commercial area, lighting has an important role instead lighting elements in buildings and street are less. Lightings are mostly simple design in the entrances and in the balcony. There are no such lighting elements which are designed for aesthetic purpose. In the case of landscape and planting, small moveable plants are found in ground floor in some hotel buildings only. It indicates that there is lack of greenery in the building as well as shop fronts. Greenery which is the important feature in creating attractive scene is missing so it lacks beauty in the street and needs to be added. Furthermore, there is side walk in both side of road but the quality and maintenance is very poor. Sidewalk is raised 5" high but there is no ramp provision for disabled people. Therefore it has created difficulties for disabled people. There are a few buildings that, in terms of proportion, have a cohesive visual link between all of the features that make up the façade.

7.2 Major Problems Identification

Following are the major issues of the research region that have been found by a field survey, observation, and questionnaire survey:

7.2.1 Functional Composition

From the observation of the site, it was found that there are many activities that have been scattered in the area. There are different kinds of buildings which has different activities such as retail shops, hotels, restaurants, storage, residence, mixed, etc. all activities are scattered with no zoning There is the absence of laws for which has created the degradable composition of the area. Similarly, there is the interference in pedestrian and automobile traffic. Pedestrians are also using vehicular road due to the small sidewalks which has also created the congestion in the road. There is the lack of pavement continuity which cause accidents and traffic jam in the street.

7.2.2 Urban Structure

Observing the existing scenario of the study area, it has been found that there is the degradation of the environment. The construction of haphazard building and the use of buildings have created the unpleasant visual image of the area. There are some old buildings which has not been maintained and some commercial buildings which are highly deteriorated. This has created the loss of identity and the sense of place.

7.2.3 Building Composition

Buildings are found to be one storey to five storeys. Some higher buildings have basement too. Maximum buildings are RCC and modern types except the temples. Buildings are constructed with lack of any essence of the trend or place. The relevance of the drive to replace them in the next years is made clear by the significant number of low-status and moderately-status structures. Result point out that there is the only existence of formal consideration but lacks symbolic, sensory and social considerations of aesthetic design in the building formation.

7.2.4 Building Frontage

The scenario of the area suggests the poor frontage of buildings and lack of consciousness. There are informal shops with no rules and regulations. In some commercial buildings, shop items are displayed covering the sidewalk area which has created difficulties for pedestrians. Similarly, there are none of the rules for façade design and displays. The building facades' original shapes are obscured by the many, huge, and vibrant advertising ads, creating the eye-catching street scene. Furthermore, there is the lack of consistency in color of buildings.

7.2.5 Streetscape

Observing the streetscape, the street's appearance suffers from unclear details of elements. There are not sufficient elements which is very important for any streetscape design. The commercial buildings have billboards in front of shops which creates unpleasant image of the place and also distract the attentions of the visitors. The elements such as sign and signage, furniture & seating, shading elements, lighting, trace receptacles etc. are missing. The absence of signage has created unsafe pedestrian walking as well as difficulties for disabled people. Similarly, lack of sign and traffic light has caused unsafe crossing and accidents. There is no parking provision in this place. So parking is done haphazardly on both sides of road which makes the less vehicular way width and this has caused the congestion in the street. Likewise, there are no trace receptacles and the garbage is thrown in the street and street corners.

Furthermore, the management also helps to maintain the street's order and provide a comfortable environment, which has an impact on how people view Commercial Street. Due to the abundance of eateries and snack bars on both sides of the street,

poor management and cleaning are issues. The lack of periodic maintenance makes the street disorder.

7.3 People's perception Views

People's perception is analyzed in two ways; positive view and negative views. Both can play role in addressing the problem as well as encouraging the street in future.

7.3.1 Positive Views

The street has an easy access and is easy to find the place. The development of commercial is rapid and diverse and mostly there are restaurants and hotels. Street is always vivid and lively, as the various activities take place during morning, day and evening time. Also, public service is convenient.

7.3.2 Negative Views

The opinions of people were negative too towards NGO Road. People had to face several problems due to bad street environment. There is severe traffic jam in peak time which also includes the flow of heavy vehicles in the narrow street with poor street facilities. Buildings have high price for commercial rent and residential house. Similarly, the traffic flow is very crowded that causes minor to major accidents. The street also lacks greenery and plazas.

7.4 Triangulation Analysis (Theories, Experts and Empirical facts)

Empirical facts are one of the strong evidence of what actually the truth is. It helps to identify the real problem, analyze the problems and solve the problems. Theory explains that urban design is the planning and administration of public space. And Experts believe urban design is more concerned with daily needs of user and their comfort. In fact, the result shows the uneven pattern and lack of appropriate policy in the case of NGO Road. On the subject of urban aesthetic, there are mainly three types i.e. formal, symbolic and sensory aesthetic. In addition, architects and designer explains, the urban aesthetic as the aesthetic of diversity, it is not the consensual uniformity. While, in the study area, it was found that there is the lack of urban diversity i.e. social and cultural diversity. Moreover, buildings are the principle aspects in architecture. It should create a sense of place. But in case of NGO Road, buildings only stand as a built form. There is the lack of social values. Similarly, theory says, "Streetscape is the view or scene of street". It is an identity of the area

and the essential component of a city that represents public life. The result in the site indicates that the public life is difficult and the streetscape elements are not well facilitated. Regarding people's views, opinion and experience, it was found that majority feels unsafe due to the congestion, unmanaged condition of street and its elements. Similarly, frontage zone is one of the important factors that balance the aesthetic quality because it shapes the street. Conversely, the frontage zone of study area looks unhealthy. Proper design guideline is important for the development. It will boost to add social and environmental value too. According to Architects and Engineers, design guidelines exist but the implementation is poor. The result of observation shows that the guidelines are not implemented or needs to be improvised. From the experts view, it was found that the poor literacy and the public awareness about streetscape and urban aesthetic is leading the city backward. Thus, design guideline is the most important thing that should come first.

People's perception is a unique and potential powerful construct for explaining cognition. Out of the 138 respondent, majority stated that there is active built environment, however it is not well managed and the condition is degradable. Some respondents are facing problem with the reflecting façade from the buildings thus it needs to be improvised. Similarly, the cleanliness of the sidewalk is very poor so the garbage should be appropriately managed and the office of Bharatpur Metropolitan City should also have regular attention towards it. Theories explain that pedestrian facility is another most needed thing that should be accessible for all gender, age as well as disabled people. However, these facilities are not provided in the study area. Furthermore, greenery plays important role in keeping street clean and beautiful. And it also helps city to main microclimate. Yet there is little greenery in the street but it is dirty and not maintained. So, more trees and plants should be added to make it visibly pleasant as well as it can provide psychological relaxation, streets alleviation, supporting physical activity and stimulating social cohesion. Finally from the result of people's experience, it was found that the area is poor in case of urban aesthetic and streetscape. Thus, only urban design guideline can help to get rid of the problems and make the environment human friendly.

