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Effective Use of Urban Voids: A Case of Indore

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Abstract - Flyovers have become essential elements of urban infrastructure, playing a crucial role in addressing the challenges of traffic congestion and facilitating efficient transportation networks within cities. While serving as vital transportation infrastructure, they often generate unintended consequences in the form of urban voids These voids are commonly observed in urban environments, where elevated road networks create empty spaces beneath them. These spaces often suffer from neglect, resulting in underutilized and unattractive areas within the city fabric. However, these urban voids have the potential to be transformed into vibrant community spaces that contributes to the overall livability and sustainability of cities. This paper aims to explore the concept of urban voids under flyovers, examining the challenges they present as well as the opportunities they offer for revitalization and community engagement.

***Key Words*:** Urban Voids, Underutilized, Sustainability

1.INTRODUCTION

Rapid urbanization, population growth, and increased vehicular traffic have led to escalating congestion on urban road networks. Urbanization is a well-known phenomenon that is spreading around the world, with the urban population expanding quickly between 30% in 1950 and over 55% in 2018. The cities today face a lot of population growth issues which could escalate further in future with the ongoing trend in progress. Flyovers in urban areas have emerged as a solution to alleviate traffic congestion and enhance transportation infrastructure, allowing for smoother and faster movement of vehicles. As cities expand and infrastructure needs intensify, flyovers are constructed to meet the growing demands of urban mobility. Due to their elevated nature and the spaces created underneath and around them, they can result in the formation of urban voids. The paper explores the challenges associated with urban voids, such as safety concerns and lack of amenities, while also discussing the numerous opportunities they present for revitalization, social interaction, and sustainable development.

2. Background

Urban voids are defined as "Unutilized, underutilized, or abandoned land or areas and premises which exist in city areas owing to outdated or defunct uses. These voids can have both positive and negative impacts on cities. On the positive side, they can provide opportunities for creative interventions, adaptive reuse, and temporary or permanent urban transformations. These spaces can be utilized for various purposes, including public art installations, community gardens, recreational areas, or pop-up markets. They can also serve as buffer zones between buildings, helping to reduce urban heat island effects, provide natural ventilation, or create visual relief within densely built areas.

However, urban voids can also pose challenges and have negative effects. They can contribute to the deterioration of urban aesthetics, attract illegal activities, and create safety concerns. Vacant lots, for instance, may become dumping grounds for waste or breeding grounds for pests. Moreover, urban voids can disrupt the continuity of the urban fabric and hinder pedestrian connectivity if not properly integrated into the urban design and planning.

To address urban voids, cities often adopt strategies such as adaptive reuse policies, land-use planning regulations, and urban revitalization initiatives. By transforming these voids into vibrant and functional areas, cities can improve the quality of life for residents and create more inclusive and resilient urban environments.

Categories of urban Voids: Urban voids can be categorized based on different criteria. Here are a few common categories of urban voids:
Physical Void: Empty spaces or gaps within the built environment. These can include vacant lots, abandoned

buildings, demolished structures, or unbuilt areas within urban settings.

Infrastructural Void: Spaces created by infrastructure elements that result in underutilized or disconnected areas. This category includes underpasses, flyovers, bridges, tunnels, or elevated highways that can create urban voids beneath or around them.

Disused Spaces: Spaces that were once functional but are no longer in use. This category includes abandoned factories, closed-down warehouses, decommissioned railway tracks, or unused industrial areas that have become vacant or neglected.

Unplanned or Informal Spaces: Spaces that have emerged spontaneously or without formal planning. These can include vacant lots that have been informally occupied, temporary or ad hoc structures, or unplanned pedestrian pathways.

Interstitial Spaces: Small, leftover spaces between buildings or within urban blocks. These can be narrow alleyways, small courtyards, or gaps between structures that are often unutilized or overlooked.

Negative Public Spaces: Spaces that have a negative impact on the surrounding urban environment. These spaces can be characterized by poor maintenance, lack of amenities, or inadequate design. Examples include underused parks, poorly designed plazas, or neglected public squares.

Brownfields: Abandoned or underused industrial or commercial sites that may be contaminated or perceived as contaminated. These spaces often require remediation before they can be redeveloped or repurposed.

