

TRAFFIC MANAGEMENT ALONG AN ARTIRIAL IN BHIMAVARM TOWN IN ANDHRA PRADESH

Submitted in partial fulfillment of the requirements for the award of Bachelors of
Engineering degree in
Civil Engineering

by

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**SATHYABAMA INSTITUTE OF SCIENCEANDTECHNOLOGY
(DEEMEDTO BE UNIVERSITY)**

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BONAFIDE CERTIFICATE

This is certify that this Project Report is the bonafide work of **G.YASWANTH NAIDU (37200022) AND M.ROHITH VARMA (37200037)** who is carried out the Project entitled "**TRAFFIC MANAGEMENT ALONG AN ARTIRIAL IN BHIMAVARM TOWN IN ANDHRA PRADESH**" under my super vision from October2020 to April2021.

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DECLARATION

We **G.YASWANTH NAIDU (37200022) AND M.ROHITH VARMA (37200037)** hereby declare that the Project Report entitled “**TRAFFIC MANAGEMENT ALONG AN ARTERIAL IN BHIMAVARAM TOWN IN ANDHRA PRADESH**” done by me under the guidance of **Dr. V.SAMPATH KUMAR** at Sathyabama Institute Of Science And Technology is submitted in partial fulfillment of the requirements for the award of Bachelor Of Engineering degree in Civil Engineering.

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ABSTRACT

India has one of the largest highways and vehicles usage is drastically increased. This rise in vehicular traffic on roads leads to traffic jams at junctions.

In the current context of Bhimavaram town, specifically in the market zones and NH- 165 passing through the town, the traffic scenario is very congested most of the time particularly at the peak times. Due to narrow roads in the town and increasing growth of vehicles people face lot of problem at the major traffic points of the town which causes travelling delays.

Turning moment studies are conducted at all the major junctions and the traffic flow was estimated. The data from turning moment studies is collected for one day at each junction during peak 3 hours in the morning and evening. The peak hours traffic data from video figureic survey is also collected and examined.

To provide congestion less traffic in Bhimavaram town by diverting the heavy vehicles through the by-pass road. Time restrictions should be mandatory for heavy vehicles to pass through the town. Proper parking slots should be provided by the Government mainly at the market zones which doesn't have proper parking and uses narrow roads for parking.

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CHAPTER1

INTRODUCTION

The problem of traffic congestion has always been an essential part of human civilization; however, it was not until the second of the last century that the rapid rise in the number of motor vehicles and demand in virtually all modes of transport became predominant. The amount of traffic- is determined by the number of vehicles (or people) that travel over a certain time span of 1 hour to a transportation facility. There are several volumes in traffic engineering studies such as daily volume, volume per hour, and maximum volume per hour. Moreover, quantities of a day or an hour can vary greatly according to the day or time of the week. Benefits - The number, movements and classification of road vehicles at a given location is determined via traffic volume studies. Data from traffic volume may calculate critical flow times, determine the impact of large vehicles or peatland users on the flow of vehicles, or record patterns for traffic volume. The duration of the sampling period depends on the number type taken and the expected use of the recorded data. For example, during the high flow time an intersection count can be. If so, it is possible to use the manual count for the data on traffic volume with 15 minutes intervals.

1.1. Need for the Study:

Bhimavaram is a town located in West Godavari District in Andhra Pradesh with a population up to 2 lakhs. The town has become a hub of educational institutions, being surrounded by 6 engineering colleges, seven schools and other institutions, Apart from this, Bhimavaram is commercially well developed and culturally forward than surrounding towns and villages. The town always entertains people with cultural programmes and fairs. This attracts a lot of people from surrounding regions into the town. This raise in traffic leads to traffic jams at many intersections.

In a town like Bhimavaram, where the growth of traffic is too rapid, it is quite essential to take enough measures to reduce the number of road accidents taking place, In this regard, we have planned to study the traffic volumes at various intersections located on a major corridor of the town during the peak hours as per old records.

1.2. OBJECTIVES OF STUDY:

- To study the current traffic conditions in Bhimavaram town
- To determine turning movements of traffic at intersection
- Suggestion for effective traffic control devices and their maintenance
- To identify traffic bottle necks and the need for service roads bypasses to congested locations
- To study necessary measures in order to avoid traffic jams and to reduce the delay caused in the time of travel to reach the destinations
- To determine the alternate directions for heavy vehicles to avoid congestion

1.3. SCOPE OF STUDY:

- This project is owing to several constraints like time, people and money.
- This would help in controlling the traffic in the whole town. As the traffic problem will not reduce in near future for developing towns like Bhimavaram, traffic regulations will definitely help in smooth flow of the growing traffic through the town.
- To make the traffic flow in uniform manner without having any stops at an intermediates.

1.4 Functions:

- Collection, analysis and interpretation of data pertaining to traffic.
- Traffic and transportation planning.
- Traffic design.
- Measures for operations of traffic.
- Administration.

CHAPTER 2

REVIEW OF LITERATURE

2.1.B. C. ROBERT L. BERTINI AND AHMED EI-GENEIDY: (September 2019) (Advanced Traffic Management System Data)

Improved economic and living conditions have allowed most people to own many personal vehicles. This increase is causing frequent traffic jams and long journey times in crowded regions, particularly for 4-wheelers and heavy vehicles. Unfortunately, such problems cannot be remedied if cars are limited. An efficient approach for traffic management will benefit instead. Today's metropolises were vulnerable to traffic issues because of increasing use of four and two rollers.

In order to address these issues, which are seen as a requirement rather than an obligation, Smart cities use smart traffic management systems. For iSMART IOT sensor-based solution, image processing, GPS and data analyses, an intelligent traffic management system is proposed. Not only does iSMART make the installation and use more intelligent, it's more efficient than many other conventional traffic management systems.

The route optimization planner provides an on-line traffic data analysis and takes various traffic conditions into account. Information and characteristics of various existing traffic networks were also discussed.

2.2.B. JOHN F. GILMORE AND KHALID J. ELIBIARY: (2019) (All In Advanced Traffic Management System)

The traffic situation is one of the biggest problems in South Asia. During the course of the population growth and the impacts of industrialisation, urbanizers' GDP has risen, leading to a large number of automobiles. Traditionally, street light management has only been regulated by traffic control systems.

Expert device implementations with minimal signal systems only have valid performance. Algorithms have proved highly restrictive in solving the existing drawbacks. None of these approaches addressed the need for overall management of transport.

Unit factor includes road surfaces, highways, public transport, vehicles for emergency response, etc.

The implementation of advanced algorithms of artificial intelligence is therefore essential to develop a distributed intelligent system capable of dealing with traffic management issues, traffic prediction, event management and adaptive communication of the problem domain and providing a potential solution to them. The goal of this paper is to provide a summary of the AI techniques that can be used to tackle traffic safety, public transport, urban mobility, etc.

2.3C. D. HASAN OMAR AI-SAKRAN: (2015) **(Intelligent Traffic Information System Based On Integration Of Internet Of Things And Agent Technology)**

In recent years, private automobiles have become more and more popular with urban traffic. This is one of the main challenges in transport in large cities around the world. Congestion and crash that resulted in massive waste of time, damage to property and contamination of the environment include transport problems.

This study presents the groundbreaking intelligent traffic management system based on Things' Internet that provides low costs, high scalability, easy-to-modify connectivity and a system that can replace traditional traffic management systems.

Identify, register, control, manage and automatically process traffic objects through the Internet, wireless sensing and network detection technology. The Internet of Things. Internet of Things. This also offers a unique platform integrating the Internet of agent technology into the efficient communication and interface between various high-distribution and de-centralization heterogeneous devices within IoT. The architecture utilises active frequency IDs (RFIDs) for the automation of tagged traffic objects across a network, wireless sensor technology, ad-hoc networks for objects and Internet related information systems. This research provides an overview of a distributed model of traffic simulation NetLogo, a traffic control system based on mobile agent technology.

2.4JIANDONG CAO: (2016) **(Research On Urban Intelligent Traffic Monitoring System Based On Image Processing)**

As the computer technology and technology are continuously developing, increasingly conventional industries depend on the new intelligent industry to complete their transformation. Traditional techniques used in urban traffic management are video acquisition equipment, which capture all the data and then use the personnel to complete the control process. Their performance is small and the error rate is very high. not just wasting a great deal of artificial resources.

In this report, a prototype of a city smart traffic management system is developed based on the computer and smart technology and the study of the functional nature of the smart traffic system, video image processing and database analysis module is examined in the light of the summary processing technique. With the current the data volume and the increasing data analysis complexity, it will not only save much manual monitoring and control but will also achieve high performance, real-time analyses outcomes. The system is capable of intelligent analysis to the conventional traffic management industry.

As the Internet of Sensor Techs, Network transmission, IT, artificial intelligence, European and US developed fast, these new technologies have begun to be used in every area of life to increase the degree of intelligence and knowledge. Smart traffic has been developed especially in the field of traffic research that has been carried out with the help of high technology and new technology in order to increase management, reduce pressure on traffic, improve road safety. In the area of intelligent transport, the application of Internet technology is currently mature. Video surveillance technology focused on image processing is the main and most straightforward way to achieve a multi-info view of things technology on the Internet. How to refine and transform this with modern technologies in order to better respond

to the growth trend of intelligent video surveillance in the Internet era is inevitable, and to support the work of the Department of public security. The key study in this paper is focused on the internet of video sensor technology, computer technology and a different smart traffic monitoring system, based on video image analysis of the real business needs of the department of public safety.

2.5

HARSHA PRIYA.K, K.V.R. RAVI SHANKAR: (2013) (Evaluation Of Area Traffic Management Measures Using Microscopic Simulation Model)

A broad variety of engineering practises for managing network traffic include priority-setting and slowing down. Traffic management is the term used to define. A big suburb in Hyderabad, Mehdiapatnam is the field of research. It has an APSRTC bus depot which makes it a hub of many buses all over the city. This has helped to raise congestion levels on roads and junctions.

This problem could be solved by two approaches. First and foremost, infrastructure including broader roads, flyovers, bypasses and highways would be the solution. However, money and space are serious concerns for developing countries such as India. The second solution involves managing current traffic, using technology and including traffic control passengers. To overcome these issues, various traffic control measures have been introduced. A model was designed using VISSIM micro-simulation software, and network shortcomings were discovered. The calibrated model was tested and its efficacy quantified using the proposed traffic management steps. The initiatives suggested are re-arranging the bus terminal, prohibiting the turning of the bus, improving the junctions and signalling crossings. The problem area was the Mehdiapatnam bus terminal, which was the most improved by the initiatives proposed. A separate assessment was carried out to access public transit results. The shortened travel times, long queues and delays demonstrate the effectiveness of the proposed steps. Also quantified were the number of stops faced by vehicles and the delay caused. Further enhancement of the study area has also been proposed for other traffic calming steps such as rerouting and signal synchronisation.

2.6

ALLAN M DE SOUZA, CELSOARL BRENNAND, ROBERTO S YOKOYAMA, ERICK A DONATO:(2017)

(Traffic Management Systems: A Classification, Review ,Challenges, And Future Perspectives)

Rapid mobility is one of the most important needs in modern society. As such, people can use various transport facilities such as motor cars, underground transport and bicycles. However, automobile vehicles are still the most used among all these transport systems because of their convenience and practicality. This is how you assume a

The number of vehicles in major cities will also grow continuing population growth, but much faster than transport infrastructure, and the congestion of road traffic will become an urgent problem. It creates several negative environmental and social concerns, such as an increase in traffic accident rates, economic impacts and high greenhouse emissions.

Traffic congestion may have three key sources, according to the US Department of

Transportation (DoT). The first relates to events that affect traffic, such as incidents, working areas and bad weather. The second relates to the demand for transport, which means changes in normal traffic and special events. The second concerns demand. The last source is the infrastructure of transport representing traffic control equipment and physical bottlenecks. Furthermore, these bottlenecks account for 40% of all traffic congestion, followed by incidents such as vehicle accidents with 25%, bad weather at 15%, working zones with 10% and bad traffic signalling and special events at 5% each.

In this way, large cities are using traffic management systems (TMSs), which aim to reduce traffic jams and related problems, to prevent traffic jams and increase overall traffic efficiency. For this purpose, TMSs consists of a number of applications and management tools to integrate technologies of communication, sensing and processing. In short, transportation-related data are collected by TMS from heterogeneous sources, such as vehicles, traffic lights and on/off sensors. In addition, a number of transport risk risks can be detected and managed, increasing overall productivity and providing smooth traffic flows by aggregating and using data related to traffic in a collaborative manner (e.g. among cars) or a traffic management centre (TMC) concentrated in a cloud or a data centre.

2.7

MAMATA RATH: (2020)

(Control Of Congestion And Traffic Light Using Intelligent Approaches In Smart City)

The traffic scenario is often congested, especially in the peak time of business hours, in the current context of the intelligent region, in particular in industrial and market zones. As the population and vehicles expand more and more in intelligent and metropolitan areas, the main traffic points in business cities are causing great problems. Not only does it slow travel, it also helps to pollute the atmosphere and to create health risks due to car fuel emissions.

Many radiant urban societies are currently introducing intelligent traffic control frameworks that address traffic automation requirements with the avoidance of the previously listed issues to avoid such serious problems. The basic definition lies in

collecting and efficiently applying information on transport congestion to individual traffic streams easily and transferring the alternative approach to vehicles and passengers using on-line traffic information system.

In this connection, the present article proposes an enhanced framework for traffic control and monitoring which enables rapid transmission of information and its corresponding actions. The mobile-agent-based controller executes a congestion control algorithm for uniform organisation of the transport flow under the scenario of a Vehicular Ad-hoc Network (VANET) to prevent congestion in the intelligent traffic region. It has other special characteristics such as crash avoidance, violence, driver flexibility and passenger safety. Simulation by Ns2 shows promising results in terms of higher delay management and accident prevention to a greater degree due to deep congestion.

2.8

JOHN L. MCLIN1 AND WILLIAM T. SCHERER: (2011) (Development And Evaluation Of A Control System For Regional Traffic Management)

Congestion of traffic arises when the dominant transport infrastructure request is insufficiently satisfied and the results are greater delays, emissions and wasted fuel. Addressing the issue of congestion is a challenge for transport planners as demand for traffic increases and increased capacity is reduced. As a consequence, the transport planners focused on traffic management solutions that use the current transportation system more effectively. The STI technology defines these efforts as 'the advanced electronic and communication technology to increase the ability and effectiveness of the surface transport system.' These efforts are supported by intelligent transport systems (ITS).