CHAPTER 8. CONCLUSION AND RECOMMENDATION

Aesthetic in urban design refers to the creative arrangement of the elements in a beautiful and functional manner. It requires a connection between architecture and landscape quality, the experiencing of attractions, and the use of city. Streetscape refers to the architectural components of a street, such as the road, adjacent structures, walkway's, street art, trees, and open areas, among others, that work together to define the street's character. The study of urban aesthetic and the streetscape of a location help assess the urban environment's quality. The character of an urban area of a city can be inferred from an observer's first impression of the place. The perception of the visual environment by the community may enhance the meaning of space and reveal the characteristics of the suitable setting.

From the observation of NGO Road in Narayangarh, there is the diversity of building façade elements. The use of modern building materials such as brick, stone, aluminum, etc. reflects the modern aesthetic, while the rectangular forms, horizontal and vertical lines, shading devices in façade indicate the adaptation of site-specific design. This also highlights the aesthetic aspect of the region with contemporary development. And, especially the corner buildings gain attention and create an aesthetical view in the street. In the case of people's perception the result shows majorities of respondents are not satisfied with the existing condition of the street and the building fronts thus, desire a satisfied & pleasing environment. People faces major problems while using the street therefore facilities need to be improvised and the design guidelines can help to achieve it. Findings suggest NGO Road is an active area and can be more vibrant if assembling the elements and facilities in a proper way. Thus, the issues of building design should be considered a main concern in urban design, so as to improve aesthetic and streetscape. The present scenario of the buildings represents the lack of consciousness towards aesthetics to create pleasant visual image of the place. The lack of urban design guidelines also has created the unpleasant visual image of the city. In this regard, formal, symbolic, sensory and social considerations of aesthetic design need to be put together in such a way as to implement the principles of aesthetic design in the planning process. In addition, more diversity and commercial opportunities are brought about by the complexity of land use, but it also leads to congested, high-density cities and disputes between different social groups. As a result, the way that land is organized needs to be changed so that

commercial and other uses may coexist. Also, there should be awareness of current trends which is the important aspect in building aesthetics.

From the analysis and findings we can assume that it has not become the worst yet but it could become some day. That is why, by using the facade configuration elements that may create the image of a building, arrangements must be made in line with the design of urban aesthetic. The urban environment can be created safe for the comfort of users. According to Architects and Engineers, guidelines are important for a successful commercial street. However, lack of public awareness towards aesthetic guidelines is leading the city backward. Furthermore, a healthy, comfortable, safe pedestrian path and aesthetically pleasant buildings and street could ultimately become a "tool" for attracting tourists to the region.

Conclusively, beauty is in the eyes of viewer and if they feels pleasing, comfortable, safe, attractive, enjoyable and eye-relaxing view then it represents aesthetically pleasing environment. For achieving aesthetically beautiful and functionally suitable corridor, a joint effort by local government and local people would improve the prospects of urban aesthetic and streetscape in urban area. Yet scientific and professional knowledge as well as practices are required to promote urban aesthetics in the city. Additionally, personal motivation also serves as a catalyst to pursue particular styles for façade inspiration. The perception of quality and the associated consciousness of "beauty" have changed with time and will do so in the future. Therefore, incorporating this is crucial both social and personal values when designing.

8.1 Recommendations for Aesthetics and Streetscape

It is essential to have a good understanding of the basic elements needed to achieve good aesthetic and streetscape in urban commercial street. There should be proper planning of the building and its elements in urban areas so that; it would have less impact and adds more value in the environment. Guidelines provide knowledge for the aesthetic development as well as will boost to add social and environmental value. Analyzing the result, some recommendations and design guidelines have been prepared to improve the existing condition of urban aesthetic and streetscape for NGO Road in Narayangarh. As well as, this can be a guideline for the new buildings.

8.1.1 Design Guidelines of Urban Aesthetic for façade Elements of Existing buildings

- Apply uniformed doors and windows
- Enhance ground floor and entrance with indoor-outdoor interaction
- Add Building Signage, mural signage and planting elements
- Integrate art and architecture that focus on the identity of place and nation
- Add lighting elements to create impressive and vibrant environment at night
- Minimize the size of billboards so it will not dominate the entire building façade
- Apply façade finishing method to create harmony and unity with the nearby buildings
- Apply colors in accordance with the concept & building materials
- Billboards are generally created of warm color to attract visitors, thus cool colors are recommended in buildings and street pavements
- Instead of CGI truss roof, apply passive methods such as green roof, roof garden, etc. to reduce direct heat radiation so that it will not dominate overall building façade

Figure 8.1: Proposed Street Elevation

Figure 8.2: Paintings (representing Nepali culture) added on blank wall

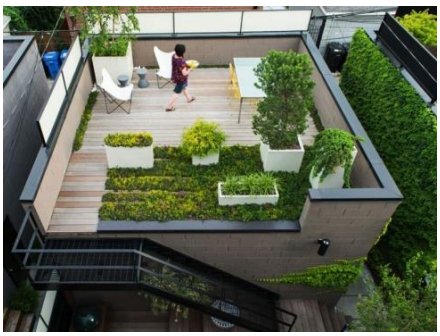


Figure 8.3: Roof Garden

Figure 8.4: Inverted Earthen Pot

Figure 8.5: Solar installation in roof

8.1.2 Design Guidelines of Streetscape

Taking the reference from proposed street of MTMP, following guidelines have been prepared with modifications that may be appropriate and applicable for the design.

- *Sidewalks:* The width of sidewalk must be minimum 1m. The drainage in the side of sidewalk can be replaced in the center underground of road.
- *Street Corners and Curb Extensions:* The curb extensions should be provided in the street corner. It can also create short distance to the pedestrians. The street corners should be easy for pedestrian crossing.
- *Trees and Landscape:* More trees should be planted with at least 4 feet diameter well. It can also be shading to the street as well as sidewalks. The colorful trees can be planted to make street more impressive.
- *Moveable Planter:* It should be simple, affordable and easily accessible. It should be easy to transport. It can create the gateway to entrance or even a border sometimes. The width of planting pots can be 1.5 feet.

- *Seating:* It can be wooden, metal or stone. The width of seating should be at least 1.5 feet and should be placed within pedestrian's accessibility.
- *Trash Receptacles:* It must be positioned at one in every corner of the shop fronts.
- *Public Art:* It can be permanent or temporary. The blank walls of building attached to the sidewalk can be used for public art.
- *Screening:* Screening should be at least 40" high and should not cover the entrance and building facade
- *Café Spaces:* The café space should be provided at least 3 feet width.
- *Special Event Spaces:* It should be readily visible and accessible. For special event such as Mahotsav, mela, etc. the street can be used for pedestrian only. Temporary shading can be provided.
- *Lighting:* Street lighting should be sufficient and pedestrian level lighting should also be provided. For lower level lighting it can be 0.5' to 2' high. Advocate smart pole.

