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Visual Analysis of Commercial Street in Pune

Sub Theme: GOAL 11: Sustainable Cities and Communities

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Abstract

Most of our Indian cities are growing as a result of the country's fast urbanization, which is also causing a significant change in the way that land is used in terms of both form and structure. The requirement for travel has significantly increased as a result of urban modifications of the city layout, particularly changes in land use. The majority of Indian cities prioritize motor cars over people on their streets. If the roads are maintained in their present condition, they will only be able to carry automobiles. However, given that historically speaking, streets have mostly been used to move people rather than vehicles. The streets in our cities lost their significance in terms of their proportion of the area they covered as a result of the rapid expansion of our cities, and they began to change into roadways that are solely intended for automobiles and lack a comprehensive people-oriented approach. It is required to intervene and make the streets pedestrian-friendly in order to accommodate more people and guarantee proper and equitable use of the available street space. In order to create a set of referential tables that can be used as an evaluation tool, this research will examine the physical characteristics of commercial streets. Pune's busiest commercial street has been chosen for the investigation. The data collection process uses a mixed method approach. After doing a literature review and ranking the streetscape features, polls of public opinion are used to determine the study's parameters. The entire site context, street connectivity, and urban dynamics affecting how public space is used will all be synthesized in the study. The study's findings suggest that inadequate and poor streetscapes on commercial streets have an adverse impact on users' experiences. Instead, carefully designed shopping districts with appropriate and pleasant seating, shelters along the street, lighting fixtures everywhere, commutable and accessible sidewalks, and flora would become livelier. The study also highlighted the importance of citizen engagement in enhancing streetscapes of commercial street.

Keywords- Urbanization, Commercial Street, Streetscape, Visual Analysis, Pedestrian

1. Introduction

An improved streetscape identity raises the built environment's quality and ensures that shared public places are usable, aesthetically pleasing, and welcoming. (SOULE). The purpose of this research is that it can enhance the functionality and activity of commercial streets with a variety of uses, hence improving quality of life. Moughtin (2005) and Carmona (2007) define street as three-dimensional spaces between two lines of adjacent buildings or

enclosed on opposites sides by buildings. This definition implies the meaning of street as urban space that is broader than just a roadway. Jane Jacobs (1961), a prominent critic of the modern urban form said: “Streets and their sidewalks, the main public places of a city, are its most vital organs. The linear design of the street allows for easy mobility from one location to another, but activities within buildings and the architectural character of the street wall will dictate what kind of activities occur or are hindered. The most deciding components of street character as urban space are the nearby building facades and the proportion of wall height with distance establishing a streetscape. In this scenario, Gehl (2002) discovered that smaller plots imply more complicated and appealing frontage, particularly if there is transparency between inner and external expressed by doors and windows. A larger plot is more likely to be monotonous, dull, and to limit the possibility of interaction between public and private activities.

2. Background

People are influenced by their interactions with urban areas in their daily lives. This experience is influenced by perceptual, functional, social, visual, temporal and morphological dimensions (Carmona et al., 2010). The elements of the streetscape and their composition contribute to these dimensions. As a result, streetscape design can influence people's impressions of the city's identity and character. (Wibisono, 2001). Streets are essential urban spaces unlike squares, which require something, such as an object or an event, to keep people coming, (Gehl, 1987). Streetscape is an unique component of street design that necessitates separate planning and design. The term "streetscape" refers to a three-dimensional outdoor environment that encircles roadways and is framed by structures known as the "streetscape skeleton."Various design factors influence the overall design of the streetscape. The dimensions and scale of streetscape skeletons, on the other hand, have a considerable impact on user comfort and productivity. The character of a city is determined by the appearance and relationship of its exterior characteristics and street design components. (Wibisono, 2001). The streetscape encompasses the area between two buildings. Hartanti (2012) divides streetscape into three layers: vehicular lane, public frontage, sidewalk, and private frontage. The private frontage is the privately owned land that extends from the building face to the plot boundary. Such spaces include arcades, porches, stoops, fences, yards, alleys and in-fill spaces, unique activity zones, and special event spaces. The public frontage, often known as the roadside, is the publicly owned space that extends from the boundary of the private plot to the edge of the motor lane. This space includes sidewalks or pathways, street corners and curbs extensions, street planters, trees and other vegetation landscaping, and other street furniture as fixtures, seating, and utilities. The spaces that extend from curb to curb, or from one side of the pavement to the other if there are no curbs, are known as vehicular lanes.This area functions as a roadway, with both transportation and parking lanes. Hardscape, softscape, furniture, and external influencers are the four major types of streetscape design features. Buildings and trees are referred to as streetscape skeletons because they dominate in terms of proportion and scale. Commercial streets are municipal areas that provide a variety of shopping, entertainment, and dining options.

