Atal Mission for Rejuvenation and Urban Transformation

AMRUT Centre of Urban Planning
for Capacity Building
A-CUPCB-SPAV

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OPERATIONAL PLAN FOR VIP VEHICULAR MOVEMENT IN VIJAYAWADA

Interim Report
APRIL 2025

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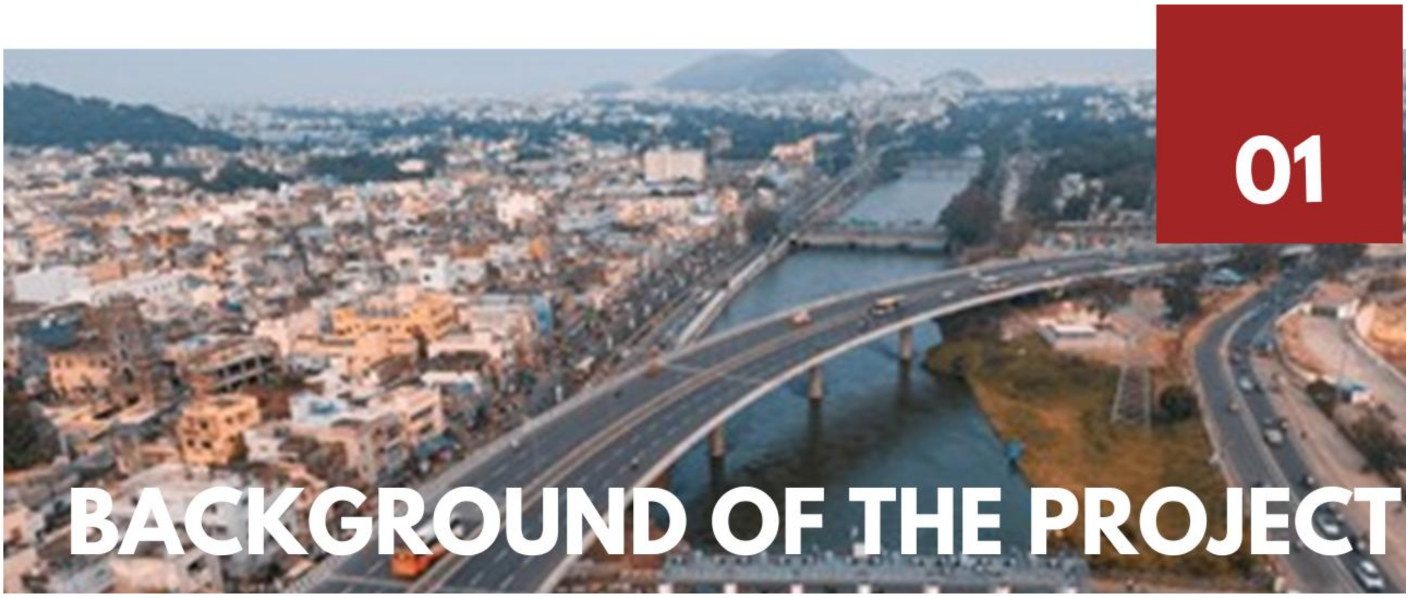


1.1 INTRODUCTION

Andhra Pradesh, as a recently established state, is engaged in the development of its economic, political, social, and industrial hubs. For the last fifty years, Vijayawada has been the second-largest city and has functioned as the commercial center of Andhra Pradesh. Nonetheless, with the recent designation of Amaravati as the capital, Vijayawada serves as both the business core and the political center of the state. All political activity are presently concentrated on Amaravati, with primary roads linking Vijayawada International Airport at Gannavaram to the Amaravati Secretariat. The transit of VIPs within the VMC area has begun to complicate traffic for both the general public and VIP travelers. Implementing an effective traffic management system for Vijayawada could promote VIP travel and improve overall mobility inside the city.

Keywords: Delays and Stagnation, Short-term Traffic Management Plans, Signal Phasing,

1.2 PROJECT OVERVIEW

The necessity for an interim traffic management strategy for VIP vehicle movement in capital cities stems from the distinct problems of maintaining efficient mobility and security for VIPs. Global capital cities function as centers for political, economic, and cultural activities, requiring efficient traffic management solutions to ensure operational continuity and public safety during VIP vehicle movements. VIP vehicular movements frequently impede normal traffic flow due to security measures and the necessity for swift, uninterrupted travel. This inconvenience impacts daily passengers utilizing these routes. Therefore, it is essential to formulate short-term traffic management strategies that reconcile VIP security requirements with the need to reduce interruptions for daily commuters and maintain road safety, thus optimizing the utilization of existing road infrastructure and enhancing present road capacities. Efficient traffic management solutions for VIP movements generally encompass temporary road closures, specified VIP routes with enhanced security protocols, and synchronized communication plans to notify the public regarding alternative routes and any delays. Furthermore, the implementation of technology-driven solutions can enhance traffic flow and alleviate congestion during VIP movements. This optimization is essential for preserving order, safety, and accessibility in urban environments. Consequently, it is imperative to formulate a short-term traffic management strategy for Vijayawada, specifically connecting Gannavaram Airport with Amravati and the principal administrative buildings in the city. At present, these regions possess adequate connectivity through key roadways; yet, they encounter substantial traffic congestion, leading to considerable delays for VIP vehicles and hindering regular commuter flow. Formulating an operational plan for VIP movements would guarantee that both daily commuters and VIP cars experience enhanced traffic flow and increased transportation efficiency inside the city.

OVERVIEW OF TRANSPORTATION IN VIJAYAWADA

Road Network: Vijayawada serves as a significant nexus with superior connectivity via National Highways (NH-16, NH-65), railroads, and airplanes. It is among the largest railway crossroads in Andhra Pradesh. NH-16 links Chennai to Kolkata, whilst NH-65 connects Hyderabad to Vijayawada. The city of Vijayawada possesses an extensive network of roads. The city's arterial roads are adequately broad. Vijayawada possesses two National Highways (NH-16 and NH-65), six principal highways, and one bypass road. Furthermore, the city possesses multiple sub-arterial roads. The principal thoroughfares are: Bandar Road, Eluru Road, G.S. Raju Road, C.K. Reddy Road, Nehru Road, and Tunnel Road.

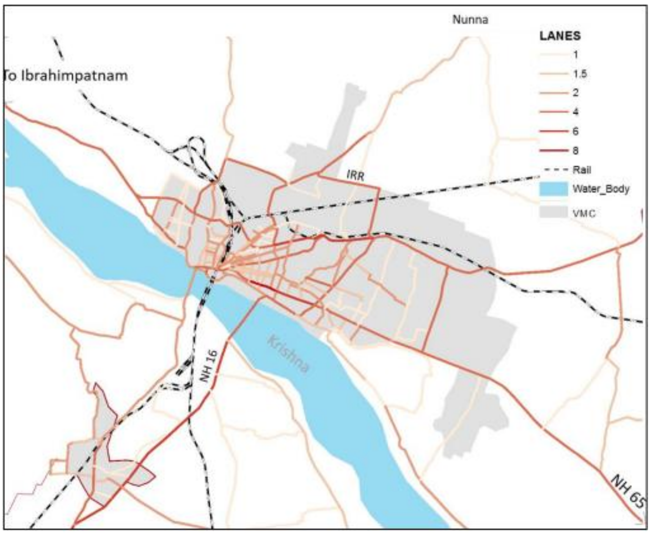


Figure 1 Roads in Vijayawada (by lane configuration) Source: CMP Vijayawada by AMRCL., 2017

Travel Patterns: The average travel speed within the city is 22.4 km/h, hindered by congestion and poorly coordinated intersections. Two-wheelers and shared auto-rickshaws prevail as the main modes of transportation for short to medium distances. Shared auto-rickshaws offer comprehensive connectivity along principal roads. Passenger Trip Demand: 625,000 trips per day at internal cordon sites, indicating robust regional and intra-city connectivity.

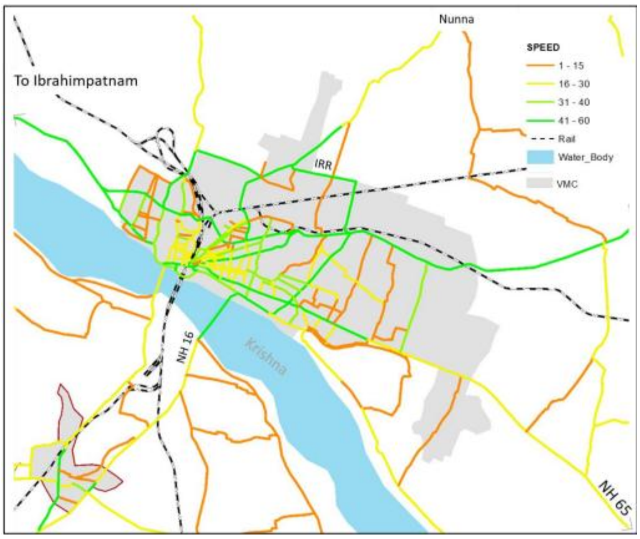


Figure 2 Roads in Vijayawada (by speed) Source: CMP Vijayawada by AMRCL

Traffic Volume and Flow in brief: Peak traffic volumes are recorded on major arterial roads: Benz Circle (NH-16) experiences a daily traffic volume of 87,515 automobiles. Fire Station Junction (Bunder Road): Encounters significant congestion owing to its nearness to commercial and institutional zones. Traffic volumes on roadways demonstrate an almost equal directional distribution, with the exception of the Kanakadurga Temple route towards the barrage, which has a 22/78 split.

Directional Splits and Volume Counts: Directional splits on major roads like NH 5 range between 44/56 and 46/54, showing relatively balanced flows. Traffic flow is highest on Bander Road and NH 5 near Benz Circle, with daily vehicle counts exceeding 85,000 in some segments.

Per Capita Trip Rate: PCTR for Vijayawada Urban Area is 1.04, while the vehicular PCTR is estimated at 0.62. A total of 10,41,904 trips are performed daily (including walking), with 6,25,144 trips involving vehicular modes. This indicates that most inter-zonal trips are made using vehicles, whereas intra-zonal trips are predominantly completed on foot.

Traffic Network and Issues: The city experiences radial network connectivity, linking suburban areas. Ribbon development along highways has caused congestion, especially due to commercial centers and hawkers encroaching arterial roads. Congestion is aggravated by improperly planned intersections, lack of organized parking spaces, and narrow streets.

Causes of Delay	**No. of Points that Caused Delay**	**Percentage (%)**
Traffic	21	42.86
Junctions & Signals	25	51.02
Animal	1	2.04
Geometrics	0	0
Condition of the Road	0	0
Other	0	0
Pedestrian	2	4.08
Total	49	100

Source: Comprehensive Mobility Plan for Vijayawada

Travel speed of personal vehicles along key corridors

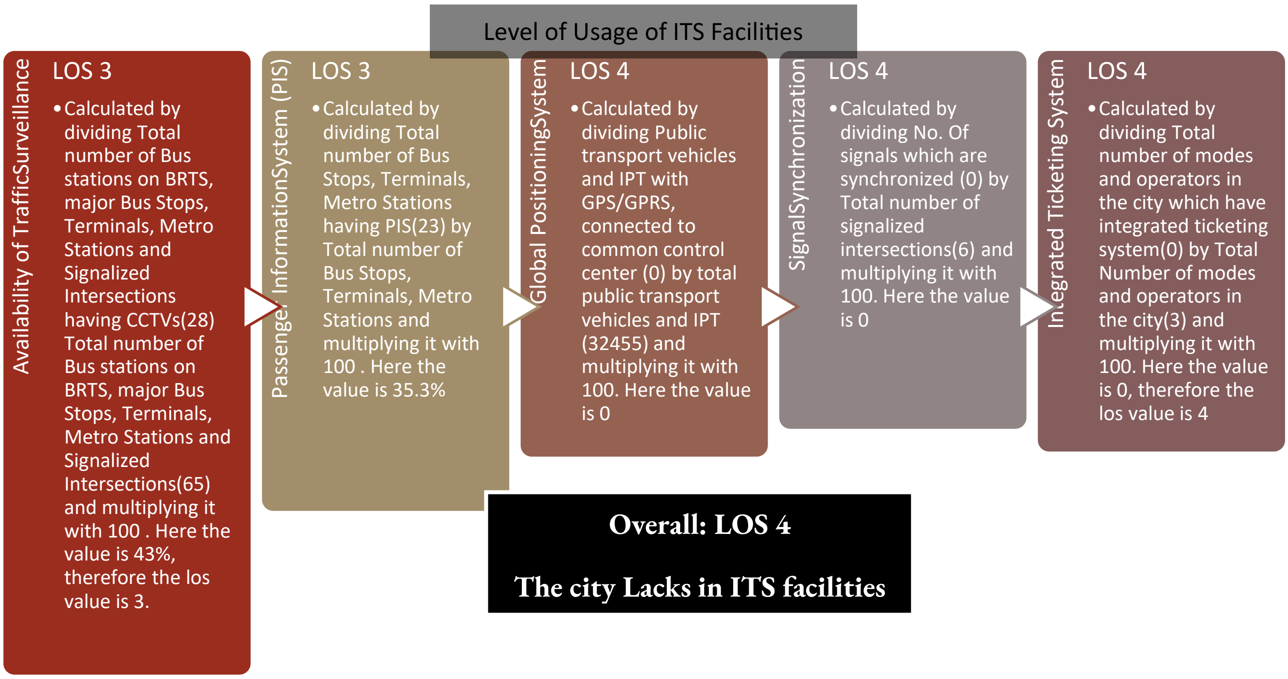
LOS 2

The calculation of Travel Speed of Personal Vehicles along Key Corridors is based on Speed and Delay Survey data of Vijayawada. On these corridors, average speeds during peak hours on working days observed average travel speed for personal vehicles in Vijayawada is 25.5 Kmph

Remarks: Small increase in flow may cause substantial increases in approach delay and hence decrease in arterial speed.

Level of usage of its facilities in Vijayawada: Indicates the efforts to add information technology to transport infrastructure and vehicles in an effort to manage factors that are typically at odds with each other. Indicators

1. Availability of traffic surveillance
2. Passenger information system (PIS)
3. GPS/GPRS Systems
4. Signal Synchronization
5. Integrated Ticketing System



This afforded us a comprehensive glimpse of Vijayawada city. The traffic conditions in Vijayawada have changed along the National Highways, and the suggestions in the AMRCL study were executed for road expansion. Nonetheless, the traffic congestion at peak hours remains mainly unaltered. This study analyzes both the mobility of VIPs and the traffic management strategy at the corridor level.

2.1 CONCEPTUAL LITERATURE

The project primarily focuses on Traffic management plan at corridor level, Route Optimization, Intelligent Transportation System, Emergency and Contingency Planning, Framework and operation of Special vehicles, Micro Simulation using transportation software.

2.1.1 Corridor-level transportation studies

Corridor-level transportation studies are critical tools used by transportation planners, engineers, and policymakers to analyze and improve mobility along major transportation corridors. These studies evaluate existing conditions, predict future demand, and propose improvements for efficient and sustainable transportation for short term planning. A transportation corridor is a defined route where people and goods move between key destinations. These corridors may include highways, arterial roads, transit routes, freight rail lines, or multimodal networks (a combination of different transport systems).

Objectives of Corridor Studies:

- Reduce congestion and delays.
- Improve multimodal connectivity (integrating cars, buses, trains, bikes, and pedestrians).
- Enhance environmental sustainability.
- Support economic growth and land development.
- Increase safety and accessibility for all users.

2.1.2 Intersections

An intersection is defined as "the general area where two or more highways join or cross, within which are included the carriageway and roadside design features which facilitate orderly traffic movements in that area". An intersection leg is "that part of any one of the highways radiating from an intersection which is outside of the area of the intersection proper."

2.1.2.1 Hierarchy & Type of Intersections

Intersections can be classified into these categories depending on traffic conditions:

Uncontrolled Intersections at-grade: These intersections are between roads with relatively low traffic volume, where neither road has precedence.

Intersection with Priority Control: The major road theoretically experiences no delay, while vehicles on the minor road are controlled by "GIVE WAY" or "STOP" signs.

Time Separated Intersection/Signalized Intersections at-Grade: These intersections use traffic signals, justified per IRC:93-1985 warrants; typically warranted when the major street has 650-800 vehicles per hour (both directions) and the minor street has 200-250 vehicles per hour (one direction).

Space Separated Intersection/Grade Separated Intersections: Also known as interchanges, warrants for these are given in IRC:92-1985, typically justified when total traffic across all arms exceeds 10,000 PCUs per hour.

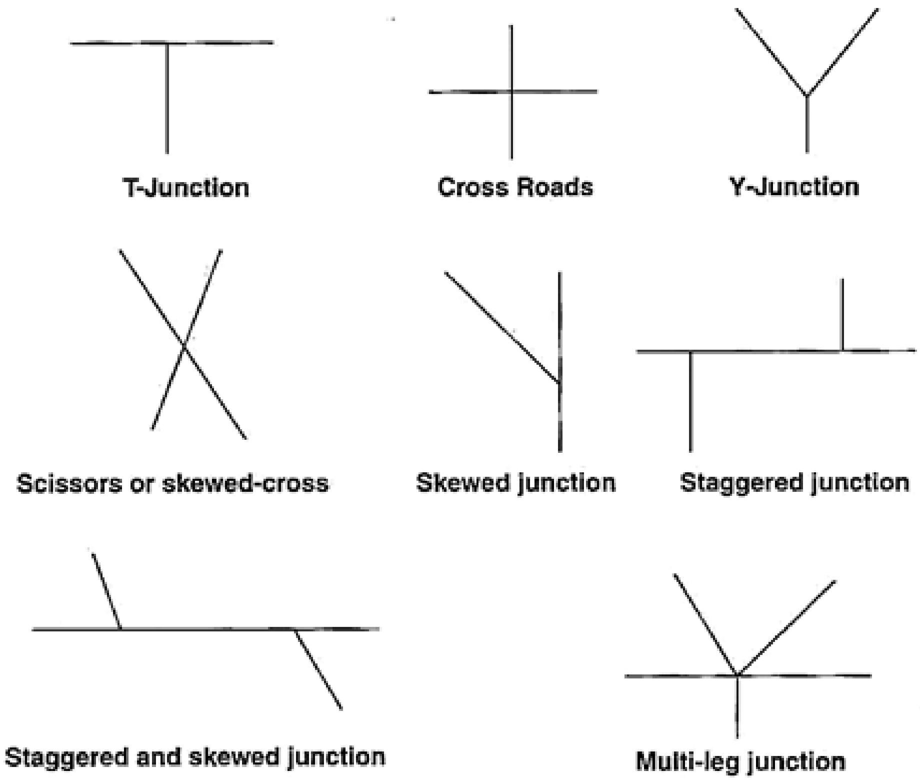


Figure 3: Types of At-Grade Intersection

2.1.2.2 Conflict Point Diagrams

When two or more roads intersect or cross, the users of these roads have to necessarily adjust their movement in order to avoid 'collision'; this adjustment could be by way of reduction in speed and/or change in the path of their motion.

Depending upon the direction or intersection leg towards which the driver of an approaching vehicle wants to travel, he or she has to make certain kinds of traffic maneuvers at the intersection area.

Thus, depending on the maneuvers chosen by individual drivers, conflicts tend to occur between their vehicles; Traffic conflicts tend to occur at or near intersections; they are potential sites of accidents and are therefore important in the consideration of road safety. Figure below shows traffic conflict points at intersections.

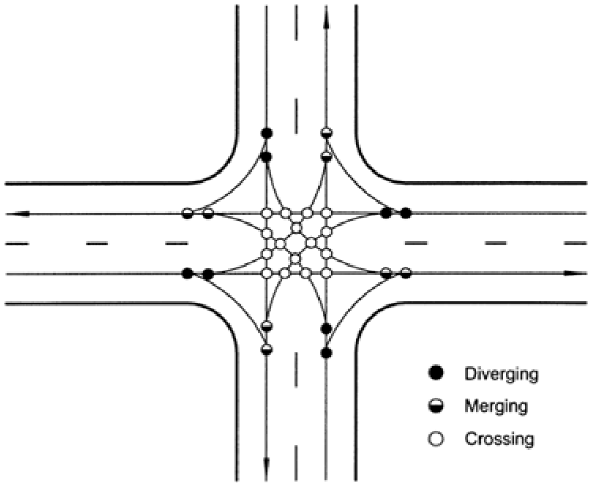


Figure 4: Conflict Point Diagram for 4-Armed Junction

Four-armed Junction will be having total of 32 Conflict (8-Diverging point, 8-Merging point, 16-Crossing Point)

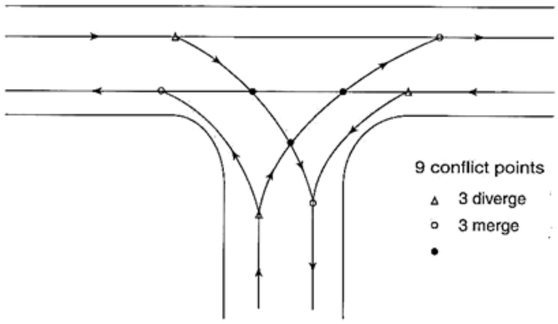


Figure 5: Conflict Point Diagram for 3-Armed

Three-armed Junction will be having total of 9 Conflict (3-Diverging point, 3-Merging point, 3-Crossing Point)

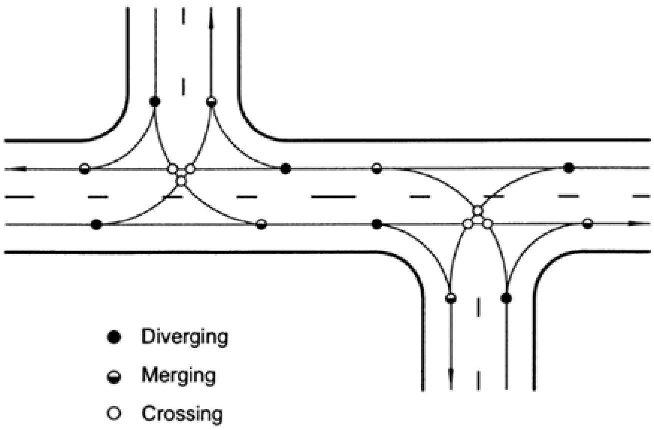


Figure 6: Conflict Point Diagram for Staggered Junction

Three-armed Junction will be having total of 18 Conflict (6-Diverging point, 6-Merging point, 6-Crossing Point)

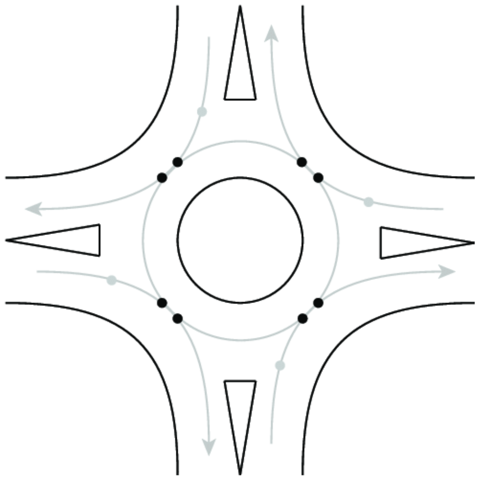


Figure 7: Conflict Diagram of Roundabout

Three-armed Junction will be having total of 8 Conflict (4-Diverging point, 4-Merging point)

2.1.3 Guidelines for Junction Design

IRC Code	Title	Key Features
IRC:70-2017	Guidelines on Regulation and Control of Mixed Traffic in Urban Areas	Recommends measures for segregating traffic, improving pedestrian safety, and implementing public transport lanes in urban areas.
IRC:93-1985	Guidelines on Design and Installation of Road Traffic Signals	Covers placement, timing, and coordination of traffic signals to manage congestion and ensure pedestrian safety. Specifies signal components and power requirements.
IRC:99-2018	Guidelines for Traffic Calming Measures in Urban and Rural Areas	Suggests physical measures like speed bumps, chicanes, and raised intersections to control vehicle speeds and enhance safety. Focuses on accident-prone zones.
IRC:SP:43-2022	Guidelines on Traffic Management Techniques for Urban Areas	Details advanced methods like intelligent transport systems (ITS), adaptive signals, and congestion pricing for managing traffic in urban environments.
IRC:SP:55-2014	Guidelines on Traffic Management in Work Zones	Focuses on temporary traffic management strategies, signage, and safety protocols to protect workers and travelers during road construction projects.
IRC:93-1985	Guidelines on Design and Installation of Road Traffic Signals	Covers placement, timing, and coordination of traffic signals to manage congestion and ensure pedestrian safety. Specifies signal components and power requirements.
IRC:65-2017	Guidelines for Planning and Design of Roundabouts	Includes geometric design parameters, entry/exit angles, central island design, and traffic volume considerations for smooth and safe operation.