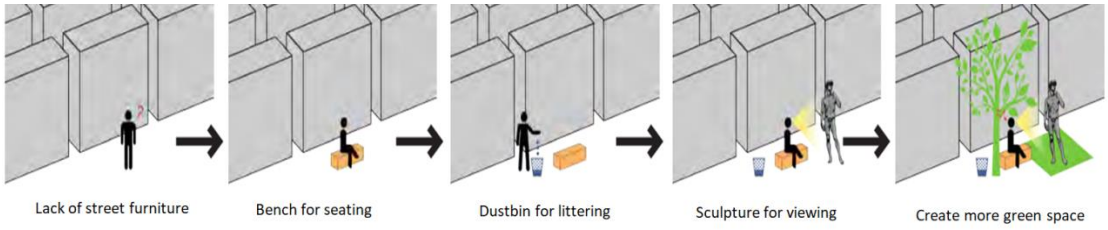


Figure 8.6 Recreating the public spaces

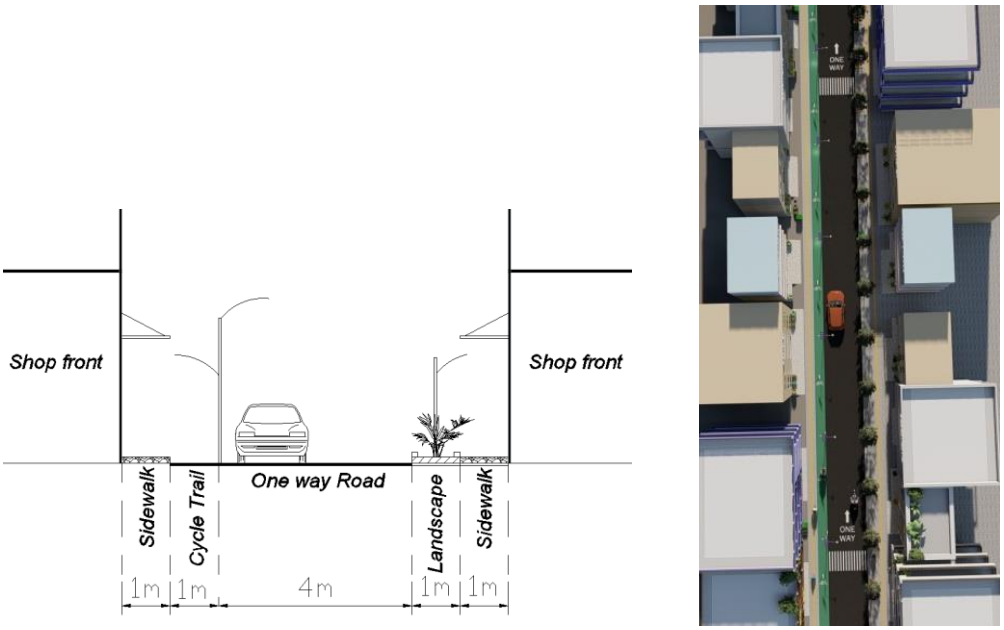


Figure 8.7: Proposed Street for NGO Road

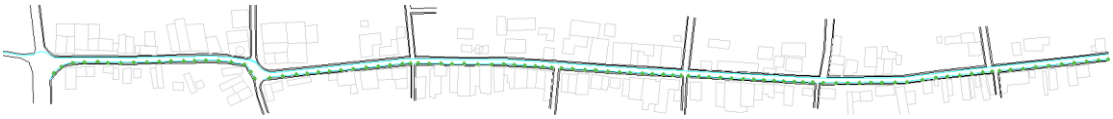


Figure 8.8: Proposed street renewal

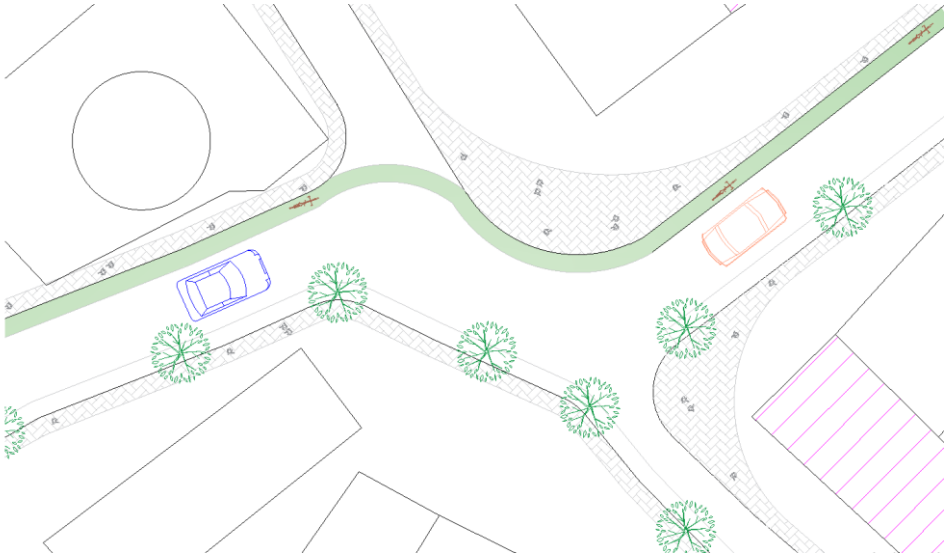


Figure 8.9: Remodeling of street nodes at Bhagwati Marg

Figure 8.10: Proposed Street Day View

Figure 8.11: Proposed Street Night View

Figure 8.12: Proposed Street Food Festival

Additional recommendations for existing streetscape:

- Provide sidewalk from start to end
- Provide curb extension
- Add pedestrian-scale lighting in sidewalks
- Advocate digital signage (audible as well as visible signal)
- Add greenery and landscape elements
- Remove vendors and allocate appropriate area
- Provide water rechargeable pavements wherever possible
- Provide emergency equipments such as fire extinguisher
- Provide parking provision away from street at appropriate distance

8.1.3 Solutions of problems

The traffic issue and congestion on NGO Road are the most challenging issues. The unfavorable walking environment on the sidewalk and the combination of walkway and parking are strongly related. The whole street's width is set, yet demand from automobiles, cyclists, and pedestrians are growing. However, it would be wrong to demolish all the houses along the road in order to widen the road, thus in the face of this conflict, a decision must be taken and another solution must be found. According to the research, walkers and bicycles have more demand than autos. As a result, the design rules reduce the car lanes from 6 to 4 meters, giving the sidewalk, planter, and cycle lane more space on the road. The vehicle lane has been created with one-way transportation and the roadside parking has been eliminated.

For a building, vegetation is one of the principal elements to be successful urban street. The roadway is more aesthetically beautiful than basic, archetypal ones thanks to the various colorful flowers and green foliage. The analysis shows the lack of green spaces so, more plants are added to make it visibly pleasant as well as it can provide psychological relaxation, streets alleviation, supporting physical activity and stimulating social unity. More green areas are being added to both sides of the roadway to create a natural landscape and to give a setting with shade from trees for the physical comfort of pedestrians. Buildings with more textures and embellishments on their exterior are also more intriguing to look at. Facades using varied materials like metal, glass, and laminates are more interesting. Each element on building should indicate aesthetic as well as functional value.

Furthermore, street elements have been added so that it makes the use of street easy and comfortable for all users; vehicular, pedestrians and disabled. The static spaces are also thoughtfully created to make them dynamic and a positive space. The street space design is based on human scale and human behavior. Lightings are provided with certain equal intervals along the whole street while, the zebra crossing is provided with each 50 meters interval.