3. Parameters derived from literature

Local factor-related variables are chosen as a component of the study and used as the foundation for the empirical study for measuring the situation in selected area of Pune. These criteria are chosen after doing a thorough analysis of the Pune and making first visual observations. The indicators chosen to be used for the case study areas are briefly described in the following table.

Table 1- Illustration of selected parameters for the study

Area of examination	Sub-area of examination	Indicator
Street functionality and efficiency	Street management and maintenance , Retail mix, car-parking, safety, transit-oriented development	Vacant land , economic revenue Number of visitors, shop rent
Street design and management	street maintenance, street wall elements , streetscape, greenery, Land use, walkway width, lighting, street quality, street furniture, shaded areas	Accessibility, walkability, number of visitors

Social reaction	Culture and identity, Population, perception, social comfort , density, community's needs, safety, activities	Number of visitors, activities
Street unity , morphology, legibility , context theme, form, imageability	Street image, street scale, connectivity, signage, building architecture, enclosure, land use	Connectivity, permeability, transparency, aesthetics

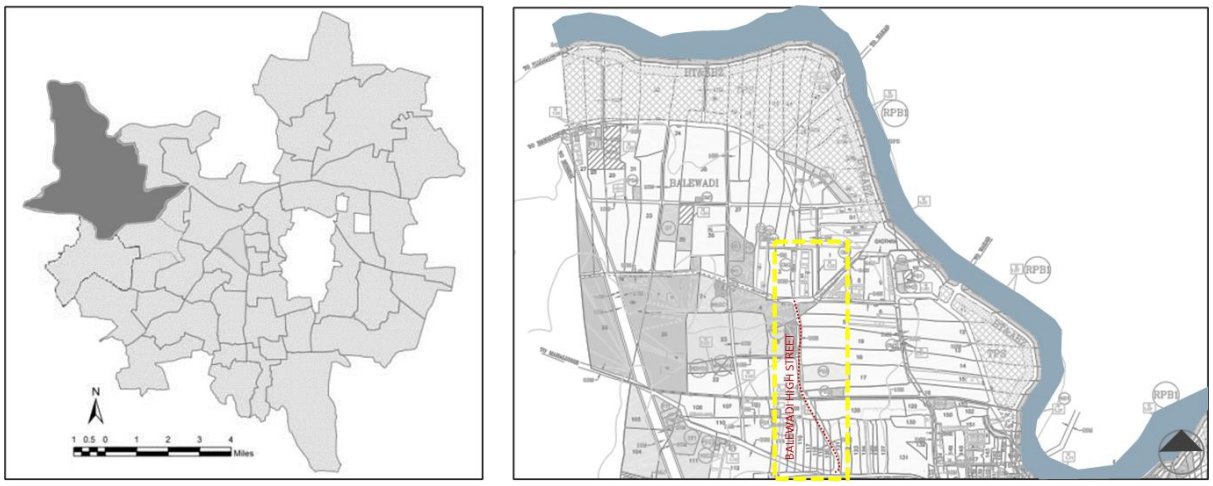
4. Research Methodology

This research investigates Pune's morphology by examining the history and synthesis of the city's street hierarchy. Following that, empirical research is carried out based on an exhaustive case study that examines the history, evolution, and contemporary real-life scenario. Balewadi High Street is considered as case study as one of the commercial street in Pune. In addition to secondary resources, this study makes use of primary resources collected from case study site. Secondary resources include national and worldwide comparisons, as well as academic literature research, and they are combined with and examined primary data acquired from the domain. In this study, a mixed technique was used because the data gathering and analysis procedure involves both qualitative and quantitative. They will collaborate to get the best possible findings and outcomes. Street unity, land usage, spatial organization, street pattern, enclosure, and other aspects of street design are all instances of macro-morphology. Drive-by, walk-by, video, photography mapping, and time-lapse photography with a Go-Pro camera can all be used to acquire this data. This type of research entails a detailed analysis of the selected street. Data is gathered at the street block or segment level. This comprises street design on a smaller scale, as well as physical and social components that are planned and prepared following the initial site visit. This information is incorporated into the questionnaire, and cross-sections and sketches are created to identify the street components and aspects that can influence user viewpoints, such as greenery, sidewalk width, street furniture, architectural themes of shopfronts, and so on.