IRC:63-2022	Code of Practice for Road Signs (Fourth Revision)	Provides specifications for uniform road signs, ensuring visibility, standard shapes, and consistent messaging. Emphasizes reflective materials and designs for night visibility.

Other important documents/reports on Traffic Management

S. No.	Guideline Document/Report	Source/Authority	Key Features
1	Manual on Road Safety	MORTH (India)	Guidelines for accident reduction, traffic control devices, and safety audits.
2	Manual on Uniform Traffic Control Devices (MUTCD)	FHWA (USA)	Standardized road signs, signals, and pavement markings for safe and efficient traffic movement.
3	Highway Capacity Manual (HCM)	TRB (USA)	Methodologies for analyzing traffic flow, road capacity, and intersection performance.
4	AASHTO Green Book	AASHTO (USA)	Guidelines on geometric design standards for highways and streets, including traffic management.
5	Unified Traffic and Transportation Infrastructure (Planning and Engineering) Centre (UTTIPEC) Guidelines	DDA, India	Guidelines for urban street design, pedestrian safety, and traffic calming in Indian cities.
6	Traffic Impact Assessment (TIA) Guidelines	MORTH (India)	Framework for assessing and mitigating traffic impacts of large-scale infrastructure projects.
7	Global Road Safety Facility	World Bank	Case studies and strategies for traffic management and road safety improvements.
8	PIARC Reports	World Road Association	Focused on traffic incident management, urban mobility, and ITS deployment.
9	Transport Systems Catapult Reports	UK	Research on smart traffic management solutions and sustainable transport technologies.
10	Traffic Congestion and Reliability:	FHWA (USA)	Comprehensive analysis of traffic congestion and potential management strategies.

	Linking Solutions to Problems		
11	European Commission's TRIMIS Reports	European Union	Traffic management systems and sustainable urban transport policies for European cities.
12	ITF (International Transport Forum) Reports	OECD	Guidelines on multimodal traffic management, ITS, and public transport integration strategies.

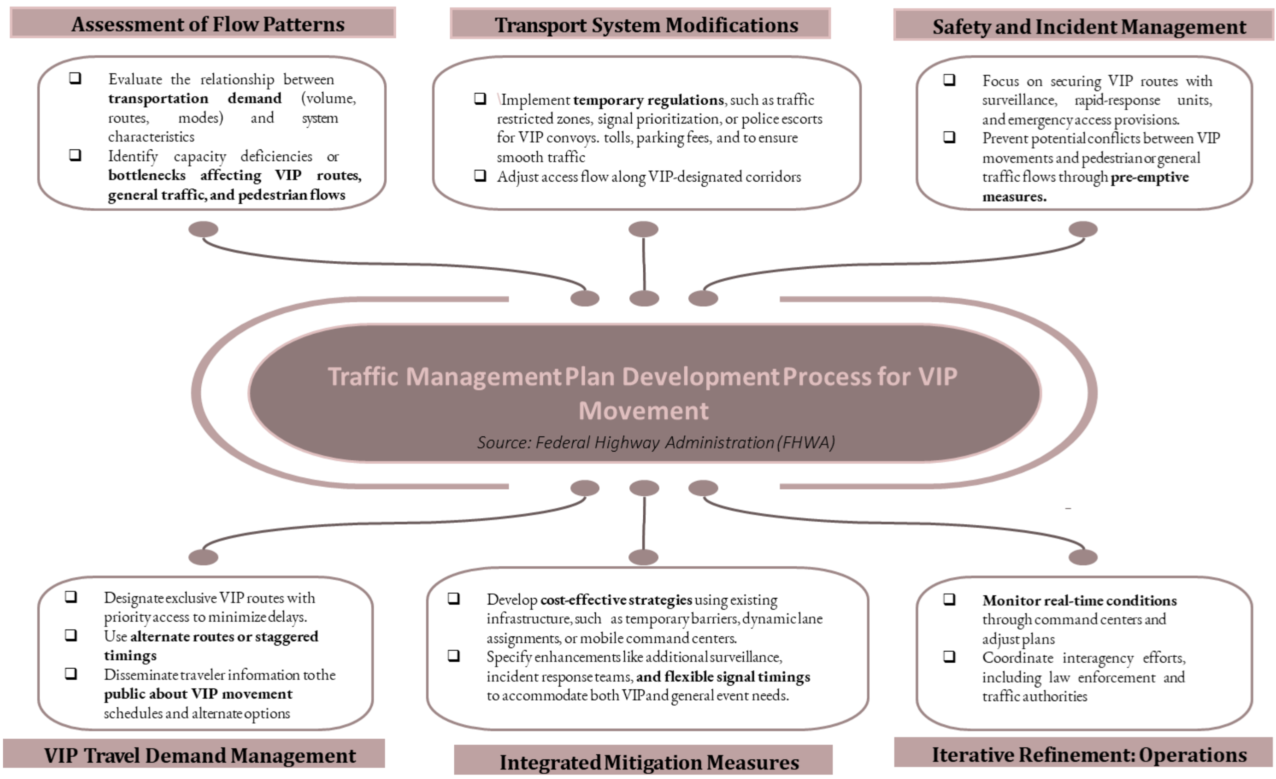


Figure 8: Traffic Management Plan Development process for VIP Movement (Source: FHWA)

2.1.4 Transportation System Management

2.1.4.1 Traffic Management

A Traffic Management Plan (TMP) specifies the allocation of traffic control and information measures in response to a specific, predefined traffic scenario, such as managing peak holiday traffic or closing a strategic route due to inclement weather, maintenance, or a serious road accident. The goal is to anticipate arrangements for real-time traffic flow control and guidance, as well as to consistently and timely educate road users about the traffic situation.

The plans, which will vary in detail depending on local conditions, apply to the following cases:

- Major traffic accidents.
- Heavy traffic and harsh weather conditions.
- Natural or technological calamities.
- Special events (sports, cultural, leisure) that cause abnormally high traffic volumes, capacity problems, or a significant displacement of road users

TMPs do not address all traffic problems, but they do mitigate the impact. They promote partner coordination and cooperation while also making it easier to reach mutual agreement on operational requirements.

A TMP will optimise the utilization of current traffic infrastructure capacity in response to a given scenario while also serving as a basis for a cross-regional and cross-border seamless service that offers consistent information to road users. The conditions described can be either unexpected (incidents, accidents) or predictable (recurring or non-recurring events). The actions are always transitory, even although "temporary" can refer to a long-term activity like construction or maintenance.

TMPs define and formalize:

- Decision making and coordination
- Driver and Traveler Information
- Coordinating traffic management and road information measures

The goal of this method is to mitigate the consequences of incidents that can cause substantial worsening in traffic conditions while also improving road safety. The goal is to coordinate action by the numerous authorities and services involved in the roadway's operation.

TMPs can be designed for corridors and networks with the goal of providing effective traffic control, route advice, and information to road users. Securing effective collaboration and coordination among the directly involved organisations can lead to an improvement in overall performance. By improving cooperation and mutual understanding, traffic management methods will be developed, deployed, and quality controlled in a more integrated manner.

Implementing TMPs reduces roadway disruptions, even if the originating event and its results deviate slightly from the TMP scenarios. When a TMP is implemented, the operator may initiate actions that are not mentioned in the plan, provided that the additional measures are compatible with the spirit of the plan and are agreed upon by the coordinating authority. To easily understand each other, all stakeholders must use common vocabulary and an agreed-upon referencing system for key places. Version control is critical for ensuring that everyone has access to the most recent version of the TMP.

The operational plan will cover the following key areas:

Component	**Considerations**
Traffic Flow Plan	- Route mapping for seamless VIP movement. - Identification of alternate and emergency routes.- Coordination with traffic management authorities.- Transit accommodation strategies to ensure continuity in public transport.- Implementation of optimized traffic signal timings and lane configurations.- Consideration of rerouting, temporary road closures, and adjusting traffic patterns for efficiency.
Traffic Control Plan	- Deployment of traffic control measures such as signal priority for VIP convoys. - Implementation of lane management strategies. - Real-time traffic monitoring to address congestion issues. - Coordination with enforcement agencies for smooth operations. - Application of advanced traffic modelling techniques to evaluate strategic interventions.
En-route Traveller Information Plan	- Use of dynamic signage and message boards. – Traffic Signal Synchronization. - Public information dissemination through media and other communication platforms.
Traffic Surveillance Plan	- Use of closed-circuit television (CCTV) for real-time monitoring. - Aerial and field observation techniques. - Integration of automated monitoring systems. - Media reporting to update stakeholders on the movement status.

Traffic Incident Management and Safety Plan	- Deployment of emergency response teams. - Development of crash prevention measures. - Quick clearance strategies for traffic incidents. - Implementation of public safety awareness campaigns.

Table 1: Traffic Management Plan Components

2.1.4.1.1 Strategies: Technological

INTELLIGENT TRANSPORTATION SYSTEMS:

Intelligent Transportation Systems (ITS) have emerged as a transformative approach to improving transportation networks by integrating advanced communication, control, and data processing technologies. The adoption of ITS aims to enhance safety, efficiency, and environmental sustainability in urban and interurban transportation systems. This literature study explores various ITS components, their applications, and the benefits they offer. ITS refers to the application of modern technology to improve transportation infrastructure and operations. According to various studies, ITS encompasses a range of systems, including traffic management, public transport enhancements, vehicle communication, and smart infrastructure.

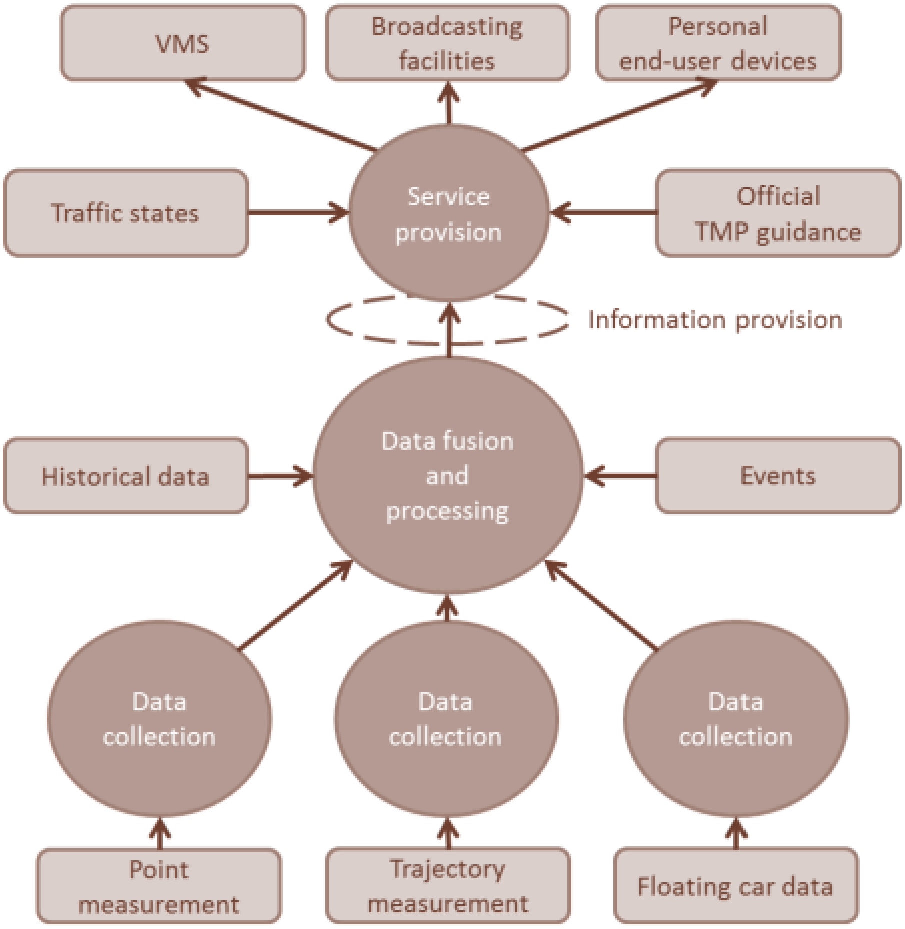


Figure 9: Travel Time Information Services- data and information flow

2.2 REVIEW OF RESEARCH ARTICLES

<u>**TITLE 1:** TRAFFIC CHARACTERISTICS EVALUATION & TRAFFIC MANAGEMENT MEASURES : DHARWAD CITY</u>

Abstract: Traffic management is the practice of maximizing the efficacy of an existing infrastructure in order to provide safe and reliable traffic operations. Most Indian cities are unplanned, and because to the catastrophic surge in automobile growth, it is critical for transportation planners to manage traffic using existing infrastructure at a low cost.

The large range of traffic units, with their vast differences in size and speed, causes a multitude of issues, including delays, congestion, accidents, and regions of conflict. The mixing of different types of cars reduces journey speed significantly, reduces road capacity, and causes severe congestion in the CBD region. Constant stops, acceleration and deceleration, and moving in low ratios all raise operational costs and vehicle wear and tear. Mixed traffic creates tensions, confusion, and aggravation, which leads to accidents.

Studies were conducted to calculate traffic conditions at midblock, space mean speed, time mean speed, and delays for a certain stretch. Studies on speed and delays were utilized to compute delays and determine the relationship between the speeds of various types of vehicles. Volume counts at intersections and mid-block help to assess the degree of service provided by the road.

Traffic management monitors the current traffic situation (speed and volume counts) and directing the flow in order to reduce traffic congestion and promote road user safety. Traffic management includes signal re-design, speed studies, parking, and pedestrian studies. This document presents a complete traffic study for Dharwad, including existing and suggested measures.

Tools/Techniques: The objective of this study is to obtain the traffic characteristics like spot speed, Speed and delay of the particular stretch road and the volume counts at the intersections of Dharwad city. The data is used to determine the level of service, amount of congestion and the measures that need to be taken in order to ease the situation.

Parameters: Speed, Delay, Traffic Volume Count at junction, spot Speed of 7 corridors, Level of Services, Traffic Management Techniques.

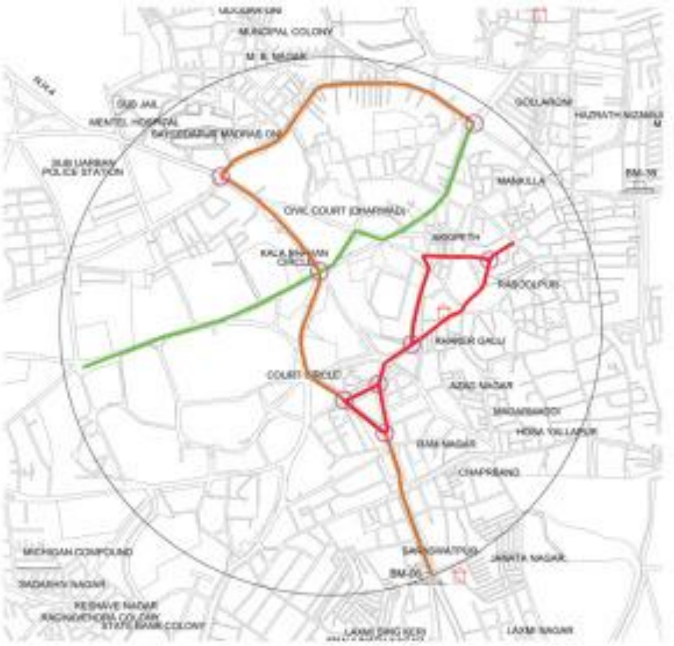


Figure 10: Road network of Dharwad city

Conclusion: Traffic management procedures typically include traffic engineering improvements, regulation, and control of the movement of various types of vehicles on the road system in order to maintain safe and effective traffic flow. The problem of traffic delays, congestion, and accidents can be alleviated to some extent by managing traffic, implementing regulatory measures, and enforcing effective road space management in order to make the best use of the roadways possible. Due to the high level of traffic, many of the tiny roads become congested, necessitating the implementation of traffic management measures such as one-way streets, restrictions on commercial vehicles within the city, restrictions on turning motions, and the closure of side streets. Heavy commercial trucks take up a lot of road area and impede traffic flow. Closing popular roads for business vehicles preserves the roadways' utility while improving the speed, safety, and comfort of other road users. The recommended traffic management strategies are based on the results of a research conducted in Dharwad.

Key takeaways: For this project we can follow the same survey techniques to arrive at the congestion locations and traffic management plan for the corridors.

TITLE 2: INTELLIGENT ROAD MANAGEMENT SYSTEM FOR AUTONOMOUS, NON-AUTONOMOUS, AND VIP VEHICLES: WASHINGTON, PAKISTAN

Authors: Awad Bin Naeem, Biswaranjan Senapati, Md. Sakiul Islam Sudman, Kashif Bashir and Ayman E. M. Ahmed

Abstract: The paper discusses about the movement of Autonomous, Non-Autonomous vehicles and VIP (emergency) vehicles using Artificial Intelligence as a strategy to minimize the travel delay time. Currently, autonomous vehicles, non-autonomous vehicles, and VIP (emergency) autonomous cars are using intelligent road management techniques to interact with one another and enhance the effectiveness of the traffic system. All sorts of vehicles are managed and under control using the intersection management unit approach. This study focuses on transportation networks where VIP cars are a major disruption, accounting for 40% of accidents and 80% of delays. Intelligent Mobility (IM) is a strategy promoted in this study that proposes setting up intelligent channels for all vehicle communication. As part of its function, the IM unit keeps tabs on how often each junction is used so that it may notify drivers on traffic conditions and ease their workload. The suggested layout may drastically cut average wait times at crossings, as shown in SUMO simulations. The entrance of a VIP car should disrupt all traffic, but the IM (intersection management) unit effectively manages all traffic by employing preemptive scheduling and non-preemptive scheduling techniques for all types of vehicles. We are employing Nishtar roads, the M4 motorway, Mexico, and Washington roads in our scenario. In comparison to all other routes, the simulation results demonstrate that the Washington road route is better able to manage all vehicle kinds. Washington's traffic delays for 50 cars of all sorts are 4.02 s for autonomous vehicles, 3.62 s for VIP autonomous vehicles, and 4.33 s for non-autonomous vehicles.

Tools/Techniques: SUMO Simulation software, Preemptive scheduling, Non-preemptive scheduling.

Parameters: Intersection Environment, Algorithm Control Strategy, Average Time delay

SOMU Environmental Setup steps:

1. Each avenue's start line and stop line are separated by fewer than 500 m.
2. The entire size of the simulation is 5 km by 5 km.
3. All vehicles always go at the same distance from one another. The intersection's centroid is 15 m away from the stop line.
4. The IM unit is in the heart of the junction and has a 200 m communication range.
5. The car travels at an average speed of 50 km/h.
6. All other cars are planned to move over to create room for high-priority vehicles when a vehicle is categorized as VIP and given the proactive scheduling technique. All other vehicles are on a non-preemptive schedule.

7. Routes are assigned for VIP cars. Under normal conditions, the speed of every vehicle is the same. The non-VIP cars swiftly leave the area when a VIP vehicle enters the network by adjusting their settings.

8. The IM unit gives a VIP car high priority and transmits the path to it as well as the car's maximum speed. This information enables the VIP car to cross the street as quickly as possible.

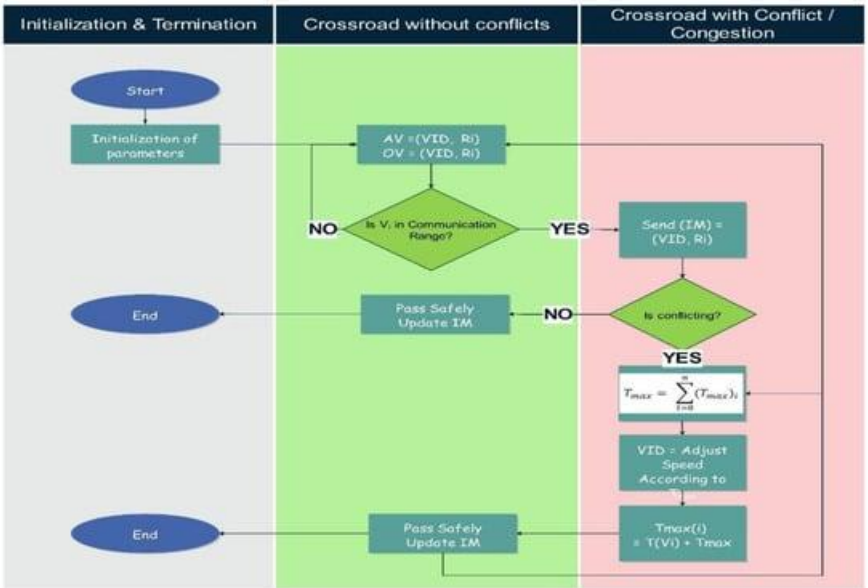


Figure 11: Flow diagram for AV/OV process.

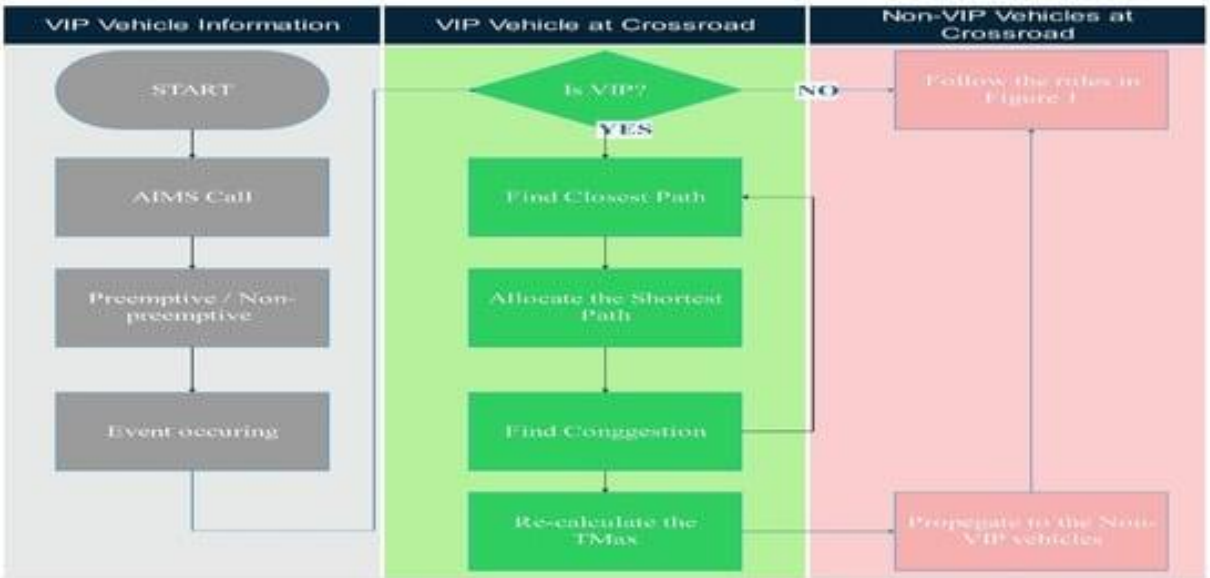


Figure 12: Flow diagram for VIP vehicle process.

Conclusion: The results show that the delay time for all vehicle types is used to evaluate the efficacy of a management strategy in the transportation management systems and understand the delay time reduction. It also demonstrates the IM's efficacy, and delay time variation may be used to evaluate the method's fairness. When compared to the road networks in Mexico, the M4 motorway, and Nishtar, the Washington system has more fully automated cars, non-fully autonomous vehicles, and VIP vehicles. Improvements to crossings and junctions, managed by IM, will allow for more precise calculations of the junction's efficiency.

Key Takeaways:

- Preemptive Scheduling: Preemptive scheduling is used in real-time systems where the tasks are usually configured with different priorities and time critical tasks are given higher priorities. (Ibrahim, 2019)
- Non-preemptive Scheduling: is one which can be applied in the circumstances when a process terminates, or a process switches from running to waiting state. In Non-Preemptive Scheduling, once the resource (CPU) is allocated to a process, the process holds the CPU till it gets terminated or it reaches a waiting state. (Dr. Shyama Prasad Mukheerjee University, Ranchi, 2022)
- SUMO Software: SUMO allows modelling of intermodal traffic systems including road vehicles, public transport and pedestrians. Included with SUMO is a wealth of supporting tools which handle tasks such as route finding, visualization, network import and emission calculation. (SUMO, n.d.)

TITLE 3: CORRIDOR LEVEL TRAFFIC MANAGEMENT THROUGH VARIABLE MESSAGING SYSTEMS: A CASE STUDY ON EAST-WEST LINKS ENTERING COLOMBO (Vajeeran, 2023)

Authors: A.Vajeeran , SMPM Premasiri , GLDI De Silva

Abstract: The use of variable message signs (VMS) is an effective method for providing drivers with real-time traffic information. Drivers being aware of the real-time traffic condition of the system, allow drivers to explore different route options and balances the road network to reach equilibrium in a very short time. In the context of developing countries where the majority of drivers don't use vehicle in-built navigational systems or smart devices with navigational applications, the use of VMS is more important. This study develops a methodology to identify the optimal locations to establish a Variable Message Sign system for corridor level traffic balancing and management for any number of pre-identified interventions.