However, it is largely the duty of the society's decision-makers to enhance the appearance and feel of the development, as well as that of the designers and planners to put suitable measures in place to guarantee that the neighborhood complies with the law. There is the need of collaboration of organization, government and citizens for the management of the street as well as aesthetic guidelines. More research is needed in this field and moreover, buildings designed with guidelines should be emphasized more to gain visual quality of the urban space.

8.1.4 Effects of Proposed Design Guidelines

The proposed design guidelines attempt to both renovate and solve current issues of NGO Road and its surrounding area. The streetscape and public areas are designed better while maintaining the diversity and charm of NGO Road. The problem identified in the analysis would be mostly resolved with the renovation design concept for NGO Road. The sidewalk environment and public areas would benefit the most obviously.

Besides, traffic flow would be smoother and safer than it was previously. The expansion and widespread use of public transit, notably walking and bicycling, would reduce the likelihood of traffic congestion and thus benefit the street.

Furthermore, while enjoying the convenience of commercial and public functions as well as participating in social activities on the public areas on the street, people would have a better living environment in such residential communities. The green spaces and shade can provide comfort to sidewalk users and more breezy and calming environment. The provided glass would enhance the building by providing a see-through view and increase outdoor indoor relationship. The street would regain the identity and experience the sense of place. The identifiable feature of street façade would easily attract the visitors and create more vibrant environment. This can also increase the economic status of the place.

However, the proposed design guidelines could potentially be restricted. Congestion on other routes might emerge from the traffic that has been relieved. Also, the proposed one way lane may affect the vehicle users.

8.2 Additional Recommendations

- Engage locals in revitalizing the urban space
- Collaboration of municipality, ward, organizations, clubs, etc. in planning and design fields
- The policies for urban space planning and design, particularly for roadways, must be addressed by the municipality, which must also take into account aesthetics and streetscape components
- Municipal engineers/ architects must be aware of sustainable practices
- Revision of the bye-laws is necessary
- Proposed design guidelines should be reviewed by municipality and should be implemented in order to get paper work in action
- Joint effort of municipality, ward and local residents can improve the quality of aesthetics and streetscape

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ANNEX

Annex 1: Observation Parameters for Building and its Front

1. Building Type *(Tick One)***:**

Commercial	Residential	Mixed (Commercial + Residential)	Religious	Others

2. Building Height *(Tick One)***:**

One Storey	Two Storey	Three Storey	Four Storey	More than Four Storey

3. Building Width *(Tick One)***:**

Less than 5 meters	5-15 meters	15-25 meters	Above 25 meters

4. Building Color *(Tick One)***:**

Primary (Red, Yellow, Blue)	Secondary (Green Orange, Purple)	Tertiary

5. Other Components:

Building Elements	(Material/Type)
Façade	
Main Gate	
Doors	
Windows	
Awnings	
Guard Rails	
Roof	
Exterior Display	
Landscape/ Planting	
Signage	
Building Signage	
Window Display Signage	
Mural Signage	
Upper Level	
Cornice	
Windows	
Materials	

Annex 2: Observation Parameters for Streetscape

A. Existing Streetscape & its elements:

1	**Space Pattern**	
2	Movement Pattern	
3	Street Width	
4	Street Type	
5	Sidewalk Width & Materials	
6	Landscape/Planting	
7	Moveable Planter	
8	Signage	
9	Furniture/ Seating	
10	Public Art	
11	Trace Receptacles	
12	Utilities /Fixtures	
13	Cycle Track	
14	Street Lighting	
15	Shading	
16	Street Corners	

B. Street Activities:

1	**Morning**	
2	Day	
3	Evening	

C. Event Spaces/ Activities:

1	**Weekly**	
2	Monthly	
3	Yearly	
4	More than a Year	

D. Identify Major Problems:

1	**Skyline**	
2	Proportion	
3	Building Composition	

1	**Skyline**	
4	Street Activities	
5	Street Condition	
6	Sidewalk Condition	
7	Shop Fronts	
8	Signage Condition	
9	Presence of Greenery	
10	Signage quantity & quality	

Annex 3: Questionnaire

A. Demographic Information

1. **Name of Respondent:** …….
2. **Age of Respondent:**
   a. Below 15
   b. 15-30
   c. 30-60
   d. Above 60

3. **Gender of Respondent:**
   a. Male
   b. Female
   c. Others

4. **Ethnic group of Respondent:**
   a. Brahmin
   b. Chhetri
   c. Newar
   d. Tharu
   e. Magar
   f. Gurung
   g. Rai
   h. Others

5. **Religion of Respondent:**
   a. Hindu
   b. Christian
   c. Muslim
   d. Buddhist
   e. Others

6. **Condition of Respondent:**
   a. Normal
   b. Disabled

B. Streetscape Information

1. **Side Walk Condition**
   I. Rate the Quality of the sidewalk
      a. Very Poor
      b. Poor
      c. Good
      d. Very Good

   II. Rate the Cleanliness of the Sidewalk
      a. Very Dirty
      b. Dirty
      c. Mostly Clean
      d. Very Clean

2. **Building/ Storefront Condition & Quality**
   I. Rate the Condition of the storefronts/building facades

a. Very Poor
b. Poor
c. Good
d. Very Good

II. Rate the Overall transparency of the storefronts/buildings
a. Very Poor
b. Poor
c. Good
d. Very Good

III. Rate the Vibrancy of the built environment
a. Inactive
b. Dull
c. Active
d. Vibrant

3. Streetscape Asset Evaluation

I. How strong is the presence of greenery on the block?
a. None
b. Low
c. Medium
d. High

II. Rate the Quality of the greenery and landscaping
a. Very Poor
b. Poor
c. Good
d. Very Good

III. Rate the Sidewalk in terms of pedestrian amenities
a. None
b. Minimal
c. Adequate
d. Great

IV. Rate the Uniformity of the streetscape
a. No consistency/ None
b. Little Consistency
c. Mostly Consistency
d. Fully Consistency

4. Pedestrian Experience

I. How would you characterize the pedestrian activity?
a. Empty
b. Somewhat Active
c. Active
d. Busy

II. How would you characterize the vehicle traffic?
a. Completely Gridlocked
b. Heavy Congestion

c. Some Congestion
d. No Congestion

III. Do you feel safe crossing the street?
a. No
b. Mostly No
c. Mostly Yes
d. Yes

5. User's Interest

I. Which street type do you prefer?
a. Vehicular only
b. Pedestrian only
c. Pedestrian and Vehicular Both
d. Others

II. How would you like the street frontage to be?
a. Silent
b. Active
c. Vibrant
d. Any of above

6. Overall

I. How would you rate the visual environment?

II. Do you feel safe?

III. Considering all the aspects in this survey, how do you rate this?

7. Personal Opinion

I. Is there any other aspect of current urban aesthetic and streetscape condition you would like to comment?

……
……
……

Date: ……..

Thank You for Your Time!

