

# *Urban streets and nodes : A case of Bangalore*

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**Abstract - Urban design has the greatest impact on the city's physical environment and quality of life. It is the three-dimensional combination of forms and spaces as seen in time and over time that defines the character of any urban area. Public realm consists of those places to which everybody has access, although this access may be controlled at times. This includes outdoor spaces such as streets, squares, nodes, parks. Etc. The city is indeed and will continue to be a collage of parts, some distinctive and others a mélange. What is imperative is that, cities provide a rich set of behavioral opportunities and aesthetic displays that augment the lives of all people who constitute it.**

**Urban streets and nodes being the main links and junctions for movement of motorized traffic, multifold as public spaces by structuring numerous aspects such as mobility of the inhabitants, their interactions as well as conduction of diverse array of activities. Under the impact of rampant urbanization, our streets and nodes are failing to function as public spaces due to several reasons, one of the primary reason being lack of much required attention to micro details with respect to various amenities in the design of street scape navigated by the urban dweller. In this context, this paper attempts to study, analyze and propose certain design interventions that can be adopted with respect to two public realm spaces( Streets and Nodes) addressing different set of user groups, in a commercial and a residential area respectively.**

**Keywords-urban streets; node; public space; mobility; livability; streetscape; amenities; urban modules**

## I. INTRODUCTION

Urban design draws together the many strands of public-making, environmental responsibility, social equity and economic viability to sustain urban life. In summary, urban design is about creating a vision for an area and the deploying of the skills and resources to realize that vision [1]. Most urban designs deal with Precincts - smaller areas of cities such as Business-Commercial Districts, and new, predominantly residential areas, fringe areas of cities.

The multi-fold increase in the economic growth, urban population and related urbanization are placing high demands on our cities and its infrastructure. . "The quality of our communities and lifestyles they support, is an outcome of many factors, including the provision of streets, spacing of dwellings, availability of accessible green spaces, distribution of public open space, essentially the relationship between these [2]." Urban streets, being the basic physical infrastructure fulfill two

functions: they serve as spaces for people as well as arteries for motorized and non-motorized traffic. Streets encompass more than 70% of public space in our cities and are very much part of the people constituting their surroundings. They are recognized as important axes of economic activities, social interface and cohesion as they balance diverse users. Therefore, the design of an urban street must reflect and accommodate these assorted functions so that they act as public spaces positively impacting the quality of urban life.

The traditions and habits of residential user group provides a basis for unique design opportunities that can enliven the setting as a whole, while serving specific needs. Nodes in residential areas can accentuate the vitality of the area while supporting functional needs of the community. The qualitative aspect of such public spaces in precincts is ensured when it is designed to suite the need and comfort of the user group.

In India, at present the street design approach primarily focuses on motorized mobility often ignoring the vibrant and vital socio-economic activities witnessed by the streets. The main scheme followed in the design of our streets and nodes is centerline outwards which includes marking of the median first followed by the construction of carriageway. This approach leaves an undefined outer area. This left over, undefined and often insufficient space is shared by pedestrians, utilities, trees, hawkers and for other urban activities leading to conflicts for space. These unresolved conflicts of mobility and livability is degenerating the quality of urban life and the character of public spaces.

Further, the lack of much required attention to micro details in our streets and nodes with respect to various amenities in the design of street scape navigated by the urban dweller is aggravating the situation. This is leading to the non-functioning of our streets and nodes as public spaces.

It is in this context, this research paper attempts to study, analyze and propose certain ready-to-build design interventions that can be adopted as urban inserts. The proposed interventions have been demonstrated through two case studies. Both case studies in this paper- street in a commercial zone and nodes in a residential zone fall under the precinct typology of urban design

## II. DESIGN OBJECTIVES AND SELECTION OF CASE STUDIES

### A. Design Objectives

- **Appropriateness:** The major objective in the design would be to place the street furniture appropriately so as to provide a visual and physical accessibility to the users.
- **Contextual:** To respond to the character and the context physically as well as visually.
- **Adaptability:** Flexible to continually cater to the changing needs of the users, while providing safe urban environment.