5. Study Area Details: Balewadi High Street

Balewadi High Street has had a very widespread impact ever since it materialized. Surrounded by young, cosmopolitan, high-income groups staying in catchment area like Aundh, Baner, Wakad, Pashan, Hinjewadi etc. hence, it has been chosen as the study area with high end commercial area.

Figure1 Pune Map and map highlighting Balewadi High Street

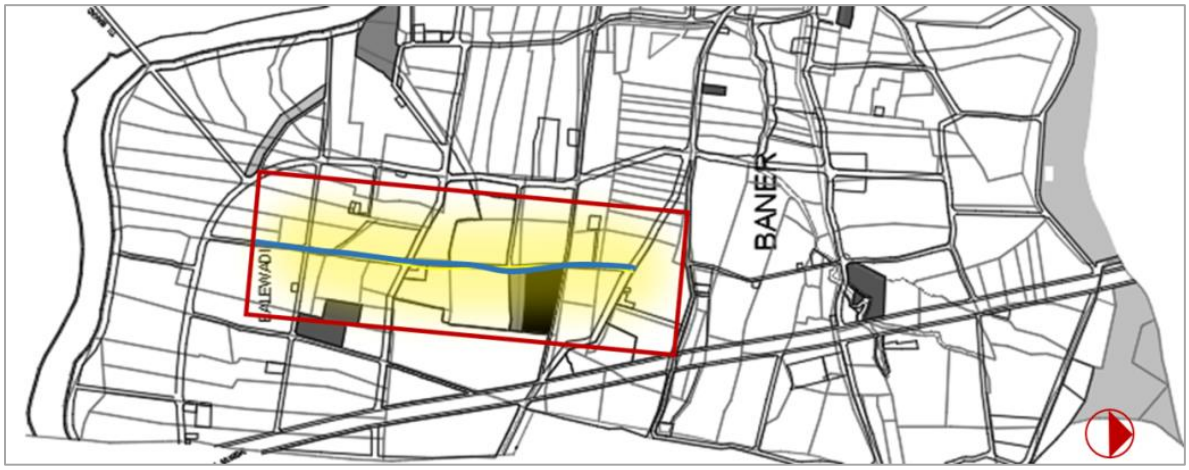


Reference Pune Municipal Coorporation

It has been established itself as a new entertainment hub along with being recognized as the first multi-disciplinary neighbourhood of its kind. Baner was initially on outskirts of the city with very less infrastructure and mostly residential societies. As more people came to stay in the area, schools, colleges and restaurants started emerging. Soon the main road was developed which connected to the Mumbai-Pune expressway. As more offices started emerging in the area societies and eateries came up. Balewadi high street Phase I was built. Soon parallel road networks to this area were established as the traffic increased on the main road. Many commercial buildings are now coming up in the vicinity following the construction of Phase 2.