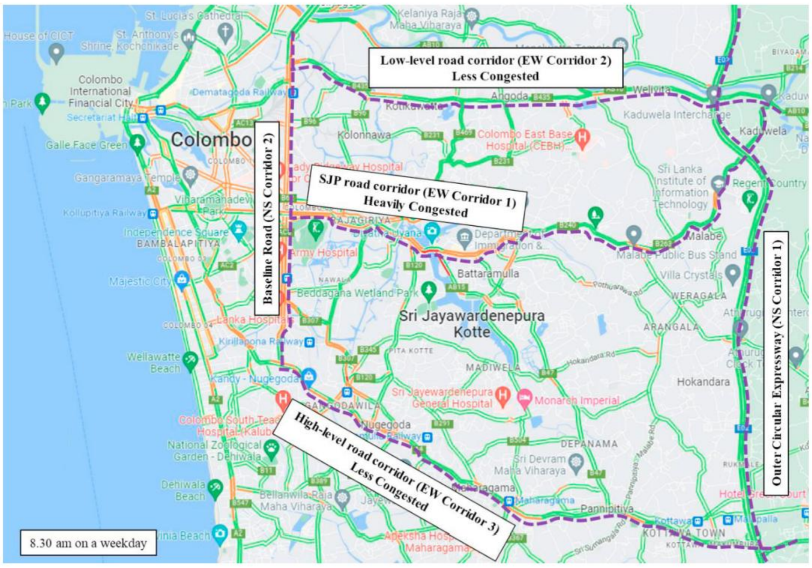


Figure 13: East-west corridor arrangement in Colombo City

Tools/techniques: Macro-modelling, Western province transport demand model version 1.0 (WPTDM V1.0), Select-link analysis tool in CUBE Voyager

Parameters: Possible diversion routes, Potential diversion volume, Origin-Destination of the vehicles entering the study area, Identified locations for VMS boards.

Conclusion: The validity of the strategy was tested through a case study of traffic entering and leaving the Colombo, Sri Lanka from East-West corridor. 6 major locations for corridor level diversion using VMS and 7 minor locations to support the major diversion using auxiliary signage boards were identified. The results show that with 30% of potential diversion vehicles directed through VMS, a 10% vehicle reduction in the Rajagiriya section and 18% in Malabe could be achieved.

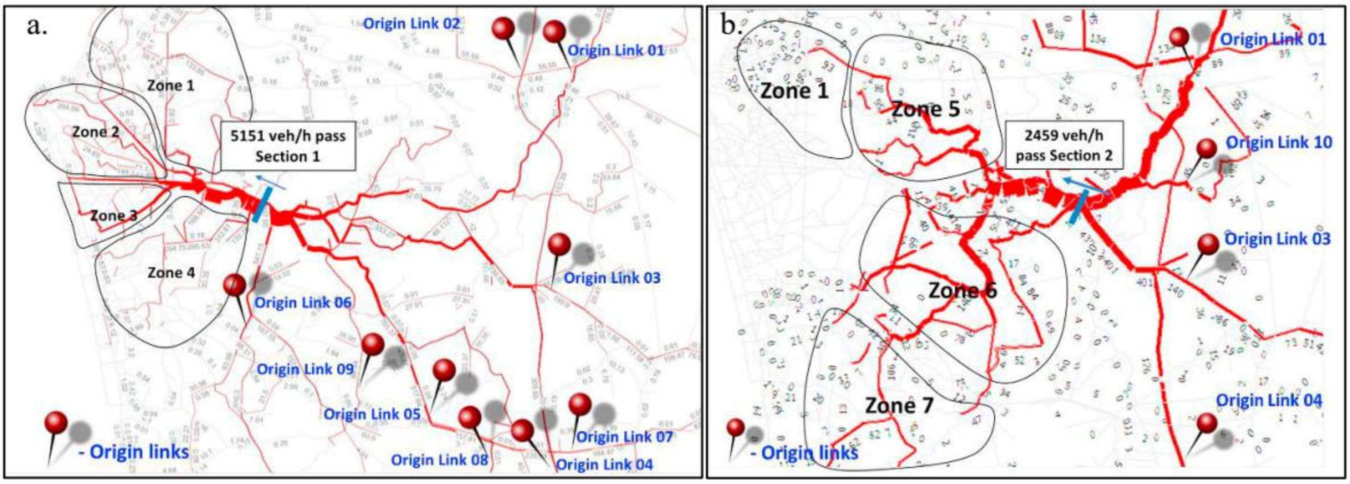


Figure 14: Route analysis results Case A; (b) Route analysis results Case B

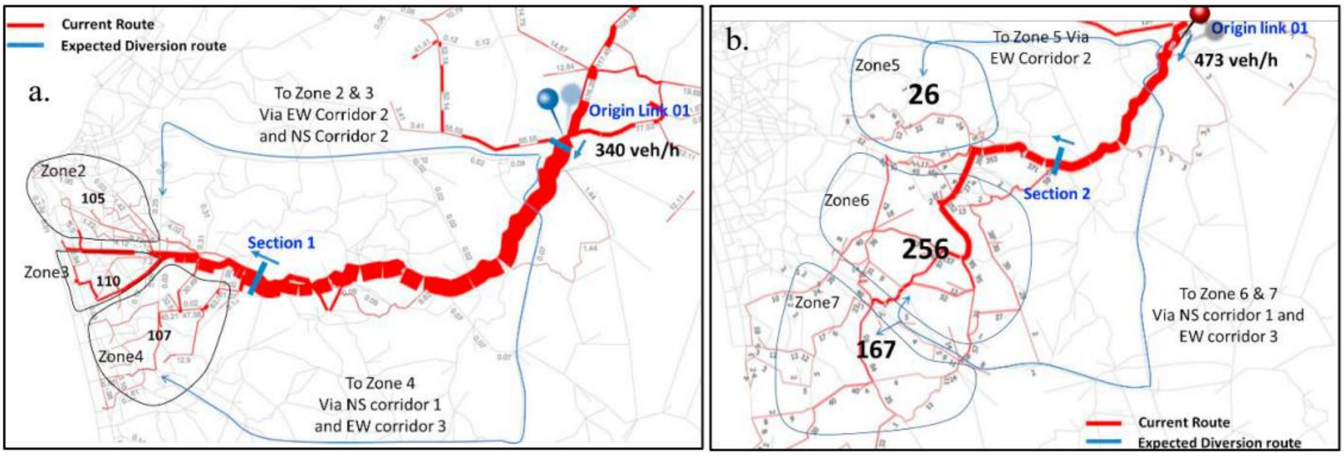


Figure 15: Route analysis results, Origin link 01; (a) For Case A; (b) For Case B

KeyTakeaways: Usage of VMS as a solution for congestion in particular intersections and decongesting the corridor

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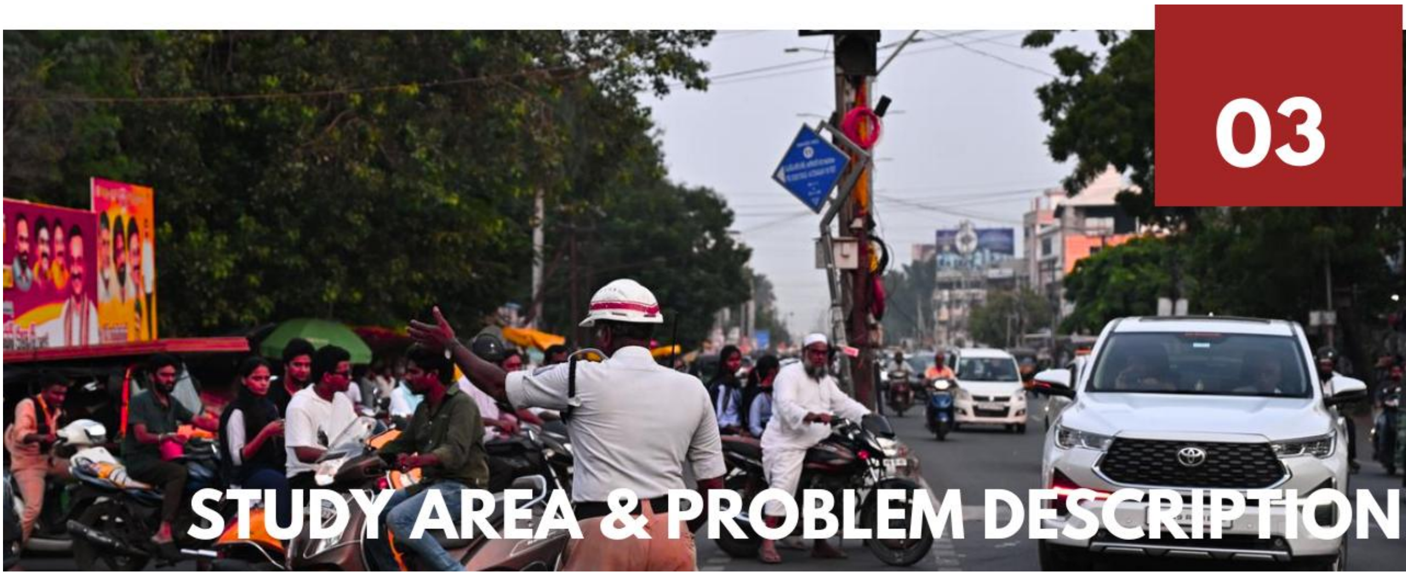


03 STUDY AREA & PROBLEM DESCRIPTION

3.1 PROBLEM DESCRIPTION

The designation of Amaravati as the capital of Andhra Pradesh has significantly impacted traffic conditions in Vijayawada. This study examines the major traffic challenges arising from increased vehicular movement between Gannavaram and the Amaravati Secretariat.

3.1.1 Key Traffic Challenges

A. Increased Traffic Congestion

- Vijayawada acts as an important transportation center between Amaravati and Gannavaram.
- National Highways NH-16 and NH-65 have high traffic loads, resulting in frequent bottlenecks and ineffective traffic control techniques.
- Major crossroads including Benz Circle, MG Road, and Eluru Road are congested, especially during peak hours.
- This congestion not only hinders public activity, but also impedes VIP transit. These routes are unavoidable during VIP movement because various administration offices are along this route.
- Following Amaravati's designation as capital, political and administrative activities have been focused between the Vijayawada Municipal Corporation (VMC) and Amaravati. Velagapudi houses the government legislature and secretariat, which have been operating since March 2017. The proclamation of Amaravati as the sole capital in June 2024 has resulted in a huge rise of VIP travel inside the city over 2022.

B. **Heavy Vehicle Movement**

- The rise in government-related travel, construction projects, and commercial activity has resulted in an increase in official and transportation vehicles.
- The Vijayawada-Guntur Highway and Prakasham Barrage are under significant strain due to rising heavy vehicle and logistics truck traffic.

C. **Traffic Diversions & VIP Movement Disruptions**

- Frequent VIP visits to Amaravati result in temporary road closures and traffic diversions, causing delays for daily commuters.

- Public transportation, including APSRTC buses and auto-rickshaws, faces unpredictable route changes and scheduling disruptions.

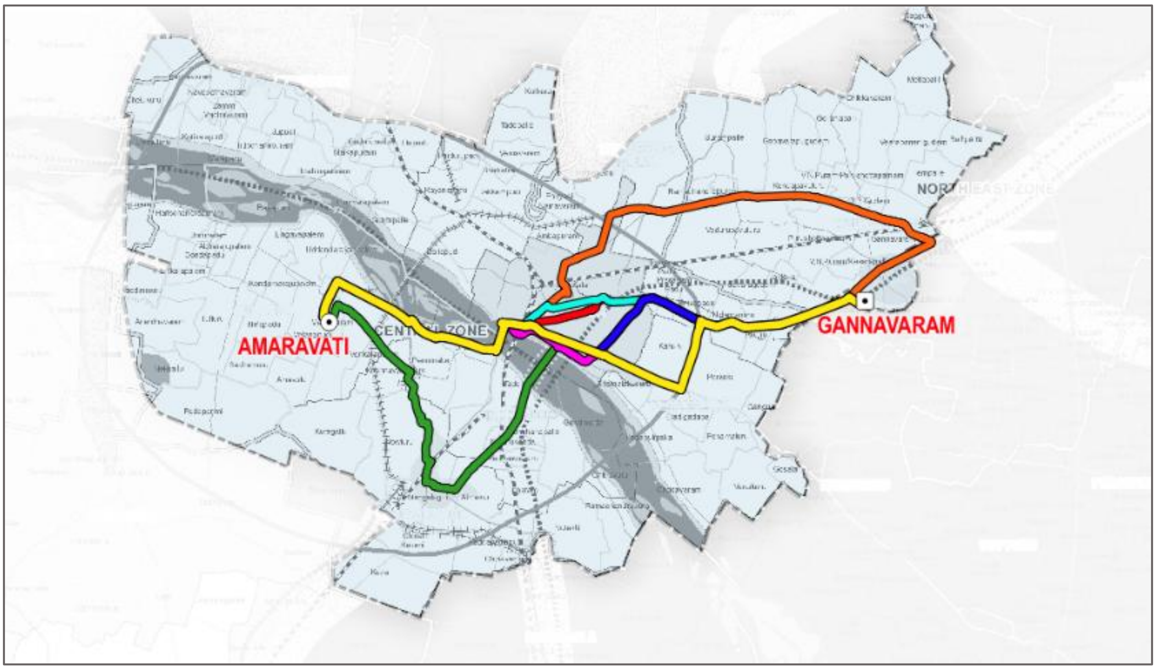
Therefore, this study is concentrating on efficient movement of VIP vehicles with minimum diversion of public traffic, Development of alternative route options for VIP movement, Implementation of intelligent traffic management systems (ITS) to optimize signal timings and reduce congestion using micro simulation.

3.2 STUDY AREA

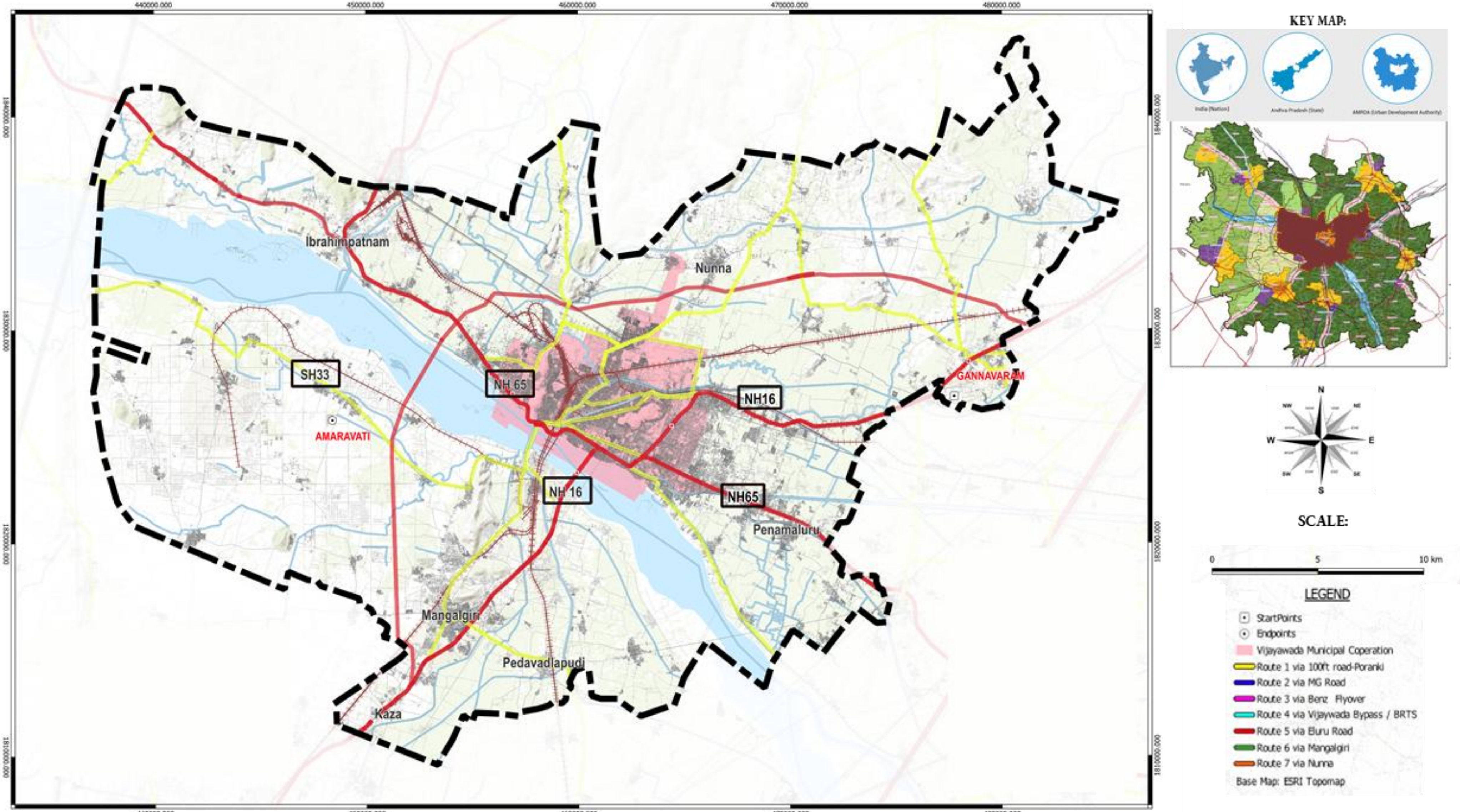
The short-term traffic management plan would concentrate on Vijayawada's principal networks, particularly those connecting Gannavaram Airport to Amravati and major administrative offices. These routes are heavily trafficked, causing considerable delays for VIP vehicles and affecting normal commuter traffic. Creating a traffic management plan and raising commuter awareness can improve journey planning, increase travel reliability, and alleviate congestion difficulties. By implementing targeted measures and aggressively alerting the public, both regular commuters and VIP cars would benefit from smoother traffic flow and increased overall transportation efficiency in the city. Corridors with the possibility for VIP vehicular movement have been identified.

Delineation Of Study Area:

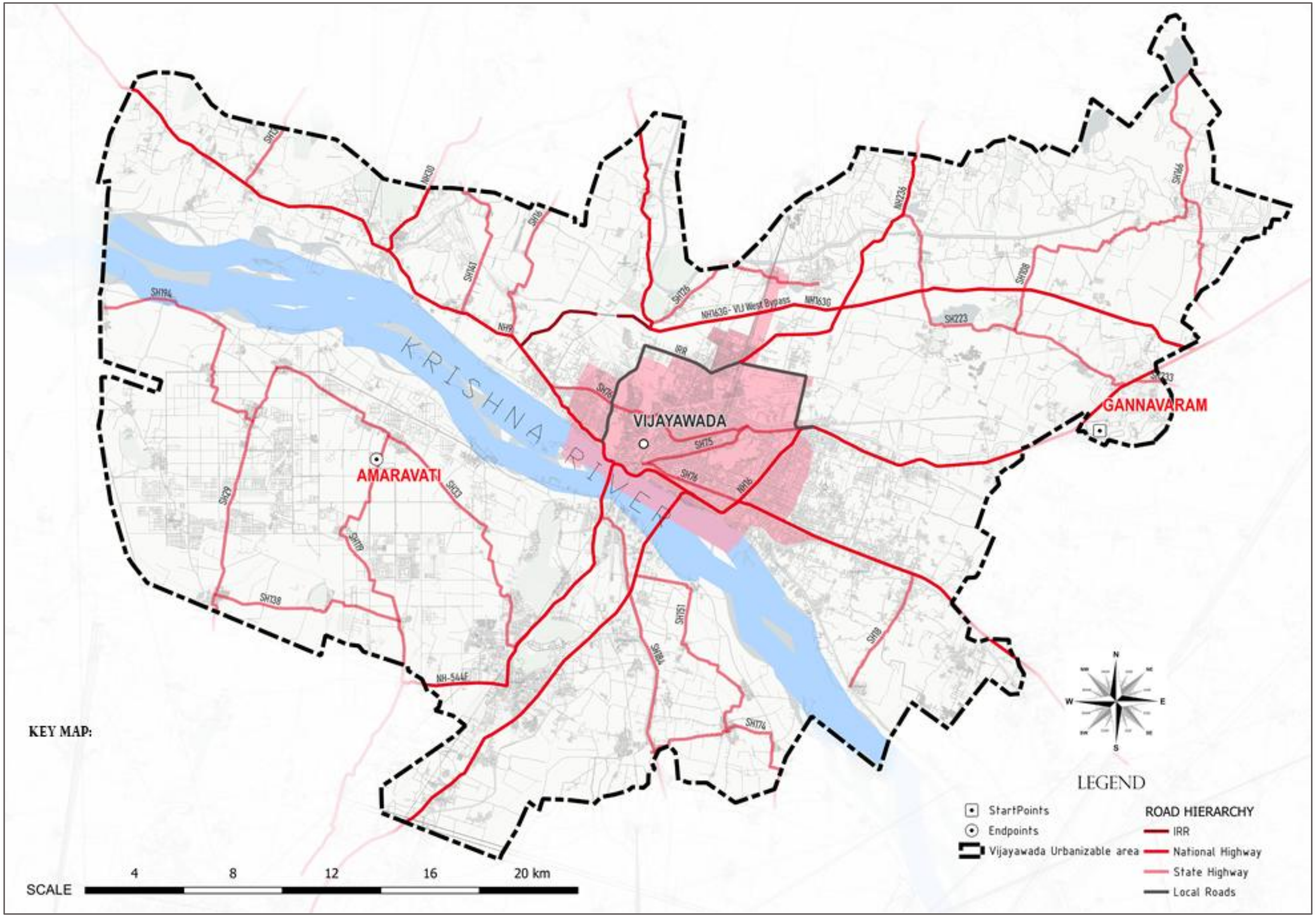
The corridor under study stretches from Gannavaram to Amaravati, covering the Vijayawada Municipal Corporation (VMC) and surrounding rural mandalas, such as Gannavaram and Tadepalli. As a result, the urban region of Vijayawada, as defined in the Draft Perspective Plan 2050, has been identified as the focus area for this study. Nevertheless, the study primarily emphasizes the corridor level, so the specific characteristics of the delineated area have not been investigated in depth throughout the project.



Map 1: Possible Routes for VIP Movement



Map 2: Delineated Area



Map 3: Road Network of Delineated Ar

3.2.1 Fact Sheet of Delineated Area:

(Source: AP Capital Region Draft Perspective Report 2050)

Population: 17,60,790 (2011 Census)

Projected Population: 42,50,000 (Year 2035)

Area: 922.847 sq.km

Region Setting: Krishna River separates the delineated Region into two parts. Presently the two-lane Prakasham Barrage Road and the NH16 are the only highways across the Krishna River in the Delineated Region, and are heavily congested.

Transportation Overview:

- NH16 connects the Delineated Region with the two industrial centers of Chennai and Kolkata.
- the NH65 connects the Delineated Region with Hyderabad and Machilipatnam Port.
- Several large cities and towns in the Capital Region of Andhra Pradesh, such as Guntur, Gannavaram, Mangalagiri, Jaggayyapeta and Nandigama are also located along these two National Highways. High traffic demand is expected along the National Highways, as they are the only roads that connect the Capital Region with other commercial centers.

- **Delineated Areas includes Mandals**: Ibrahimpatnam, Tulluru, Mangalgiri, Tadepalli, Vijayawada Municipal Corporation, Penamaluru, Vijayawada Rural, Gannavaram

Mandals	Population (2011 Census)
Ibrahimpatnam	1,03,559
Tulluru	45,773
Mangalgiri	1,69,303
Tadepalli	99,428
Vijayawada Municipal Corporation	10,21,806
Penamaluru	1,68,022
Vijayawada Rural	1,53.591
Gannavaram	87,027

- **A Mega City within the Central Planning Area:**

The AP Capital Region is organized into eight planning areas. The Central Planning area comprises our designated border. The following points were stated in the APCRDA draft Perspective Plan 2050 in the context of the Central Planning Area becoming a Mega City.

- Because of their proximity, the New Capital City and Vijayawada will become twin cities in the future. The different economies of the two cities will complement each other and eventually emerge as a megacity.
- The Capital City, together with Vijayawada and Mangalagiri, is planned to flourish as twin cities and eventually become a'mega city'. The growth of the'mega metropolis' is contained inside the inner ring road that runs through the Central Planning Area.
- Various business parks and industrial clusters will cater to the Central Planning Area's employment needs.

3.2.2 Timeline of Vijayawada Traffic Management

Pre-2010: Conventional Traffic Regulation

- Manual management: Personnel overseeing traffic flow at major intersections.
- Lack of integration: Limited use of digital tools or coordinated signal timing.