### B. Selection and analysis of case studies

Streets abut and criss-cross different land uses and contexts. It is very nature of the streets result in different problems that are contextual to the areas. Therefore the case selected for the study, problem identification, analysis and design interventions have been broadly classified under two contexts: streets in a commercial zone and nodes in a residential zone.

#### • Streets in a commercial area: Selection



Fig.1. Selected two streets in Jayanagar 4<sup>th</sup> Block, Bangalore South

Jayanagar, hub of south Bangalore is one of the first planned neighborhoods in the year 1948 in Bangalore and is considered as the largest in Asia. It is surrounded by prominent neighborhoods.

The area of Jayanagar is sub-divided into ten parts comprising of residential and commercial areas known as Blocks. The third and fourth blocks are largely commercial blocks. Being a planned neighborhood, it is dotted with wide tree lined boulevards, wider footpaths, larger plots, etc. The 4<sup>th</sup> Block has a prominent shopping complex that houses wide variety of shops, restaurants, many public sector units, private offices etc.

The selected two streets in Jayanagar 4<sup>th</sup> Block are under the jurisdiction of Byrasandra ward (Number 169), Bangalore south, Bangalore, Karnataka (Refer Fig.1). They are:

- Make-shift bus stop on 11<sup>th</sup> main road between 28<sup>th</sup> and 29<sup>th</sup> cross roads
- Area in front of Jayanagar Shopping complex on 10<sup>th</sup> main road

#### • Streets in a commercial area: Analysis

- Make-shift bus stop on 11<sup>th</sup> main road between 28<sup>th</sup> and 29<sup>th</sup> cross roads:

Presently a part of this stretch of the street is being identified as a bus stop, although it does not have any physical structure as a shelter. The shade casted by dense canopy of existing trees is the primary reason for this part of the selected stretch to be used as a bus stop. It also has two electric transformers installed. This particular stretch needs a designated bus shelter to create a safe and user friendly street scenario. (Refer Fig.2).

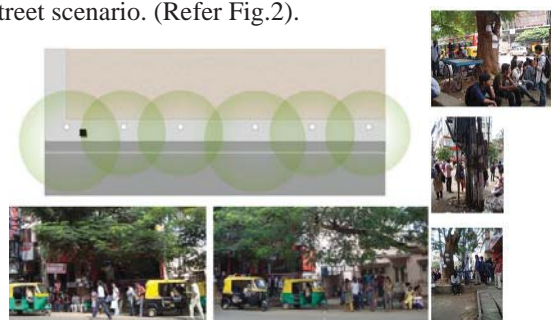


Fig.2. Make-shift bus stop on 11<sup>th</sup> main road between 28<sup>th</sup> & 29<sup>th</sup>

- Area in front of Jayanagar Shopping complex on 10<sup>th</sup> main road:

This stretch of the street is also used as a resting point and accommodates pre-paid auto stand. This stretch has a line of dense trees and is shaded throughout the day. But it cannot be used during rainy days due to the lack of shelter. Also the area is devoid of many street amenities such as tree guards, comfortable seating / resting area, trash receptacles, activity space for different age groups, traffic calming measures, a well-defined entry to the existing Jayanagar shopping complex and running urban shade to multi-fold usage of the area (Refer Fig.3).



Fig.3. Area in front of Jayanagar Shopping complex on 10<sup>th</sup> main road

**Nodes in a residential zone: Selection**

Ramanjaneya Nagar, Comparatively a new residential extension in south Bangalore is rapidly developing with many apartments coming up in and around the area. A bus stand was also built in 2011 to cater to the need of the growing population of this area. This residential neighborhood is identified for study, analysis and intervention as its vivid topography and elevations, inadequate amenities sparse and haphazard placement of street furniture clearly exhibits the need for urban design interventions. The distinctive qualities about the landscape of this precinct, particularly landforms, vegetation, natural drain, slopes, elevation variations, surrounding land uses which attribute to its local character has been studied and design interventions responds to these in a congruent manner.(Refer Fig.4).