6. Visual Survey Analysis: Balewadi High Street

Figure 2 Balewadi high street



6.1 Observations

6.1.1 Building Use (Precinct)

Figure 3 Building use of Balewadi high street precinct

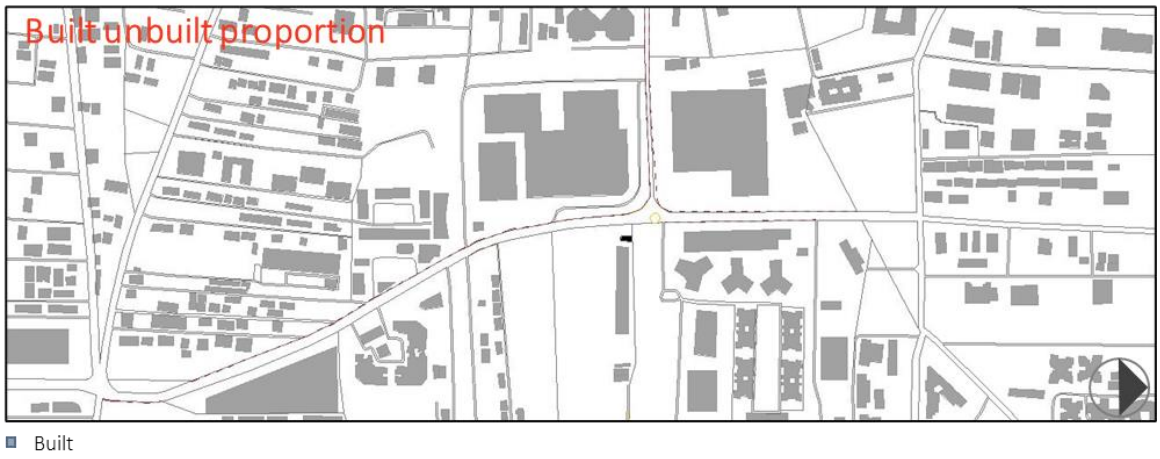
The building use indicates strong residential typology with a mix of commercial establishment along the road. Commercial spaces pulled up to scale up vertically while open and retail spaces pushed down for wider access. Commercial buildings like the Veritas technology, Cummins Office etc serve as an attractor on the street. Most of the newly developed area has aneclectic architecture, with mixed land use, mainly residential and commercial. Maximum exposure of retail spaces to pedestrian pathways and main road to optimize engagement, interaction and

scale. There are also many eateries and cafes, which become a place to hang out for the youths at late evenings. Some snack shops are also available, and along the streets there aren't any vendors and street hawkers selling both clothes and food. With commercial use on the bottom floor, the streets become varied, and pleasant to walk along at night as opposed to the harsh afternoons.

4.1.2 Built Unbuilt (Precinct)

Voids made according to orientation built, seemingly cut off from each other but connected to the contextual axis. The urban fabric is not dense and buildings are located sparsely. Some high trees are sticking up along the compound wall to act as a barrier. Bottom floor towards the streets is commercial. There are many apartment buildings with vast open podiums on the lower level as a common interactive area with green spaces. Buildings are reached either direct through avenues.

Figure 4 Built unbuilt proportion of Balewadi high street precinct



Density (Precinct)

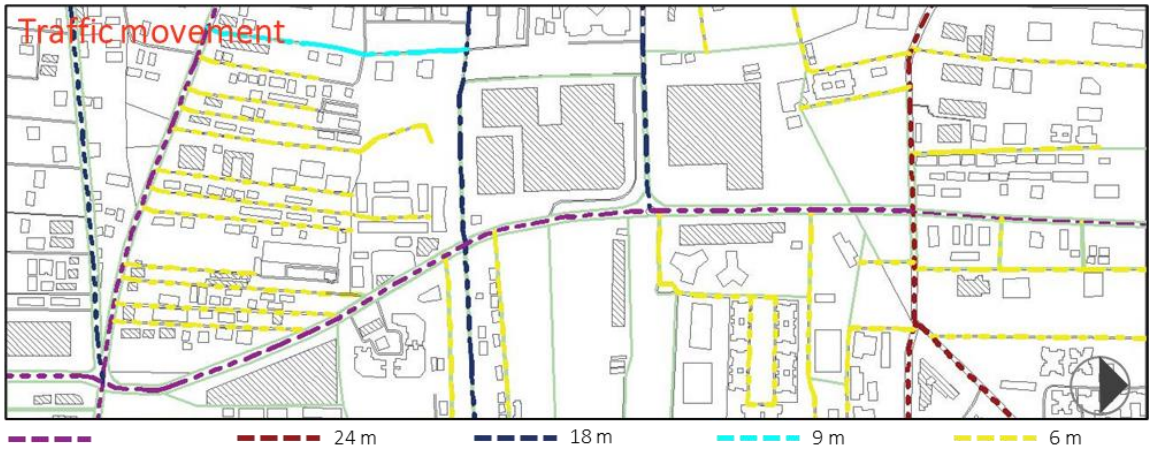
There are no of buildings undergoing construction that are built as commercial complexes on the street. These vary from G+8 and G+12 and above structures. The urban fabric is not as dense as most of the core city and the prominent land use apart from commercial complexes and offices are residential apartments. Many shops are 1-2 floors, especially on the road running perpendicular to Balewadi high street.