The macroscopic approach to traffic management can be called regional traffic control and a means for dealing with recurrence (e.g. regular congestion) as well as with non-recurring congestion (e.g., incidents, bad weather). The definition of Regional Traffic Centers for the coordination of the efforts of traffic management among jurisdictions during regular traffic operations, accidents and emergencies. Data is exchanged, timelines are implemented and co-ordinated emergency response plans are created. The establishment of regional traffic control organisations, which provide real-time traffic management in the metropolitan region has been introduced throughout the country.

The area (for example, Transtar Houston). Traffic management will be required in the future at regional level in metropolitan areas because "as recurrent or non-recurring traffic congestion rises in the spatial extent, monitoring strategies are increasingly ineffective by virtual insulation in any subnetwork."

Coordinated diversion of traffic is an efficient way to help boost network conditions in area traffic controls during non-recurring events. The deployment of the network capacity minimises the delay experienced by drivers. Coordinated efforts often reduce the chances for antagonistic control measures. For instance, diversion into an arterial by cars from an interstate may produce secondary congestion, without proper evaluation of the diversion route's ability and the correct adjustment of time schedules on the divert route.

The large number of control decisions needed for regional traffic control are one of the major challenges. During non-recurrent incidents, traffic planners have various options. They can first introduce predefined control plans or create ad hoc traffic control plans. Predefined plans probably reflect a series of wide-ranging activities that apply to a large number of incidents and may not be the best response to the present issue. Due to network dynamics under congestive conditions and the complex interactions between control measures it can be difficult to develop ad hoc plans. In this case, traffic control is highly reliant on the expertise of the traffic manager.

The above discussion emphasises the need for a regional traffic control system to

quickly pick and execute control decisions in unrecurrent incidents. This paper addresses the implementation and evaluation of the regional traffic control monitoring control system. Results indicate that the control system will boost the efficiency of the system in non-recurring cases.

2.9

ANDREY GOREV, ALEKSANDR SOLODKIY: (2018)

(Improving Efficiency Of Traffic Management And Safety Base On Integration Of Local ATMS)

The integration of automated local traffic systems (AtMS), built and operated in Russia's regions, is another activity that is considered, as demonstrated by the St Petersburg agglomeration. A analysis of individual ATMS integration experiences shows similar roles in the main sector. Functional integration is most effective in the design of smart transport systems. Objectives to provide local ATMS for agglomeration transport

The operation of the ITS device is agreed upon. The main integration tasks to be solved are defined areas where the consistency of transport management decisions is enhanced. In particular, the expected outcomes will be taken into account in enhanced urban mobility accessibility, improved public safety and safety by reducing the accident rate of motor vehicles, improved urban environments, and improved operational performance in Special and Emergency Response Units.

2.10

HARSHAD PAWAR: (2020)

(Smart Traffic Management System For Automobile)

Inadequate antiquated traffic management schemes that are designed to overcome traffic bottlenecks. These conventional systems have allocated times that are diverted on a definite route from a certain traffic frequency, causing a large red light reverse effect. The systems we appoint recognise traffic importance in real-time and thus ensure proper management of time and assets. To achieve this, we initially alter the traffic density which is targeted by the consolidation and modification of images of ultrasonic sensors. This knowledge is classy or can be called Raspberry Pi which adjusts the traffic light indicators. The data is also sent to the cloud and can also be used to monitor traffic flows at regular intervals. The stored values within the cloud are useful to anticipate traffic intense in the event of sensor system failure, based on a long periodical monitoring procedure. This traffic control system fulfils its mission by the smooth development of vehicles and the use of an unsafe system in unexpected circumstances.

The main components of the traffic control system are the monitor, yellow, green, and red indicators, the ThingSpeak IOT analysis tool, and ultrasound sensors. As the input tools, the output displays and Raspberry Pi as the cloud edge the eco-sensors and the camera delvers.

The main purpose of an intelligent traffic management system is to assign traffic signal time based on lane equalisation. The road is split into three uniformly spaced sections to assess traffic on each lane.

CHAPTER 3 METHODOLOGY

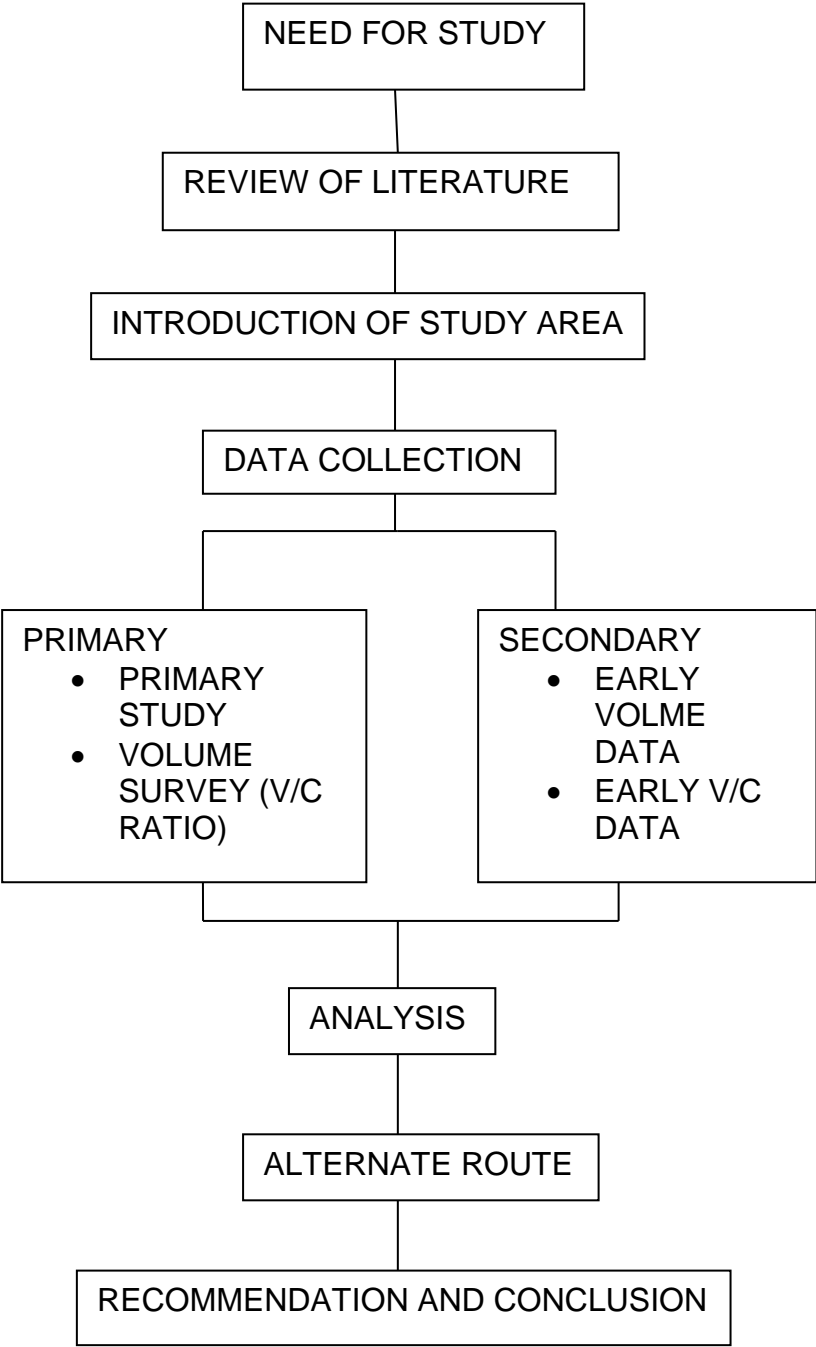


Figure 1 Methodology Chart

3.1.COLLECTION OF DATA:

The collected data which have been used previously.And the ways in which they had implemented. What kind changes they have made in congestion. The data includes various kinds of views and opinion and we have collected information from journals also

3.2. ANALYSIS OF DATA:

In analysis of data we have taken traffic volume count during the peak hours by using passenger car unit (PCE) by comparing with early growth. We have analysis the data. We have taken three different locations registering the number of vehicles for every half hour.

3.3. RECOMMENDATIONS:

By understanding the congestion of traffic we have proposed changes in traffic routs and hence it will avoid congestion and the traffic will be there without congestion.

CHAPTER 4

COLLECTION OF DATA:

4.1.1. SELECTION OF LOCATION:

- Select the proper location.
- Planning the preparation of data collection.
- Complete the pre-study documentation.

4.1.2 STUDY OF LOCATION:

- Collect the data.
- Evaluate the data.
- Calculate the traffic volume trends.

4.1.3. DOCUMENTATION:

- Finalize the report.
- File the report.
- Communicate the results.

4.2. TRAFFIC VOLUME DATA COLLECTION:

The number of vehicles (or persons) passing a point over a specific duration, normally one hour on a transport facility is determined by the traffic volume.

There are several volumes in traffic engineering research, such as daily volume, volume per hour, maximum volume per hour. In addition, amounts of a day or an hour will vary considerably depending on the day or time of the week.

Data on the traffic volume may identify critical periods of flow, assess the effect of large vehicles or passengers on the flow of vehicles or record the flow patterns.

The sample duration depends on the type of count taken and the expected use of the collected data.

For example, during the peak flow time an intersection count can be performed. If so, the traffic volume data can be obtained by using a hand count of 15 minutes.

4.3. USING PERIOD TO DETERMINE STUDY METHOD COUNT:

Two methods are available for conducting traffic volume count:

(1) manual and (2) automatic.

4.3.1. MANUAL:

Manual counts are generally used to collect information about classification of the vehicle, turning movements, travel direction, foot movements or occupation of the vehicle.

4.3.2. AUTOMATIC:

Automatic counts are commonly used for collecting data on vehicle patterns, daily or seasonal changes and trends of growth or annual traffic forecasts.

For each 24-hour cycle, automatic counts are normally taken at 1-hour intervals. The numbers will last for one week, month or year. The maximum flow duration can be identified if the counts are registered for each 24-hour period.

Automatic Count Recording Methods: They are portable counters, permanent counters, and videotape.

4.3.1.1. MANUAL COUNTMETHOD:

- Manual counts are often used where the effort or the expenses of automatic equipment are not justifiable. • Manual counts are often used.
- Manual counts are needed if the equipment is not automatically accessible.
- Manual counts for periods of less than one day are generally used. The usual manual count intervals are 5, 10 or 15 minutes.
- Traffic counts are typically made on a Tuesday, Wednesday, and a Thursday during a rush hour on Monday morning and a rush hour on Fridays evening will display high volumes and are not used as standing in the study.

4.3.1.2. MANUAL COUNT RECORDINGMETHODS:

- Manual counts are recorded using one of three methods:
 1. Tally sheets,
 2. Mechanical counting boards, or
 3. Electronic counting boards.

4.3.1.3. TALLY SHEETS:

Recording data onto tally sheets is the simplest means of conducting manual counts. The data can be recorded with a tick mark on a pre-prepared field form. A watcher or stopwatch is necessary to measure the desired count interval. A blank traffic volume count intersection tally sheet is provided in Appendix B.

4.3.1.4. MECHANICAL COUNTING BOARDS:

- Mechanical count boards consist of counters mounted on a board that record each direction of travel.
- Common counts include pedestrian, bicycle, vehicle classification, and traffic volume counts.
- Typical counters are push button devices with three to five registers. Each button represents a different type of vehicle or pedestrian being counted.
- A watch or a stopwatch is also necessary with this method to measure the desired count interval.
- The limited number of buttons on the counter can restrict the number of classifications that can be counted on a given board.

4.3.1.5. ELECTRONIC COUNTING BOARDS:

- Electronic counting boards are battery-operated, hand-held devices used in collecting traffic count data.
- They are similar to mechanical counting boards, but with some important differences. Electronic counting boards are lighter, more compact, and easier to handle. They have an internal clock that automatically separates the data by time interval.
- Special functions include automatic data reduction and summary. The data can also be downloaded to a computer, which saves time.

4.3.1.6. PERSONAL INVOLVED IN A MANUAL COUNT STUDY:

The size of the data collection team depends on the length of the counting period, the type of count being performed, the number of lanes or crosswalks being observed, and the volume level of traffic (Robertson 1994).

The number of personnel needed also depends on the study data needed. For example, one observer can record certain types of vehicles while another counts total volumes. Observers conducting manual traffic counts must be trained on the study purpose. To avoid fatigue, observers must be relieved periodically. Every 2 hours observers should take a 10 to 15 minute break.

4.3.1.7. KEY STEPS TO A MANUAL COUNTSTUDY:

A manual count study includes three key steps:

- Perform necessary officepreparations.
- Select proper observerlocation.
- Label data sheets and recordobservations.

4.3.1.8. PERFORM NECESSARY OFFICEPREPARATIONS:

Office preparations start with a review of the purpose of the manual count. This type of information will help determine the type of equipment to use, the field procedures to follow, and the number of observers required. For example, an intersection with multiple approach lanes may require electronic counting boards and multiple observers.

4.3.1.9. SELECT PROPER OBSERVERLOCATION:

Observers must be positioned where they have a clear view of the traffic. Observers should be positioned away from the edge of the roadway. If observers are positioned above ground level and clear of obstructions they usually have the best vantage point. Visual contact must be maintained if there are multiple observers at a site. If views are unobstructed, observers may count from inside a vehicle.

4.3.1.10. LABEL DATA FORMS AND RECORDOBSERVATIONS:

Manual counts may produce a large number of data forms; therefore, the data forms should be carefully labelled and organized. On each tally sheet (a blank tally sheet is provided in Appendix B), the observer should record the location, time and date of observation, and weather conditions.

4.3.2.1. AUTOMATIC COUNTMETHOD:

In this method counters are either fixed or permanent type or portable type of counters. The mechanical counter can automatically record the total number vehicles crossing a section of the road in a desired period. One of the old methods of automatic counter is by the effect of impulses on a pneumatic hose placed across the roadway; traffic count is recorded by electrically operated counters and recorders capable of recording the impulses.

Various other modern sensing techniques are available to detect crossing of different vehicle classes based on either the spaces between the axles or axle loads or overall length height of the vehicle or by any other measurement. Approximate type of sensors are made use of to provide the actuating stimulus

and these are electronically recorded in computers to obtain classified vehicle counts during desired time of intervals. The main advantage of automatic traffic counters is that it can work throughout the day and night for the desired period, recording the exact time at which each vehicle crosses the line.