Fig.4. RamanjaneyaNagar-Vasanthapura Ward, Bangalore South

As nodal extensions of streets, two significant nodes that fall under the jurisdiction of RamanjaneyaNagar-Vasanthapura Ward (197), Bangalore South have been selected in this neighborhood. They are:

- a) Node A: Junction of 2<sup>nd</sup> main road and 7<sup>th</sup> cross road
- b) Node B: Junction of 3<sup>rd</sup> main road and 4<sup>th</sup> cross

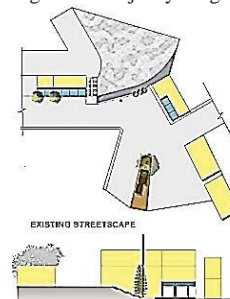


Fig.5.Node A: Junction of 2<sup>nd</sup> main road and 7<sup>th</sup> cross road

**Nodes in a residential zone: Analysis**

- a) Node A: Junction of 2<sup>nd</sup> main road and 7<sup>th</sup> cross road

The area opposite to the new bus stand by virtue of its location, accessibility and visibility has a potential to become a vital node for the neighborhood.

The area has a strong pedestrian link from 12<sup>th</sup> cross road which is at a higher elevation which on the other end connects to the main road of Uttarahalli. The area is surrounded by neighborhood's commercial shops. The 3<sup>rd</sup> main road parallel to the 2<sup>nd</sup> main road is the activity spine of the neighborhood and is the main route for local bus. The precinct lack in terms of basic facilities like Auto stand, street lights and public seating. The bus stand situated along the 12th main road is hidden and lacks the visibility from the main spine. Thus this area can become a strong node where it could visually act as a pointer to the existing bus stand while serving as a hub for various other neighborhood activities. (Refer Fig.5).

This junction is wide and is important as it connects the main activity spine (3<sup>rd</sup> main road) of the neighborhood to the residential surrounding. The street furniture such as seating, trees, signage, electrical poles, hoardings are located inappropriately both in terms of visual and physical accessibility. The junction has a potential to thrive as a node for, neighborhood people particularly the senior people use it for various activities (Refer Fig.6).



Fig.6. Node B: Junction of 3<sup>rd</sup> main road and 4<sup>th</sup> cross

III. DESIGN INTERVENTIONS

A. Commercial area:

- Make-shift bus stop on 11<sup>th</sup> main road between 28<sup>th</sup> and 29<sup>th</sup> cross roads

The proposed design intervention is to develop a bus shelter as an urban insert module which can be repeated. The bus shelter accommodates the following amenities:

- Better equipped bus shelter with facilities such as-
  - Comfortable seating area
  - Activity zone for various users
  - Trash receptacles color coded for dry and wet waste
  - Kiosk
  - Water dispenser
  - Planter box with hand rail all around
  - Curb ramps
- Transformer enclosure wall providing safety as well as vertical surface for thematic public art which can be changed periodically.
- Tree guard with seating all around.
- Space for multiple activities- street performance, hawkers, etc
- Rickshaw stand(Refer Fig.7 & 8).