2010–2015: Initial Modernization Efforts

- Automatic Traffic Signals were introduced at significant intersections (e.g., Benz Circle, Ramavarappadu).
- CCTV usage began for basic observation at busy junctions.
- More stringent enforcement of parking rules and penalties commenced.

2016: Impact of Capital Region Development

- Following the declaration of Amaravati as the capital city:
- Vijayawada experienced heightened traffic volumes, necessitating improved traffic systems.
- Urban transport strategies included proposals for integrating ITS (Intelligent Transport Systems).

2017–2018: Planning and Pilot Programs for ITS

- Pilot projects and funding requests initiated by Andhra Pradesh State Road Transport Corporation (APSRTC) and Vijayawada Municipal Corporation (VMC).
- Inclusion in the Smart City Mission enabled central funding assistance.

2019: Launch of Smart City Phase

- Deployment of smart poles and surveillance in central areas.
- Initiation of the Traffic Signal Synchronization Project aimed at reducing wait times and enhancing junction efficiency.

2020: Implementation of Intelligent Traffic Management System (ITMS) Phase 1

- ITMS rolled out as part of the Smart City initiative in partnership with VMC and Vijayawada Police.
- Key elements included:
  - Adaptive Traffic Signals equipped with vehicle detection
  - Red Light Violation Detection (RLVD)
  - Automatic Number Plate Recognition (ANPR)
  - Speed Detection Cameras
  - Public Address Systems installed at signals
  - Real-time data provided to the Command & Control Center (CCC)

2021: Operationalization of the Command & Control Centre

- A centralized traffic monitoring facility established at VMC.
- Consolidation of feeds from police, fire, disaster response, and traffic into a single system.
- Introduction of Mobile Traffic Management Vans.

2022: Enhanced Enforcement Measures

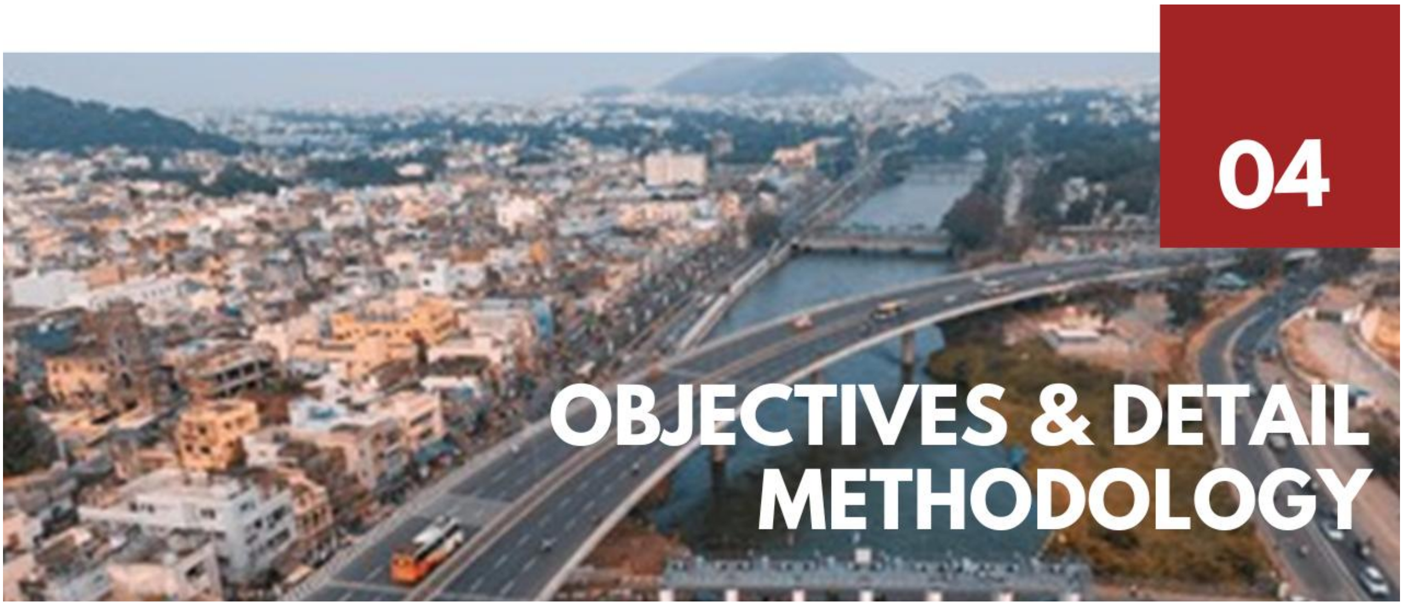
- e-Challan system incorporated with ANPR and RLVD information.
- Increased fines for violations now connected to RTO databases.
- Launch of features in a citizen app for reporting traffic concerns and suggestions.

2023–2024: Growth and AI Incorporation

- Pilot studies for AI-based vehicle classification and congestion analysis initiated.
- Integration of Google Maps traffic data for improved route planning and congestion oversight.
- Testing of smart parking management systems in commercial districts initiated.

2025: Advancements Towards Predictive Traffic Management

- Testing of predictive analytics using historical data to dynamically adjust signal timings.
- Proposed addition of drone surveillance for real-time congestion monitoring during peak times and VIP movements.
- Development of green mobility strategies in tandem with traffic management for encouraging modal shift



4.1 OBJECTIVES AND SCOPE OF THE PROJECT

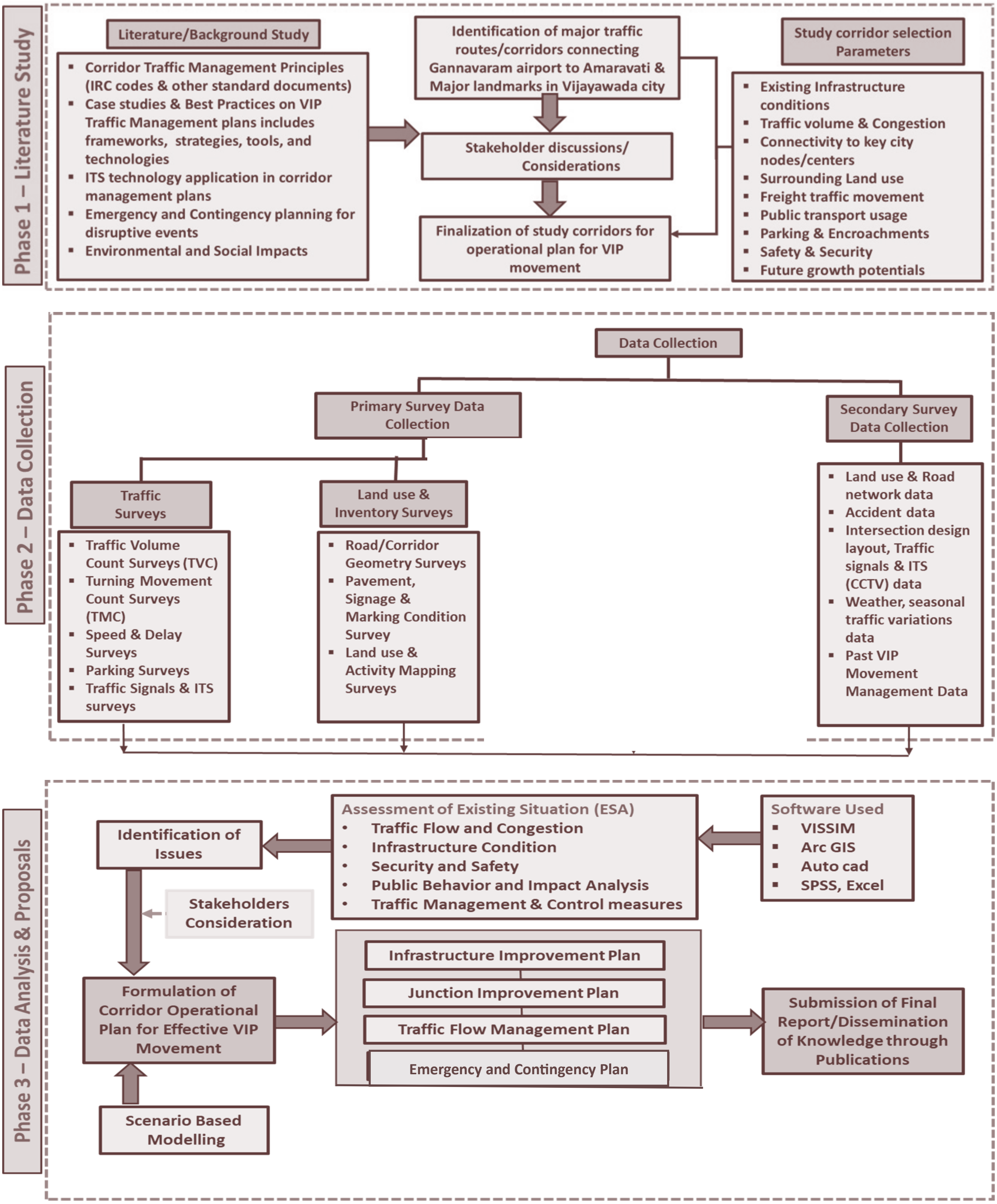
Objectives and Outcomes:

1. Develop a comprehensive TMP that outlines how traffic will be managed during the VIP movement, considering factors such as road closures, diversions, and alternative routes and ensure coordination with local law enforcement.
2. Modeling and quantifying benefits of feasible strategies such as optimized traffic signals timings, lane configurations, and parking restrictions, rerouting, temporary road closures, or adjusting traffic patterns on the overall efficiency of vehicular movement on the primary routes.
3. Specify the roles and responsibilities of traffic controllers and relevant personnel.
4. Knowledge dissemination on preparation of short-term Traffic Management Plans

Scope:

The study's Traffic Management Plan is limited to three selected corridors and focuses on developing a structured and efficient movement plan for VIP vehicles using technological advancements while minimizing traffic congestion and disruptions to general traffic.

4.2 METHODOLOGY



5.1 DESCRIPTION OF DATA RELATED TO PROJECT

The below table lists the data which is required for the project. The primary type of data must be obtained from surveys and secondary data must be collected from respective departments. Once the data is received the data need to be complied and processed which further can be used for analysis to archive the project objectives.

Data	Type of Data	Status
Road Geometry data	Primary Data	Received by conducting Initial Surveys
Junction Inventory	Primary Data	Received by conducting Initial Surveys
Speed and delay	Primary Data	Received by conducting Initial Surveys
Traffic Signal Management and Phasing Details	Secondary & Primary Data (Traffic Police Department)	Can receive the data by 15th April, 2025
Data Regarding VIP movement and management	Secondary (Traffic Police Department)	Can receive the data by 15th April, 2025
Land use along the corridors	Secondary data (VMC)	Received
Traffic Volume Count	Secondary (Traffic Police Department)	Can receive the data by 15th April, 2025
Queue Length	Primary Data	Can receive the data by 15th April, 2025
Turning Movement Count (TMC)	Secondary (Traffic Police Department)	Can receive the data by 15th April, 2025

The details regarding the Surveys, Stakeholder meetings and Data Collection were shown below:

5.1.1 LIST OF SURVEYS FOR THE STUDY

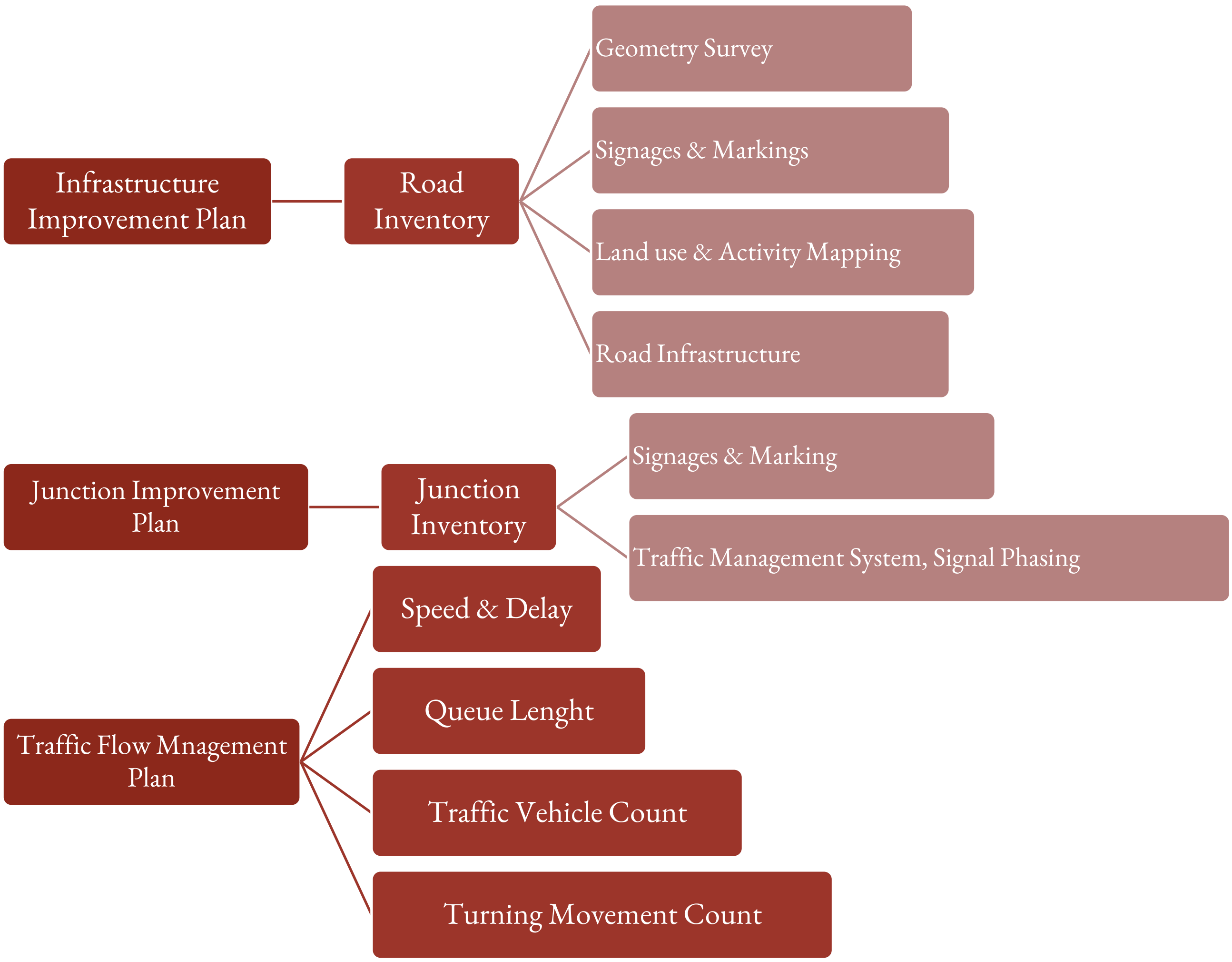


Figure 16: List of Surveys

Survey Phase 1: February, 2025

20th	21st	22th	23rd	24th	25th	27th	28th
Pilot Survey of all the Corridors			Road Inventory			Junction Inventory	

Survey Phase 1: March, 2025

1st	-	3rd	4th	5th	6th
Miscellaneous			Speed and Delay		

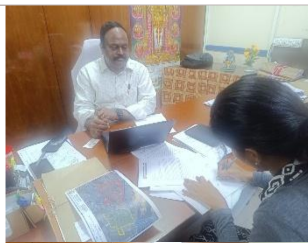
The Phase 1 of surveys were conducted in the moths of February and March of 2025. The data which was recorded was compiled and used for preliminary analysis. The Phase-2 of surveys will be having Traffic Volume Count, Turning Movement Count, Queue Length Surveys, which was scheduled in the month of April.

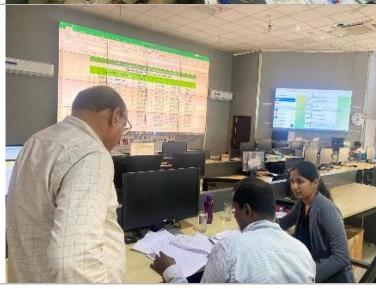



Pictures of Phase -1 Surveys.

5.1.2 *Field-Visit Details*

The stakeholders of the project were identified before the commencement of project. At Regional Level the stakeholders are, Andhra Pradesh Capital Regional Development Authority, as our study corridors lies between Gannavaram Airport to Capital City Amaravati. The future prospects of the corridors need to be known. City Level stakeholders are Vijayawada Municipal Corporation (VMC)- Administrative Body, Traffic Police Department-Vijayawada- Executive Body of this project.

Date	Department	Stakeholder	
11th March, 2025	Traffic Police Department - Vijayawada	*Mr. Krishna Murthy Naidu*, Deputy Commissioner of Police Traffic	 
12th March, 2025	NTR Police Commissionerate, Vijayawada	*Sri S.V. Raja Sekhara Babu, IPS,* Commissioner of Police	Appointment was taken
13th March, 2025	Vijayawada Municipal Corporation	*Dr. Chandra Sekhar,* Additional Commissioner	 
13th March, 2025	Andhra Pradesh Capital region Development Authority	*Sri K Kanna Babu, I.A.S.* Commissioner	Endorsed letter was received
17th March, 2025	Andhra Pradesh Capital region Development Authority- transportation Department	*Mr. M. Manoj Kumar,* Associate Planner	Project Objectives were discussed and valuable insights were received
08th April, 2025	NTR Police Commissionerate- Vijayawada	*Sri S.V. Raja Sekhara Babu, IPS- Commissioner of Police*	Project Objectives were discussed and co-operation from traffic

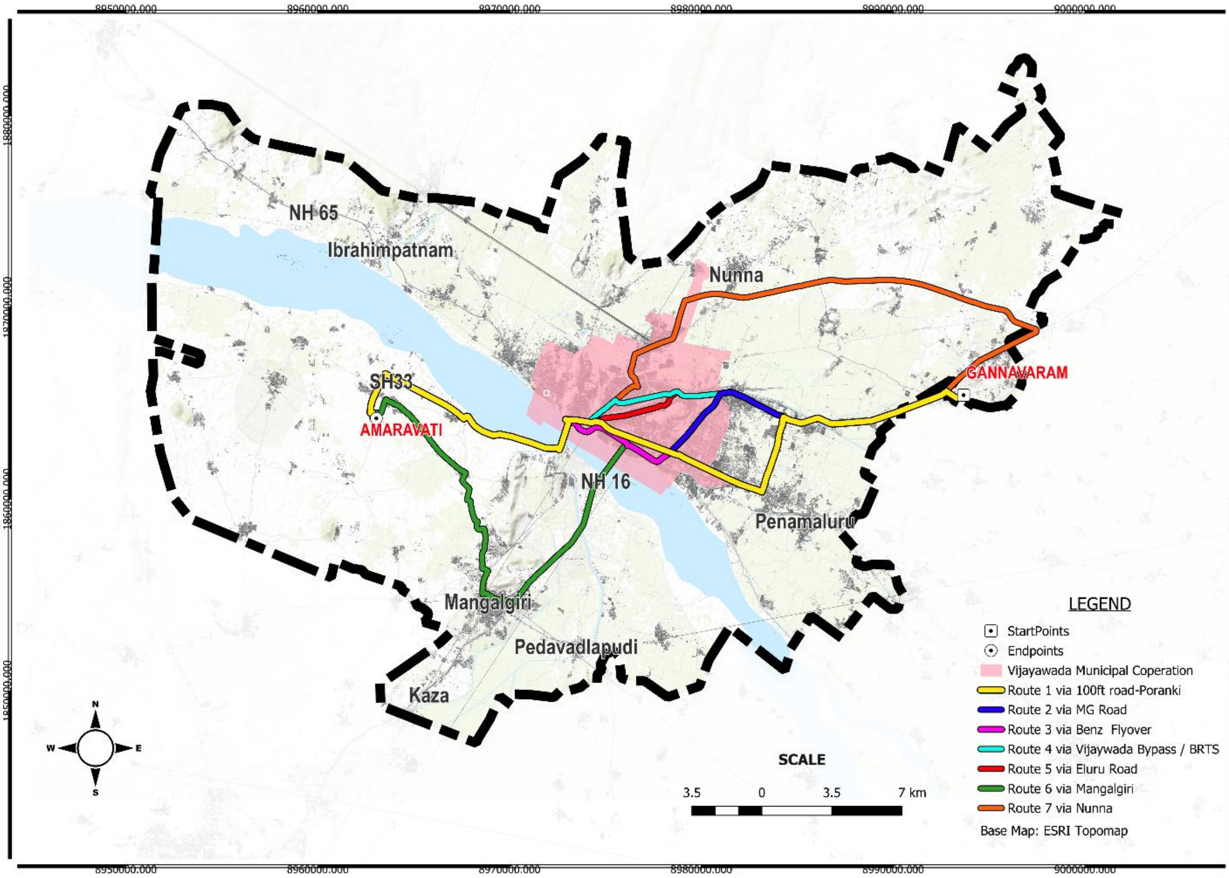
			police department was assured. Endorsed letter was received.
08th April, 2025	Traffic Police Department - Vijayawada	*Sri A.V.L. Prasanna Kumar- Addl.DCP - Traffic Zone*	
08th April, 2025	Command Control Center-Vijayawada	*Sri.JRK Hanish- Inspector*	
9th April, 2025	Traffic Police Department - Vijayawada	*A session involving all traffic police personnel stationed along the VIP movement corridor was conducted to identify challenges and opportunities along the route.*	
10th April, 2025	Command Control Center-Vijayawada	*Collection of Data- TVC, TMC*	
11th April, 2025	Ms. Navya Indupalli- ASTraM, Command Control Center-Vijayawada	*A session to understand the existing ITMS, ASTraM initiatives in Vijayawada City.*	

In March, initial meetings were held with stakeholders, during which the project's objectives and related directives were clearly communicated. In April, as outlined in Phase 2, data was collected from the relevant departments. Additionally, in-depth sessions were conducted with the traffic police department, providing specific insights related to the current VIP movement and intelligent traffic management system in Vijayawada city.

5.2 PRELIMINARY ANALYSIS AND PRELIMINARY FINDINGS FROM STUDY AREA

5.2.1 Potential Routes for VIP Movement between Gannavaram Airport to Amravati Secretariat:

In Total 7 route possible routes were identified for the study. From which the major efficient corridors will be selected for detail study. The parameters for selection potential corridors are; Travel Time, Travel Distance, Level of significance based on Points of Interest and below mentioned parameters in Table 2.



Map 4: Potential Routes of VIP Movement

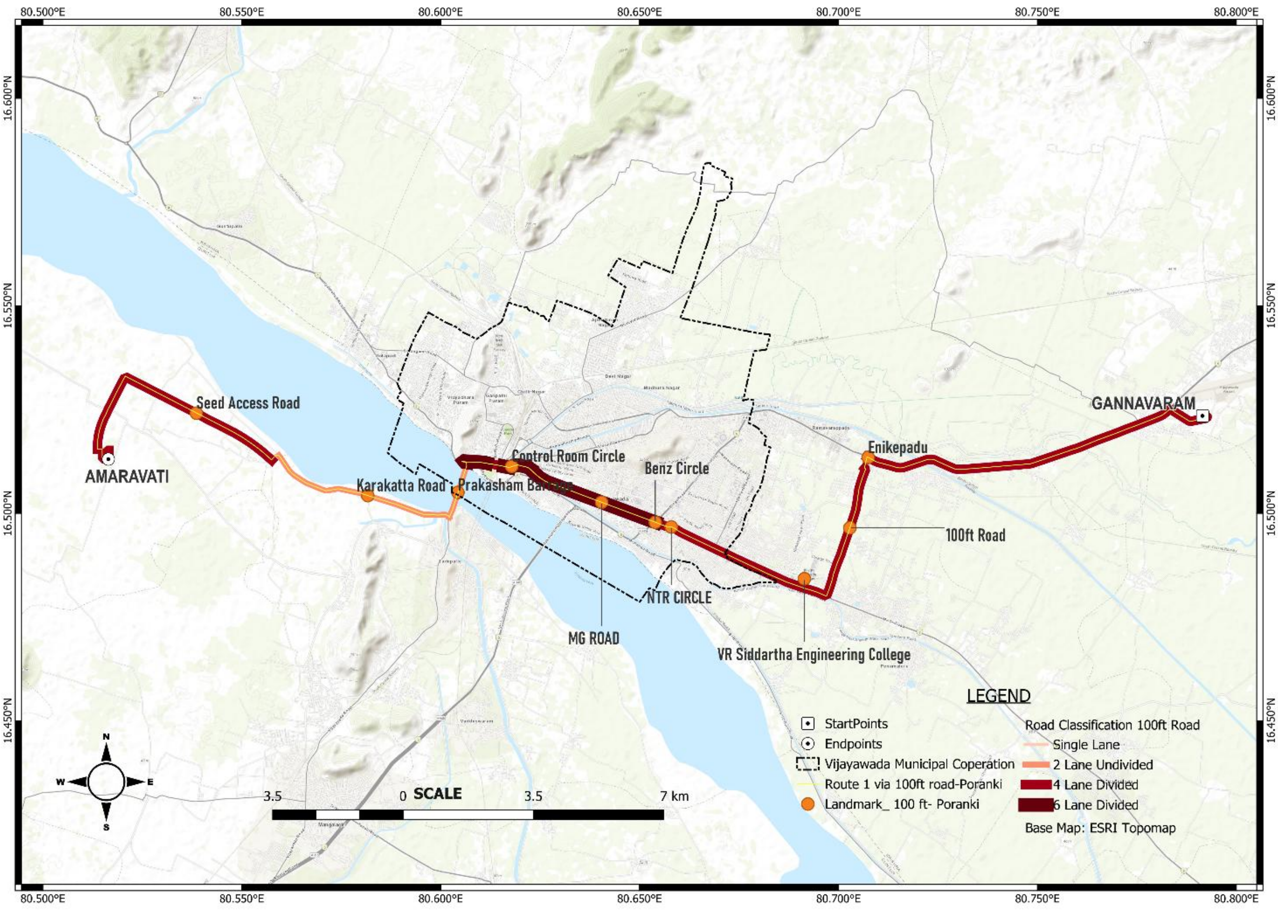
Table 2: Corridor Selection Parameters and Corresponding Score Criteria

CORRIDOR SELECTION PARAMETERS	**Score System**
Existing Infrastructure Condition	Good (Pedestrian, Signalized Junctions, Right of Way) - 3 Moderate (Manual operated Junction, No Pedestrian Facility)- 2 Bad (Junctions with no control, Encroachments) - 1
Traffic Volume	Less Volume - 5 High Volume with Free Flow-4 Moderate Volume with controlled intersections-4 High Volume with controlled intersections- 3 Moderate Volume with uncontrolled intersections-2 High Volume with uncontrolled intersections-1
Congestion	No Congestion-3 Congestion at Signals- 2 Other Congestions- 1
Connectivity to key places and centers	Well, Connected-3

	Moderately Connected-2 Less Connection-1
Surrounding land use	Commercial, Public Services – 2 Others-1
Freight Traffic Movement during VIP Movement	Absent-2 Present-1
Public transit along the corridor during VIP Movement	Absent-2 Present-1
On Street Parking &Encroachments	Absent-2 Present-1
Provision of Safety and security	Highly Possible-3 Moderately Possible-2 Not Possible-1
Future growth potential	High Potential- 3 Moderate Potential – 2 Low Potential - 1
Emergency response along the corridor	Present-2 Absent-1

Based on the parameters outlined above, all corridors will be evaluated and assigned a score accordingly. The corridor with the highest score will be more suitable for VIP movement and detail study of those corridors will be carried out.