4.3.2.2. AUTOMATIC COUNT RECORDING METHODS:

Automatic counts are recorded using one of three methods:

1. Portable counters
2. Permanent counters
3. Videotape

4.3.2.3. PORTABLE COUNTERS:

Portable counters are used to collect short term duration traffic counts or classification studies. Portable units are utilized for performing Average Daily Traffic (ADT) counts and speed studies used by all types of users from government to local residents.

Road tube units are the most common portable technology available and the most economic way to collect traffic data. With Road tube units the count, speed and axle data is highly accurate.

Hand Held Counters are used by a user to input data manually on location or via a visual recording.

4.3.2.4. PERMANENT COUNTERS:

Permanent counters are used when long-term counts are to be conducted. The counts could be performed every day for a year or more. The data collected may be used to monitor and evaluate traffic volumes and trends over a long period of time. Permanent counters are not a cost-effective option in most situations.

4.3.2.5. VIDEOTAPE:

Observers can record count data by videotaping traffic. Traffic volumes can be counted by viewing videotapes recorded with a camera at a collection site. A digital clock in the video image can prove useful in noting time intervals. Videotaping is not a cost-effective option in most situations.

4.3.2.6. KEY STEPS TO AN AUTOMATIC COUNT STUDY:

- An automatic count study includes three keysteps:
- Perform necessary office preparations.
- Deploy and calibrate data collection equipment.
- Check data and retrieve (protect) equipment.

4.3.2.7. NECESSARY OFFICE PREPARATIONS:

Coordinates all data collection operations, including travel, traffic and law enforcement agencies, with the relevant government and local authorities in the office preparatory stages. You may, for example, organise traffic control for the deployment and recovery of equipment with state or local officials. To ensure that all observers collect the same data type, the field team must be informed of the data collection process. The equipment must be checked on each item.

4.3.2.8. EQUIPMENT OF CALIBRATE DATA COLLECTION AND DEPLOY:

The mobile counter system uses pneumatic route tubes, because for most automated counting cases the other techniques aren't economic. The tubes on the roadside are prepared to reduce the time each lane is shut down. Then workers placed the road tubes around the streets.

The position of the tubes does not affect other variables like a crossroads, major access points, etc. The crew should be protected by traffic control. The crew should ensure that the tubes operate correctly after positioning. The crew will finally secure road tubes to the floor. The recorder may also be locked to prevent theft.

DATE:

ROADCLASSIFICATION:

TIME:

LOCATION:

TYPE OF VEHICLES HOUR COUNT	CARS, JEEPS, VANS, THREE WHEELER S	BUSES	TRUCKS	TWO WHEELER S	OTHERS
1	2	3	4	5	6
VEHICLES TURNING LEFT					
VEHICLES PROCEEDING STRIGHT					
VEHICLES TURNING RIGHT					
TOTAL					

Table 1 Field data for traffic census

FIELD DATA SHEET FOR TRAFFIC CENSUS

ROAD CLASSIFICATION: S-H

DATE: 18-02-2021

TIME: 9:30-10:00

LOCATION: ①

TYPES OF VEHICLES HOUR COUNT	CARS, JEEPS, VANS, THREE WHEELERS	BUSES	TRUCKS	MOTOR-CYCLES AND SCOOTER S	OTHERS(SPECI FY)
1	2	3	4	5	6
VEHICLES TURNING LEFT	 	 	 	 	
VEHICLES PROCEEDING STRIGHT	 	 		 	
VEHICLES TURNING RIGHT	 	 		 	
TOTAL	341	83	38	383	

Figure 2 Field data for traffic census



Figure 3 Traffic condition at Bhimavaram road intersection

CHAPTER 5

5.1. ANALYSIS OF DATA:

Table 2 Vehicles proceeding straight S.R.K.R. college road (W) to Palakollu road (E):

TIME	CAR, AUTO, THREE WHEELER	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTAL
8.00-8.30 AM	38	4	9	82	133	118
8.30-9.00 AM	42	6	10	91	149	135.5
9.00-9.30 AM	46	9	7	112	174	150
9.30-10.00 AM	89	7	4	153	253	198.5
10.00-10.30 AM	67	7	5	119	198	162.5
10.30-11.00 AM	44	5	3	88	140	112
6.00-6.30 PM	47	10	4	144	205	162
6.30-7.00 PM	53	8	2	133	196	149.5
7.00-7.30 PM	43	9	4	106	162	135
7.30- 8.00 PM	40	6	5	96	147	121
8.00-8.30 PM	37	5	3	92	137	107
8.30- 9.00 PM	39	2	6	89	136	107.5

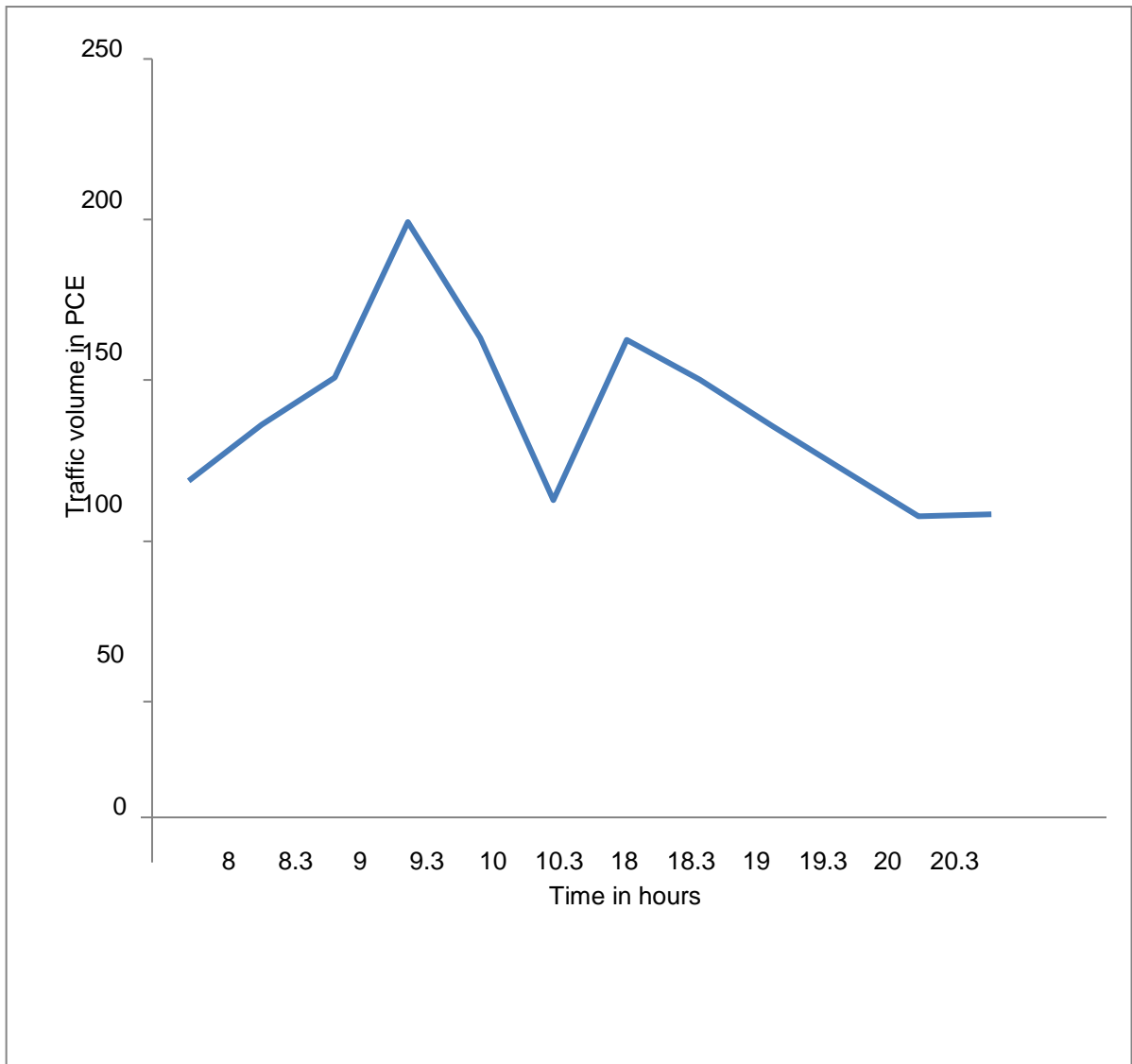


Figure 4: volume accumulation from S.R.K.R. college road (W) to Palakollu road (E)

Table 3 Vehicles turning left from S.R.K.R. college road (W) to Mavullammatemple road (S) :

TIME	CAR, AUTO, THREE WHEELER	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTAL
8.00-8.30 AM	33	3	7	77	120	101.5
8.30-9.00 AM	40	4	9	90	143	124
9.00-9.30 AM	37	7	4	103	151	121.5
9.30-10.00 AM	69	6	3	123	200	157
10.00-10.30 AM	54	6	5	131	199	152.5
10.30-11.00 AM	39	4	6	93	142	115.5
6.00-6.30 PM	51	8	3	119	181	143.5
6.30-7.00 PM	55	7	5	121	188	151.5
7.00-7.30 PM	38	7	4	97	146	119.5
7.30- 8.00 PM	33	4	7	103	147	117.5
8.00-8.30 PM	37	1	7	88	133	105
8.30- 9.00 PM	42	2	6	95	145	113.5

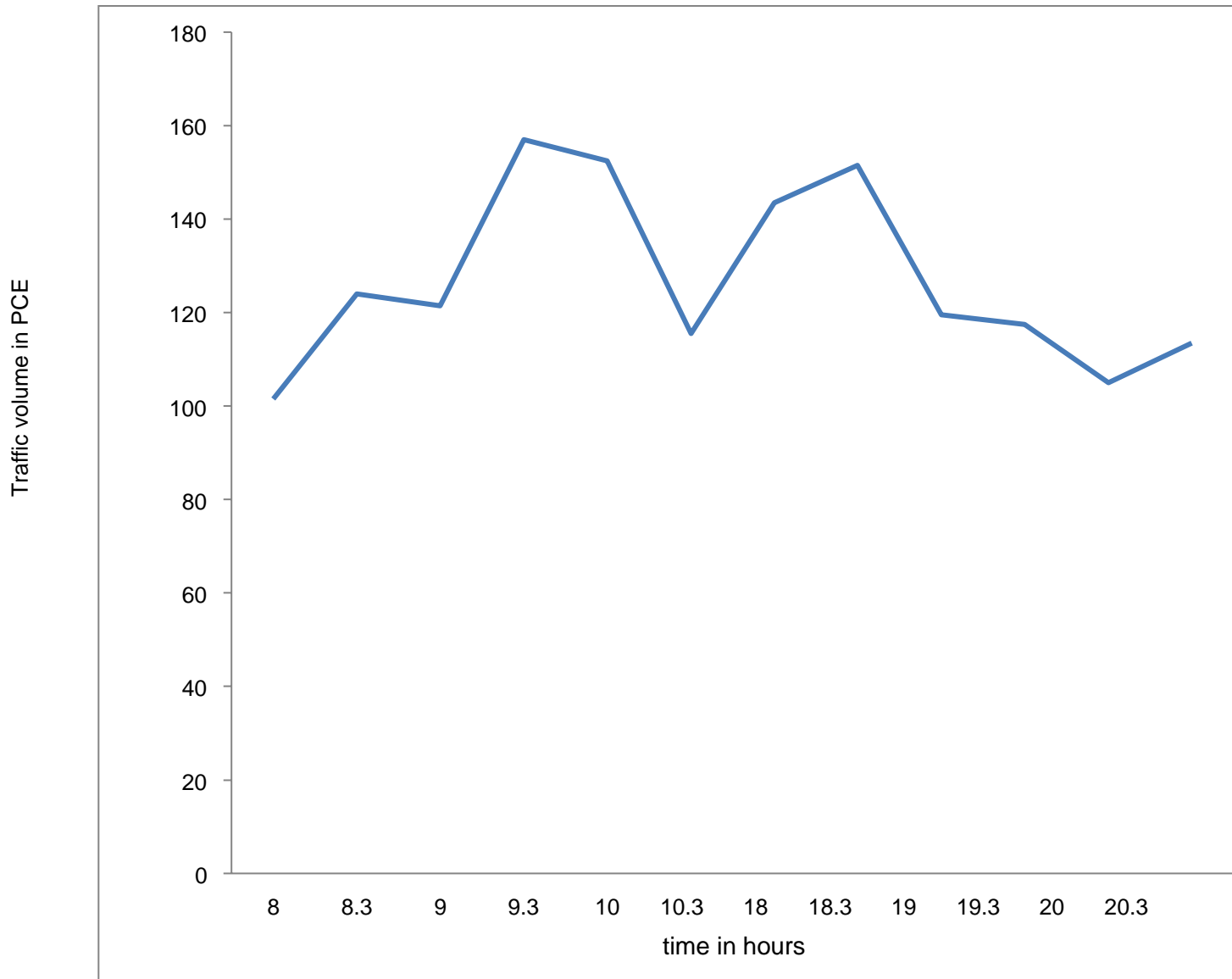


Figure 5: volume accumulation from S.R.K.R. college road (W) to Mavullamma temple road (S)

Table 4 Vehicles turning right from S.R.K.R. college road (W) to B.V. Raju road (N):

TIME	CAR, AUTO, THREE WHEELER	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTAL
8.00-8.30 AM	28	2	4	90	124	91
8.30-9.00 AM	33	4	3	100	140	104
9.00-9.30 AM	40	7	6	115	168	136.5
9.30-10.00 AM	51	7	4	144	206	156
10.00-10.30 AM	42	4	3	135	184	130.5
10.30-11.00 AM	38	6	4	140	188	138
6.00-6.30 PM	43	7	6	149	205	156.5
6.30-7.00 PM	34	4	2	160	200	132
7.00-7.30 PM	36	3	3	161	203	132
7.30- 8.00 PM	40	3	2	141	186	125.5
8.00-8.30 PM	28	2	1	111	142	92.5
8.30- 9.00 PM	31	1	0	93	125	80.5