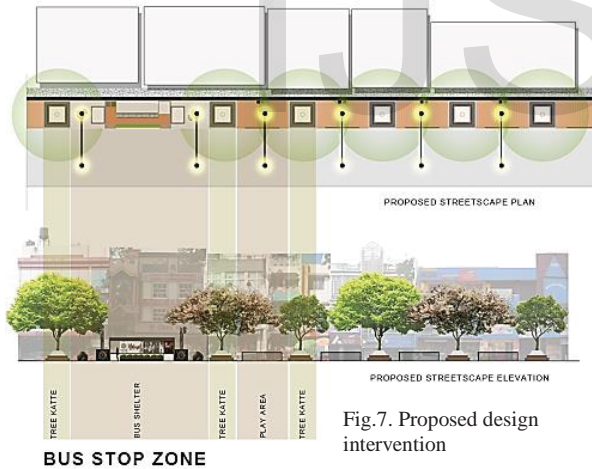


Fig.7. Proposed design intervention

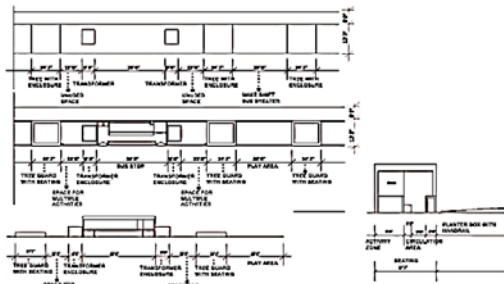


Fig 8. Proposed design seating

- Area in front of Jayanagar Shopping complex on 10<sup>th</sup> Main road:

The proposed design intervention is to develop a public resting point as an urban insert- a prototype. The street amenities provided in the design are as follows:

- Running urban shade to enhance the resting and walking experience.
- Three types of comfortable seating varieties:
  - Tree guard with seating all around.
  - Seating abutting the raised platform of Jayanagar Shopping complex.
  - Staggered/ grouped seating.
- A well-defined entry to the existing Jayanagar Shopping complex with steps and ramp.
- Trash receptacles color coded for dry and wet waste.
- Activity space for different age groups.
- Traffic calming measures.

(Refer Fig. 9 & 10).



Fig.9. Proposed street amenities

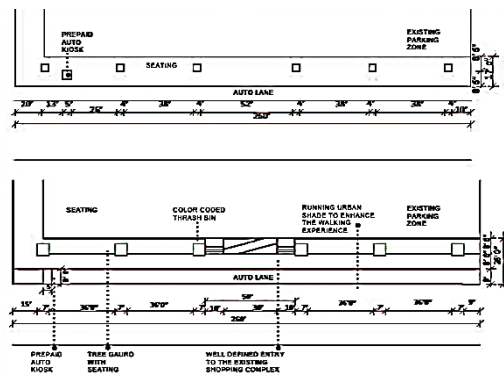


Fig.10. Proposed street amenities

**B. Residential area:**

- Node A: Junction of 2<sup>nd</sup> main road and 7<sup>th</sup> cross road

The objective of this intervention is to provide a scheme to organize the community spaces for interaction and provide certain basic facility which is a requirement of the neighborhood, corresponding enhancement of the visual quality of the area. Design details for the street furniture as modules, address dramatic seasonal changes and consequent comfort of the users.

The proposed design intervention is to develop the node as public place while the designed street furniture as modules which can be used as ready urban insert module. Apart from site organization as a whole the design of the following elements are explored:

- Comfortable seating area
- Retaining wall design
- Guide lighting
- Auto Rickshaw stand

This intervention becomes crucial in this precinct as the vivacity of this node acts as a neighborhood landmark while aiding to locate the hidden bus stand. It also augments to the benefit of commercial stretch by bringing in people all through the day (early morning to late evening) thus ensuring the psychological safety around the precinct. (Refer Fig.11 & 12).

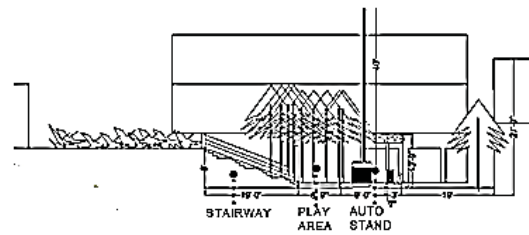


Fig.12. Proposed design intervention-section

**Node B: Junction of 3<sup>rd</sup> main road and 4<sup>th</sup> cross**

The design intervention in this node essentially is to reorganize the street furniture while providing alternative designs to address the user friendly aspects to ensure the spatial quality. The proposal can be adopted as an urban insert module for such similar junctions in residential areas. The street furniture (prototype) provided in the design are as follows:

- Sheltered Seating prototype
  - Signage
  - Pedestrian pavement
  - Curb details
  - Tree enclosure
- (Refer Fig.13 & 14)