Annex 4: Observed Buildings

Building No. 1 (Hotel)		Building No. 2 (Mixed)	
Building No. 3 (Hotel)		Building No. 4 (Hotel)	
Building No. 5 (Temple)		Building No. 6 (Hotel)	
Building No. 7 (Hotel)		Building No. 8 (Retail shop)	
Building No. 9 (Hotel)		Building No. 10 (Hotel)	

Building No. 11 (Party Palace)		Building No. 12 (Mixed)	
Building No. 13 (Stupa)		Building No. 14 (Residential)	
Building No. 15 (Temple)		Building No. 16 (Hotel)	
Building No. 17 (Residential)		Building No. 18 (Hotel)	
Building No. 19 (Retail Shop)		Building No. 20 (Retail Shop)	

Building No. 21 (Office)		Building No. 22 (Storage)	
Building No. 23 (Party Palace)		Building No. 24 (Office)	
Building No. 25 (Commercial)		Building No. 26 (Retail Shop)	
Building No. 27 (Mixed)		Building No. 28 (Commercial)	
Building No. 29 (Hotel)		Building No. 30 (Residential)	

Annex 5: Key Informant Survey from BMC

A. Interview with Mayor

Question No. 1. What are your main urban street concerns?

Answer: The urbanization has brought several issues and problems that involve fiscal difficulties, crowding, traffic, housing, etc. This problems stem directly from the fact that cities involve large population living in a small amount of space.

Question No. 2. Why is there no provision of pedestrian amenities and street facilities in urban street of Narayangarh ?

Answer: Yes it is true that the provision of pedestrian amenities and street facilities have not been implemented everywhere. But the planning of road management (refer MTMP) and beautification is also the major concern of Mahanagarpalika and has been started in few residential streets.

Question No. 3. Is there any future plan for commercial streets of Narayangarh?

Answer: Of course, the planning of smart city which also includes Commercial streets have been prepared recently and the revision of MTMP is also on the process.

Question No. 4. Do you think it is necessary to develop design guidelines?

Answer: Why not? It is very necessary and important to develop design guidelines which will help this city to make "One city one identity".

B. Interview with Architect/ Urban Planner

Question No. 1. Is there any provisions made for aesthetic quality and safety of street and street frontages? If no why?

Answer: The municipality transport master plan has been prepared but not implemented properly because of the Budget issue.

Question No. 2. What do you think the major problem of urban streets in Narayangarh?

Answer: Lack of public awareness, No policy of parking, lack of implementation, etc.

Question No. 2. Do you think it is necessary to develop design guidelines?

Answer: Of course, it is vital for the urban development. It has become very important to this date, as the city is growing and guidelines can explain the desired design elements and qualities that shape development.

C. Interview with Ward Head

Question No. 1. Is there any provision made for aesthetic quality and safety of street and street frontages in NGO Road? If no why?

Answer: No, it is because the main problem is budget. The ward is not able to plan for it on its own. But the planning is on the process which includes road facilities such as plantation, garbage collection, etc.

Question No. 2. Do you have future plan regarding NGO Road?

Answer: Yes. There is the plan of road management and land management. However, the discussion has not started yet.

Question No. 3. Do you think it is necessary to develop design guidelines?

Answer: Yes. It is necessary especially in the streets of NGO Road, as it is one of the most used roads by the domestic and local tourists. And it will further invite more number of tourists.

D. Interview with Head of Traffic Department

Question No. 1. What do you think the main problem for the congestion in urban street?

Answer: The main problem is the lack of policy, policy making and lack of awareness. Similarly, Narrow Street with lack of parking facilities are some other problems causing congestion.

Question No. 2. How can traffic department control the congestion in urban streets of Narayangarh?

Answer: Inculcate a sense of discipline amongst the street user, ensuring smooth and secure traffic movement for special occasions can help to control congestion.

E. Interview with Engineer from Road Division

Question No. 1. Why the urban streets of Narayangarh lacking the provision of road facilities?

Answer: lack of policy and management. New Policies are being prepared and it will help in the management of streets.

Question No. 2. How can we solve the problem of transport management in NGO Road?

Answer: Developing guidelines for use and maintenance of street, adding traffic calming measures and prioritizing the route with pedestrian amenities can reduce the problems of NGO Road.

Annex 6: Article Published in IOE Graduate Conference

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Date: September 14, 2022

To Whom It May Concern

This is to confirm that the paper titled "*Aesthetics and Building Appearance on Urban Commercial Street- A Case of NGO Road in Narayangarh*" submitted by **Rachana Dahal** with Conference ID **12029** has been accepted for presentation at the 12th IOE Graduate Conference being held in October 19 – 22, 2022 at Thapathali Campus, Kathmandu.

Khem Gyanwali, PhD
Convener,
12th IOE Graduate Conference

IOE Graduate Conference
[Placeholder for Publication Information]

Aesthetics and Building Appearance on Urban Commercial Street- A Case of NGO Road in Narayangarh

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Abstract
The urban environment is changing as the development of urbanization takes place and the common parameters of urban environment are also being transformed. Today's urban environment incorporates a number of components that influence the quality of life, have an emotional affect on citizens as well as the architecture of buildings and constructions. Narayangarh is an emerging city and NGO Road is one of the most used streets in Narayangarh and the urbanization has also impacted in the buildings of this commercial street. This research is an attempt of in-depth study of the aesthetics and building appearance of NGO road in Narayangarh. The focus of the research lies in studying the building facades elements and its appearance from the direct observations, questionnaire survey and interviews. The methodology applied for the study is case-study methodology and the method applied is mixed i.e. qualitative and quantitative. The study is limited to observation of building frontage while the other three sides and interior space of buildings are not considered. Study concludes that there is the diversity in building facade elements as well building type, material, construction, height, color, etc. The use of modern building materials reflects the modern aesthetics, while the rectangular forms, horizontal and vertical lines, shading devices in facade indicate the adaptation of site-specific design. In the case of people's perception, the result shows majorities of respondents are not satisfied with the existing condition of the building fronts and its appearance thus, prefers an active, satisfied pleasing environment.

Keywords
Aesthetics, Buildings, Building Frontage, Facade Elements, Urban Commercial Street

1. Introduction

A city is composed of numerous tangible and intangible elements. Elements such as natural setting, land-use, circulation system, built form and people's behavioral pattern are more articulated which contributes towards urban aesthetics [1]. The urban environment is changing as the development of urbanization takes place and the common parameters of the urban environment are also being transformed. Today's urban environment incorporates a number of components that influence the quality of life, have an emotional affect on citizens as well as the architecture of buildings and constructions, landscape, panorama of city, culture, environment, and much more [2].

Narayangarh, Bharatpur's largest business area, is a major transportation and commercial hub in Nepal and human movement has played a significant role [3]. With the change in way of life, standard of living, socio-economic conditions, and even the people's perception, the urban structure could not remain the same and thus transformed gradually [4]. Streets or city spaces that are perceived as insignificant and do not reflect the social or environmental dimensions sought after by city dwellers are considered poor aesthetically [5]. In the case of Narayangarh, most urban road lacks good street frontage which adversely affects the behavior of users aesthetic aspects of urban environment. Most of the buildings and infrastructures are unplanned and have resulted in substandard and irregular housing patterns.