Figure 5 Density of Balewadi high street precinct

Existing Traffic Movement

Balewadi High Street is a two-way street beginning from Amar Business Zone (Ganraj Chowk) leading to Balewadi Road (Dasara Chowk). The road has footpaths on either side for food joints and walking, but the sidewalks are often damaged and/or occupied by construction work on the eastern side of the street. The sidewalks are approximately 2.7 m wide, and a 1.5 m parking space running parallel to 3.5 m carriage way. There is median separating the carriageway of 3.6 m. The pedestrians are often using the footpaths at late nights. The parking facility is provided by the commercial complexes and the offices inside their complexes and yet there is a need for four-wheeler parking on street.A common entrance to the podium for both the buildings is created while the third structure remains isolated as the company name differs. Maximum exposure of retail spaces to pedestrian pathways and main road to optimize engagement, interaction and scale.

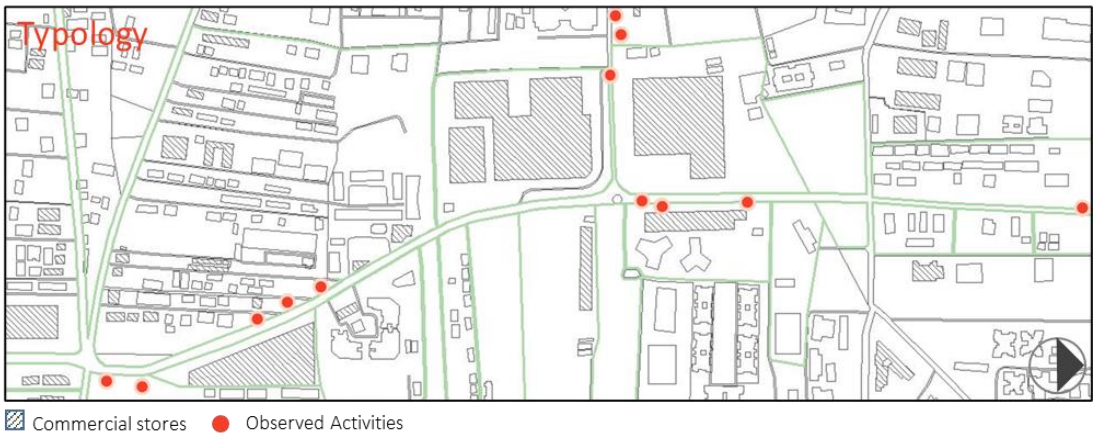
Figure 6 Traffic movement pattern of Balewadi high street precinct



Typology

The primary typology is commercial and residential. Vast open podiums on the lower level as a common interactive area with green spaces. Minimal exposure of commercial buildings to main road, increasing privacy and separate entries internally. As a response to site and privateness of the structure, openings are given and orientation justified.The change in style with respect to context makes the cluster stand apart from its immediate structures existing from before. The entire cluster follows a set style and hence sits well with one another. The upcoming structures are following the new style to some extent.

Figure 7 Typology at Balewadi high street precinct



Vegetation

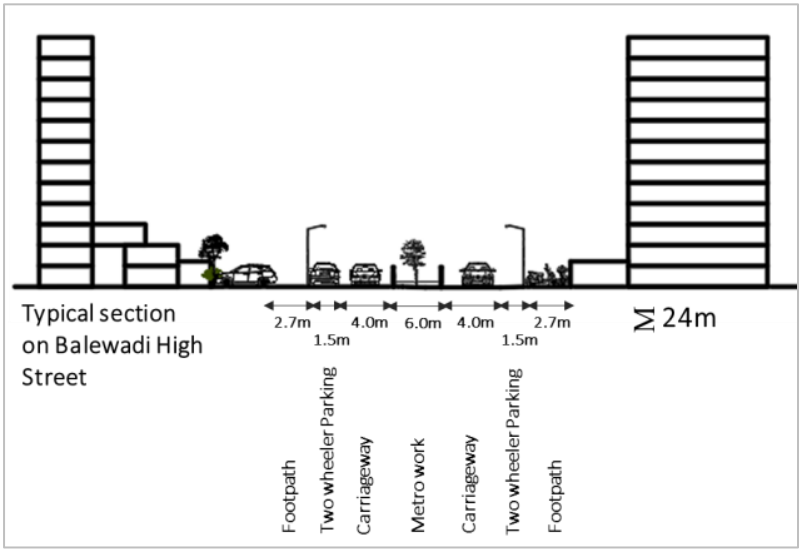
The street of Balewadi High Streethas ample of greenery. There are many trees along the route. It is critical to maintain this plant cover along the street and other routes in the vicinity.