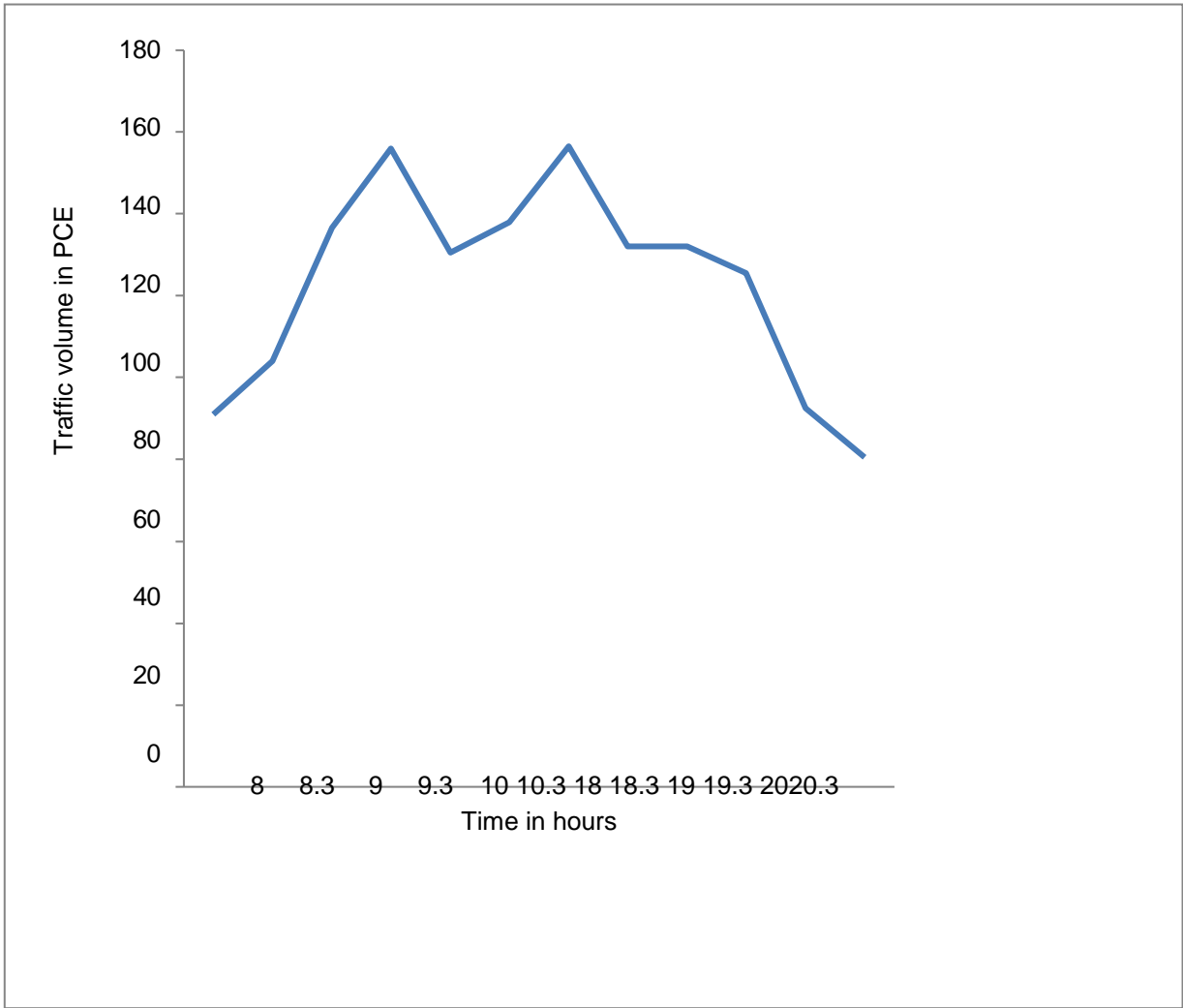


Figure 6: volume accoumulation from S.R.K.R. college road (W) to B.V. Raju road (N)

Table 5 Vehicles proceeding straight B.V. Raju road (N) to Mavullamma temple road (S):

TIME	CAR, AUTO, THREE WHEELER	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTAL
8.00-8.30 AM	34	4	8	81	127	110.5
8.30-9.00 AM	40	6	7	103	156	130.5
9.00-9.30 AM	46	4	4	117	171	128.5
9.30-10.00 AM	53	3	6	152	214	156
10.00-10.30 AM	61	3	4	134	202	149
10.30-11.00 AM	57	2	1	143	204	137.5
6.00-6.30 PM	51	8	3	111	173	139.5
6.30-7.00 PM	62	6	4	123	195	153.5
7.00-7.30 PM	66	3	4	131	204	152.5
7.30- 8.00 PM	44	3	2	109	158	113.5
8.00-8.30 PM	42	2	0	119	163	107.5
8.30- 9.00 PM	51	1	3	82	137	104

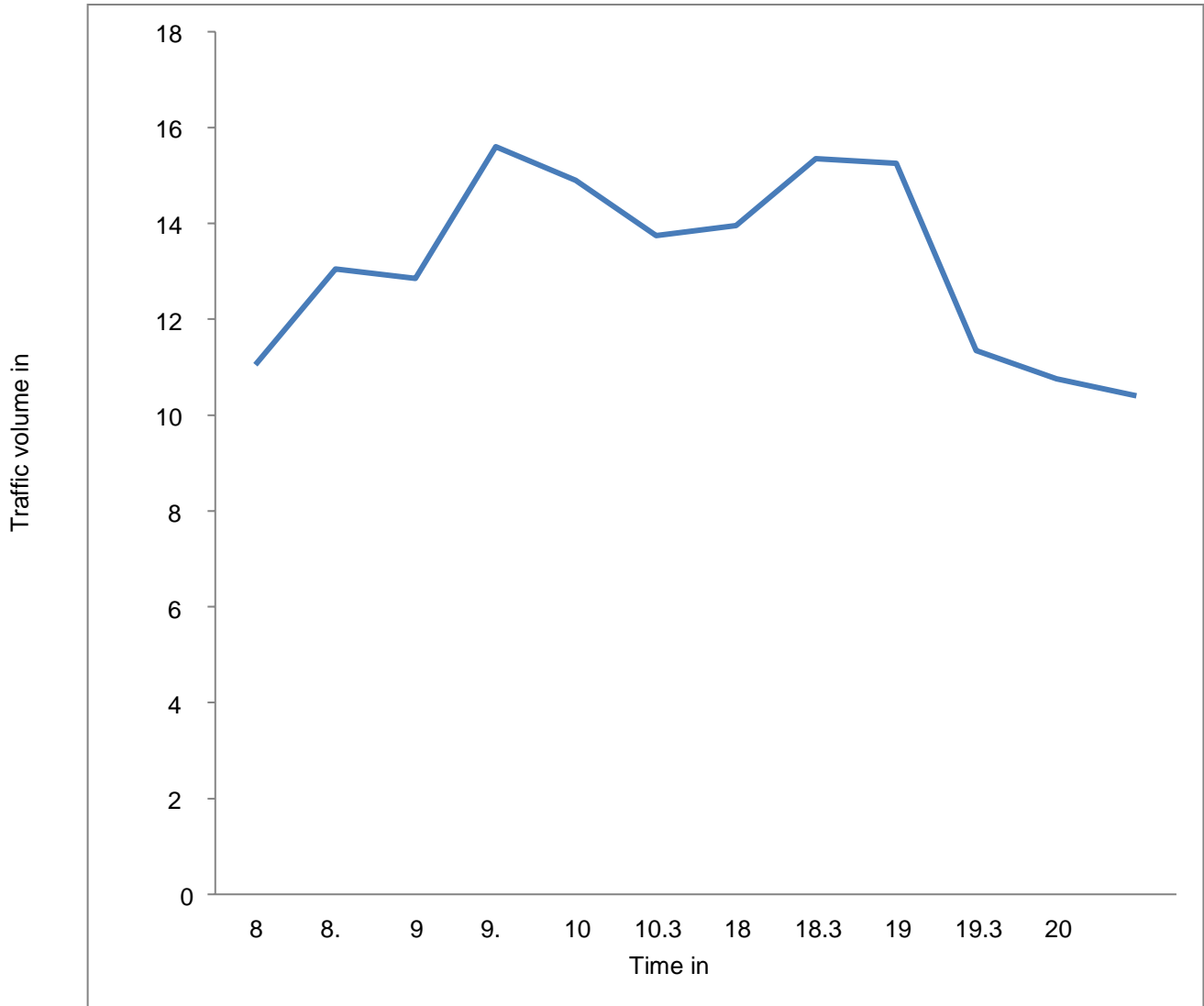


Figure 7: volume accoumulation B.V. Raju road (N) to Mavullamma temple road (S)

Table 6 Vehicles turning left from B.V. Raju road (N) to Palakollu road (E) :

TIME	CAR, AUTO, THREE WHEELER	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTAL
8.00-8.30 AM	37	4	5	96	142	112
8.30-9.00 AM	41	5	5	103	154	122.5
9.00-9.30 AM	53	4	6	112	175	139
9.30-10.00 AM	63	3	4	137	196	152.5
10.00-10.30 AM	57	2	1	133	193	132.5
10.30-11.00 AM	67	4	3	121	195	148.5
6.00-6.30 PM	51	7	4	113	175	140.5
6.30-7.00 PM	57	4	3	121	185	138.5
7.00-7.30 PM	63	4	0	103	170	126.5
7.30- 8.00 PM	42	3	2	124	171	119
8.00-8.30 PM	56	2	3	111	172	126.5
8.30- 9.00 PM	71	3	0	88	162	124

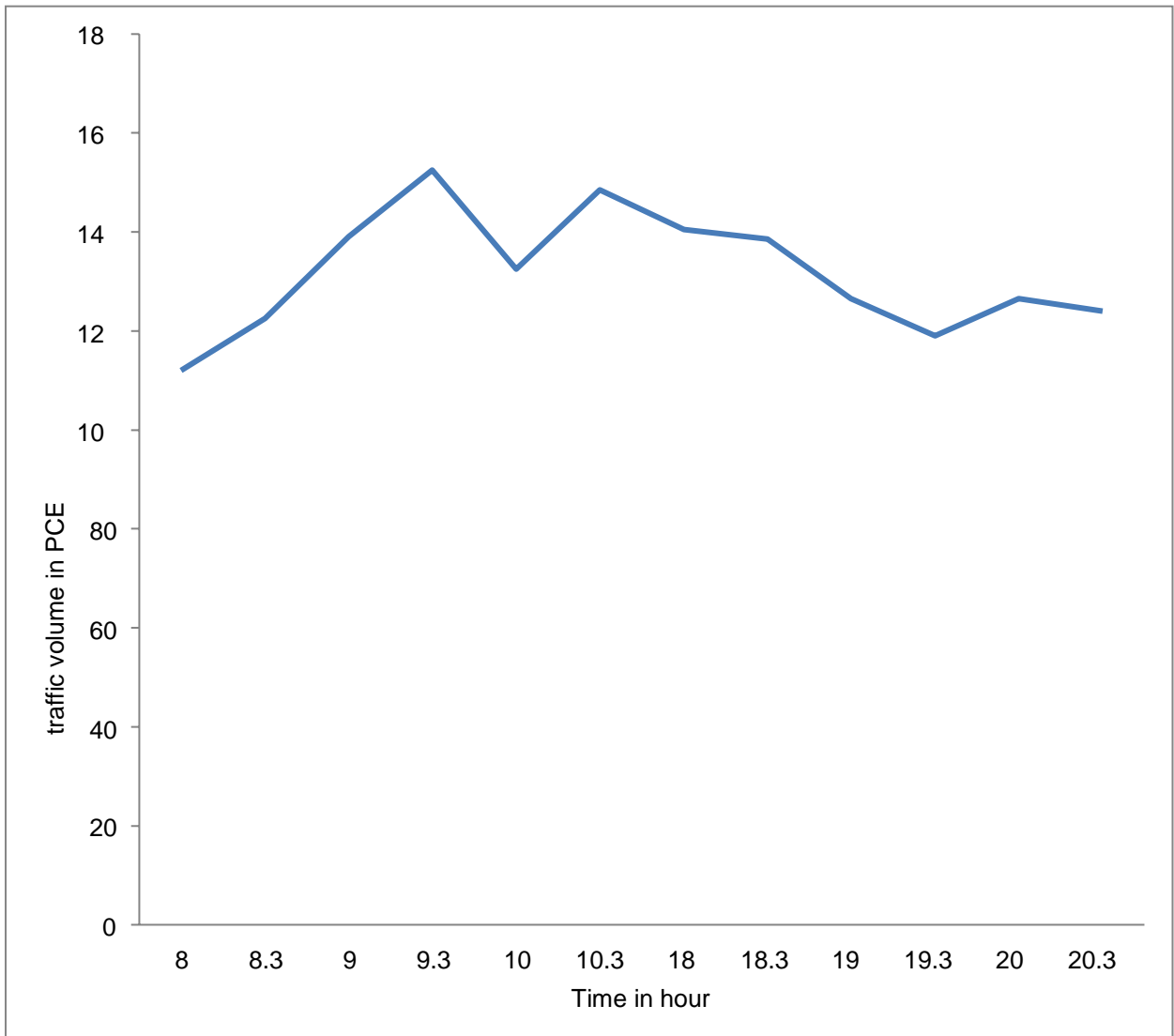


Figure 8: volume accumulation from B.V. Raju road (N) to Palakollu road (E)

Table 7 Vehicles turning right from B.V. Raju road (N) to S.R.K.R. college road(W):

TIME	CAR, AUTO, THREE WHEELER	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTAL
8.00-8.30 AM	36	5	7	93	141	118.5
8.30-9.00 AM	43	5	11	111	170	146.5
9.00-9.30 AM	45	8	7	121	181	150.5
9.30-10.00 AM	62	9	5	132	208	170
10.00-10.30 AM	82	7	5	151	245	133.5
10.30-11.00 AM	39	4	1	146	190	127
6.00-6.30 PM	46	8	4	152	210	158
6.30-7.00 PM	51	10	2	158	221	166
7.00-7.30 PM	44	3	1	167	215	139.5
7.30- 8.00 PM	39	6	2	151	188	138.5
8.00-8.30 PM	42	4	4	112	162	122
8.30- 9.00 PM	38	3	0	96	137	95