3 Urban Voids under Flyovers

Urban voids under flyovers are specific examples of underutilized spaces within urban environments. Flyovers, or overpasses, are elevated roadways or bridges that allow traffic to bypass congested areas or intersections. The spaces underneath these flyovers often remain unused or neglected, resulting in vacant spaces. These voids under flyovers can vary in size and shape, depending on the design and construction of the flyover. These spaces can be found in different urban contexts, ranging from busy city centers to residential areas. The presence of an urban void under a flyover can be attributed to several factors:

Factors	Issues
Lack of accessibility:	Underpasses or areas beneath flyovers may not have proper pedestrian or vehicular access, making them unattractive or difficult to use.
Perception of safety:	Some people may perceive these spaces as unsafe due to limited visibility, poor lighting, or potential for criminal activities.
Noise and pollution:	The proximity to heavy traffic on the flyover can result in increased noise and air pollution, making the spaces less desirable for various activities.
Disruption of connectivity:	The presence of a flyover can create physical barriers, disrupting pedestrian and bicycle connectivity in the surrounding area.

Efforts have been made in many cities to activate and transform urban voids under flyovers into more functional and vibrant spaces. Some common strategies include:

Urban design interventions: Redesigning the spaces to improve accessibility, enhance aesthetics, and create better integration with the surrounding urban fabric. This can involve adding pedestrian walkways, bike lanes, seating areas, green spaces, and public art installations.

Community engagement: Involving local communities and stakeholders in the decision-making process to understand their needs and preferences. This can help shape the transformation of the urban voids under flyovers into spaces that reflect the community's aspirations.

Mixed-use development: Introducing commercial or recreational facilities, such as cafes, shops, or sports facilities, to attract people and encourage activity in these underutilized areas.

Safety and security measures: Implementing measures to improve lighting, surveillance, and overall safety to address concerns and create a more welcoming environment.

It is crucial to involve local communities, stakeholders, and urban planners in the revitalization process to ensure that the interventions align with the specific needs and aspirations of the area.

4 Case study

4.1 Case Study under garden Matunga flyover

Figure 1 (source: indiatimes)

The creation of an under-flyover garden in Matunga, Mumbai presents an inspiring case study of transforming an urban void into a vibrant and functional space. The under-flyover garden is a well-designed and landscaped space that stretches beneath the flyover structure. It features lush greenery, colorful plantings, seating areas, pathways, and recreational facilities. This beautiful garden has a 600 M long jogging track and a Childrens play area. It has 300 lights and 11 rotatable cameras to ensure safety of the users.

Figure 2 (source: Indiatimes)

There is limited accessible area to the space and bollards are used at the entrance. Grills are used on both the sides to ensure safety. Initially the site was a Hangout zone for hawkers, gamblers, drug addicts and encroachers. The idea of transforming the urban void under the flyover into a garden was initiated by local residents, supported by civic bodies and urban planning agencies. It was first constructed in 2014 but due to a few political issues was inaugurated in 2016. This under garden creates a visually appealing and accessible environment that enhances the beauty of the locality.

4.2 Case Study (Kathipara Junction flyover)

The Kathipara junction is probably one of the busiest and most important junctions in Chennai. The square was previously an underutilized space characterized by congestion, inadequate pedestrian infrastructure, and lack of amenities. The area beneath the flyover has been transformed into a multifunctional public space that encourages social interaction & fosters community engagement. The project would also act as a resting point for several commuters coming into the city from various points.

Figure 3 (source: the hindu)

It is 500m away from the alandur metro station. Spread across an area of 5.9lakh sq ft and constructed at a cost of Rs 14.5 crores, this multi modal transport hub has got many facilities such as parking lots, bus bays, eateries, play area etc. The flyover is in the form of 4 leaf clovers and the place beneath is divided into 4 zones. In these 4 zones there is 62,322 sq ft area available for parking. Likewise, 33250 sq ft area is available as retail space and 32808 sq ft areas available for walkways and restrooms. The dining area would be available on a space of 9311 sq ft and children's play area would be available on a space of 4884 sq ft.