The main objective of this article is to explore the aesthetics and building appearance in urban commercial street of Narayangarh i.e. NGO Road, defining major elements of the building that are used as the street frontages. The specific objective is to

identify existing problems in building facades of urban commercial street due to urbanization and its impact on aesthetic quality of street.

2. Literature Review

2.1 Aesthetics and Architecture

Aesthetic as practiced in architecture is a reference to a particular design aspect or style that adds appeal and pleasure to ant type of architectural construction. Moreover, aesthetics are based on taste and the evaluation of human sensory perceptions. Aesthetic judgment tremendously affects how we judge beauty. In other words, the associations that specific design features, qualities, and spatial layouts elicit within us can be a wonderful source of aesthetic pleasure. While making an aesthetic judgment, form, color, materials, shape, lighting, and spatial organization all have important significance. [6].

2.2 Buildings and Building Aesthetics

The most prominent aspects of urban architecture are buildings since they create the city's street boundaries and shape and articulate space. Well designed buildings should have high quality of architectural concept, design, materials, and construction as well as scale, size and proportion of building [7].

Aesthetics of a building is one of the main considerations in architecture. It should also be designed to meet standards for safety, serviceability, durability, and aesthetics as well as to ensure proper structural performance over the course of its service life. While designing buildings, a very important aspect that should not be ignored is the awareness of the current trends or patterns to use particular types of materials. Considering knowledge and best practices offered by architects, designers, investors, and builders should serve as the foundation for confidence on their suitable selection, usage, and maintenance [8].

2.3 Facades and Frontage Zone

Street life is significantly enhanced by the utilization of the walkway and building facades. Thus, building frontages are a crucial part in the effective street. The aesthetic quality of the urban street, especially the quality of building facade, which should follow aesthetic uniformity with consideration of design unity, is balanced by a number of public realms (public facilities), shape and type of building, building frontage, building height, etc. [9]. The development should be balanced with the quality of road space as a link between pre-existing buildings and an aesthetic supporter of urban space [10].

2.3.1 Building Facade Components

Facade is a visual expression or depiction of a variety of emerging features. Building facades in urban architecture are not only two-dimensional but also three-dimensional so that they can depict each building in the general public (city) or vice-versa. For this reason, the building facade component observed comprises [11]:

1. Gate and Entrance
2. Ground Floor Zone
3. Windows and Entrances to Buildings
4. Guardrails (railing)
5. Roof and Building Endings
6. Signs and Ornaments on Facade

2.3.2 Facade Configuration Elements

The facade configuration elements that can form the appearance of a building are [11]:

1. Elements of space openings
2. Field of building facade
3. Application of dominant facade material
4. Types and methods in finishing facade
5. Color processing techniques

2.4 Previous studies on asthetics, building appearance and its findings

2.4.1 Case of Al-Khan Street, Tanta City, Egypt

Al-Khan Street is situated within the historical and commercial district in Tanta city. The length of Al-Khan Street is around 210 m [12]. Firstly, urban structure and visual composition was studied. Then problems in street was identified and the renewal of street was proposed.

Urban Structure: A study of the street's land use reveals that ground level is full commercial. The majority of the buildings that overlook the street are in poor condition, which demonstrates a lack of maintenance.

Visual Composition: The area is linear and is shaped by the buildings. Street is as well characterized by

its human scale. The proportion of the street sector fluctuates according to the different building heights along the path.

Problems in Al-Khan Street: Composition represented in the diffusing of activities with the absence of laws, street' s appearance endures from unclear details of the elements , lack of general taste and consistency in the colors, etc.

Street renewal: For the street renewal, two steps were followed. First step includes the preservation and conservation of historical buildings, keep present economic activities, provide green areas, etc. Second step includes creating a secure environment, emphasize pedestrian path, activate the distinctive architectural character of area, etc. Then the street was proposed.

2.4.2 Case of West Kalimantan, Indonesia

Study was performed at commercial area on Jalan Diponegoro, Jalan Agus Salim, and Jalan Gajahmada at Administrative Village of Benua Melayu Darat, West Pontianak sub-district, Pontianak, West Kalimantan. Firstly physical identification analysis of facade corridor space was done based on facade elements. Then visual quality analysis of corridor was done that includes [13]:

- Storefront Elements includes the same Awnings with the same dominant height but there are differences in width, material diversity, and color.
- The entrance of the building is perpendicular to the road without borders
- It does not have a guardrail
- Landscape and planting elements are found on the 2nd -floor balconies
- Some buildings are modern style buildings with the dominance of glass, concrete, ceramics and aluminum as building materials.
- Some lighting are from exterior displays or building signage, but some lighting are applied in the entire building along with exterior displays and signage

2.5 National Case

2.5.1 Case of Bandipur

The main objective of BECTP was: "to develop Bandipur as sustainable eco-cultural tourism centre with a network of similar hill towns to revitalize, protect and promote their cultural and natural resources with programs that have replication values" [14].

Project Activities: Two traditional houses were restored and adapted for tourist accommodation. Similarly, one house in middle was restored into a visitor's center. In total 11 house owners had applied for restoration, when the project called for it. It is rather a different approach of restoration, unlike initial phases of BDP. The house owners were involved in restoration along with the project team [15]

Road as a way to Modernity: Road is the main reason for the rebirth of the place and modernization.

Implementation: The project was implemented by the respective local committee under the supervision of the project team. Numerous meetings with the local committees were held to implement the project activities effectively. In some cases, designs were prepared during the meetings with the local implementation committee.

Conclusion: Projects highlight the importance of public participation in urban renewal process, so that the project is successfully completed and is sustainable. Bandipur project is implemented systematically through exchange of ideas among the project partners and involvement of local community.

3. Methodology

The aesthetics and building appearance of the NGO Road is explored through the case study methodology which involves the direct observation, questionnaire survey and key informant survey that focused on building facade elements. The method used is mixed i.e. qualitative and quantitative research method. For the observation, 30 houses were chosen randomly in a systematic method with interval of every fourth house in both rows. From observation, it extracts non-numeric data so research falls on qualitative descriptive research method that seeks to describe the existing conditions. Also, quantitative analysis is done using questionnaire survey with 138 respondents in which numbers and statistics are extracted. Hence, research falls on pragmatic paradigm. The database are collected from the primary and secondary sources. Primary source includes field visit, observations, photographs, interviews and questionnaire survey while, secondary source includes literature reviews from published articles, research paper, journals, and websites.

Based on the gathered information from field survey, the existing conditions of building elements and rising problems are highlighted analytically. Then the database are analyzed and then discussed involving the concept of aesthetics and building appearances including facade elements and people's perception towards existing condition that affect the urban street eventually. The analysis is carried out on three steps that includes overall visual quality analysis, major problem identification and triangular analysis.

4. Limitation

The interior of buildings are not taken into considerations. The observation limits to the building fronts and other three sides are not included. The sample size for questionnaire limits within the street users and surrounding residents.