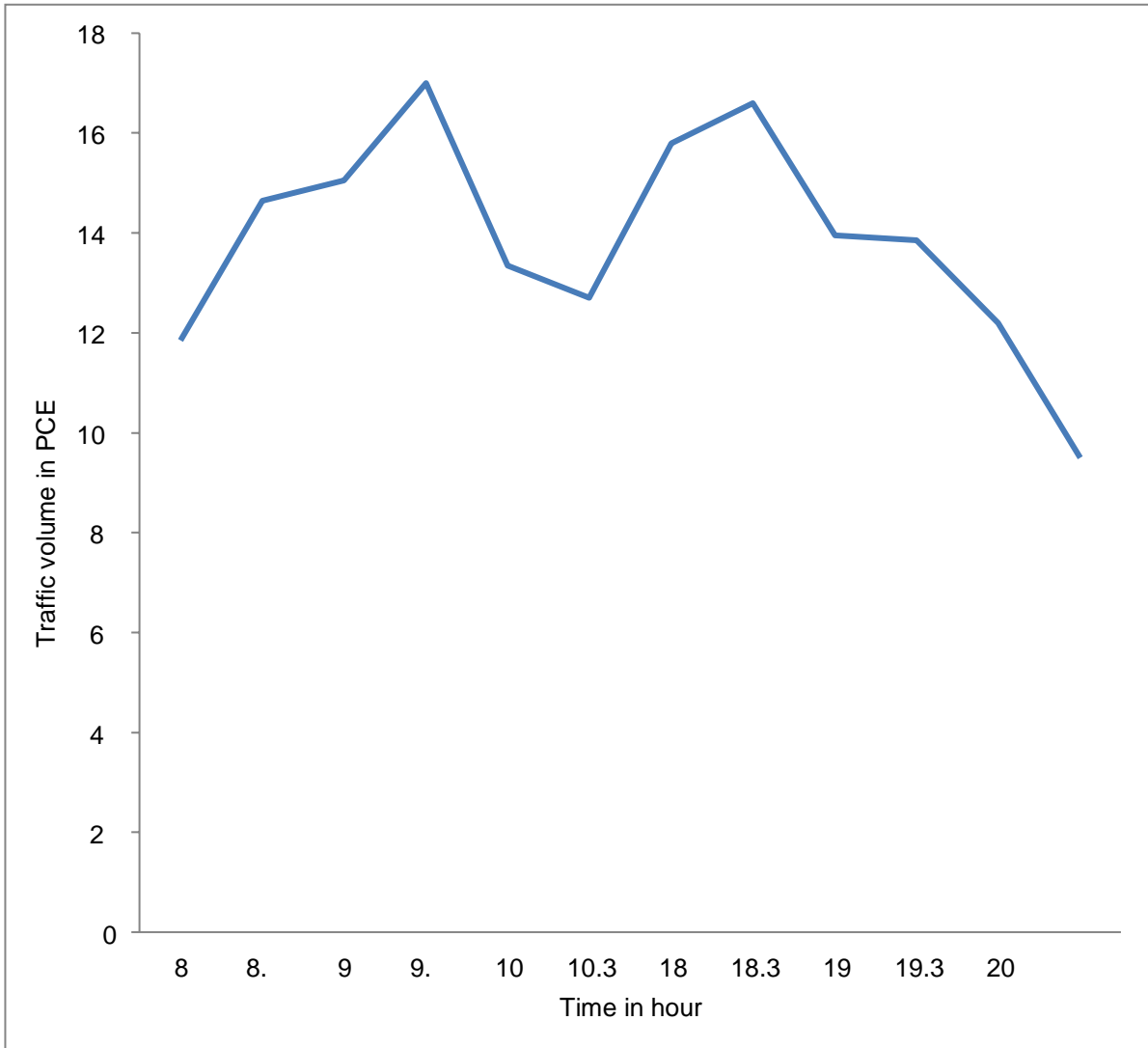


Figure 9: volume accumulation from B.V. Raju road (N) to S.R.K.R. college road (W)

Table 8 Vehicles proceeding stright from Palakollu road (E) to S.R.K.R. college road:

TIME	CAR, AUTO, THREE WHEELE R	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTA L
8.00-8.30 AM	26	3	5	99	133	99.5
8.30-9.00 AM	33	5	3	102	143	108
9.00-9.30 AM	46	8	6	121	181	148.5
9.30-10.00 AM	51	7	4	139	201	153.5
10.00-10.30 AM	63	4	5	135	207	157.5
10.30-11.00 AM	49	5	6	142	202	153
6.00-6.30 PM	47	7	5	147	206	156.5
6.30-7.00 PM	56	3	3	133	195	140.5
7.00-7.30 PM	52	2	2	142	198	135
7.30- 8.00 PM	49	2	1	143	195	129.5
8.00-8.30 PM	41	4	3	110	158	117
8.30- 9.00 PM	47	2	2	95	146	106.5

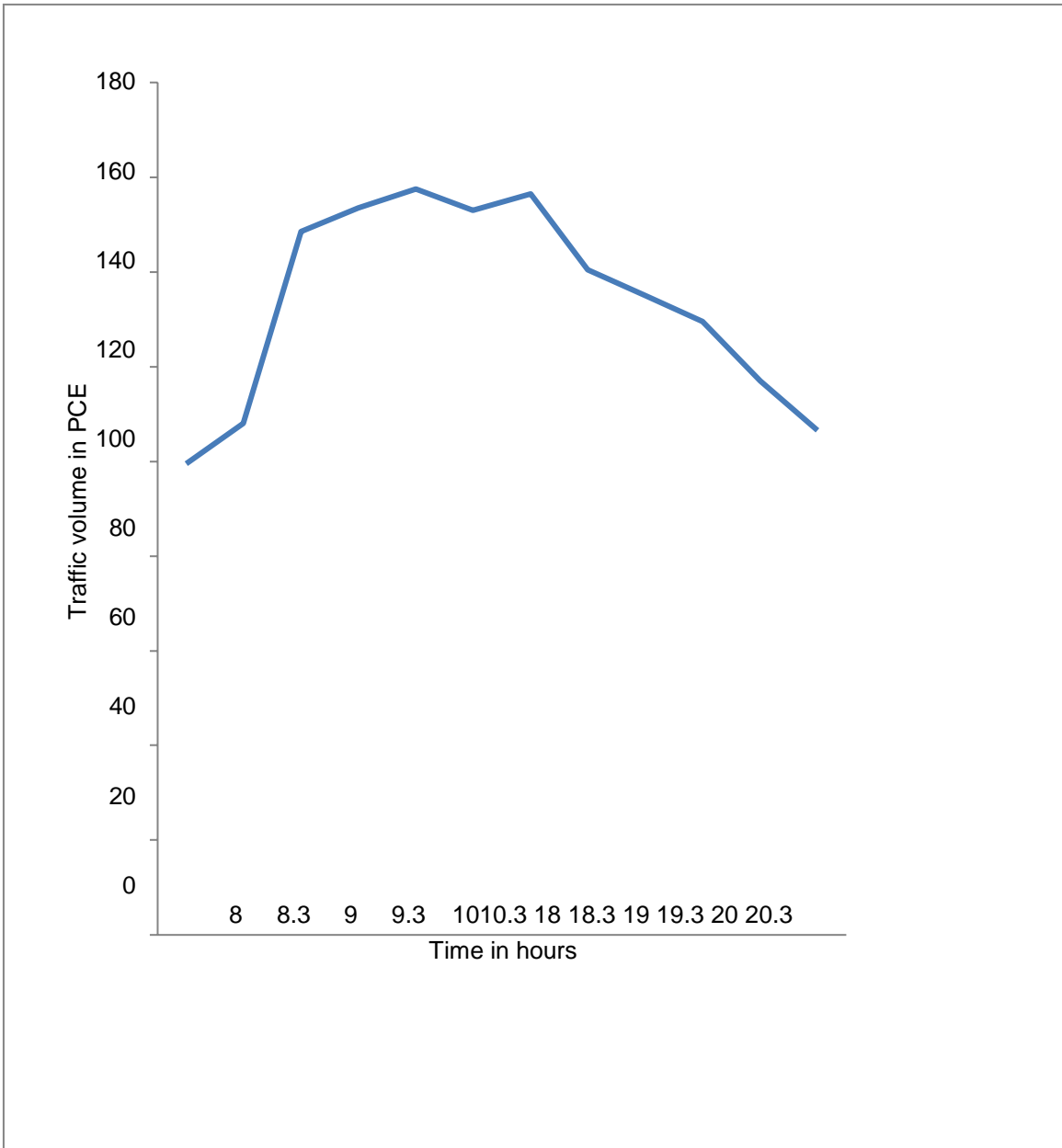


Figure 10: volume accumulation from Palakollu road (E) to S.R.K.R. college road (W)

Table 9 Vehicles turning left from Palakollu road (E) to B.V. Raju road (N):

TIME	CAR, AUTO, THREE WHEELER	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTAL
8.00-8.30 AM	23	6	8	101	138	115.5
8.30-9.00 AM	36	5	9	93	143	124.5
9.00-9.30 AM	42	7	10	96	155	141
9.30-10.00 AM	41	6	8	115	170	140.5
10.00-10.30 AM	50	5	4	151	210	152.5
10.30-11.00 AM	49	4	2	143	198	138.5
6.00-6.30 PM	56	6	6	133	201	146.5
6.30-7.00 PM	33	7	4	104	148	118
7.00-7.30 PM	46	4	3	115	168	124.5
7.30- 8.00 PM	49	3	5	97	154	123.5
8.00-8.30 PM	33	4	4	102	143	108
8.30- 9.00 PM	29	2	1	87	121	81.5

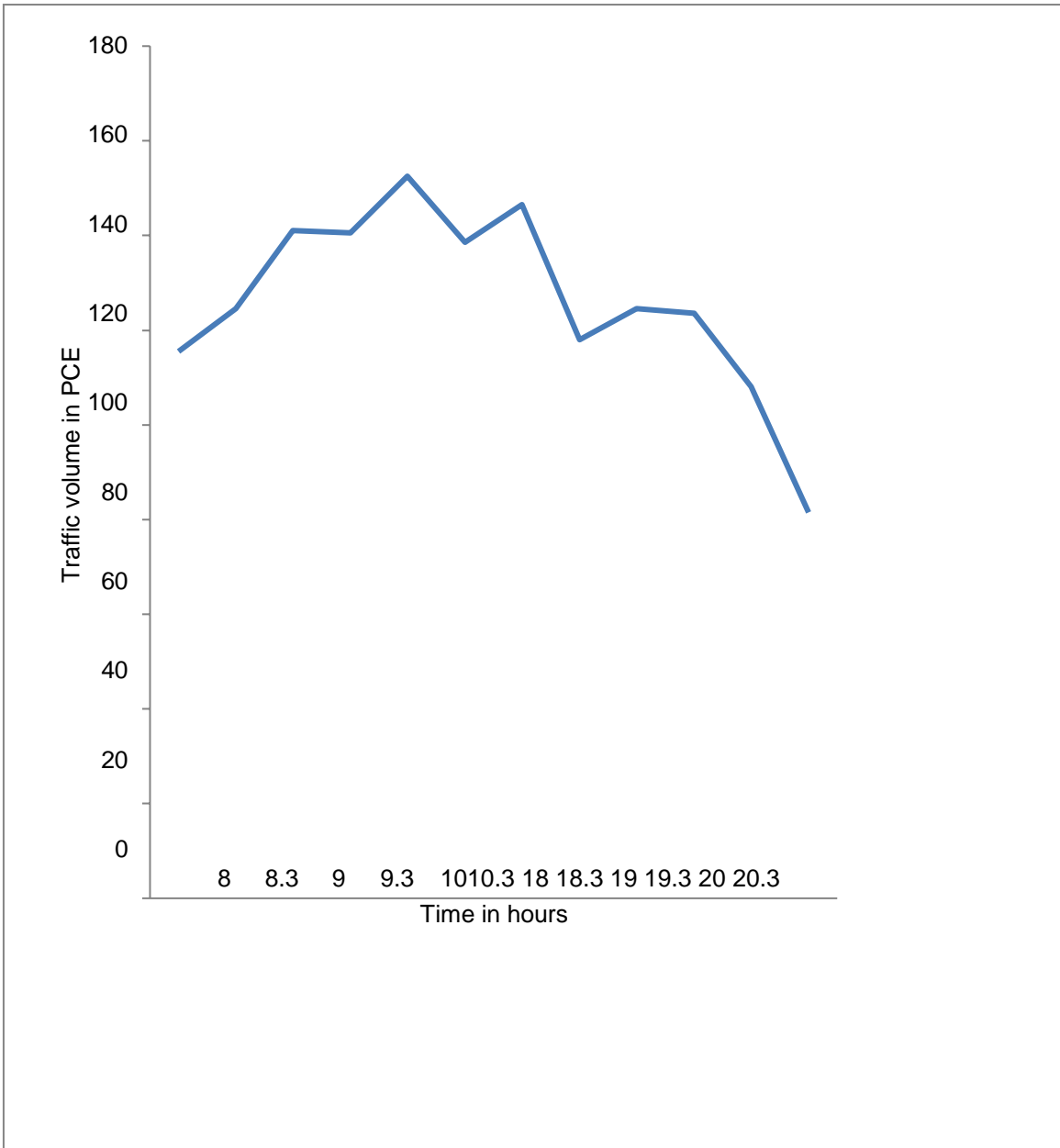


Figure 11: volume accumulation from Palakollu road (E) to B.V. Raju road (N)

Table 10 Vehicles turning right from Palakollu road (E) to Mavullamma temple road (S):

TIME	CAR, AUTO, THREE WHEELER	BUS	TRUCK	MOTOR- CYCLES AND SCOOTERS	TOTAL	PCE TOTAL
8.00-8.30 AM	22	6	8	121	157	154.5
8.30-9.00 AM	49	7	7	103	166	142.5
9.00-9.30 AM	42	4	8	91	145	123.5
9.30-10.00 AM	76	4	4	164	248	182
10.00-10.30 AM	51	6	6	145	208	159.5
10.30-11.00 AM	49	5	2	136	192	138
6.00-6.30 PM	45	6	5	157	213	156.5
6.30-7.00 PM	59	3	1	112	175	130
7.00-7.30 PM	49	4	5	99	157	125.5
7.30- 8.00 PM	39	2	4	141	186	127.5
8.00-8.30 PM	57	1	2	110	170	121
8.30- 9.00 PM	49	4	2	88	143	111