Figure 4 The Hindu

4.3 Case Study (sports facility Sanpada flyover)

Figure 5(Hindustantimes.com)

Mumbai has been facing the issue of an overflowing population for a long time now. This has resulted in lack of open spaces and grounds. To deal with these problems, a sports facility recently of 2745 sqm under Sanpada, flyover, Navi Mumbai has been created. A clever solution of turning an open space beneath a bridge into a playground that acts as recreational space. The sports facility has a badminton courts, a skating rink, a box-cricket set-up, and space for yoga. The structural members visible beneath the bridge are painted in different colors to give it a sense of a play area.

Figure 6 (Maharashtratimes)

5 Methodology

This research study was based on a case study approach to identify ways and successful practices in designing and developing urban voids. The flyovers are then identified in a particular city and stated along with its context. This paper then attempts to propose a basic prototype as an example to the context of the flyover in the mentioned city and provide alternate strategies that could be used for urban void under flyovers.

5 Data Collection and analysis

Indore, one of the fastest-growing cities in India, is experiencing significant population growth and urbanization. Today, Indore plays a crucial role in the economic, educational, cultural, and tourism sectors of Madhya Pradesh, making it a significant city within the state. It is a major Economic Centre in Madhya Pradesh and is considered the commercial capital of the state. It is also a prominent destination for healthcare services in Central India.

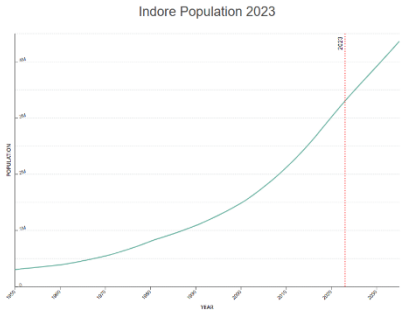

Figure 7 Worldpoulationreview.com

The population of Indore is increasing every year on a continuous basis. The city has grown by 93,355 in the last year, which represents a 2.91% annual change. In 1950, the population of Indore was 302,233. Today it stands at 32,76,697 which is estimated at 3.9 million by 2030. This substantial increase in population is leading to a surge in vehicular traffic on its roads. With the consistent increase of population, the city has started to struggle in accommodating the rising number of vehicles, resulting in congestion during peak hours. This could arise the need of more flyovers in the city.

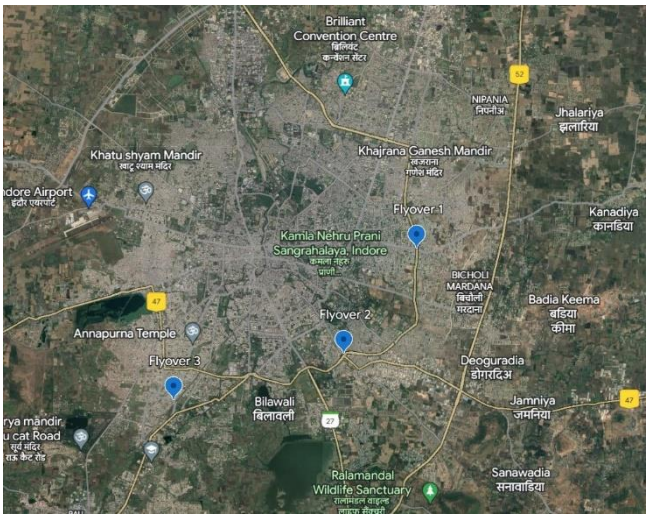

Figure 8 Indore Map (Google earth)

Void No	1	
Location	Bengali Square ring road, Indore	
Ownership	Government	
Current use	Informal markets	
Surrounding Area	Commercial Area, Banks	
Surrounding Environment	Noisy, High Traffic Area	
Coordinates	22°43'11"N75°54'22"E	
Void No	2	
Location	Teen Imli Square, Indore	
Ownership	Government	
Current use	Informal markets, unauthorised Parking	
Surrounding Area	Commercial Area, Public Facilities	
Surrounding Environment	Noisy, High Traffic Area	
Coordinates	22°41'22"N75°52'58"E	
Void No	3	
Location	Prateek bridge, Indore	
Ownership	Government	
Current use	Unauthorised Parking	
Surrounding Area	Residential Area, Railway Line	
Surrounding Environment	Medium Traffic Area	
Coordinates	22°40'30"N75°49'54"E	