5. Study Area

Figure 1: Study Area: NGO Road, Narayangarh

NGO Road is the street connected to the National Highway i.e. East-West Highway with distance of 1.10km. There is Narayani River to the left of street and the main market area to the right side. The street is divided into different parts; Bhagwati Marg, Harihar Marg and Narayani Path. The reason to choose this area is strongly defined by its cultural and economical values. Since it directly connects to the Mahendra Highway, and the corridor reside along the Narayani River, people often like to visit the place and use the route for various purpose. This street is one of the most used and busiest Road of Narayangarh but lacks the aesthetic value which has many scopes and opportunities in the future.

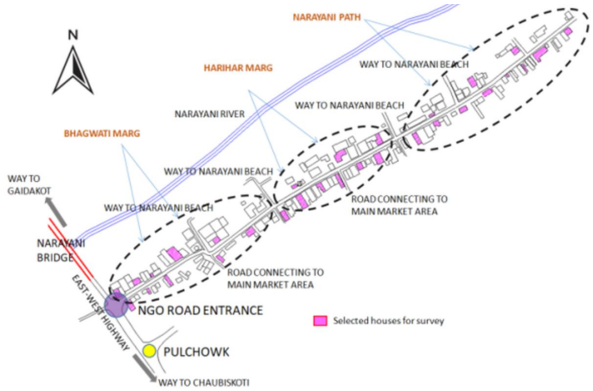

Figure 2: Raster Layout map of NGO Road with buildings footprint

5.1 Land Use

Figure 3: Land-Use map of NGO Road

The land use of street is mix-use which consists of various types of buildings and uses. The lands are mainly used for residential, commercial, office and educational. Some buildings are old and some are newly constructed. Streets are mostly used for commercial like stores or fast-food restaurants. Also, some residential buildings are newly constructed with modern design and modern materials.

5.2 Bye-Laws of Narayangarh

Table 1: Bye-laws for street with residential or mix-use buildings

Type		Min. Width
Right of Way (ROW)		2.43m
Setback	Building Ht. 10m	1.5m
	10m>=17m	3m
	>17m	5m
Open Space		1.5m
Turning radius		3.5m

Table 2: Building Bye-Laws

Building Type		G.C.R	F.A.R	Building Height	Floor Height	Plinth	Open Space	Plot Size
Residence	Area: 80m²	90%	1.5	GCR 70%= 12m max.	2.75m	60cm	1.5m	102 Sq.m (6 Dhur)
	250m²	70%						
	>250m²	60%						
Mixed	Area: 80m²	90%	2	GCR 70%= 15m max	2.75m	60cm	1.5m	102 Sq.m (6 Dhur)
	250m²	70%						
	>250m²	60%						

If building height is more than 15m:

- It should have lift
- It should have fire hydrant and emergency exit
- Structural design is necessary

6. Data Collection

6.1 Observation of Whole Street

6.1.1 Urban Structure

According to the street observation, ground floor is exclusively used for business purposes. In Bhagwati Marg, buildings are typically three or four stories tall, whearas in Harihar Marg and Narayani Path, most buildings are one or two stories tall. Regarding the street's business aspects, the study's commercial activities occur in fabric and garment stores, hotel and lodges, retail shops, cafes, and so on.

6.1.2 Skyline

Figure 4: Building skyline towards west of street

Figure 5: Building skyline towards east of street

Buildings area found one to five storey which are human scaled. There are no taller buildings that creates unpleasant visual image of the street. But the planning of urban skyline is underdeveloped. The overall structure of the area does not create visible pleasantness.

6.2 Observation of Buildings

For the observation, 30 houses were taken out of which 10 were from the Bhagwati Marg, 10 from Harihar Marg and 10 from Narayani Path. Different elements of buildings were observed such as façade elements, building signage, roof, materials, structure, color etc.

Figure 6: Few Buildings from Bhagwati Marg

Figure 7: Few Buildings from Harihar Marg

Figure 8: Few Buildings from Narayani Path

Building includes various types such as commercial, residential, mixed, religious, temples, etc. The heights of buildings were from one storey to maximum five storey. One storey buildings are generally residential or storage and more than one storey buildings are mix use or hotel. Similarly, minimum width of building was found to be 4.7 m while, the maximum width was 19 meters. Colors of buildings were variations. Primary, secondary and tertiary colors were found in the building exterior. Almost all buildings were modern type except temples were traditional style with brick facade and tiered roofs. Buildings in the site were found to have different structures; R.C.C, Steel and some were temporary structures too.

6.2.1 Facade Elements

Main Gate: Most of the buildings are directly connected to the road. Very few buildings have entrance gate and they were mostly residential or mixed (residential+ retail) buildings.

Doors: The maximum commercial buildings have rolling shutter and some have channel gate in ground floor. In upper floors, the doors were found wooden/net.

Windows: Windows were simple square shape with wooden material, aluminum and glass. Aluminum is mostly used in commercial buildings.

Awnings: There were no awnings in doors and windows. Balcony provides shade for the openings.

Balcony: Every multiple storey buildings have balcony with generally 1 meters width

Guard Rail: Guard rails were found in upper floors and in roof. The heights of railings were generally 1m. Materials were mostly steel. Some have concrete post also called as "Damaru".

Exterior Display: In some commercial building the exterior façade displays ACP. Almost every commercial building has advertising board in front. In temples, there were inscriptions in wall.

Planters: Only very few hotel buildings have planters.

Shading: Very few hotel buildings have horizontal and vertical shades. Other type of buildings does not have.

Lighting: There are exterior lighting in the ground floor and in the balconies of upper floors. There were no such displaying lights in the building.

Sign and Signage: There is no signage in buildings. Temples were identified by "Trishul". Some buildings have sign on window display, but none of the buildings have mural signage.

Roof: Most of the building have flat R.C.C roof, while some have C.G.I truss roof above it. Very few buildings have plants or garden in roof.

Cornice: Only the temples and religious buildings have cornices in the building.

Materials: Materials used in buildings includes concrete, brick, steel, aluminum, CGI, concrete block, etc.

6.3 People's Perception

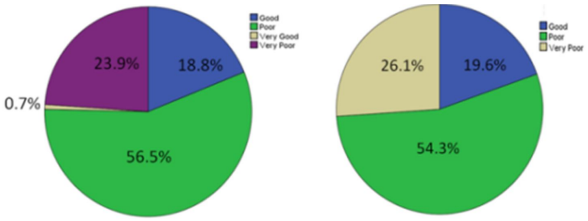

Figure 9: Building condition (left) and Overall transparency (right)

The pie chart above shows that maximum i.e. 56.5 percentage and 54.3 percentage people responded respectively that the building condition and its transparency as poor and for overall transparency.

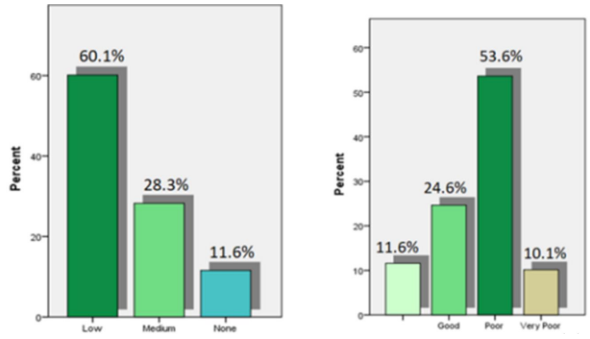

Figure 10: Greenery presence (left) and quality of greenery (right)

The graph above shows that maximum i.e. 60.1 percentage people responded low presence of greenery in building and 53.6 percentage thinks it has poor quality.