5.2.1.1 Route1: 100ft Poranki Road



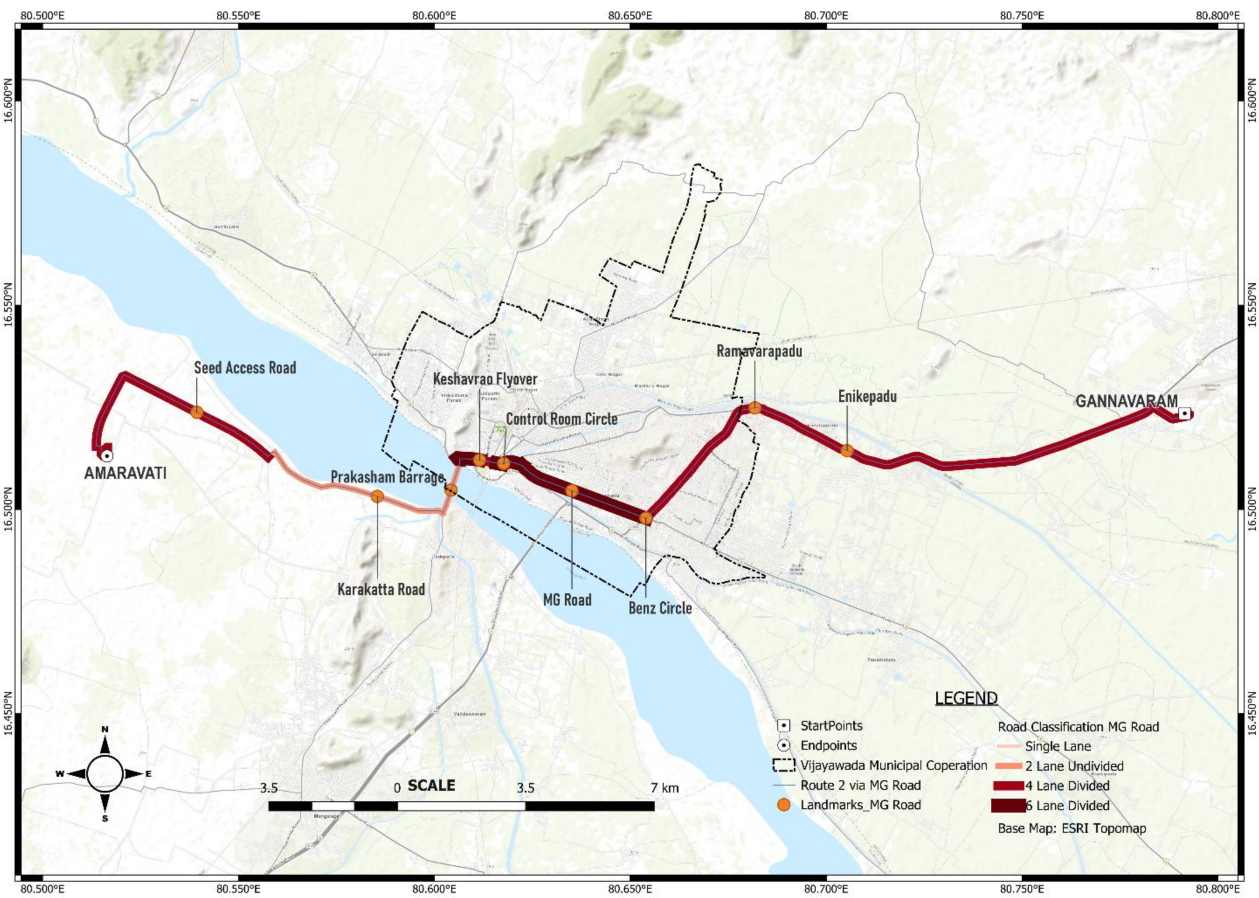
Map 5: Route 1- Gannavaram-100ft Poranki Road-Amaravati

Key Features of the Corridor:

- **Landmarks:** Gannavaram – Enikepadu – 100ft Road – Poranki Road – NTR Circle – Benz Circle – MG Road – Kaleshwarrao Flyover- Prakasham Barrage – Karakatta Road -Seed Access Road – Amravati.
- **Land use:** This corridor connects the international airport at Gannavaram to Amaravati, the state capital, via Poranki, a rapidly developing residential and commercial area.
- **Road Conditions:** The route is relatively well-developed, with fewer narrow streets compared to older parts of the city, making it suitable for high-speed VIP movement.
- **Traffic Volume:** Moderate to high, with significant commuter traffic due to Poranki's growing importance as a transit hub.

PARAMETERS	**CORRIDOR**	Score
Existing Infrastructure Condition	Good	3
Traffic Volume	Moderate Volume with controlled intersections	4
Congestion	Congestion at Intersections	2
Connectivity to key places and centers	Well, Connected	3
Surrounding land use	Commercial, Public Services	2
Freight Traffic Movement during VIP Movement	Present	1
Public transit along the corridor during VIP Movement	Present	1
On Street Parking &Encroachments	Absent	2
Provision of Safety and security	Highly Possible	3
Future growth potential	High Potential	3
Emergency response along the corridor	Absent	1

5.2.1.2 Route2: MG Road



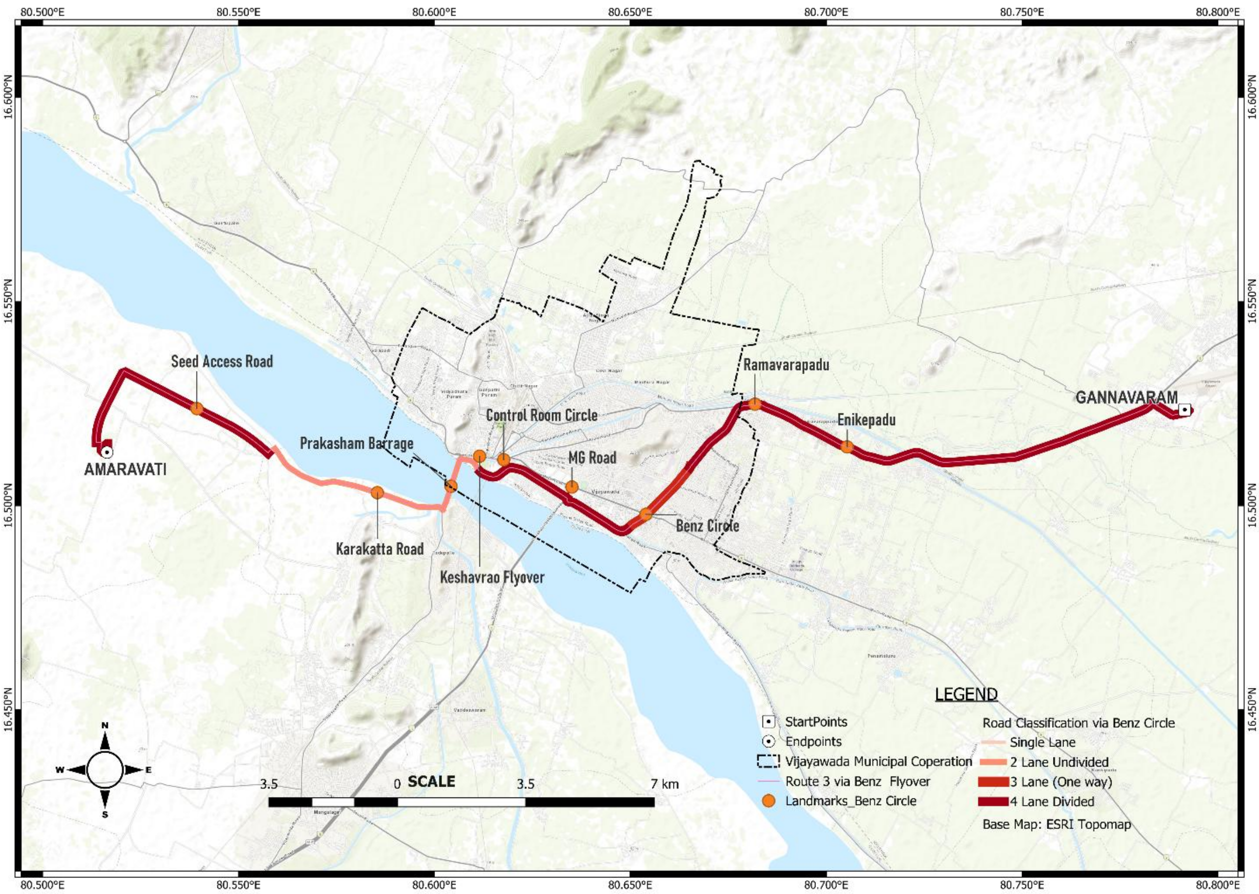
Map 6: Route 2 -Gannavaram-MG Road-Amravati

Key Features of the Corridor:

- **Landmarks:** Gannavaram – Enikepadu –Ramavarapadu- Mahanadu Junction– Benz Circle – MG Road – Kaleshwarrao Flyover- Prakasham Barrage – Karakatta Road -Seed Access Road – Amravati.
- **Land use:** MG Road is one of the primary arterial roads in Vijayawada, known for its commercial and institutional significance.
- **Road Conditions:** Wide and well-maintained, but often congested due to high traffic volume from commercial activities.
- **Traffic Volume:** High, with heavy commuter and commercial traffic throughout the day.

PARAMETERS	**CORRIDOR**	Score
Existing Infrastructure Condition	Good	3
Traffic Volume	High Volume with controlled intersections- 3	3
Congestion	Congestion at Signals	2
Connectivity to key places and centers	Well, Connected	3
Surrounding land use	Commercial, Public Services	2
Freight Traffic Movement during VIP Movement	Absent	2
Public transit along the corridor during VIP Movement	Present	1
On Street Parking &Encroachments	Absent	2
Provision of Safety and security	Highly Possible	3
Future growth potential	High Potential	3
Emergency response along the corridor	Present	2

5.2.1.3 Route3: Benz Circle Flyover



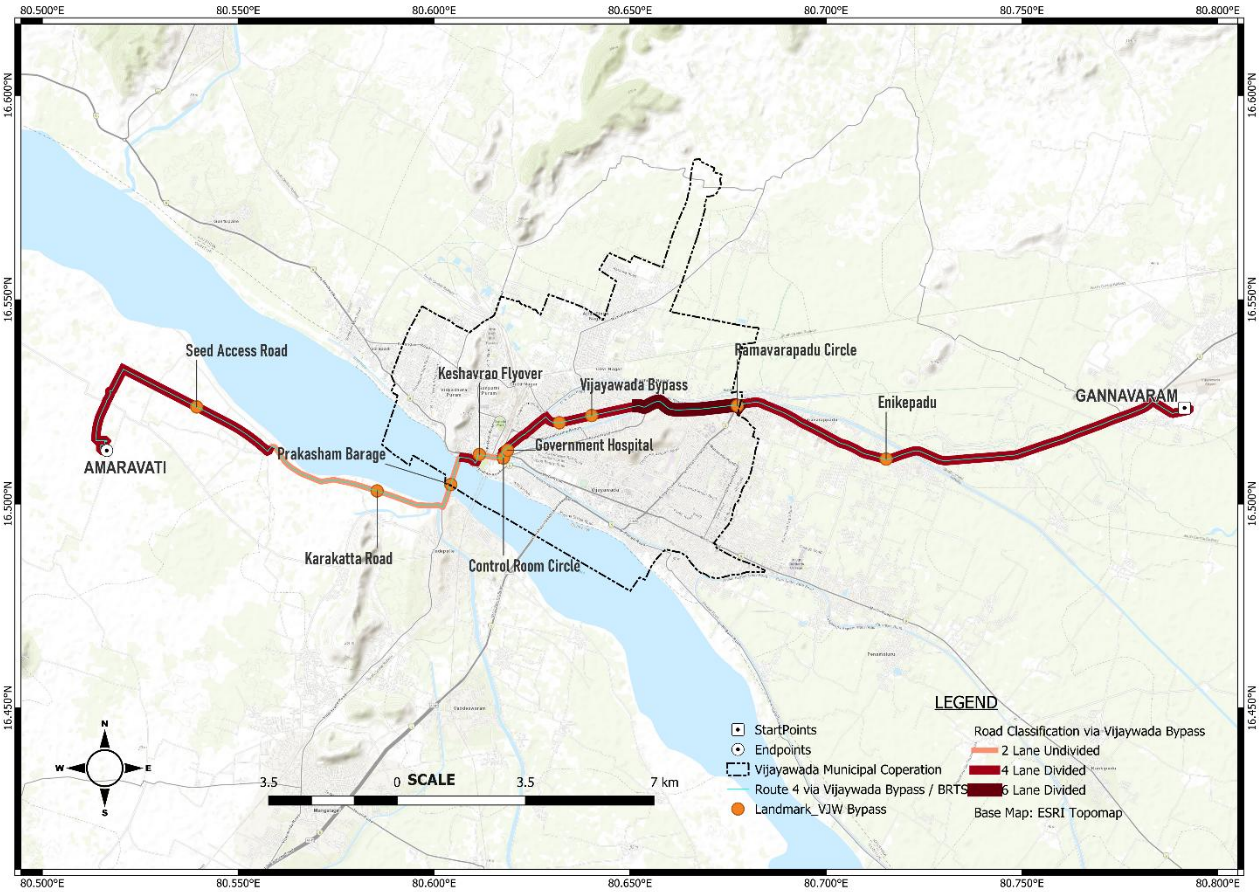
Map 7: Route 3- Gannavaram-Benz Circle Flyover- Amaravati

Key Features of the Corridor:

- **Landmarks:** Gannavaram – Enikepadu –Ramavarapadu– Benz Circle Flyover – MG Road – Raghavaiah Park- Prakasham Barrage – Karakatta Road -Seed Access Road – Amravati.
- **Road Conditions:** Modern and well-designed, with the flyover reducing congestion at ground level. The Benz Circle Flyover is a critical infrastructure project designed to ease traffic congestion at one of Vijayawada's busiest intersections.
- **Traffic Volume**: High, but the flyover ensures smoother flow compared to ground-level routes.

PARAMETERS	**CORRIDOR**	Score
Existing Infrastructure Condition	Good	3
Traffic Volume	High Volume with Free Flow	4
Congestion	No Congestion	3
Connectivity to key places and centers	No Connected	1
Surrounding land use	Commercial, Public Services	2
Freight Traffic Movement during VIP Movement	Present	1
Public transit along the corridor during VIP Movement	Absent	2
On Street Parking &Encroachments	Absent	2
Provision of Safety and security	Highly Possible	3
Future growth potential	High Potential	3
Emergency response along the corridor	Present	2

5.2.1.4 Route4: Vijayawada Bypass/BRTS Road



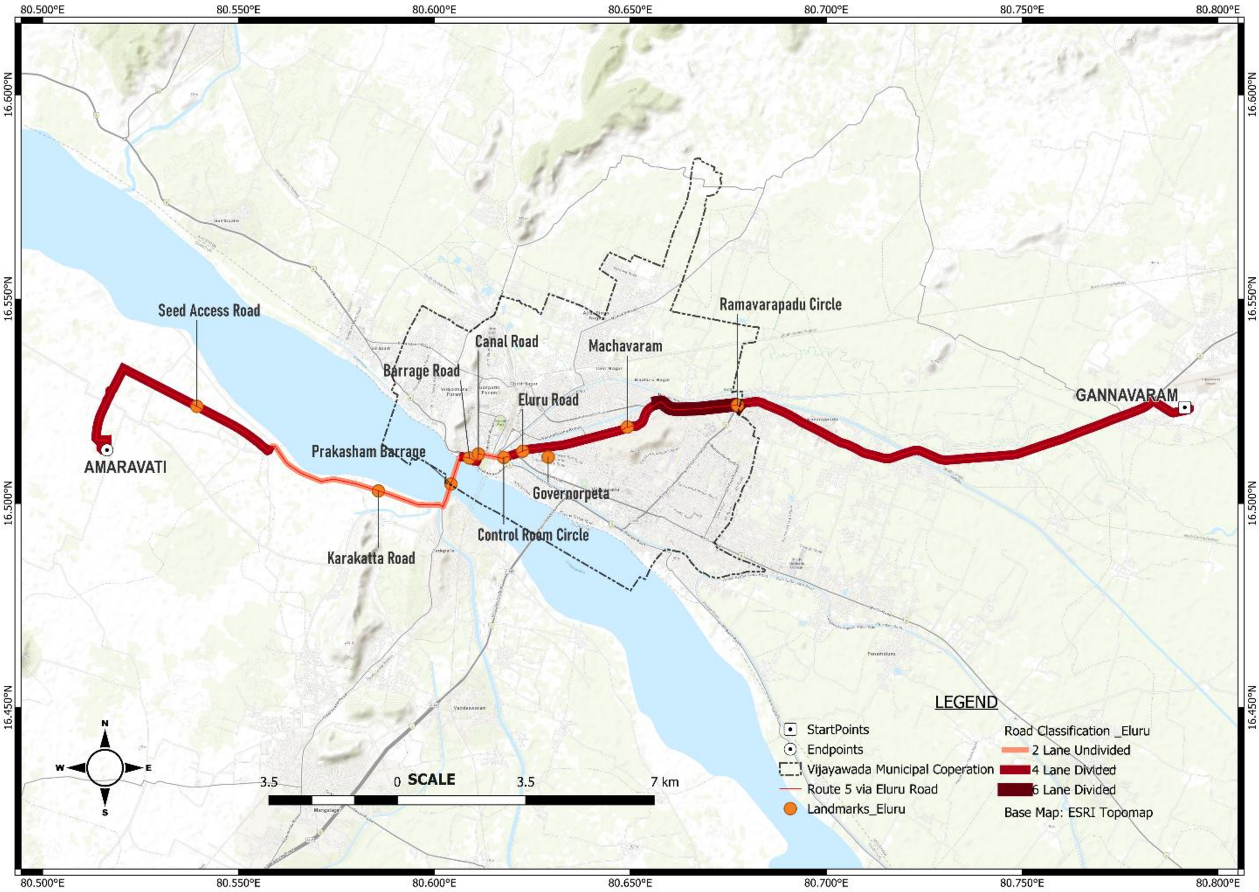
Map 8: Route 4- Gannavaram- Vijayawada Bypass-Amaravati

Key Features of the Corridor:

- **Landmarks:** Gannavaram – Enikepadu –Ramavarapadu–Eluru Road– BRTS Road – Government Hospital- Kaleshwarrao Flyover- Prakasham Barrage – Karakatta Road -Seed Access Road – Amravati.
- **Land use:** The corridor has high residential activity.
- **Road Conditions:** Wide and well-maintained, but often has high traffic volume mostly by bypassing vehicles.
- **Traffic Volume:** High, with heavy commuter and freight activity throughout the day.

PARAMETERS	**CORRIDOR**	Score
Existing Infrastructure Condition	Good	3
Traffic Volume	High Volume with Free Flow	4
Congestion	No Congestion	3
Connectivity to key places and centers	Moderately Connected	2
Surrounding land use	Other	1
Freight Traffic Movement during VIP Movement	Present	1
Public transit along the corridor during VIP Movement	Present	1
On Street Parking &Encroachments	Absent	2
Provision of Safety and security	Highly Possible	3
Future growth potential	Moderate Potential	2
Emergency response along the corridor	Present	2

5.2.1.5 Route5: Eluru Road



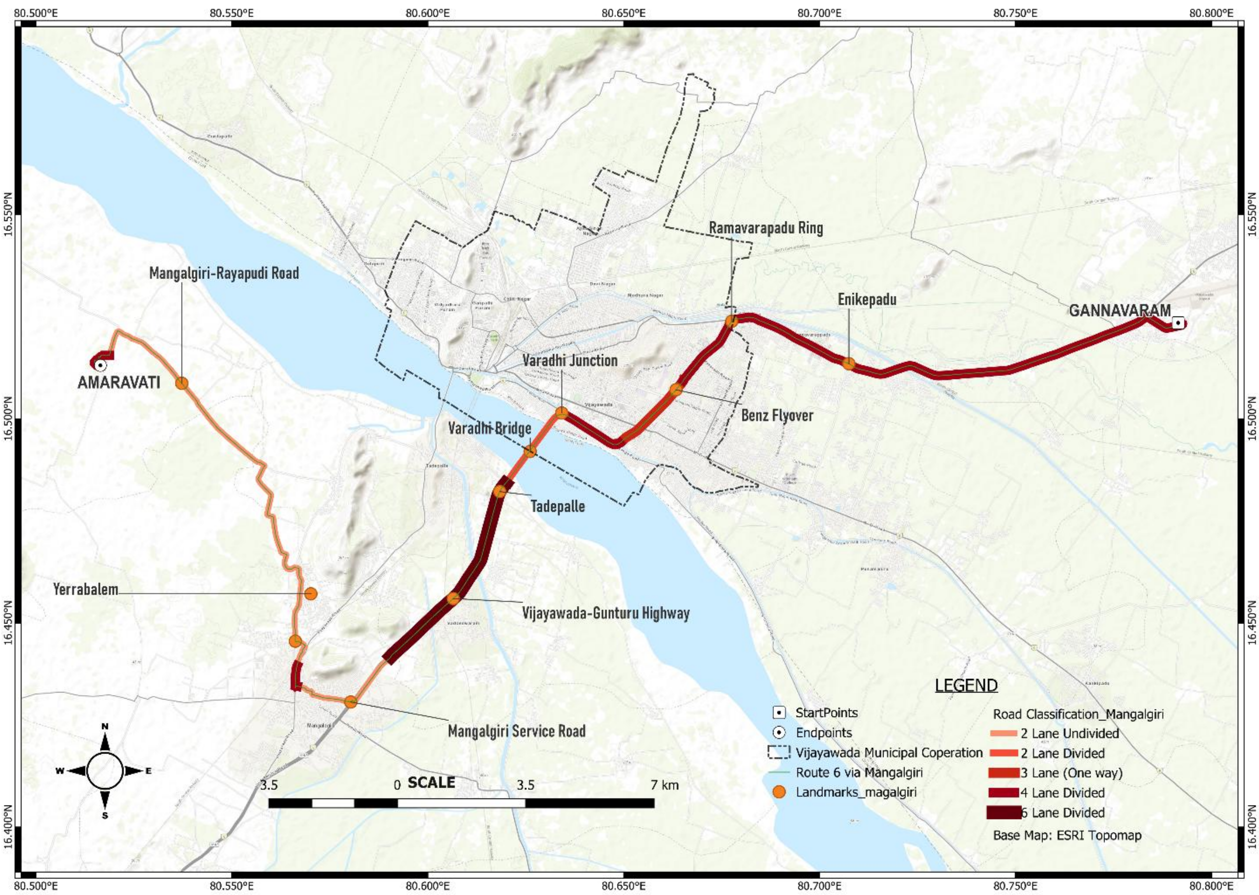
Map 9: Route5- Gannavaram-Eluru Road-Amravati

Key Features of the Corridor:

- **Landmarks:** Gannavaram – Enikepadu –Ramavarapadu–Eluru Road– Machavaram- Kaleshwarrao Flyover- Prakasham Barrage – Karakatta Road -Seed Access Road – Amravati.
- **Land use:** The corridor has high residential activity.
- **Road Conditions:** 4 Lane divide road, but often has high traffic volume mostly by bypassing vehicles.
- **Traffic Volume:** High, Hugh traffic due to residing people and freight activity throughout the day.