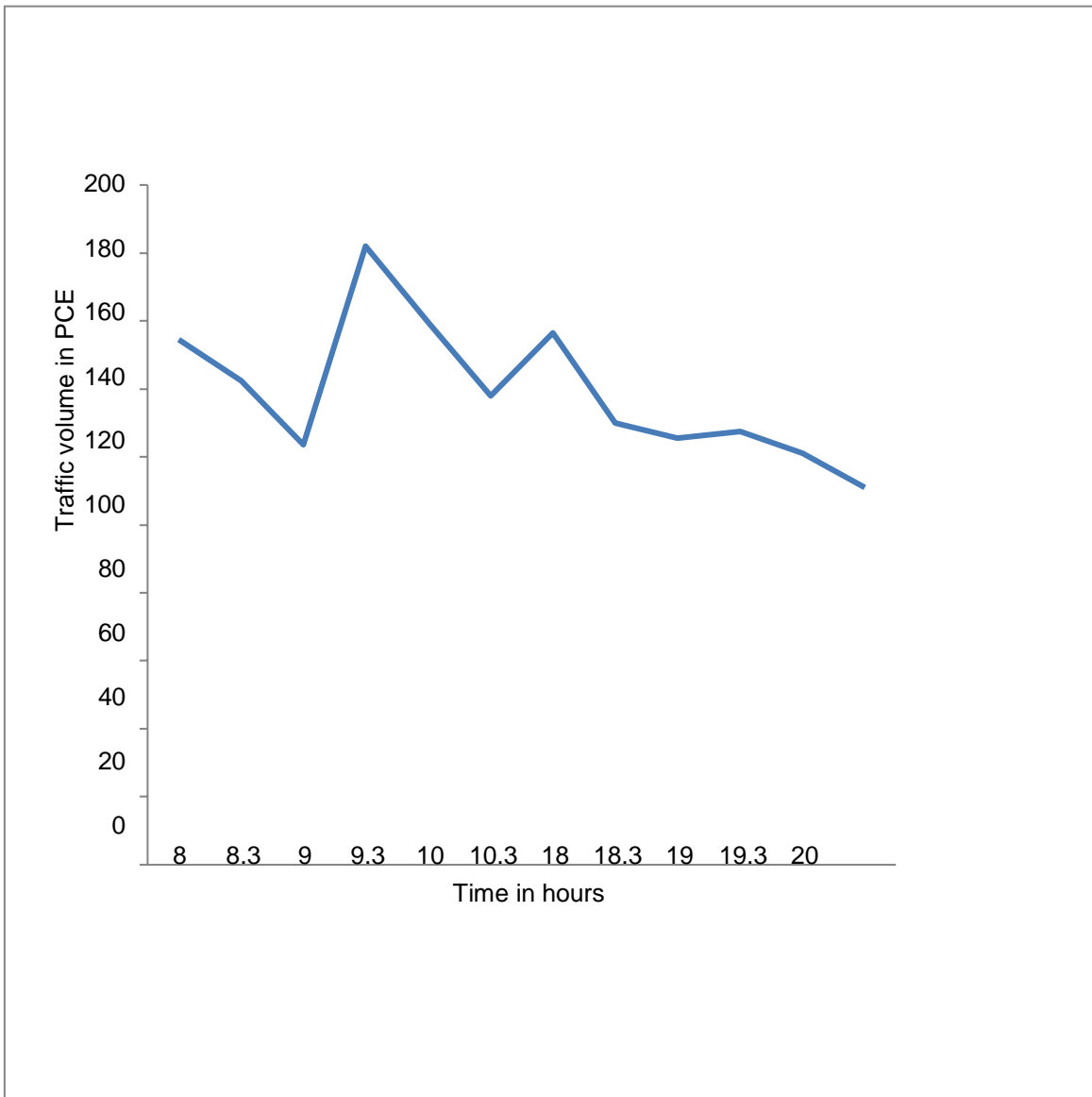


Figure 12: volume accumulation from Palakollu road (E) to Mavullamma temple road (S)

5.2. PASSENGER CAR EQUIVALENT:

The typical PASSENGER CAR EQUIVALENT (PCE) reflect effects on the saturation fluid at road sign junctions from change in the composition of traffic (mix of cars, freight vehicles, buses, etc.)

- IT is an automotive unit used to express the power of highways.
- PCE meaning of "The number of passenger cars that are moved by a single heavy vehicle of a particular type on the predominant lane, road and control conditions" is set out in the latest version of the Autobahn Capacity Manual (HCM).

Table 11 CONVERSION FACTOR

CLASS OF VEHICLE	URBAN STANDARDS
Car,jeep,vans, Three wheelers	1.00
Buses	3.00
Trucks	3.00
Motor-cycles and scooters	0.50

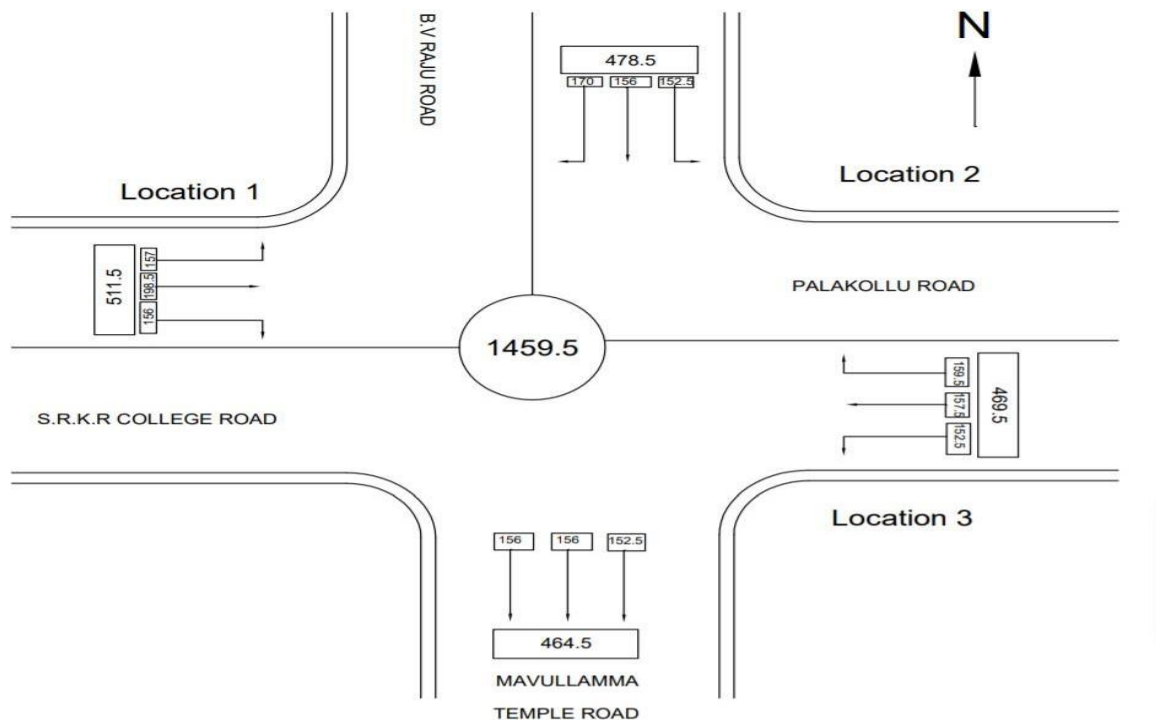


Figure 13: Volume of flow at the intersection

5.3. TRAFFIC VOLUME AT PEAKHOUR:

In the form of pie charts, the following four corridors were shown both peak time and non-peak hour composition of traffic. Manual methods were employed to compose traffic. Motorcycles are over 50% in all four corridors, whereas other motor vehicles like cars and three other wheels have less compositions than two-wheelers.

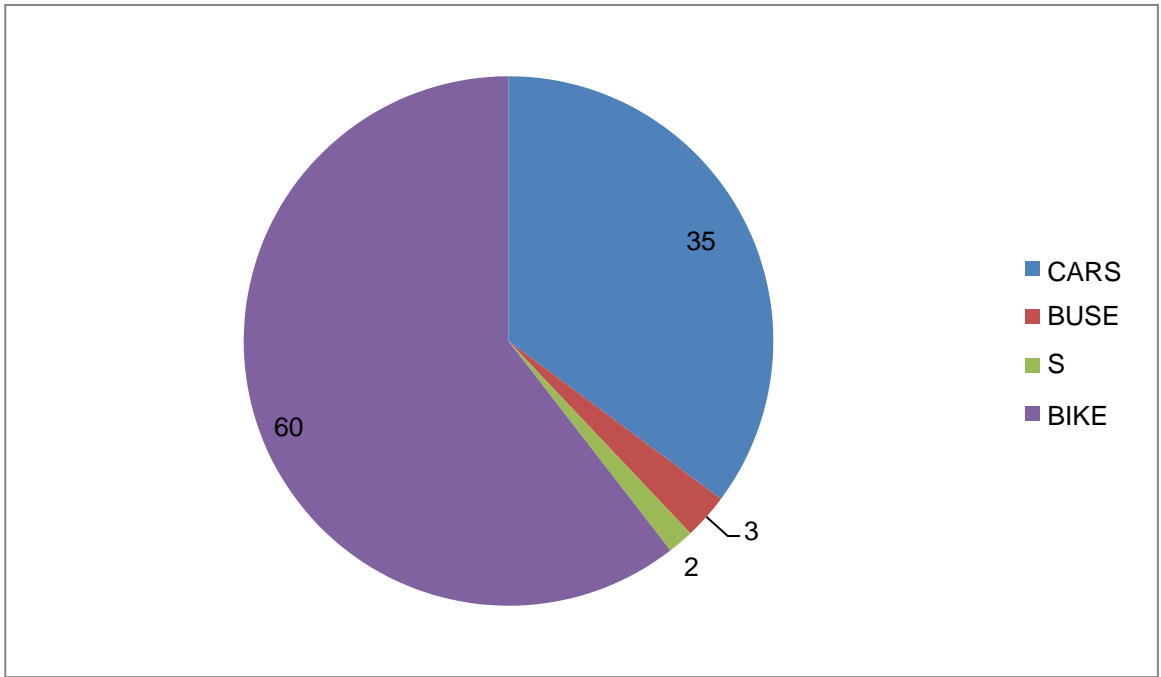


Figure 14: Volume composition at S.R.K.R. college road (W) to Palakollu road (E)

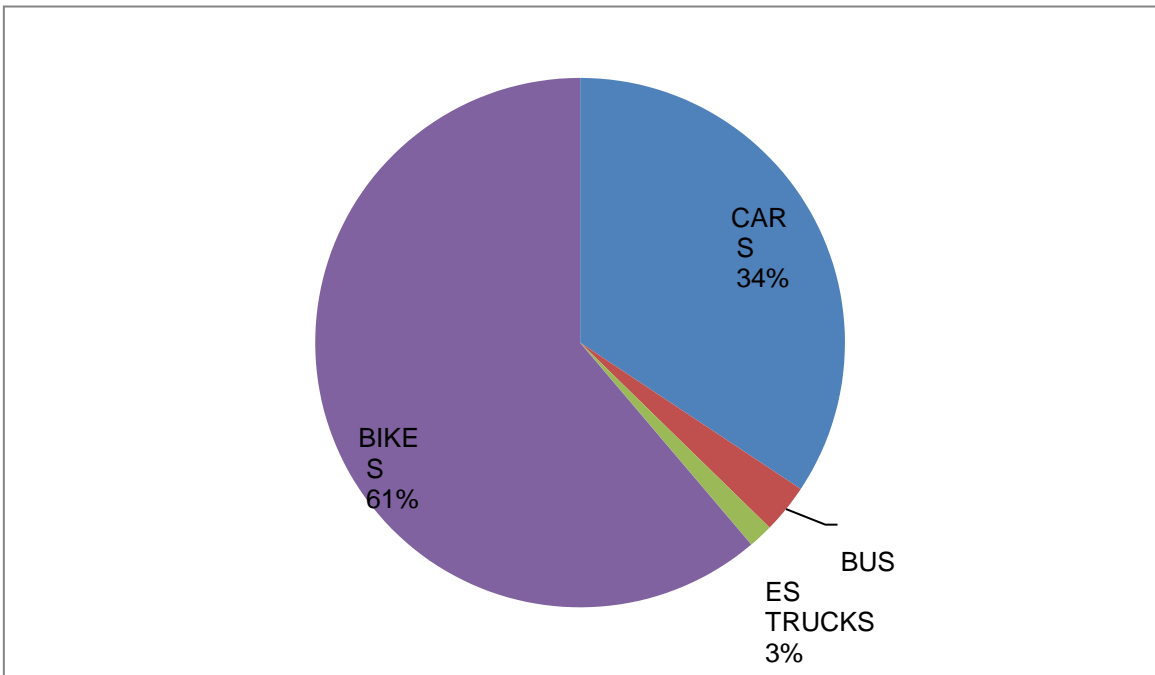


Figure 15: Volume composition at S.R.K.R. college road (W) to Mavullamma temple road (S)

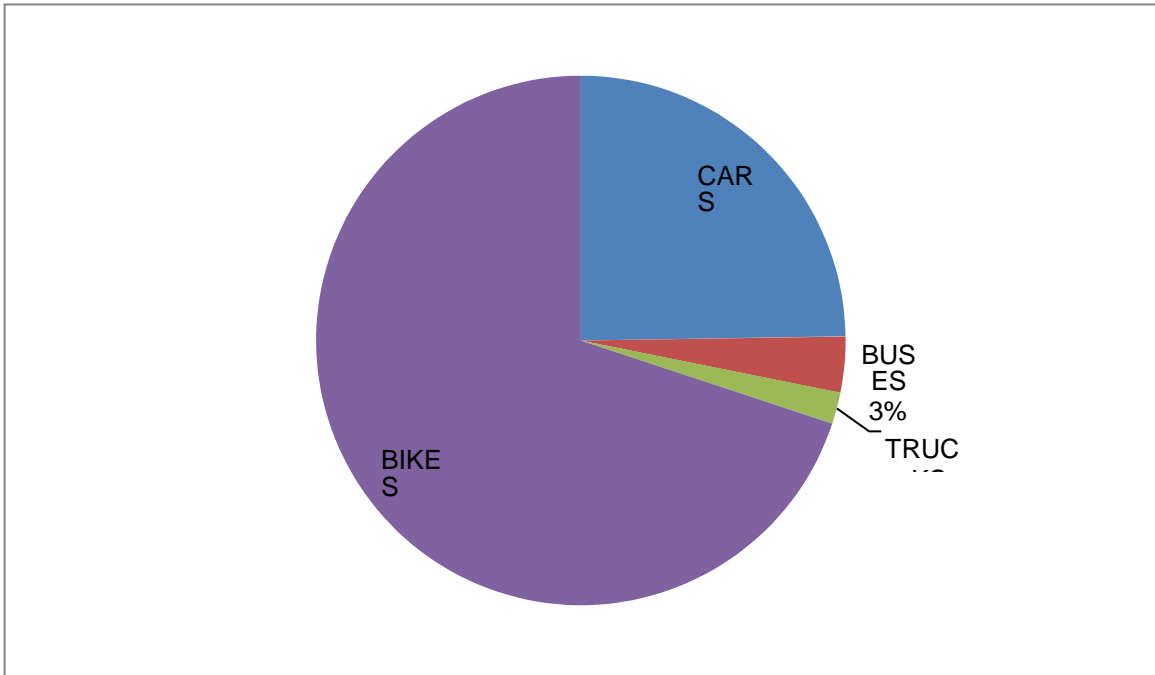


Figure 16: Vehicle composition at S.R.K.R. road (W) to B.V. Raju road (N)