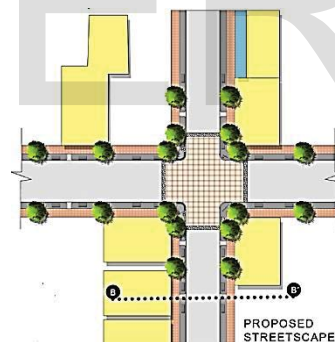


Fig.13. Proposed street amenities



SECTION AT B - B'  
 Fig.14. Proposed street section

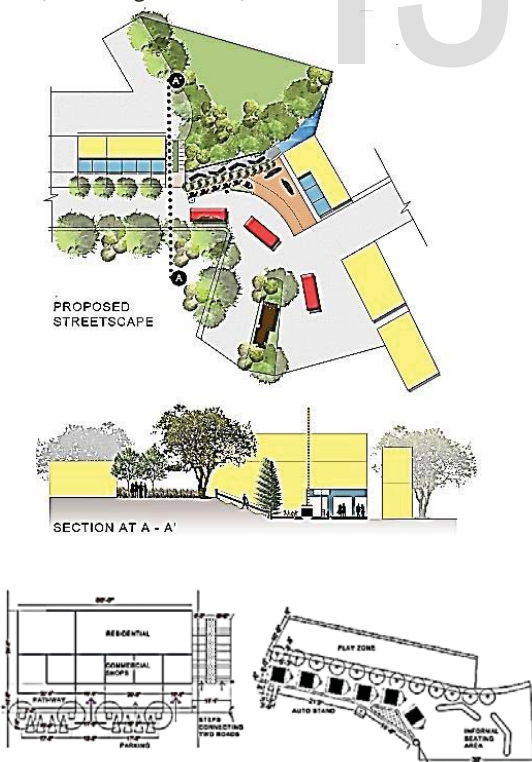


Fig.11. Proposed design intervention-plan

IV. PROTOTYPES –AS URBAN INSERTS

A. Key features of proposed urban inserts:

- All the designed modules are prototypes for urban inserts.
  - The design concept emphasize safety and user comfort.
  - Proposed prototypes are cost effective and easy to build.
  - Addresses the long term issues of maintenance, public safety, vandalism and enhances visual quality.
- The various designed urban inserts that can be used as urban inserts are as follows:

a) Prototype module- Bus shelter (Refer Fig.15)

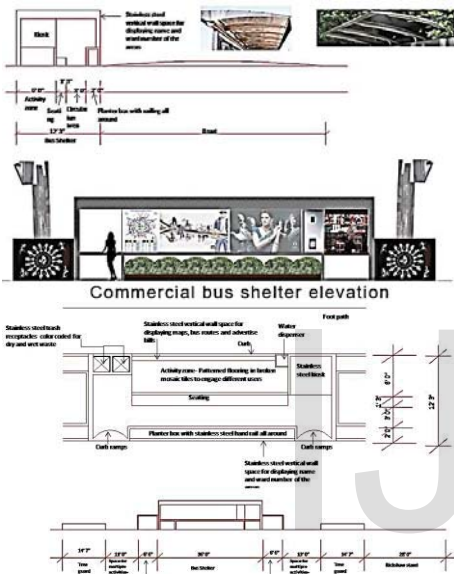


Fig.15. Prototype module-Bus Shelter

b) Prototype module-Public resting point (Refer Fig. 16)