PARAMETERS	CORRIDOR	Score
Existing Infrastructure Condition	Good	3
Traffic Volume	High Volume with controlled intersections	3
Congestion	Congestion at Signals	2
Connectivity to key places and centers	Moderately Connected	2
Surrounding land use	Other	1
Freight Traffic Movement during VIP Movement	Present	1
Public transit along the corridor during VIP Movement	Present	1
On Street Parking &Encroachments	Present	1
Provision of Safety and security	Highly Possible	3
Future growth potential	Less Potential	1
Emergency response along the corridor	Present	2

5.2.1.6 Route6: Mangalagiri Road



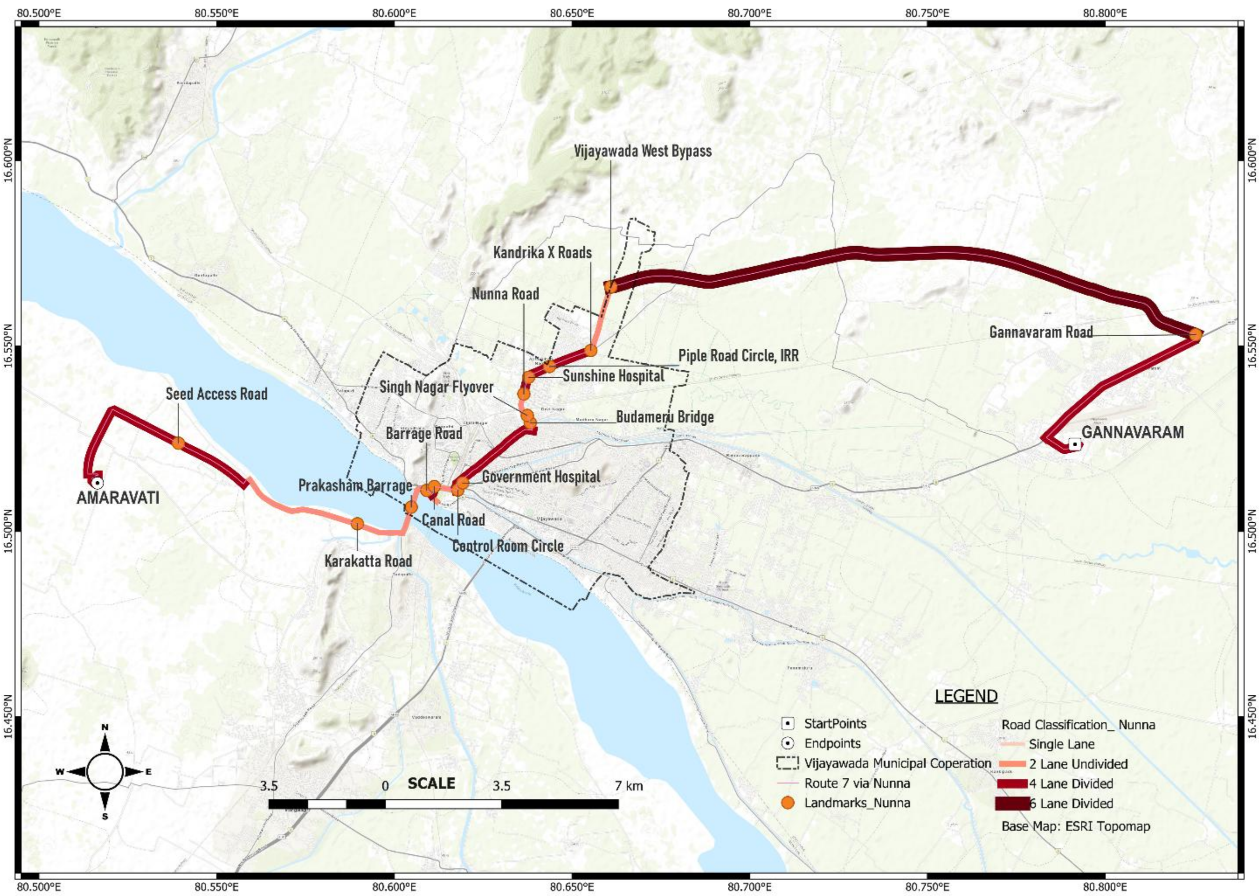
Map 10: Route6- Gannavaram- Mangalgiri- Amaravati

Key Features of the Corridor:

- **Landmarks:** Gannavaram – Enikepadu –Ramavarapadu–Eluru Road– Machavaram- Kaleshwarrao Flyover- Prakasham Barrage – Karakatta Road -Seed Access Road – Amravati.
- **Land use:** The corridor has high residential activity.
- **Road Conditions:** 4 Lane divide road, but often has high traffic volume mostly by bypassing vehicles.
- **Traffic Volume:** High, Hugh traffic due to residing people and freight activity throughout the day.

PARAMETERS	CORRIDOR	Score
Existing Infrastructure Condition	Moderate	2
Traffic Volume	High Volume with Free flow	4
Congestion	Congestion at Signals	2
Connectivity to key places and centers	Moderately Connected	2
Surrounding land use	Other	1
Freight Traffic Movement during VIP Movement	Present	1
Public transit along the corridor during VIP Movement	Present	1
On Street Parking &Encroachments	Present (Narrow roads– (Mangalagiri to Amaravati)	1
Provision of Safety and security	Moderately Possible	2
Future growth potential	High Potential	3
Emergency response along the corridor	Absent	1

5.2.1.7 Route7: Nunna Road



Map 11: Route 7- Gannavram-Nunna Highway-Amarvati

Key Features of the Corridor:

- **Landmarks:** Gannavaram – Enikepadu –Ramavarapadu–Eluru Road– Machavaram- Kaleshwarrao Flyover- Prakasham Barrage – Karakatta Road -Seed Access Road – Amravati.
- **Land use:** The corridor has high residential activity.
- **Road Conditions:** 4 Lane divide road, but often has high traffic volume mostly by bypassing vehicles.
- **Traffic Volume:** High, Hugh traffic due to residing people and freight activity throughout the day.

PARAMETERS	**CORRIDOR**	Score
Existing Infrastructure Condition	Moderate	2
Traffic Volume	Moderate Volume	3
Congestion	Congestion at Signals and Narrow Roads	2
Connectivity to key places and centers	Moderately Connected	2
Surrounding land use	Other	1
Freight Traffic Movement during VIP Movement	Present	1
Public transit along the corridor during VIP Movement	Absent	2
On Street Parking &Encroachments	Present (Narrow roads)	1
Provision of Safety and security	Moderately Possible	2
Future growth potential	Moderate Potential	2
Emergency response along the corridor	Absent	1

5.2.2 CORRIDOR SELECTION

CORRIDORS	Distance	Time of Travel without Delays	Time of travel with Delays	SCORE	Remarks	Order of Significance
CORRIDOR 1 via 100ft Poranki	39km	80mins	85-90mins	**25**	The corridor is significant for future developments, including the proposed ring road and VMC extended area.	3
CORRIDOR 2 via MG Road	38km	71min	70-90 mins	**26**	The corridor holds significant importance due to the high points of interest, particularly administrative offices	1
CORRIDOR 3 via Benz Circle Flyover	36.926 km	75 mins	75 – 90 mins	**26**	The corridor has less number of conflict points and free flowing traffic characteristic	2
CORRIDOR 4 via Vijayawada Bypass	36.359 km	73 mins	6o – 90 mins	**24**	The corridor features a high number of healthcare facilities - Preferable in emergency movement	4

CORRIDOR 5 via Eluru Road	36.491km	74 mins	70 -90 mins	**20**	The has high local traffic and the corridor is mostly 4-laned	5
CORRIDOR 6 via Mangalgiri	46km	82 mins	80-100 mins	**20**	Longest route	7
CORRIDOR 7 via Nunna	45.522km	77 mins	80-90 mins	**19**	Long route with significant conflicts due to undergoing construction works	6

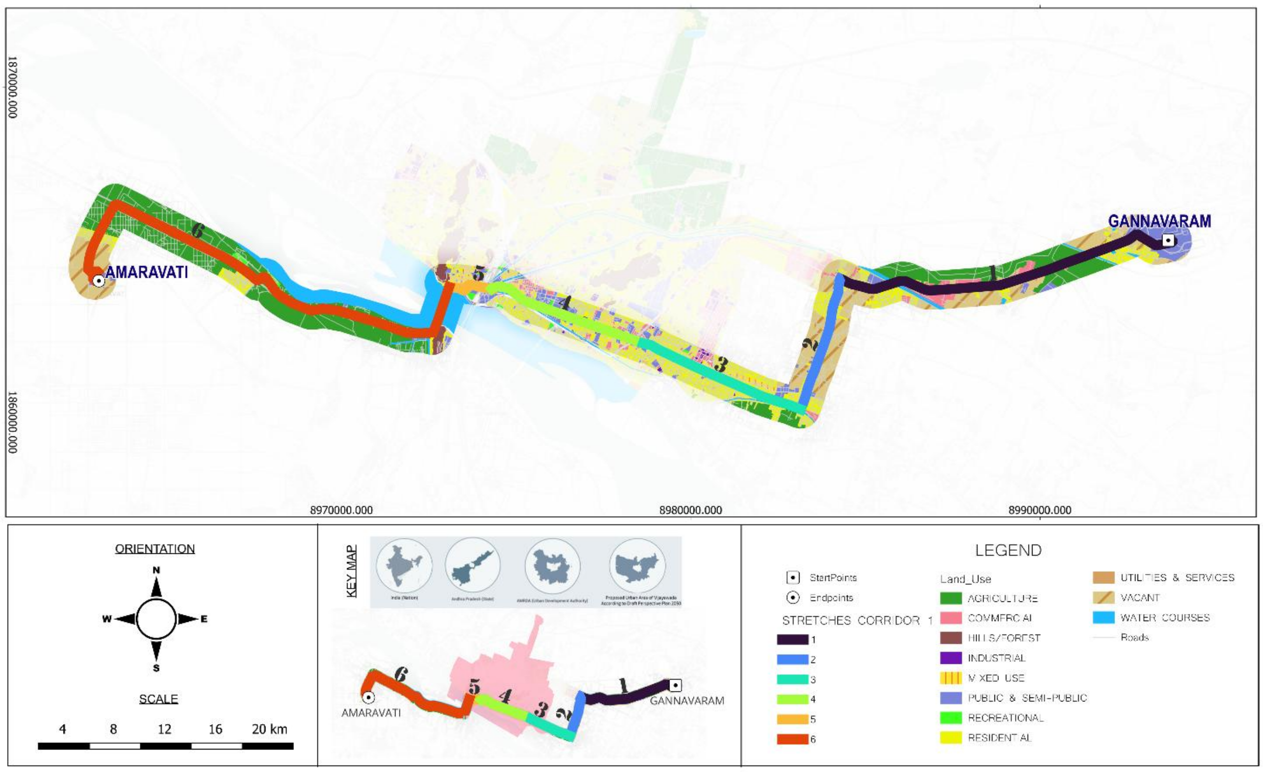
Based on the scores above, Corridor 2 and Corridor 2 have identical ratings; however, taking into account the preferences expressed at the stakeholder meeting, Corridor 1 - MG Road is more important for VIP Movement due to its proximity to numerous administrative offices in Vijayawada. Corridor 2 - Benz Circle Flyover is the fastest route with the fewest number of detours. Corridor 1 - 100ft Poranki Road has tremendous growth potential and regional importance because it is located in the VMC Outgrowth Region. Corridors 1, 2, and 3 were chosen for a more in-depth investigation.

5.3 CORRIDOR 1: GANNAVARAM AIRPORT → PORANKI → AMARAVATI.

Why This Corridor Was Chosen?

Strategic Connectivity: Directly links the airport (primary entry/exit point for VIPs) to Amaravati (administrative and political hub), ensuring efficient and timely movement. Security: The route passes through areas that can be easily monitored and secured, reducing risks during VIP movement. Minimal

Disruption: Poranki's infrastructure allows for better traffic management, minimizing disruption to daily commuters. Future-Proofing: Poranki is a developing area, and investing in traffic management here aligns with long-term urban planning goals.

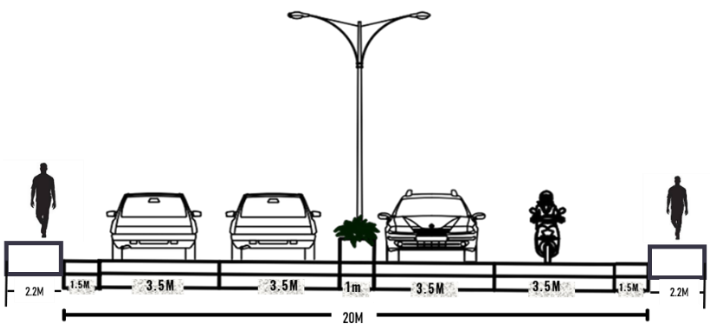


Map 12: Land use along the Corridor 1

5.3.1 Road Inventory

Seed Access Road	
Shoulder Type	Paved
Street Light	Present
Landscaping	Present
Footpath	Absent
Encroachment	Absent
Drainage Type	NA
Traffic Calming Measures	Manual
Bus Route	Present

Road Cross Section

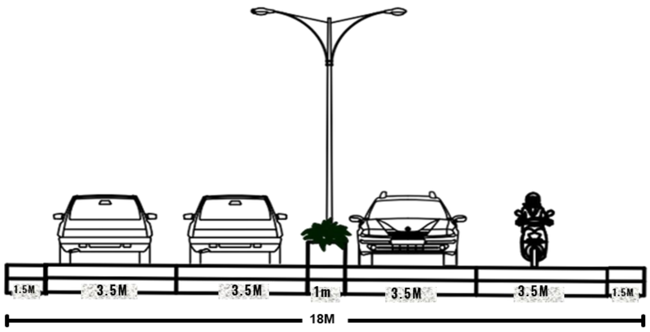


On-Street Parking	Absent
Deviation from IRC	No Deviation

Poranki Road

Shoulder Type	Paved
Street Light	Present
Landscaping	Absent
Footpath	Absent
Encroachment	Present
Drainage Type	Closed
Traffic Calming Measures	Manual/Traffic Signals
Bus Route	Present
On-Street Parking	Present
Deviation from IRC	Absence of Footpath

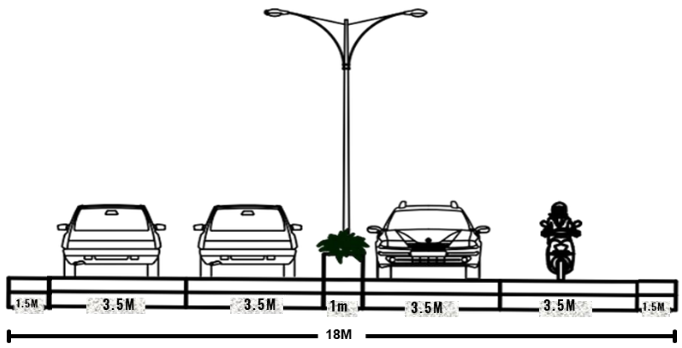
Road Cross Section



100ft Road

Shoulder Type	Paved
Street Light	Present
Landscaping	Present
Footpath	Absent
Encroachment	Absent
Drainage Type	Closed
Traffic Calming Measures	Manual
Bus Route	Present
On-Street Parking	Absent
Deviation from IRC	No Deviation

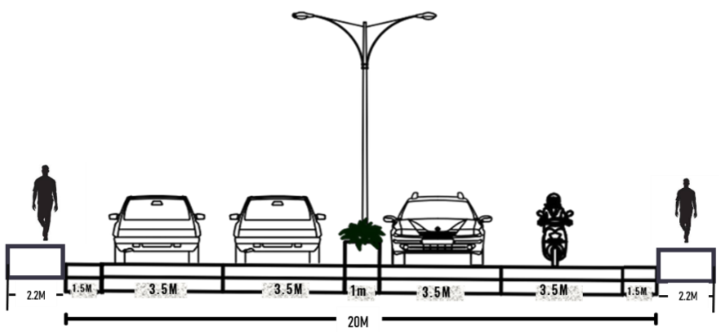
Road Cross Section



Enikepadu Road

Shoulder Type	Paved
Street Light	Present
Landscaping	Present
Footpath	Present
Encroachment	Present
Drainage Type	Open

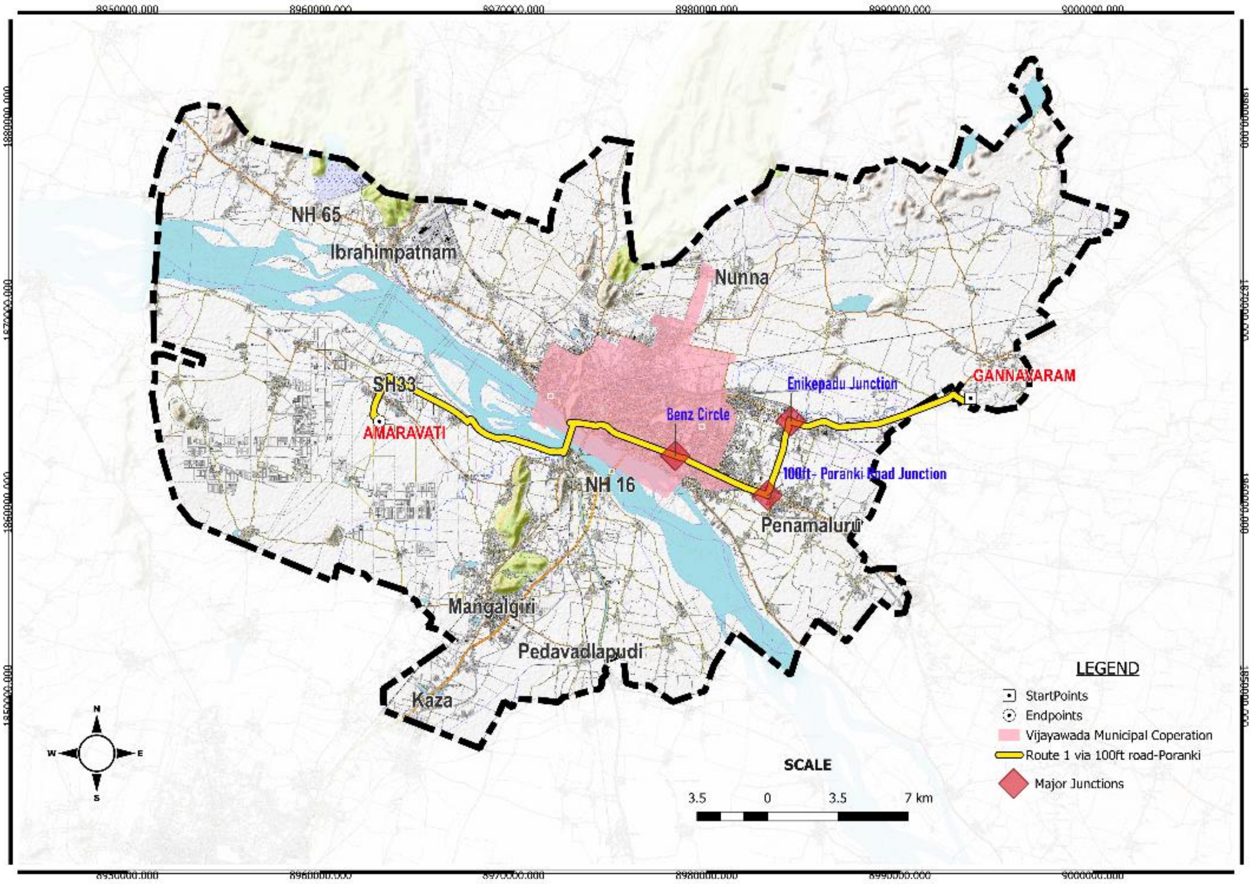
Road Cross Section



Traffic Calming Measures	None Free flow of Traffic
Bus Route	Present
On-Street Parking	Present
Deviation from IRC	Moderate

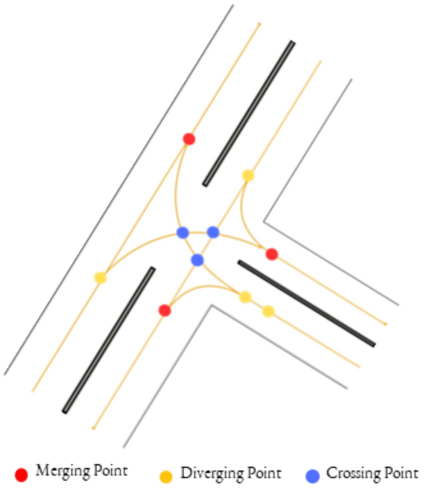
5.3.2 Major Junctions of the Corridor & Junction Inventory

Here the major junctions at which high congestion happens were taken for Junction Improvement. The major junctions of Corridor 1 are Enikepadu Junction a three-armed junction and another junction is Kannur main road junction a three-armed junction.