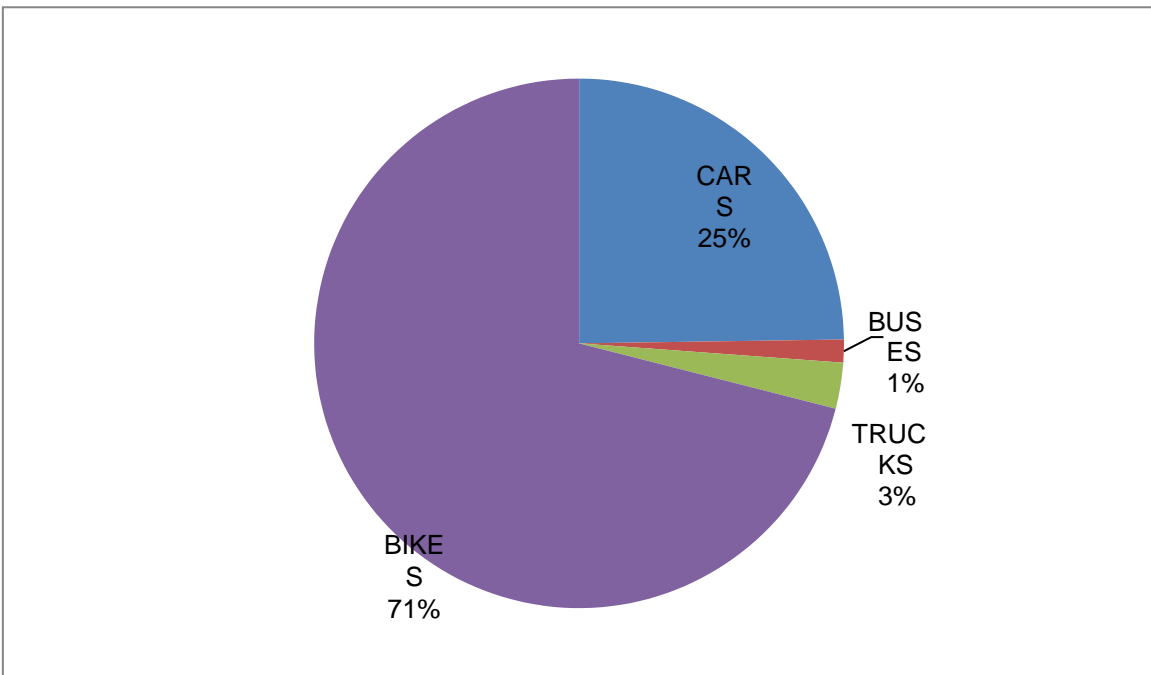


Figure 17: Vehicle composition at B.V. Raju road (N) to Mavullamma temple road (S)

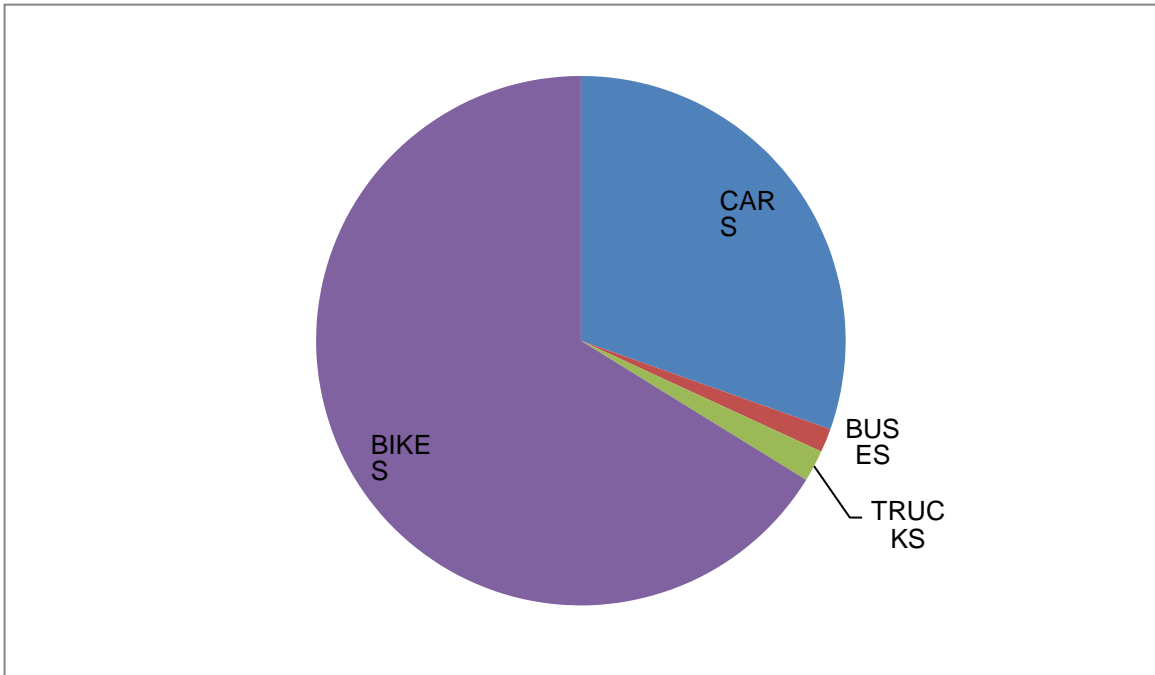


Figure 18: Vehicle composition at B.V. Raju road (N) to Palakollu road (E)

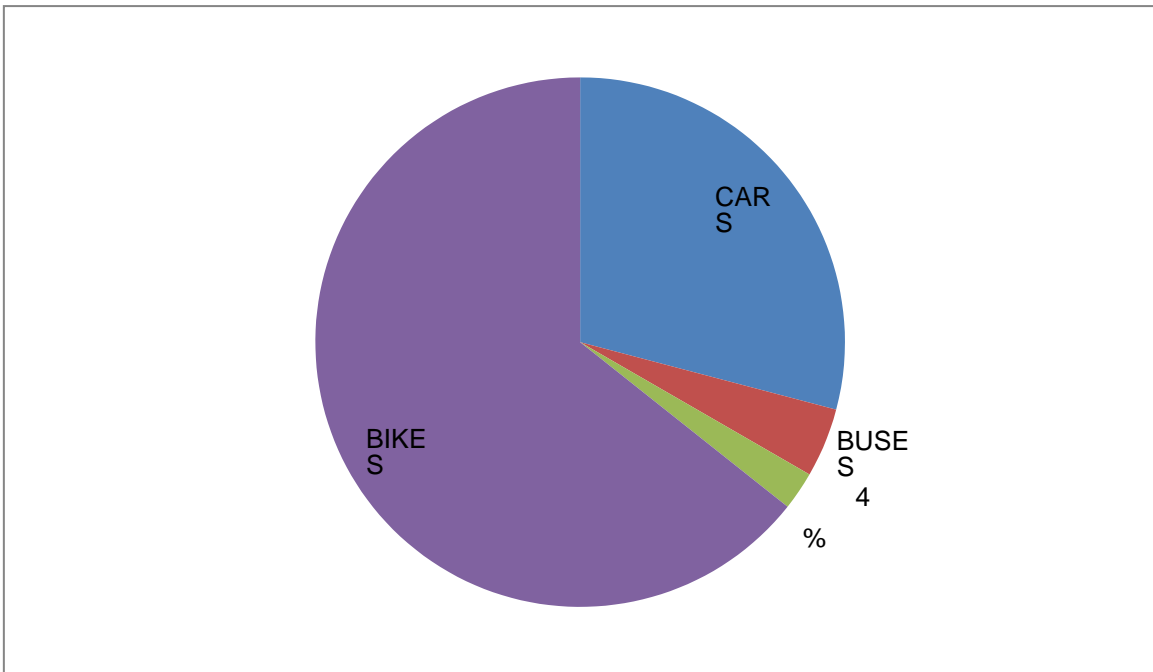


Figure 19: Vehicle composition at B.V. Raju road (N) to S.R.K.R. college road (W)

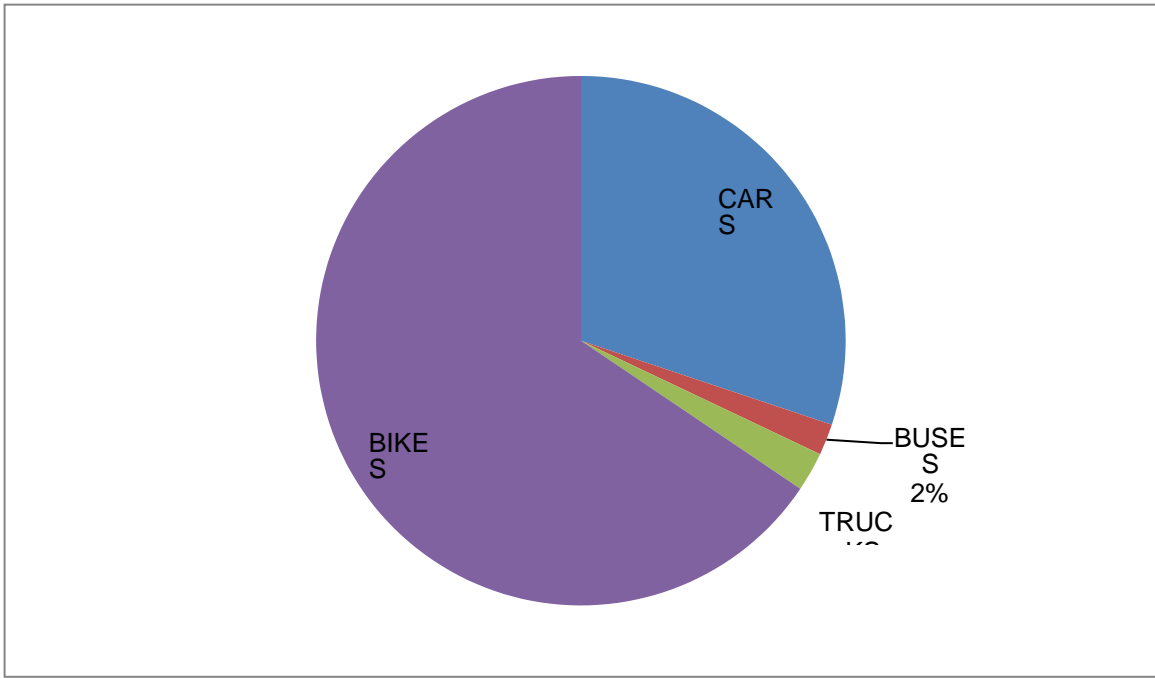


Figure 20: Volume composition at Palakollu road (E) to S.R.K.R. college road (W)

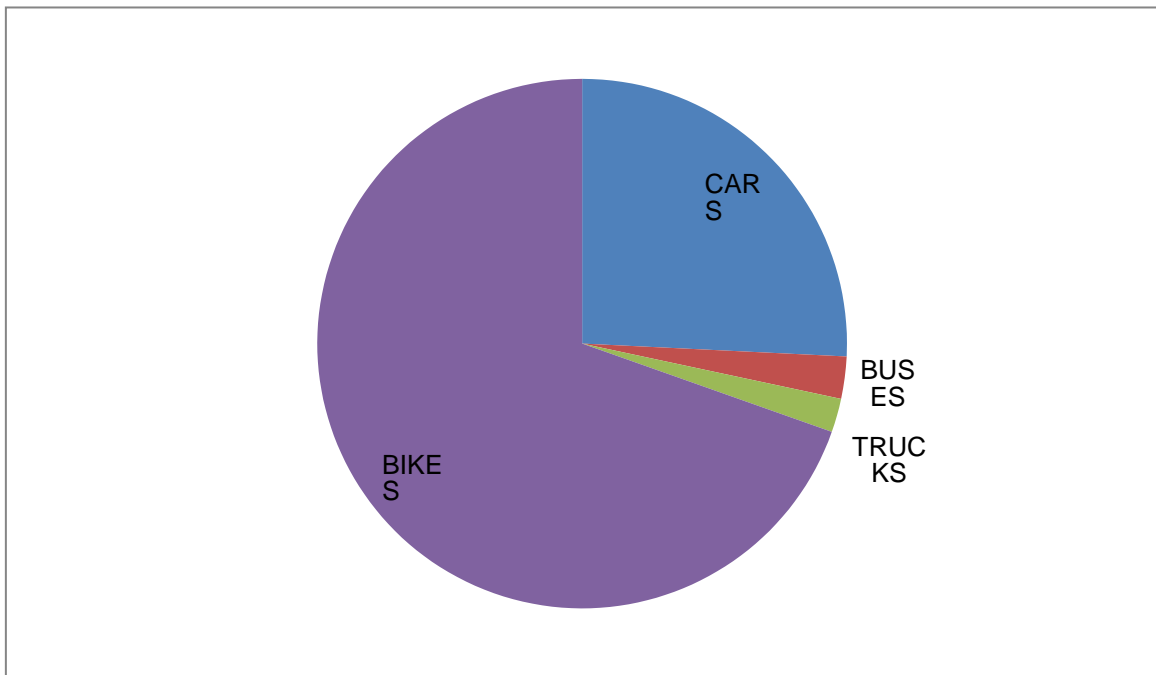


Figure 21: Volume accumulation at Palakollu road (E) to B.V. Raju college road (N)