Figure 8 Vegetation cover at Balewadi high street

Existing Road Section

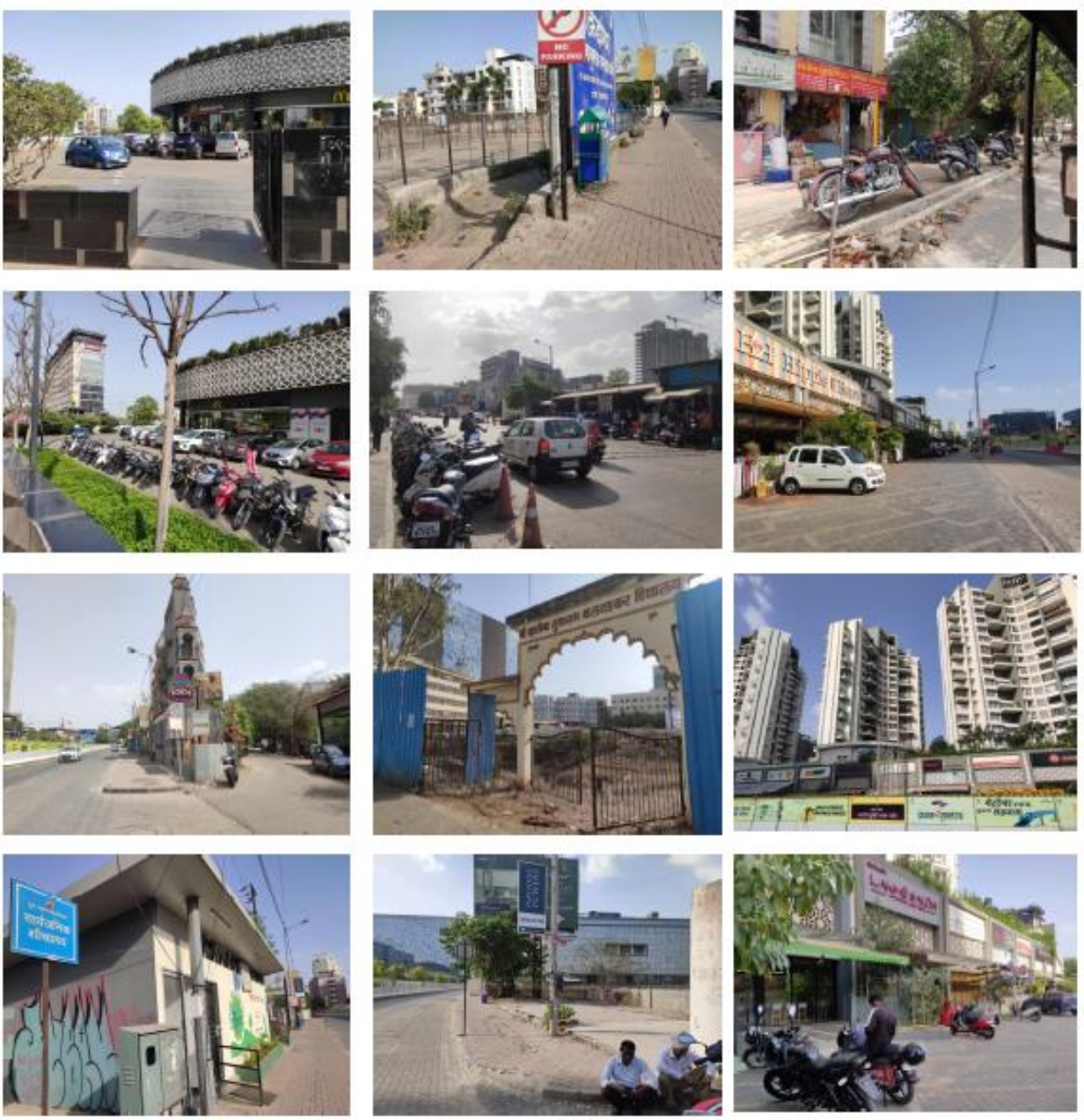
- The street is most active post 8 pm at night on the contrary it is quite deserted at the afternoon.
- The sidewalks are wide enough to cater a heavy footfall yet they are underutilized due to lack of street furniture.