Map 13 Major Junctions of Corridor-1

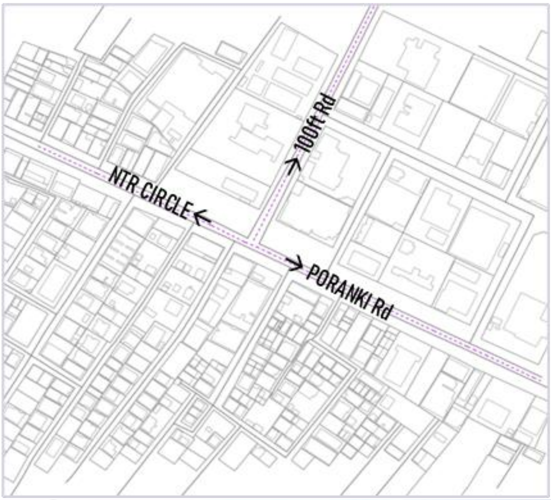
ENIKEPADU 100FT JUNCTION

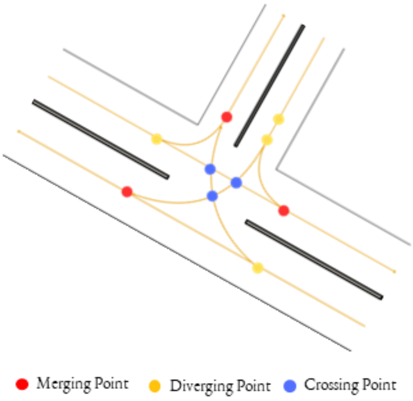


Source: Google earth

- Enikepadu Junction connects the High traffic NH16 with 100ft Road.
- 100ft feet road was designed in such a way that it eases the traffic flow and provide quick access to nearby residential and commercial areas.
- 100ft road connects the Gannavaram road to Machilipatnam road

KANUR MAIN ROAD JUCTION





Source: Google earth

- This junction links NH65 with the Kanuru Main road .
- Its stategic position makes it a major trasit point for residetial and bussiness facilitating smooth connectivity to industrial , commercial, residential zones

ENIKEPADU 100FT JUNCTION

ROAD GEOMENTRY ANDPHYSICAL FEATURES					TRAFFIC FLOW AND CONTROL						NMT FACILITIES				SAFETY			
Name of Road	Carriageway Width	Number of Lanes	Presence of slip roads/bypass lanes	Type of median	Cycle Time	Green Time	Red Time	Pedestrian Signal	Sufficient Turning Radius	Presence of Traffic Islands	Pedestrian Crossings	Cycle lanes	Bus stops/ rickshaw stands	Sidewalks /footpaths	Accident black spots	Visibility & sight distances	Encroachments	Lighting & night visibilit
NH16	17.5 m	4	NO	RAISED 1.5m	45			NO	YES	NO	YES	NO	NO	YES	YES	150M	NO	YES
100ft Rd	8m	2	NO	PAINTED	45			NO	YES	NO	NO	NO	NO	NO	YES	100M	YES	YES

KANUR MAIN ROAD JUCTION

ROAD GEOMENTRY ANDPHYSICAL FEATURES					TRAFFIC FLOW AND CONTROL						NMT FACILITIES				SAFETY			
Name of Road	Carriageway Width	Number of Lanes	Presence of slip roads/bypass lanes	Type of median	Cycle Time	Green Time	Red Time	Pedestrian Signal	Sufficient Turning Radius	Presence of Traffic Islands	Pedestrian Crossings	Cycle lanes	Bus stops/ rickshaw stands	Sidewalks /footpaths	Accident black spots	Visibility & sight distances	Encroachments	Lighting & night visibilit
NH65	15.5 m	4	NO	RAISED 1.5m	30			NO	YES	NO	YES	NO	NO	NO	YES	100M	NO	YES
Kanuru Main Rd	7m	2	NO	PAINTED	30			NO	YES	NO	NO	NO	NO	NO	YES	50M	NO	YES

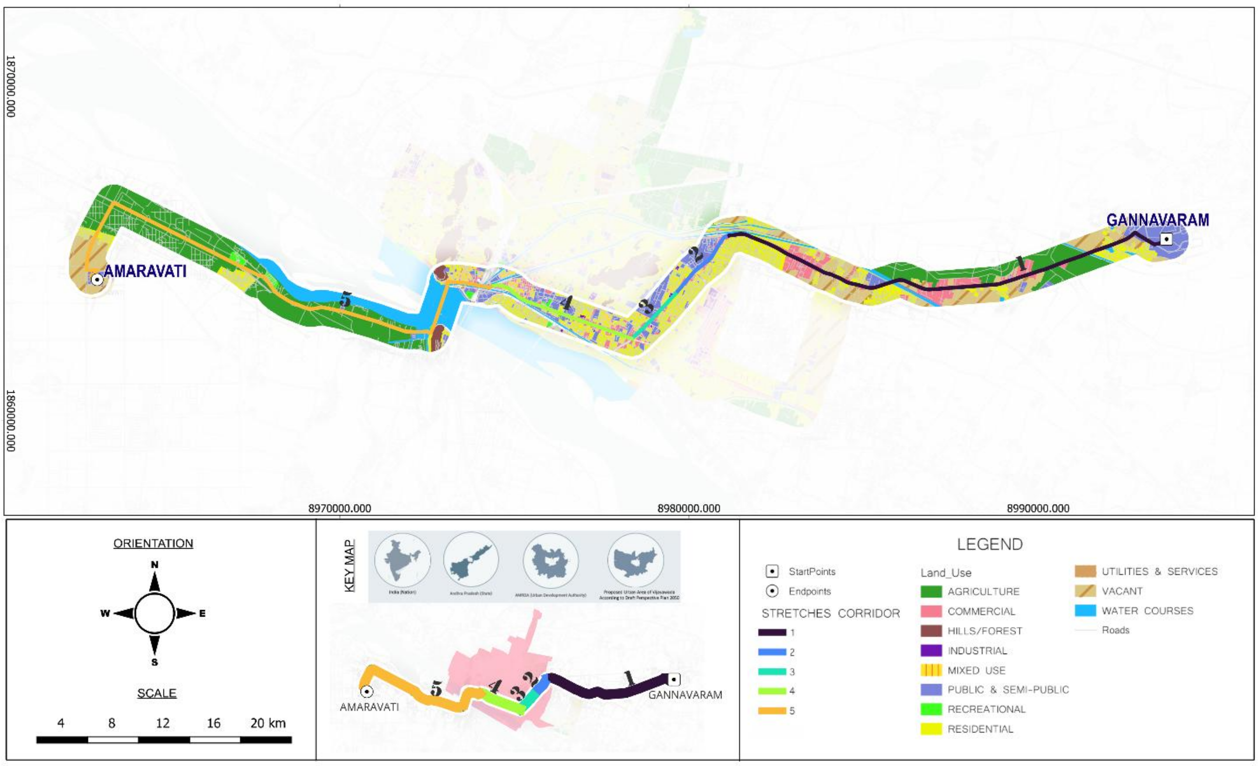
5.4 CORRIDOR 2: GANNAVARAM AIRPORT → MG ROAD → AMARAVATI.

Why This Corridor Was Chosen:

Central Importance: MG Road is a major thoroughfare in Vijayawada, connecting key commercial and institutional areas, making it a critical route for VIP movement. 1. Infrastructure: The road's width and condition allow for the implementation of dedicated VIP lanes and temporary traffic management measures.

Public Awareness: MG Road is a well-known route, making it easier to communicate traffic diversions and alternate routes to the public during VIP movements.

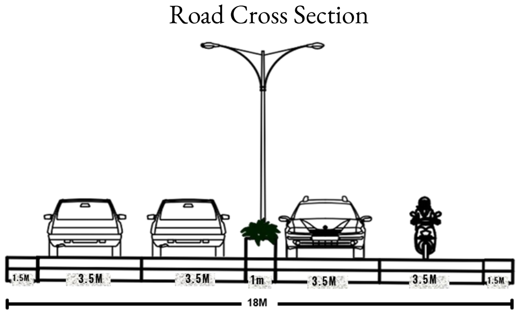
Security: The road's centrality allows for better coordination with local authorities and law enforcement for security measures.



Map 14: Land use along the Corridor 2

5.4.1 Road Inventory

Canal Road	
Shoulder Type	Paved
Street Light	Present
Landscaping	Absent
Footpath	Absent
Encroachment	Present
Drainage Type	Closed

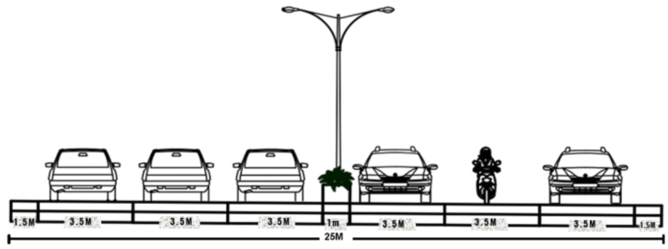


Traffic Calming Measures	Manual
Bus Route	Present
On-Street Parking	Present
Deviation from IRC	Bad

Kaleshwarao Flyover

Shoulder Type	Unpaved
Street Light	Present
Landscaping	Absent
Footpath	Absent
Encroachment	Absent
Drainage Type	Closed
Traffic Calming Measures	NA
Bus Route	Present
On-Street Parking	NA
Deviation from IRC	Good

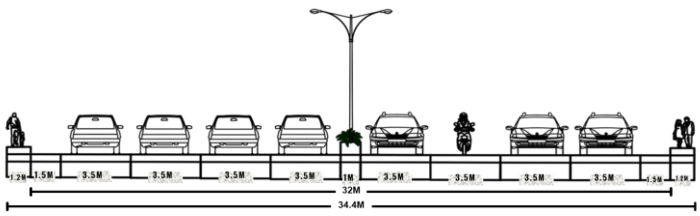
Road Cross Section



MG Road

Shoulder Type	Paved
Street Light	Present
Landscaping	Present
Footpath	Present
Encroachment	Present
Drainage Type	Closed
Traffic Calming Measures	Manual/Traffic Signals
Bus Route	Present
On-Street Parking	Present
Deviation from IRC	Good

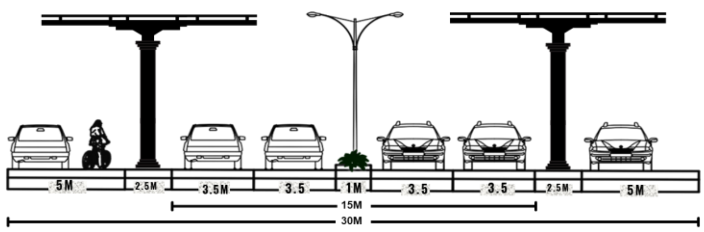
Road Cross Section



Ramesh Hospital to Benz circle

Shoulder Type	Service Lanes
Street Light	Present
Landscaping	Present
Footpath	Absent

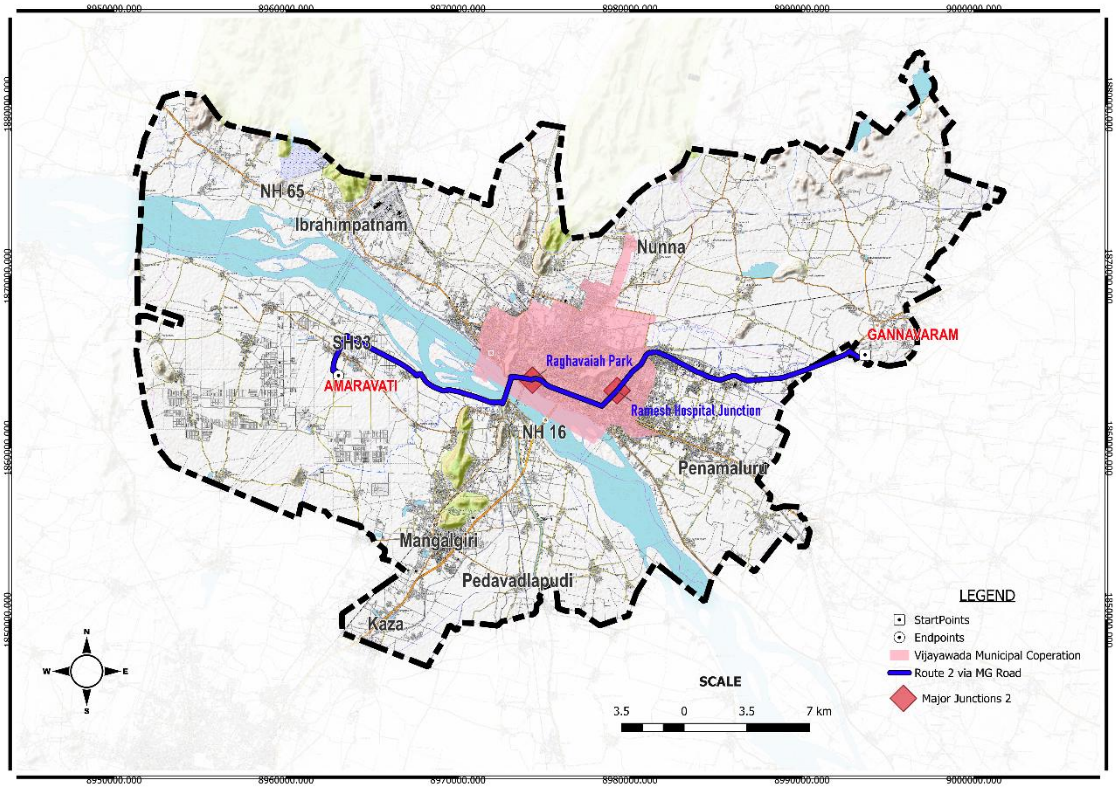
Road Cross Section



Encroachment	Absent
Drainage Type	Closed
Traffic Calming Measures	Manual/Traffic Signals
Bus Route	Present
On-Street Parking	Present
Deviation from IRC	No Deviation

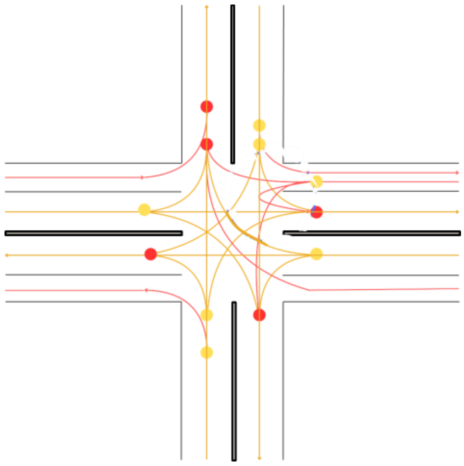
5.4.2 Major Junctions of the Corridor & Junction Inventory

Here the major junctions at which high congestion happens were taken for Junction Improvement. The major Junctions of corridor 2 are Ramesh Hospital Junction a four-armed junction with service lane and another junction is Raghavaiah Park Junction a three-armed junction.



Map 15 Major Junctions of Corridor-2

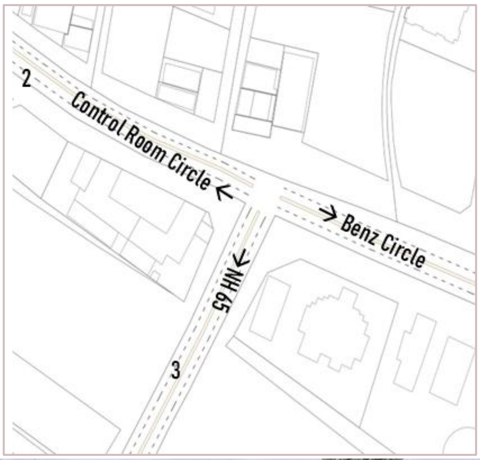
RAMESH HOSPITAL

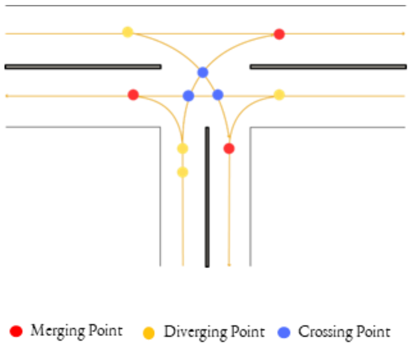


Source: Google earth

- Ramesh Hospital Junction is named after the renowned Ramesh Hospital.
- The junction serves as a critical point for patients and visitors accessing the hospital and connects to other significant parts of the city.
- This junctionis crucial because it serves as a major access point to Ramesh Hospital, one of the city's top medical facilities.
- It connects residential areas, medical services, and commercial hubs, making it an essential location for improved road infrastructure and traffic management.

RAGHAVAIH PARK JUNCTION





Source: Google earth

- Raghavaiah Park Junction is named after the adjacent Raghavaiah Park, a well- known recreational area in Vijayawada. The park offers green spaces and leisure facilities for residents and visitors, making the junction a notable landmark in the city. This area is frequented by families and individuals seeking relaxation amidst urban surroundings.
- This junction is near Raghavaiah Park, a key public recreational space, making it a popular location for pedestrians and visitors.
- As the area around the park develops, better infrastructure is needed to support growing traffic and commercial expansion.

RAMESH HOSPITAL JUNCTION

ROAD GEOMETRY AND PHYSICAL FEATURES					TRAFFIC FLOW AND CONTROL						NMT FACILITIES				SAFETY			
Name of Road	Carriageway Width	Number of Lanes	Presence of slip roads/bypass lanes	Type of median	Cycle Time	Green Time	Red Time	Pedestrian Signal	Sufficient Turning Radius	Presence of Traffic Islands	Pedestrian Crossings	Cycle lanes	Bus stops/ rickshaw stands	Sidewalks /footpaths	Accident black spots	Visibility & sight distances	Encroachments	Lighting & night visibilit
ITI ROAD	18 M	2	YES	RAISED	2 MIN	30 SEC	1 MIN 30 SEC	NO	NO	NO	YES	NO	YES	NO	YES	YES	NO	YES
MG ROAD	18 M	6	YES	RAISED	2 MIN	30 SEC	1 MIN 30 SEC	NO	YES	NO	YES	NO	YES	NO	YES	YES	NO	YES
CHENNAI-KOLKATA HWY	18 M	2	NO	RAISED	2 MIN	30 SEC	1 MIN 30 SEC	NO	NO	NO	YES	NO	NO	NO	YES	YES	NO	YES
GNC ROAD	18 M	2	NO	RAISED	2 MIN	30 SEC	1 MIN 30 SEC	NO	YES	NO	YES	NO	NO	NO	YES	YES	NO	YES

RAGHAVAIAH PARK JUNCTION

ROAD GEOMETRY AND PHYSICAL FEATURES					TRAFFIC FLOW AND CONTROL						NMT FACILITIES				SAFETY			
Name of Road	Carriageway Width	Number of Lanes	Presence of slip roads/bypass lanes	Type of median	Cycle Time	Green Time	Red Time	Pedestrian Signal	Sufficient Turning Radius	Presence of Traffic Islands	Pedestrian Crossings	Cycle lanes	Bus stops/ rickshaw stands	Sidewalks /footpaths	Accident black spots	Visibility & sight distances	Encroachments	Lighting & night visibilit
M.G.ROAD	51FT	6	NO	RAISED				NO	NO	NO	YES	MIX	NO	5FT	YES	150M	NO	YES
M.G.ROAD	24M	8,2	YES	RAISED				NO	NO	NO	YES	MIX	NO	2M	YES	200M	NO	YES
BANDHAR ROAD	30FT	6	NO	RAISED				NO	NO	NO	NO	MIX	NO	NO	YES	100M	NO	YES

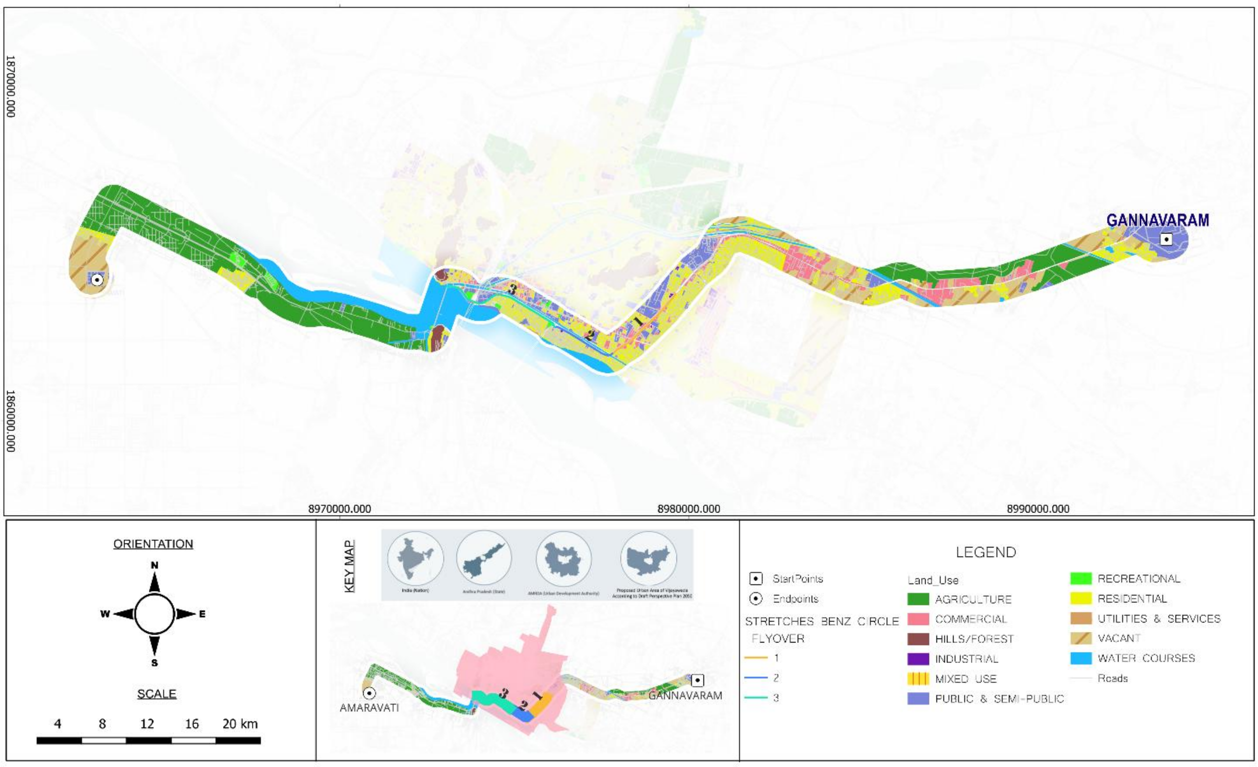
5.5 CORRIDOR 3: GANNAVARAM AIRPORT → BENZ CIRCLE FLYOVER → AMARAVATI

Why This Corridor Was Chosen:

Efficiency: The flyover significantly reduces travel time by bypassing one of the most congested areas in the city, making it ideal for VIP movement.

Reduced Congestion: The elevated structure minimizes interaction with ground-level traffic, ensuring uninterrupted VIP movement.

Security: The flyover provides a controlled environment, making it easier to implement security protocols

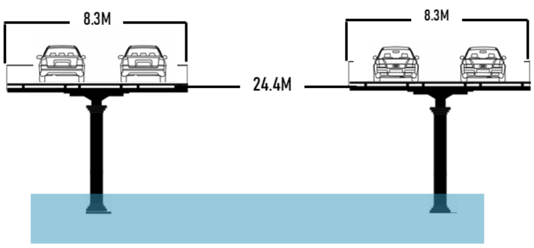


Map 16: Land use along the Corridor 3

5.5.1 Road Inventory

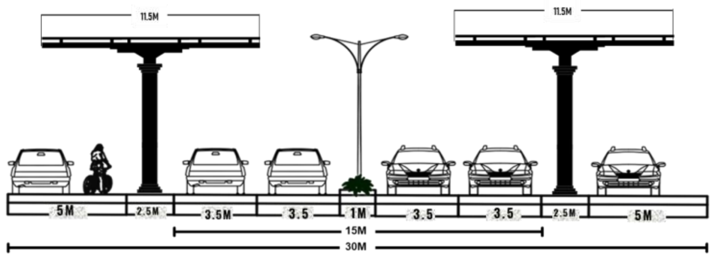
VARADHI ROAD	
Shoulder Type	**Paved**
Street Light	**Present**
Landscaping	**Present**
Footpath	**Absent**
Encroachment	**Absent**
Drainage Type	**NA**

Road Cross Section



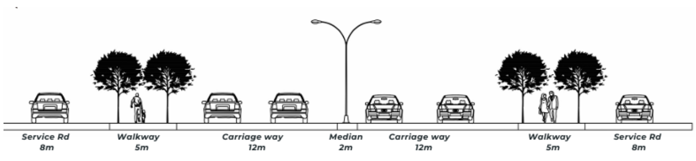
Traffic Calming Measures	**Manual**
Bus Route	**Present**
On-Street Parking	**Absent**
Deviation from IRC	**Slight Deviation**
BENZ CIRCLE FLYOVER	
Shoulder Type	Paved
Street Light	Present
Landscaping	Present
Footpath	Absent
Encroachment	Absent
Drainage Type	NA
Traffic Calming Measures	Manual
Bus Route	Present
On-Street Parking	Absent
Deviation from IRC	Slight Deviation

Road Cross Section



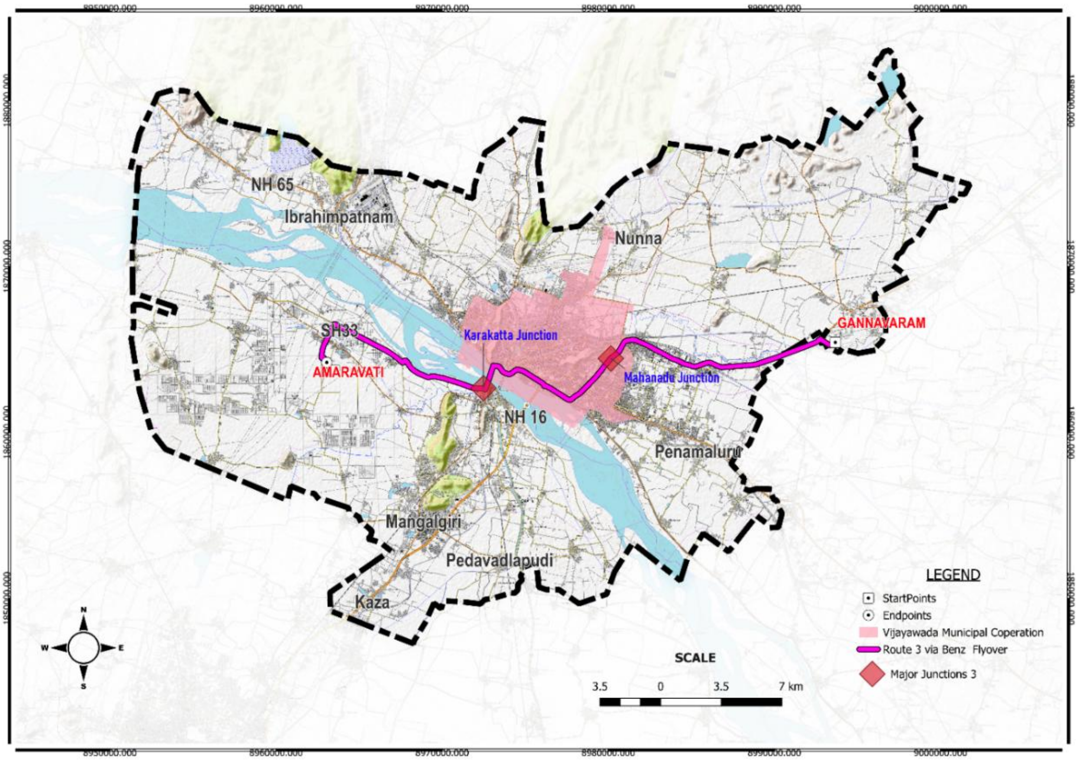
RAMVARAPADU	
Shoulder Type	Paved
Street Light	Present
Landscaping	Present
Footpath	Present
Encroachment	Absent
Drainage Type	Closed
Traffic Calming Measures	Traffic Signals
Bus Route	Present
On-Street Parking	Absent
Deviation from IRC	Moderate Deviation

Road Cross Section



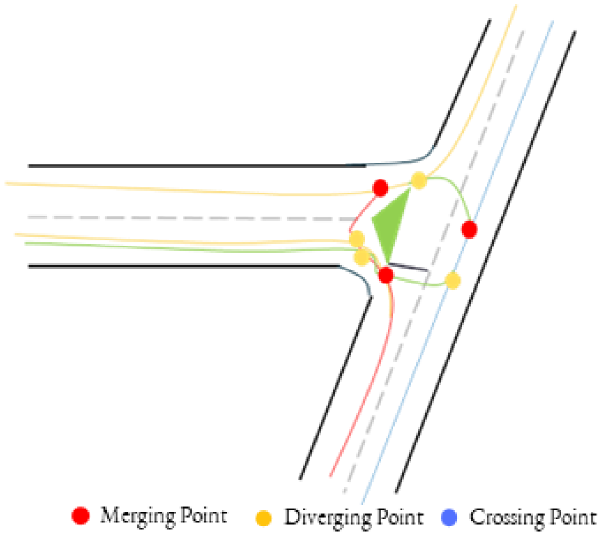
5.5.2 Major Junctions of the Corridor & Junction Inventory

Here the major junctions at which high congestion happens were taken for Junction Improvement. The major junctions of Corridor 3 are Karakatta Junction a three-armed with channel junction and another junction is Mahanadu Junction a Four-armed junction with service lane.