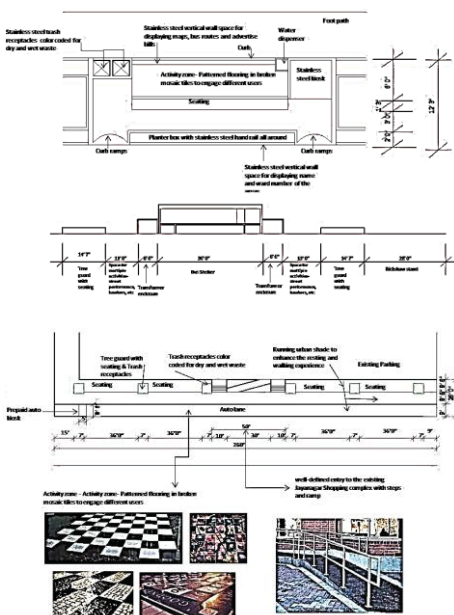


Fig.16. Prototype module-Public resting point

c) Prototype module-Seating prototype (Refer

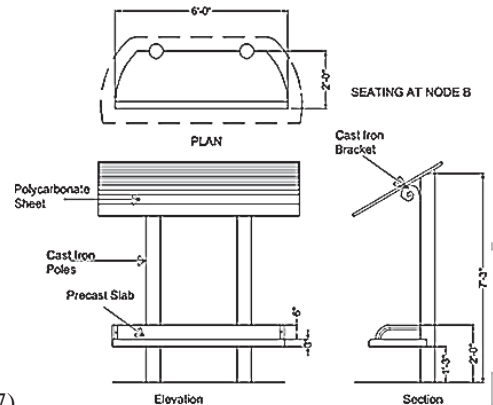


Fig.17)

Fig.17. Prototype module-Seating prototype

d) Prototype module-Signage with Guide light prototype (Refer Fig.18)

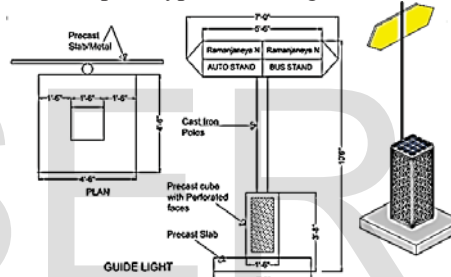


Fig.18. Prototype module-Signage with Guide light prototype

e) Prototype module- Trash receptacles color coded for dry and wet waste for commercial area. (Refer Fig.19)

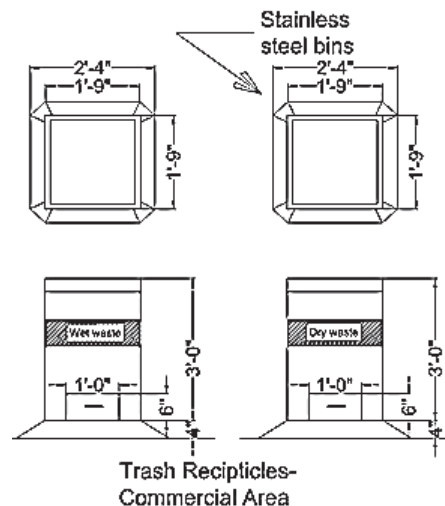


Fig.19. Prototype module- Trash receptacles for commercial area

f) Prototype module- Trash receptacles color coded for dry and wet waste for residential area. (Refer

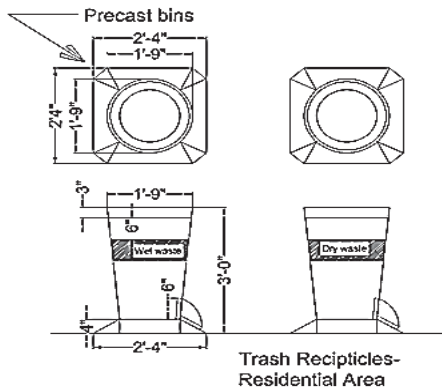


Fig.20)

Fig.20. Prototype module- Trash receptacles for residential area

g) Prototype module- Green retaining wall.

The retaining wall is of rigid construction since aesthetic is the primary concern.