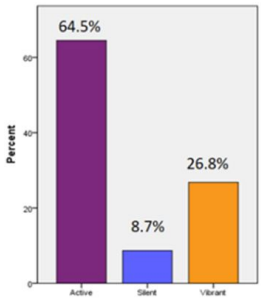

Figure 11: Preference for building frontage

Graph above shows that maximum i.e. 64.5 percentage people prefers active building frontage.

6.4 Expert's Views

Interview was taken to understand expert's sight towards urban trend and built form. Key informant includes Mayor, Architect/Urban Planner, Ward Head, Head of Traffic Management and Head of Road Division. According to experts, in urban setting, greenery plays important role. So many trees and plants should be planted. There are many problems regarding aesthetic trend and building design. For this, guidelines can help in solving the problems. It is very necessary and important to develop design guidelines which will help this city to make "One city one identity". Design guidelines exist but difficulties lies in implementation. So literacy and public awareness is important to maintain the applied design in the urban structure, form and composition. Additionally, public participation helps most to represent the identity of city. So involvement of the public is important.

7. Data Discussion and Analysis

Buildings and its appearance plays an important role in expressing street quality and the visual image of place. Result indicates that the area is a progressive area and occupies urban functions which have many scopes and opportunities. Since, an appropriate architectural design of the buildings and its components can significantly improve quality of the street. Eventually, the building height, building elements and facade materials are the factors that directly affect the urban commercial street. Yes, it is important to design the environment to satisfy requirements regarding safety, durability, but also, aesthetics.

7.1 Overall Visual Quality

Visual quality is a very important component of human existence, as it helps shape our perceptions, attitudes, and general views of life. This concept demonstrates the varying degrees of people's ideas and aesthetic admiration of various things, such as views, objects, landscape, etc.

From the data collection, it has been found that majority of buildings are of modern style, with glass, concrete, aluminum being the most common building material. This indicates the diversity of building materials and also in color, height, openings, entrances, etc. Lighting are mostly simple design in the entrances and in the balcony. As a commercial area, lighting has an important role instead, lighting elements are less. In case of landscape and planting, small movable planters are found in ground floor in some hotel buildings only. It indicates that there is lack of greenery in the building as well as shop fronts. Greenery which is the important feature in creating attractive scene is missing so it lacks beauty in the street and needs to be added. Similarly, majority of buildings are R.C.C structure with C.G.I truss roof above R.C.C roof. The truss roof is constructed above R.C.C roof to control direct heat radiation but this has dominated the original shape of building in the whole area. In terms of proportion, there are a few structures where the relationship between many facade components has solidified into a single visual relationship.

7.2 Major Problem Identification

Aesthetics and Architecture: The architecture has no particular style and follows the contemporary trend with lack of principles and sense of place. This indicates the low aesthetic expression of the place. There is not any special facade characteristic thus signifies no any identical street.

Facades and Frontage Zone: There are informal shops with no rules and regulations for facade design and displays. Large and colorful commercial advertisements on facade block the original shape of buildings resulting in the dazzling street landscape. Moreover, there is the lack of consistency in color of buildings.

Building Facade Components: Building components such as entrances, doors and windows are not uniformed. The advertisement boards are hanged on the guardrails causing the visual pollution and dominate the building looks. Also, lack of greenery and lighting elements in building indicates the poor aesthetics.

Facade Configuration Elements: Some buildings have blank walls, this creates the closed impression and there is the lack of consistency in color techniques.

Urban Structure: Construction of building lacks principles and the use of buildings is haphazard. Old buildings need maintenance some commercial buildings are highly deteriorated. Building skyline does not create visible pleasantness.

People's Perception: Majority of respondents are not satisfied with the existing conditions of the building frontage and they don't see much aesthetic quality such as greenery in buildings and transparency of buildings.

7.3 Triangular Analysis (Theories, Experts Empirical Facts)

Empirical facts are one of the strong evidence of what actually the truth is. It helps to identify the real problem, analyze the problems and solve the problems. On the subject of architecture, buildings are the principle aspects in architecture. It should create a sense of place. But in case of NGO Road, buildings only stand as a built form. Similarly, frontage zone is one of the important factors that balance the aesthetic quality because it shapes the street. Conversely, the frontage zone of study area looks unhealthy and creates the dazzling street landscape. Theories and experts say that building facade is the expression of many aspects and should encourage various activities. In fact the result of study area indicates the discouragement and irritation due to unmanaged and haphazard building looks.

8. Conclusion

Study of aesthetic and the building appearance of a place determine the quality of urban environment. In a city, the character of an urban area can be inferred from an observer's first impression of the place. From the observation of NGO Road in Narayangarh, there is the diversity of building facade elements. The use of modern building materials such as brick, stone, aluminum, etc. reflects the modern aesthetics, while the rectangular forms, horizontal and vertical lines, shading devices in facade indicate the adaptation of site-specific design. This also highlights the aesthetic aspect of the region with contemporary development.

In the case of people's perception, the result shows majorities of respondents are not satisfied with the existing condition of the building fronts and its appearance thus, prefers an active, satisfied pleasing environment. Their experience broadly explains the need of balance in aesthetic quality.

Conclusively, beauty lies in the eyes of viewer and if they feels pleasing, comfortable, safe, attractive, enjoyable and eye-relaxing view then it represents aesthetically pleasing environment. Therefore, study concludes that the issues of building design should be considered a main concern in urban design, so as to improve building aesthetic. Additionally, personal motivation also serves as a catalyst to pursue particular styles for façade inspiration. The perception of quality and the associated consciousness of "beauty" have evolved over time and will do so in the future. Therefore, it is important to take into account both social and personal values when designing.

9. Recommendation

It is essential to have a good understanding of the basic elements needed to achieve good aesthetic in urban commercial street. There should be proper planning of the building and its elements in urban areas so that; it would have less impact and adds more value in the environment. Each element on building should indicate aesthetic as well as functional value. For building vegetation is one of the major elements to be successful urban street. Different colored flowers and green leaves made the street more aesthetically pleasing than plain stereotypical ones. So, more plants should be added to make it visibly pleasant as well as it can provide psychological relaxation, streets alleviation, supporting physical activity and stimulating social unity. Similarly, buildings with more details and textures in the facades are interesting to view and a material such as metal, glass, and laminates added interest in facades. Addition of interesting façade treatment can enhance the beauty of street. Integrate art and architecture that focus on the identity of place and nation. Similarly, minimize the size of advertising board that dominates the entire building façade and add the lighting elements to create impressive and vibrant day and night view. Also, enhance ground floor and entrance with indoor-outdoor interaction. Besides, more research is needed in this field and buildings designed with guidelines should be emphasized more.

10. Further Study

Further research may specify whether similar results apply to urban commercial streets in other regions and cities. The findings of this study can be used to inform the preparation and design of guidelines for urban commercial streets, resulting in more attractive and economically successful streets that serve as attractive green spaces.

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