Map 17: Major Junctions of Corridor 3

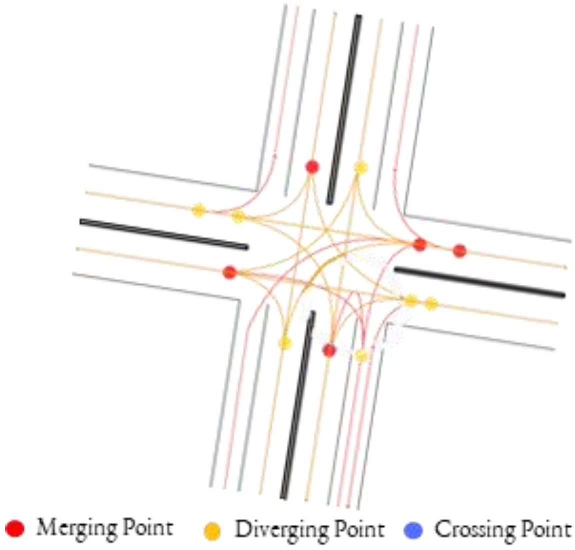
KARAKATTA ROAD



Source: Google earth

- 544F Road (Prakasham BARRAGE Road)- Arterial Road- Connecting road of Vijayawada, Guntur and Amaravati.
- Karakatta Road- Collector Road (a scenic and Strategic route along the Krishna River, which was special laid for connecting Amaravati secretariate.
- Sitanagaram Road- Collector Road (Connects Amaravati to nearby villages

MAHANADU JUNCTION



- N16 (Chennai-Kolkata Highway)- Expressway Handles Long-Distance Freight movement
- Mahnadu Road- Arterial Road- (Facilitates intra-city traffic and connects key city areas
- ESI Road- Collector road (Provides local access to Medical facilities, Institutions and residebtial zones)

5.5.3 Junction Inventory

KARAKATTA ROAD

ROAD GEOMENTRY ANDPHYSICAL FEATURES					TRAFFIC FLOW AND CONTROL						NMT FACILITIES				SAFETY			
Name of Road	Carriageway Width	Number of Lanes	Presence of slip roads/bypass lanes	Type of median	Cycle Time	Green Time	Red Time	Pedestrian Signal	Sufficient Turning Radius	Presence of Traffic Islands	Pedestrian Crossings	Cycle lanes	Bus stops/ rickshaw stands	Sidewalks /footpaths	Accident black spots	Visibility & sight distances	Encroachments	Lighting & night visibilit
Karakatta Road	3.5 m	2	NO	No Median				NO	YES	YES	NO	NO	NO	NO		GOOD	NO	YES
Sitanagaram - Tadepalli Rd	3.5 m	2	NO	No Median				NO	YES	YES	NO	NO	NO	NO		GOOD	NO	YES
Sitnagaram-Barrage	3.5m	2	NO	No Median				NO	YES	YES	NO	NO	NO	NO		GOOD	NO	YES

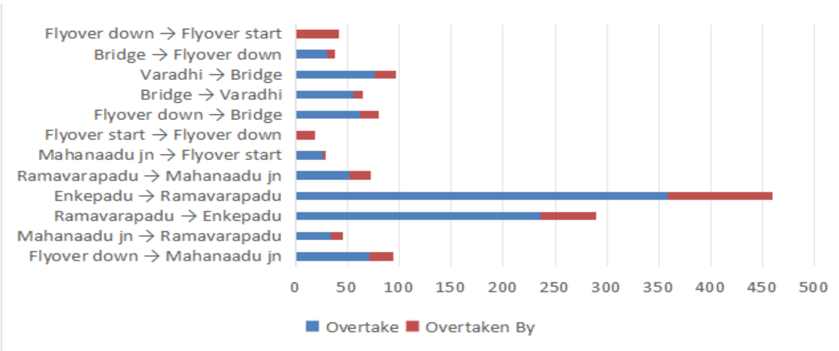
GOVERNMENT HOSPITAL JUNCTION

ROAD GEOMENTRY ANDPHYSICAL FEATURES					TRAFFIC FLOW AND CONTROL						NMT FACILITIES				SAFETY			
Name of Road	Carriageway Width	Number of Lanes	Presence of slip roads/bypass lanes	Type of median	Cycle Time	Green Time	Red Time	Pedestrian Signal	Sufficient Turning Radius	Presence of Traffic Islands	Pedestrian Crossings	Cycle lanes	Bus stops/ rickshaw stands	Sidewalks /footpaths	Accident black spots	Visibility & sight distances	Encroachments	Lighting & night visibilit
ESI Rd	3 m	4	NO	Raised 0.5m		1:04	1:35	NO	YES	NO	NO	NO	NO	NO	1	GOOD	NO	YES
Sitanagaram - Tadepalli Rd	3.m	4	NO	Raised 0.5m		1:35	2:29	NO	YES	NO	YES	NO	NO	NO	1	GOOD	NO	YES
Sitnagaram-Barrage	3.5m	4	Service Lane	Raised 0.3m		2:29	3:00	NO	YES	NO	YES	NO	NO	NO	1	GOOD	NO	YES
Sitnagaram-Barrage	3.5m	4	Service Lane	Raised 0.3m		2:00		NO	YES	NO	YES	NO	NO	NO	1	GOOD	NO	YES

5.5.4 Speed and Delay

S.no	Link	From Node	To Node	Distance (km)	Journey Time (min)	Delay (min)	Cause of Delay	Location	Speed (km/h)
1	Flyover down → Mahanadu jn	Flyover down	Mahanadu jn	0.797	2	0	No delay	No delay	23.91
2	Mahanadu jn → Ramavarapadu	Mahanadu jn	Ramavarapadu	1.9	3.1	0.38	Junction delay	Ramavarapadu	36.77
3	Ramavarapadu → Enkepadu	Ramavarapadu	Enkepadu	2.9	7.5	0.83	Pedestrian cross, Turning delay	Opp. Reliance, 100 ft road	23.2
4	Enkepadu → Ramavarapadu	Enkepadu	Ramavarapadu	2.9	9.33	2.21	Traffic jam, Junction delay	Decathlon, ISUZU	18.65
5	Ramavarapadu → Mahanadu jn	Ramavarapadu	Mahanadu jn	1.9	3.88	1.93	Junction delay	Mahanadu jn	29.38
6	Mahanadu jn → Flyover start	Mahanadu jn	Flyover start	0.797	1.33	0	No delay	No delay	35.91
7	Flyover start → Flyover down	Flyover start	Flyover down	2.5	4	0	No delay	No delay	37.5
8	Flyover down → Bridge	Flyover down	Bridge	0.177	1	0	No delay	No delay	10.62
9	Bridge → Varadhi	Bridge	Varadhi	1.6	3.7	0.15	Junction delay	Bridge	25.95
10	Varadhi → Bridge	Varadhi	Bridge	1.6	3.02	0.13	Turning delay	Varadhi	31.79
11	Bridge → Flyover down	Bridge	Flyover down	0.177	0.68	0	No delay	No delay	15.62
12	Flyover down → Flyover start	Flyover down	Flyover start	2.5	5.13	0	No delay	No delay	29.24

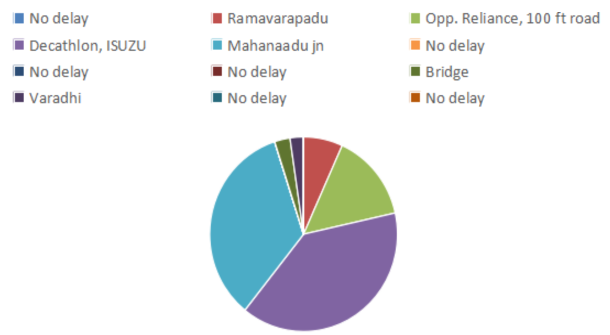
NO OF VEHICLES OVERTAKED VS NO OF VEHICLES OVERTAKEN



Speed: The average speed ranges from 10.62 km/h to 37.5 km/h. The lowest speeds are observed near pedestrian crossings and junctions

Overtaking Data: The floating car was faster than most vehicles, indicating moderate to heavy traffic density in certain sections.

DELAYS AND ITS LOCATIONS



Traffic Flow: Smooth flow on flyovers and bridges with no delays. Congestion and delays are concentrated at junctions and areas with high pedestrian activity.

AVERAGE JOURNEY SPEED = **26.2 KM/H**

AVERAGE RUNNING SPEED = **29.9 KM/H**

Delays: Junction Delays: Significant delays at junctions like Mahanaadu Junction, Ramavarapadu, and the bridge. Traffic Jams: Heavy congestion near Decathlon and ISUZU. Pedestrian Crossings: Delays due to pedestrian activity near Reliance and 100 ft road.

5.6 WAY FORWARD: OPERATIONAL PLAN FOR VIP VEHICULAR MOVEMENT

With the successful completion of Phase-1 of project, which included initial surveys and the first round of stakeholder meetings, we are now set to advance to the next critical steps in the project.

Phase-2 of Surveys & In-Depth Stakeholder Consultations

- Conduct rest of the surveys covering all corridors to identify specific operational challenges.
- Engage stakeholders in deeper discussions to address concerns, gather insights, and refine strategies for VIP movement efficiency.

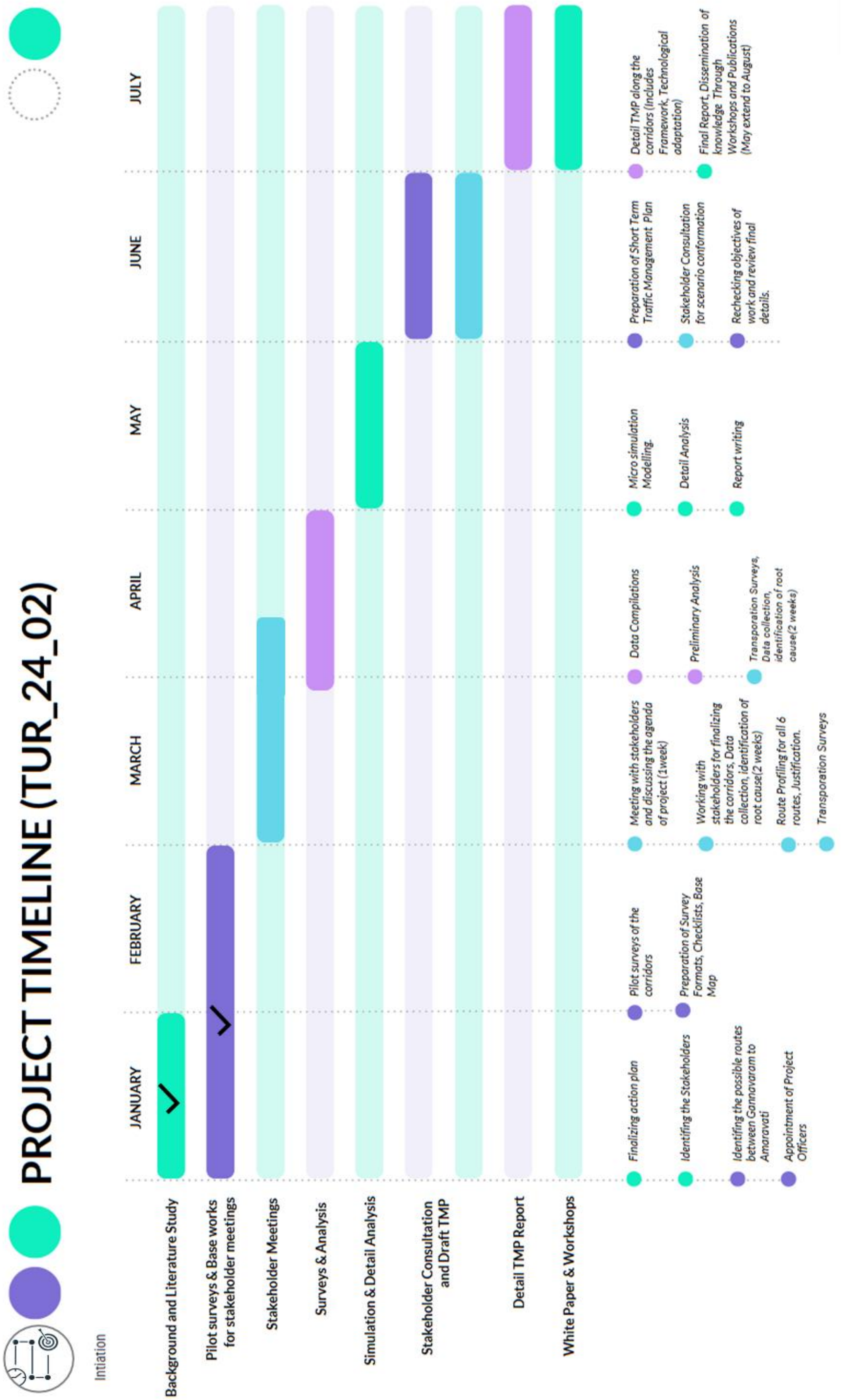
Micro-Simulation of Corridors

- Develop detailed traffic models to simulate various scenarios for VIP movement across three corridors.
- Assess traffic flow impacts, bottlenecks, and alternative routing strategies to enhance smooth movement while minimizing disruption to general traffic.

Scenario Evaluation & Best-Fit Strategy

- Analyze simulation outcomes to determine the most effective operational plan for VIP convoys.
- Finalize a data-driven, optimized approach that ensures seamless VIP transit with minimal interference to public mobility.

This phase will be instrumental in shaping a **robust, efficient, and stakeholder-backed operational plan** for VIP vehicular movement. The insights from micro-simulations and consultations will enable us to implement **evidence-based solutions** that balance security, efficiency, and public convenience.


PROJECT TIMELINE (TUR_24_02)
Intiation
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
Background and Literature Study
Pilot surveys & Base works for stakeholder meetings
Stakeholder Meetings
Surveys & Analysis
Simulation & Detail Analysis
Stakeholder Consultation and Draft TMP
Detail TMP Report
White Paper & Workshops
Finalizing action plan
Identifing the Stakeholders
Identifing the possible routes between Gannavaram to Amaravati
Appointment of Project Officers
Pilot surveys of the corridors
Preparation of Survey Formats, Checklists, Base Map
Meeting with stakeholders and discussing the agenda of project (1week)
Working with stakeholders for finalizing the corridors, Data collection, identification of root cause(2 weeks)
Route Profiling for all 6 routes, Justification.
Transporation Surveys
Data Compilations
Preliminary Analysis
Transporation Surveys, Data collection, identification of root cause(2 weeks)
Micro simulation Modelling.
Detail Analysis
Report writing
Preparation of Short Term Traffic Management Plan
Stakeholder Consultation for scenario conformation
Rechecking objectives of work and review final details.
Detail TMP along the corridors (Includes Framework, Technological adaptation)
Final Report, Dissemination of knowledge Through Workshops and Publications (May extend to August)

LETTERS

योजना तथा वास्तुकला विद्यालय, विजयवाड़ा
School of Planning and Architecture, Vijayawada
An Institute of National Importance, Ministry of Education Gov. of India

27 January, 2025

To,
Shri Rais Khan,
Traffic Police Department,
Vijayawada
A.P.

Sub: Seek appointment to discuss a project under "AMRUT Funded Centre for Urban Planning Capacity Building (A-CUPCB-SPAV)" funded by the Ministry of Housing and Urban Affairs, Govt. of India.

Dear

We take this opportunity to introduce the AMRUT Funded Centre for Urban Planning Capacity Building (A- CUPCB-SPAV), wherein the AMRUT Division of the Ministry of Housing and Urban Affairs (MoHUA, Government of India) has recognized SPA Vijayawada as one of the few centers in the country, that shall undertake cutting edge research, projects, and training in the field of urban planning and climate-sensitive development.

This Centre is testimony to SPAV's capability, resources and potential to lead the path of research and advocacy in the domain of Urban Planning in India, having profound expertise in various Planning and Architecture domains. Over the years, the institution has undertaken key Consultancy and Research projects, including GIS-based Master Plan Preparation under the AMRUT scheme, Zonal Master Plans, Revision of Planning Acts, etc. Additionally, the institution has earned recognition at national and international platforms for research outputs focusing on crucial areas like Climate Resilient Urban Planning, Urban Heat Islands, and many more.

"Operational Plan for VIP Vehicular Movement in Vijayawada" is a 8-month target urban research (TUR) Project that aims to formulate traffic management plan for effective VIP Vehicular movement from Gannavaram Airport to Amaravati "Operational Plan for VIP Vehicular Movement in Vijayawada" is a 8-month target urban research (TUR) Project that aims to formulate traffic management plan for effective VIP Vehicular movement from Gannavaram Airport to Amaravati with minimal disruption to city traffic.

Regarding the same, our team would like to visit your request to grant an appointment for our team to physically meet and discuss with your concerned personnel at any time as per your convenience in the third or fourth week of February 2025, at your convenience.

A Summary of the project is annexed for your reference.

Sincerely,

Dr. Naina Gupta
Principal Investigator
(M): +91-8470974525
(E-mail): naina@spav.ac.in

Prof. Dr. Ayon Kumar Tarafdar
Head and Team Leader of the Centre
Chair, Overall Coordination Committee
A-CUPCB-SPAV

Website: https://acupcb.spav.ac.in/

योजना तथा वास्तुकला विद्यालय, विजयवाड़ा
School of Planning and Architecture, Vijayawada
An Institute of National Importance, Ministry of Education Gov. of India

27 January, 2025

To,
Shri Dwaraka Tirumala Rao,
Director General of Police (DGP),
Vijayawada
A.P.

Sub: Seek appointment to discuss a project under "AMRUT Funded Centre for Urban Planning Capacity Building (A-CUPCB-SPAV)" funded by the Ministry of Housing and Urban Affairs, Govt. of India.

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(E-mail): naina@spav.ac.in

Prof. Dr. Ayon Kumar Tarafdar
Head and Team Leader of the Centre
Chair, Overall Coordination Committee
A-CUPCB-SPAV

DATA CHECKLIST

Atal Mission for Rejuvenation and Urban Transformation

AMRUT Centre of Urban Planning for Capacity Building
A-CUPCB-SPAV

S No.	QUESTIONS	DEPARTMENT	STATUS
	Project Name: Operational Plan for VIP Vehicular Movement in Vijayawada		
	Project Code: TUR_24_02		
1	Recent Master Plan of VMC & Existing landuse	VMC	☐
2	Accident Data (with proper classification, Accident hotspots, Incident Logs)	Traffic Police	☐
3	Is Intelligent Transportation Management system is being used? If yes, data related to it.	APCRDA/ Traffic Police/VMC	☐
4	Intersections design layouts	VMC/NHAI/PWD	☐
5	Traffic Management along the corridors (list intersections with automated traffic signals, manually operated signals, manually regulated traffic, High Traffic zones)	VMC/Transport Department	☐
6	City Road Network -(Classified road maps, Major Intersections, Congestion Hotspots, Toll Loactions, Proposal of New Roads/ Highways/Bridges/Flyovers,etc.)	APCRDA/VMC	☐
7	Traffic Videos at identified locations (One weekday and one weekend)Traffic Volume and Flow Patterns: Detailed statistics on vehicular movement across the city, including peak hours.	APCRDA/Traffic Police/VMC	☐
8			
9	Traffic Enforcement, framework & Operation during VIP movement	Traffic Police/VMC	☐
10	Current VIP mobility routes (Points of travel, Frequency of travel, time of travel, classifivation of VIPs and corresponding routes)	Traffic Police/VMC	☐
11	Locations of designated parking areas along the corridors	VMC/APCRDA	☐
12	Information regarding Surveillance, Rapid-Response Units, Emergency access provisions along the corridors	Traffic Police/VMC	☐
13	Expenditure Statement; Advertisment revenue & their sources	VMC	
14	Existing Emergency Response plan and corresponding departments	Traffic Police/VMC	☐
15	Road closure/Barricading during VIP movement	Traffic Police/VMC	☐
16	Status of ITMSs by VMC -2023 Report (Points mentioned: Adaptive Traffic Control System (ATCS), Traffic Enforcement System (TES), Information Dissemination System (IDS), Traffic Surveillance System (TSS) and Traffic Control and Command Centre (TCCC) https://www.newindianexpress.com/cities/vijayawada/2023/Apr/14/smart-traffic-system-to-help-curb-congestion-in-vijayawada-2565825.html	VMC, RTO	☐
17	Maps of Amravati Capital region : https://adcl.in/	VMC, ADCL/ APCRDA	☐
21	Challans - Parking; Wrong side driving, violations	Traffic Police	☐
	GREEN CORRIDOR PERSPECTIVE: +91 8662576648		
25	No.of Hospitals (Categories)	JEEVANDHAN/VMC	☐
26	No.of Transplant Hospitals	JEEVANDHAN	☐
27	No.of Transplants takes place in Vijayawada per year	JEEVANDHAN	☐

SURVEY FORMATS

CLASSIFIED TRAFFIC VOLUME COUNT SURVEY															
Date:		**Location:**					**Direction:**			**Enumerator:**					
Day:		**Road Name:**								**Time:**					
TIME	**FAST MOVING VEHICLES**											**SLOW MOVING VEHICLES**			
	Car/ Jeep/Taxi	**2-Wheeler**	**3-Wheeler**	**Light Commercial Vehicle**	**Mini Bus**	**Standard buses**	**2 Axle Truck**	**3 Axle Truck**	**Multi Axle Truck**	**Tractor**	**Tractor + Trailer**	**Cycle**	**Cycle Rickshaw**	**Animal drawn Vehicles**	**Others (Specify)**
From															
:00															
To															
:15															
Total															
From															
:16															
To															
:30															
Total															
From															
:31															
To															
:45															
Total															
From															
:46															
To															

Origin Destination Survey at Midblock/Cordon Points															
Date:								**Survey Location:**					**Enumerator:**		
Day:								**Direction:**					**Time:**		
				Origin		**Destination**		**Trip details**				**Commodity**			
Sr. No	**Time**	**Vehicle type***	**Occupancy**	**Place**	**District**	**Place**	**District**	**Travel Time (hr)**	**Distance (km)**	**Cost (Rs.)**	**Purpose***	**Frequency**	**Type***	**Weight (tonne)***	**Travel time (hr)**

*** Coding:** **Vehicle Type :**1 - Car/Jeep 2. - 2 Wheeler 3 - 3 Wheeler 4. Taxi 5. Public Bus 6. Private Bus 7. Institutional Bus 8. Cycle 9. Cycle Rickshaw 10. Animal Cart 9. Lcv 10. Truck 11. Mav 12. Tractor 13. Tractor Trolley

AMRUT Centre of Urban Planning for Capacity Building
A-CUPCB-SPAV

Atal Mission for Rejuvenation and Urban Transformation

ROAD INVENTORY SURVEY FORMAT

Date:		Road Name:		Enumerator:	

Note: Draw cross-sections on a blank sheet provided

S.No.	Characteristics	Section-1	Section-2	Section-3
	Link No.			
1	Right of Way (mts)			
2	Carriageway			
	Width (mts.)			
	Type (Asphalt / Concrete / WBM / Others)			
	Encroachment (mts.)			
	Type of Encroachment			
3	Shoulder			
	Width (mts.)			
	Type (Paved/Unpaved/Absent)			
	Encroachment (m.)			
	Type of Encroachment			
4	Footpath			
	Width (mts.)			
	Type			
	Condition			

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