Exisitng Flyover in Indore city (as Marked in the Fig 9)

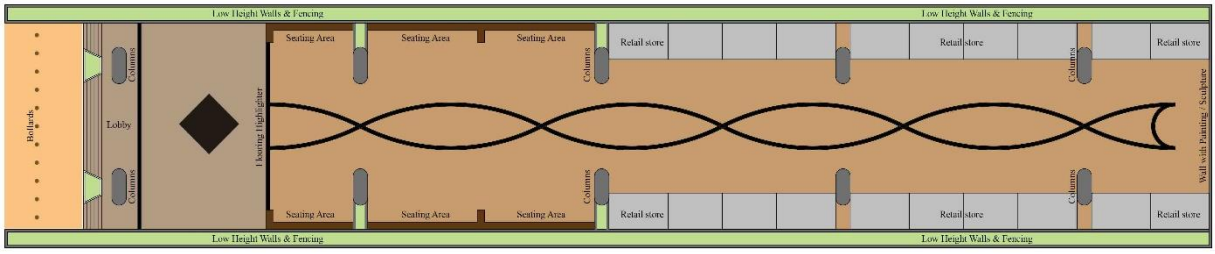

Figure 10 (Proposed Prototype Schematic Plan)

6 Strategies

The proposed prototype (figure 10) is developed for Void no 2, where the pedestrian movement is substantial across the road. Each urban void under a flyover has to be designed with the surrounding context for a sustainable use. The Void no 2 in the above table already has an informal market. Similarly, the Void No 3 is in a residential area and can be designed for a different type of use such as parking.

Revitalizing urban voids under flyovers presents opportunities to transform these underutilized spaces into vibrant and functional areas. Here are some other potential opportunities for revitalizing urban voids under flyovers:

Public Spaces: Underutilized areas beneath flyovers can be transformed into public spaces that serve as gathering places for communities. They can be designed as parks, plazas, or recreational areas, offering amenities like seating, green spaces, and play areas. Creating inviting and accessible public spaces can enhance social interaction and community engagement.

Active Transportation: Urban voids under flyovers can be repurposed to improve active transportation infrastructure. This includes creating dedicated pedestrian and cycling paths, connecting neighborhoods and improving connectivity. These interventions encourage non-motorized transportation, promoting healthier and more sustainable modes of commuting.

Art Installations and Cultural Spaces: Transforming urban voids under flyovers into art installations and cultural spaces can add aesthetic value and contribute to the cultural identity of the city. Artistic murals, sculptures, or interactive installations can be incorporated to create visually appealing and engaging environments, attracting visitors and fostering creativity.

Retail and Commercial Spaces: Underutilized spaces under flyovers can be transformed into vibrant retail or commercial areas, such as markets, food stalls, or small shops. This revitalization can enhance local economies, provide employment opportunities, and activate the area by attracting people for shopping or dining experiences.

Community Gardens: Creating community gardens or urban farming initiatives in urban voids under flyovers can help address food security concerns and promote sustainable agriculture. These spaces can provide opportunities for community engagement, education, and promote a sense of ownership and stewardship.

Cultural Events and Performances: Urban voids under flyovers can be utilized for hosting cultural events, performances, or outdoor concerts. Temporary stages, seating areas, and lighting installations can be set up, activating the space and attracting diverse audiences. Such events contribute to the vibrancy of the city and encourage cultural participation.

Integrated Infrastructure: Urban voids under flyovers can be utilized for integrating necessary infrastructure elements. For example, rainwater harvesting systems, renewable energy installations, or smart city technologies can be incorporated into the design, making the space not just visually appealing but also sustainable and efficient.

Conclusion:

In conclusion, this research paper has delved into the topic of urban voids under flyovers in India, exploring their characteristics, causes, and implications for urban planning and design. The research has revealed that urban voids under flyovers in India are a prevalent issue, characterized by their underutilized and neglected nature. These spaces suffer from a lack of maintenance, inadequate lighting, limited amenities, and poor accessibility, contributing to their unattractive and unsafe conditions. As a result, they become breeding grounds for various social issues such as illegal activities, waste accumulation, and encroachments.

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