Figure 9 Existing Road Section of Balewadi high street



Below photos show the glimpse of landuse on Balewadi High street. It consists of high rise residential buildings with high end restaurants, pubs.

Figure 10 Images from Balewadi high street by Author



7. Pedestrian Perception Survey

A pedestrian survey is conducted to determine the pedestrian facilities rating. The pedestrian survey allows citizens who are most affected by a city's walkability to express their thoughts on the current state of the pedestrian facility and, if necessary, suggest changes. It is critical that these surveys be done among local populations to avoid bias in the results. The data collected and evaluated is designed to provide a better and more unbiased understanding of specific street issues. The pedestrians' opinions on the listed parameters were scored on a 1 - 10 scale, with 1 being the worst and 10 being the best. The final average is computed. A low ranking suggests insufficient and subpar pedestrian infrastructure.

Table 2 Ratings of parameters by visitors of Balewadi high street (Source- primary Survey)

Parameters	Factors	Ratings										Avg. Score
		1	2	3	4	5	6	7	8	9	10	
Accessibility	Connectivity											2.66
	Active transportation											
	Multiple transportation options											
Attractive	Accessibility											4
	Art											
	Unique details											
Street furniture	Seating											3.33
	Lighting											
	Information and Signage on Road											
Pedestrian infrastructure	Walking in the street											3.83
	Condition of Sidewalks/Footpaths											
	Width of Sidewalks/Footpaths											
	Availability of Suitable crossing points											
	Availability of suitable pedestrian routes											
	Bicycle and pedestrian paths											
Traffic calming measures	Raised Crosswalks											1.5
	Pedestrian Frindly Islands											
	Speed Tables											
	Curb Extension											
	Bollards											
	Raised Intersections											
Natural Components	Topography											5.5
	Trees and plants											
	Microclimate											
	Pollution level											
Maintenance	Cleanliness											8
Purpose of Visit	People's presence											5.2
	Food											
	Communication											
	Variety of goods											
	Shopping											
Total Score												**30.19**

Table 3 Ratings of parameters by Visual survey at Balewadi High Street by Author

Parameters	Factors	Ratings										Avg. Score
		1	2	3	4	5	6	7	8	9	10	
Human scale	Distance and biometrics											3.66
	Edge segments											
	Proportions of building heights											
Sustainable infrastructure	Porous pavement											1
	Street water management											
	Renewable energy											
Legiblity	Legible ends											4.5
	Street length											
In between spaces	Enclosure											3.5
	Spatial hierarchy											
Edge effect	Transparency											4
	Soft edges											
Urban planning aspects	Short blocks											3.5
	Rest Areas/Drop Areas											
Context	Maintaining natural components											5
	Maintaining urban centers											
Diversity	Economics											7
Density	Density											3
Total Score												**35.16**

8. Keys Findings

Balewadi high street is not accessible due to lack of public transportation options ranging from auto rickshaws and buses. The frequency of buses is low. Despite that the place attracts the youth population of the city due to its illustrious architecture, style and mob. People prefer walking here only during late night although the walkways are found deserted at the day. The street furniture is in poor state. Pedestrian infrastructure is good because the width of footpath is sufficient, yet due to allied land use and the biometrics people don't prefer walking. Balewadi High Street is quite rich in vegetation.

9. Conclusion

Urban streets serve as gathering places for people to walk, shop, meet, and participate in a wide range of other social and recreational activities that, for many, are what make urban life attractive. The findings of the study will provide base data of one of the commercial street, which can be used to understand existing issues faced by pedestrians and public perception about streetscape. Streetscape element composition requires a thorough understanding of a Accessibility, street infrastructure, existing environment, traffic calming measures, socioeconomic, community, and cultural conditions and historical context. A community's character and identity are inextricably linked to its values

and traditions, which must be celebrated through streetscape elements and layers, as well as overall imageability. The focus of streetscape composition should be on the main intervention tools that enhance identity and character. It is critical to put theoretical guidelines for street development and revitalization into action. Intervention strategies can include everything from removing unsympathetic elements and activities to completely redesigning a space in conjunction with its surrounding envelope. The significance of each interventional decision determines its magnitude. It is widely accepted and acknowledged that there is not always a single best solution to the city's problems.

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