The proposed retaining wall in precast concrete combines vegetation and structural elements in retain sloped embankments and accommodates changes in elevational material. (Refer Fig.21)

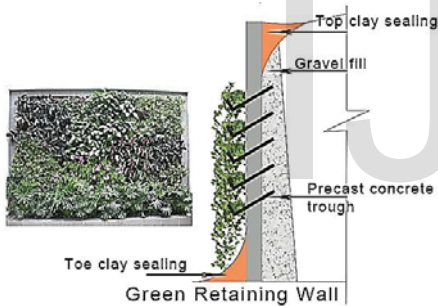


Fig.21. Prototype module-Green retaining wall

h) Prototype module- Rigid pavement in concrete and terracotta

Two kinds of Pavements are proposed Rigid Pavement and Flexible Pavement. Concrete is used for rigid pavement where it requires high compressive strength; distribute the load over a relatively wide area. The Proposed Auto stand area has concrete paving with pattern embarked. It is also used in the outer part of the Pedestrian path along the roads (Refer Fig.22)

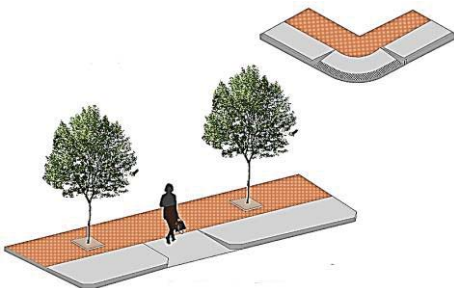


Fig.22. Prototype module- Rigid pavement in concrete and terracotta

i) Prototype module- Tree enclosure . (Refer Fig.23)

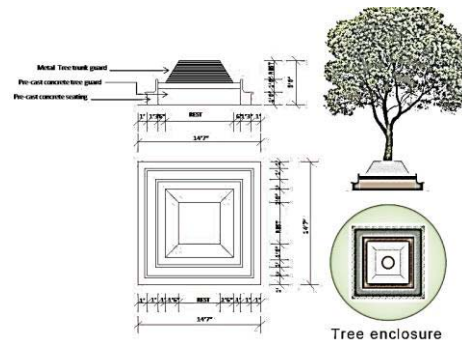


Fig.23. Prototype module-Tree enclosure

j) Prototype module- Urban Shade (Refer Fig.24)

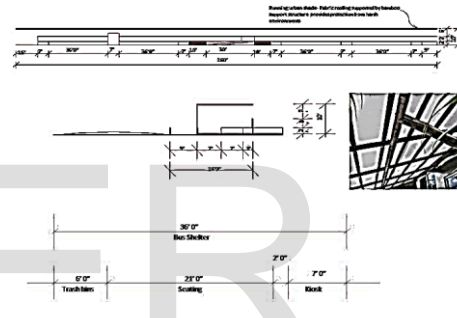


Fig.24. Prototype module-Urban shade

k) Prototype module- Seating (Refer Fig.25)

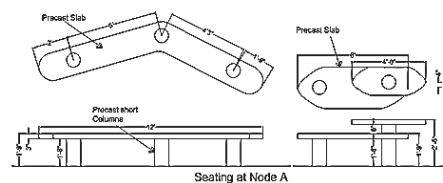


Fig.25. Prototype module-Seating

## V. CONCLUSION

The study and analysis outlines that the urban streets in many Indian cities anomaly fall under conventional use-zoning theory which works strongly with the kind of functionality and nature of evolution that the streets have gone through over the years also pointing at the possible future trends. The urban design interventions discussed in this paper, though case specific deliberates the scheme. Each module design is based on user comfort, size and nature to suit Indian streets. Hence can be used as ready- to- use urban inserts in such similar street and node scenarios. The study of the neighborhood refers to the spaces which are seen as residual spaces formed either by the geometry of the infrastructure and buildings or the pattern of land use.

The pedestrian movement is stunted mainly as it lacks meticulously worked street amenities . In this regard, the urban design interventions discussed in this paper that are pedestrian friendly and ready- to- use urban inserts shall be employed to enhance the city experience on foot. This enriched pleasant experience acts as an incentive for urban dwellers to use public transport.

The paper identifies a typical case to demonstrate how such ignored spaces can boost up neighborhood's vitality. Such designed spaces in neighborhood positively can promote social integration.

The prototypes aid to create coherent and vibrant streets and nodes by providing visual and physical access. The organization of street furniture not only gives the visual accessibility but also contribute to the free pedestrian movement which is a lacuna and crucial to the Indian city streets and nodes. These interventions essentially augment the legibility of public realm in Indian cities.

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