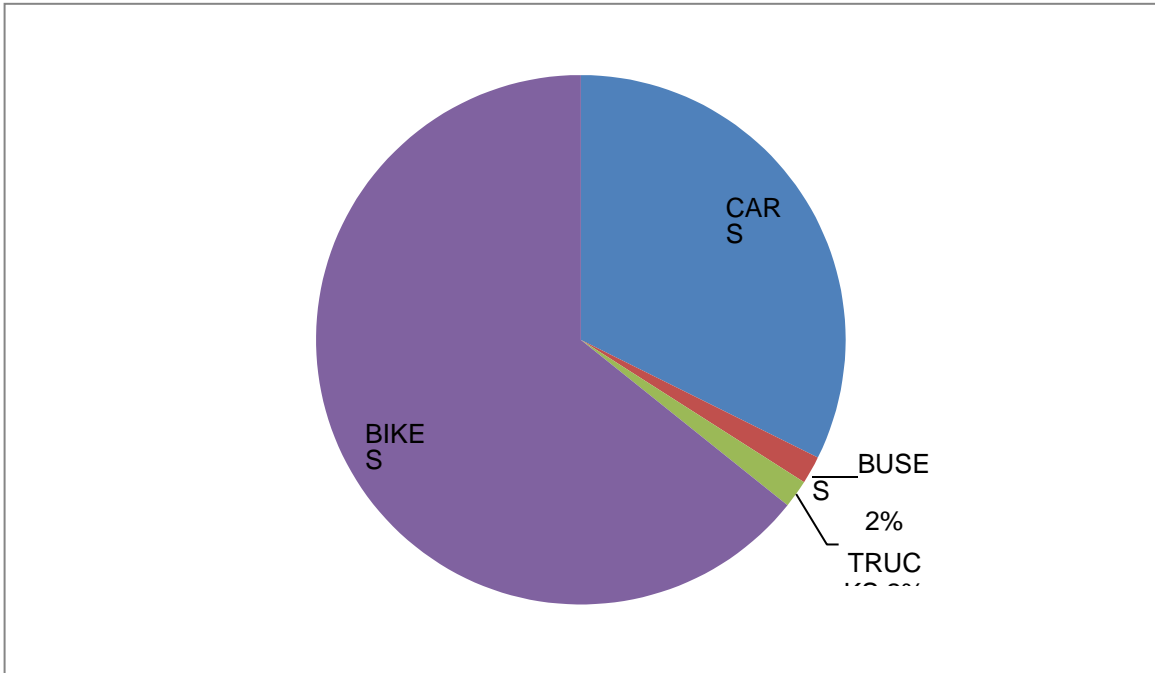


Figure 22: Volume composition at Palakollu road (E) to Mavullamma temple road (S)

5.4. ROAD MEASUREMENT IN BHIMAVARAM:

The growth of bhimavaram during the last decade can be cited due to the growth of the engineering institutions and drastic increase in population and increase in commercial sectors.

It acts as an important hub as the prices of the land has drastically increased. Lot of opportunities has been increased in every sector.

The rapid growth of Bhimavaram as a commercial and residential hub, could be attributed to its geographical advantage in terms of the connectivity to other parts of the district.

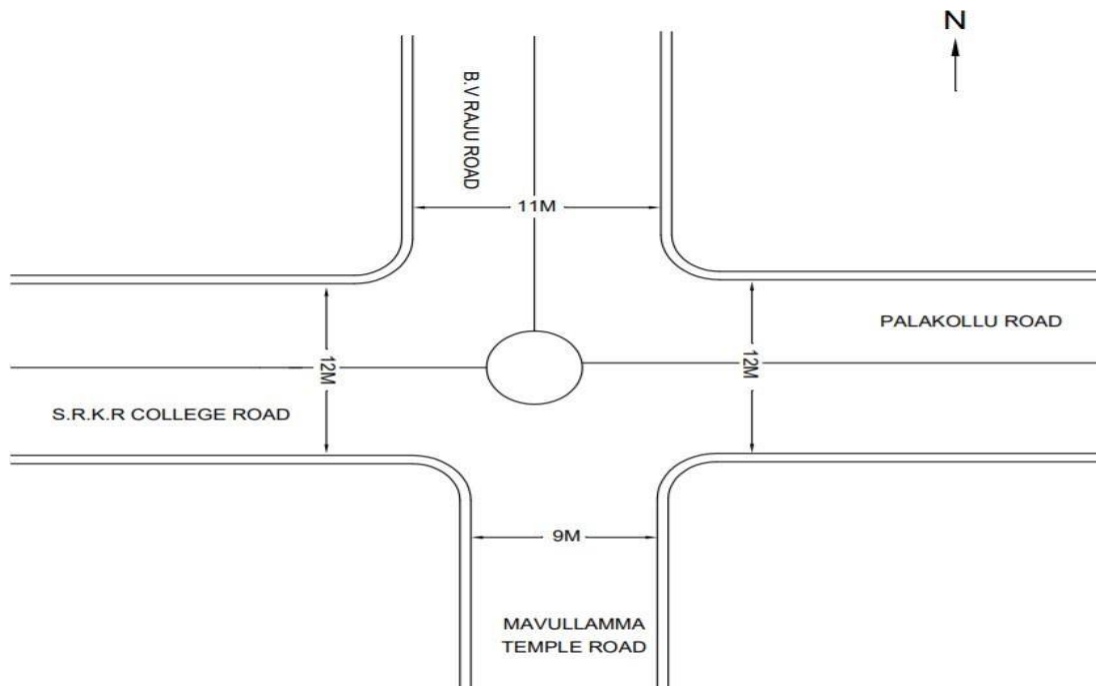


Figure 23: Road measurements of Bhimavaram

5.5. PARKING CONDITION INBHIMAVARAM:

This road total width is almost 15 meters, currently parking is done on either side which is covering 2mts on each side.

While parking vehicles were parked in random manner and left on the driveway which is contributing to traffic jam on this road.

CHAPTER 6

6.1. RECOMMENDATIONS:

6.1.1. INTRODUCTION:

This chapter deals with the traffic control measures suggested for the intersections located on the major corridor of the Bhimavaram town, based on the data obtained from turning movement studies and floating car method of Delay studies. Traffic management at these intersections on the principles of one way traffic is also discussed. In the past, many controlled measures are taken to minimize the accidents to a greater extent by the Bhimavaram municipality. But these measures went out-dated due to the terrific growth of the traffic flow all along the road.

From this study, we inferred a measure regarding the traffic control, to be taken along the full stretch of the road. Some part-time measures like operation of simultaneous traffic signal system during peak hours of flow, operating one-way traffic on various road links at some intersections etc., are recommended as per rules I.R.C. But due to certain factors like narrow width of roads, diminutive possibility of widening the roads, uneven distribution of traffic flow may increase the delay time for traffic.

The well known measures are:

1. Restriction of rotation
2. One roads
3. Activities of tidal flow
4. Bus lanes are exclusive.
5. Side roads close.

6.1.2. RESTRICTIONS ON TURNING MOVEMENTS:

Method requested

At the crossing: the vehicle driver intended to turn at a crossing shall do the following:

1. The right-hand approach and the right-hand turn should be as close to the right-hand curb or roadside as practically is needed.
2. An approach shall be made to a left turn at all points where traffic is permitted on each route which enters the intersection in the right half of the road which is closest to the centre and is allowed to move to both directions.

By crossing to the right of the intersection, the left turn is made to leave an intersection to the right of the centerline to which the road is entered, after it reaches

the intersection. In the same part of the crossroads to the left of the middle of the crossroads the left turn shall be made wherever possible.

3. At any intersection at which the traffic is restricted to one or more directions on a single route, the vehicle operator intending to turn left at any of such crossings shall, legally available for transport moving in the direction of travel of that vehicle, approach the intersection on the far right lane and turn to the left after entry into the intersection, to leave the intersection.

B. Turning on Hill: no vehicle is turned in a way which allows the driver of another vehicle approaching either direction within a quarter of a hundred feet in the opposite direction on or near the crest of a grade.

C. Left Turns: The driver of a vehicle inside an intersection intended to take a left turn gives way, after having so delivered and indicated a sign when and where it is necessary, to any vehicle approaching from the other side which is in or close to the intersection to be an immediate danger.

At any intersection, where such turns are prohibited by order and no left turns are shown, no motor vehicle operator must turn left.

D. Turning Around: No vehicle operator shall turn the vehicle in the opposite direction unless the vehicle is safely and unbacked or interfering in otherwise trafficked.

E. U-turns: no vehicle operator shall make a U-turn anywhere where such turns by order are prohibited and posted as no U-turns.

F. The village engineer is hereby allowed to identify those intersections at which car drivers should not turn to the right or to the left and shall position the appropriate signs at such intersections. Such turns may be forbidden between certain hours and may be authorised at other hours if the same is clearly shown on the signs, or if such turns are allowed, they may be removed.

6.1.3. ONE-WAYSTREETS:

A one-way street is a one-way street or it is built to direct vehicles to travel in one direction. Single roads normally lead to increased traffic, as drivers may avoid coming into contact with traffic or through ongoing traffic. The residence can disappoint one-way roads because of the route necessary to reach a particular destination and the potential for speeding up affects the protection of the peatlands. Some studies also dispute the original drive of one-way roads, since the higher speeds are denied by the circuitous routes.

6.1.3.1. ADVANTAGES OF ONE-WAYSTREETS:

- Reduction in the points of conflict.
- Increased capacity.
- Increased speed.
- Facilities the operation of a progressive signal system.
- Improvement in parking facilities.
- Elimination of dazzle and head-on collision.

6.1.3.2. DISADVANTAGES OF ONE-WAYTRAFFIC:

- Increased travelling distance.
- Wider pedestrian crossings.
- Driver confusion.
- More difficult emergency vehicles access.
- Possible increase in fuel cost.
- Unless appropriate measures are taken for safe pedestrian crossing facility at identified locations.

6.1.4. TIDAL FLOWOPERATIONS:

The morning peak attracts a large flow to the centre of the city, while the evening peak leads to a larger flow from the city centre. In this case there is an excess of the street space for the opposing traffic. The term "Tidal Flow" is used for this phenomenon. One way to deal with the issue of tidal flow is to allocate about half of the lanes during peak hours for one direction. This system is known as 'Tidal Flow' or 'Reverse Flow'.

6.1.4.1. METHODS:

Increased traffic in the morning high on a multi-way and equally large numbers of lanes in the evening high. Increase traffic in the morning high.

The existence of two separate streets parallel and similar to each other allows the larger two to be divided into two during the morning peak and the evening summit for the heavy traffic.

6.1.5. Exclusive Bus Lanes:

The reservation of a lane for the carriageway solely for bus transport provides exclusive bus lane. It is only possible when the track is of sufficient width and a lane for buses can be easily repaired. This means that three lanes in each direction should be at least. The exclusive bus line must be adjacent to the curb for reasons of comfort while travelling and embarking passengers in the curb.

6.1.5.1. REQUIREMENTS FOR AN EXCLUSIVE BUSLANES:

1. If severe incidents must be prevented, good compliance measurements are necessary. A good length bus lane should be built. Health needs an effective compliance strategy.
2. There must also be satisfactory signature and labelling of the roads and sufficient advertising.
3. Recessed bus bays must be provided for the introduction of dedicated bus lanes.
4. Bus detectors include preference for buses at road intersections, which reduces delays.
5. Bus lane width should be at least 2.8 metres to at most 3.5 metres.

6.1.5.2. USES OF EXCLUSIVE BUS LANES IN ROADTRAFFIC:

The reservation of a lane for the carriageway solely for bus transport provides exclusive bus lane. It is only possible when the track is of sufficient width and a lane for buses can be easily repaired. This means that in each direction there should be at least three lanes. The exclusive bus lane has to be next to the curb for reasons of convenience for the arrival of passengers and their entry.

6.1.6. CLOSING SIDE-STREETS:

- The main street can be blocked without disrupting traffic and still can have several advantages.
- This side street is not restricting traffic

6.1.6.1 ADVANTAGES OF CLOSING SIDE-STREETS:

- As interference is removed from traffic on side streets, speed increases, travel times are reduced and injuries are reduced.
- The side—closed streets can be used to park cars if the car park is acutely short on the region.

6.2. REMEDIES AT EACH LOCATION:

6.2.1. S.R.K.R. COLLEGE ROAD:

This road is connected with to Bus Stand, road from Over-Bridge and Bhimavaram. The traffic volumes do vary on daily basis. Heavy volumes will be recorded on the days when the weekly fairs are held on Sundays. Remedies like control of traffic manually, under the guidance of police, are suggested. Care must be taken these vegetables stalls do not cause any trouble to the traffic. Alternate road links must made use to minimize the problem. One-way is enabled for the route coming from Bhimavaram towards Over-Bridge. No vehicles are permitted to move directly from Over-Bridge towards Bhimavaram.

In this regard, these are some of the possible suggestions or alternate remedies to be employed at these intersections individually. From the analysis of data collected at all the intersections, designing a simultaneous traffic signal system is found out to be not that effective option, as it causes even more delay.

6.2.2. B.V. RAJU ROAD:

This is one of the junctions with more number of conflicting points, with legs connecting roads from Bhimavaram, Juvvalapalem and Undi. A Petrol Bunk is located on the sideways, on the leg connecting Bhimavaram to Juvvalapalem. Due to the increasing day-by-day traffic volume, provision of a mini-round about also connect be able to serve the purpose. Also, due to the halting autos on the Bhimavaram to Juvvalapalem leg, causes delay to the traffic. Hence, they must be given stop and proceed, all the time to reduce the levels of delay. Proper Bus- bays must be provided for halting the Govt. buses moving towards Eluru and Vijayawada on the legs connecting Bhimavaram to Undi and Juvvalapalem.

6.2.3. PALAKOLLU ROAD:

At this location the stalls nearby should be strictly restricted. Auto-rickshaws should be seen that they are halted near the stands, not to cause any delay. Speed limits should be specified near the junction.

This road is connecting legs from Bhimavaram, Juvvalapalem and Mavullamma temple. Manual supervision, with the aid of traffic police is a must, due to narrow road with, heavy traffic flow and least chance for extending the road width.

6.2.4. MAVULLAMMA TEMPLEROAD:

Due to the heavy traffic volume, that is increasing very rapidly, it is suggested to design traffic signals as per I.R.C. rules. It must be seen that this signals must be designed also taking into consideration, the traffic flow coming out during the times of operation of the level-crossing present near by Mavullamma temple. An alternate remedy for the heavy traffic coming from temple towards the junction should be made by connecting roads from Ambedkar junction.

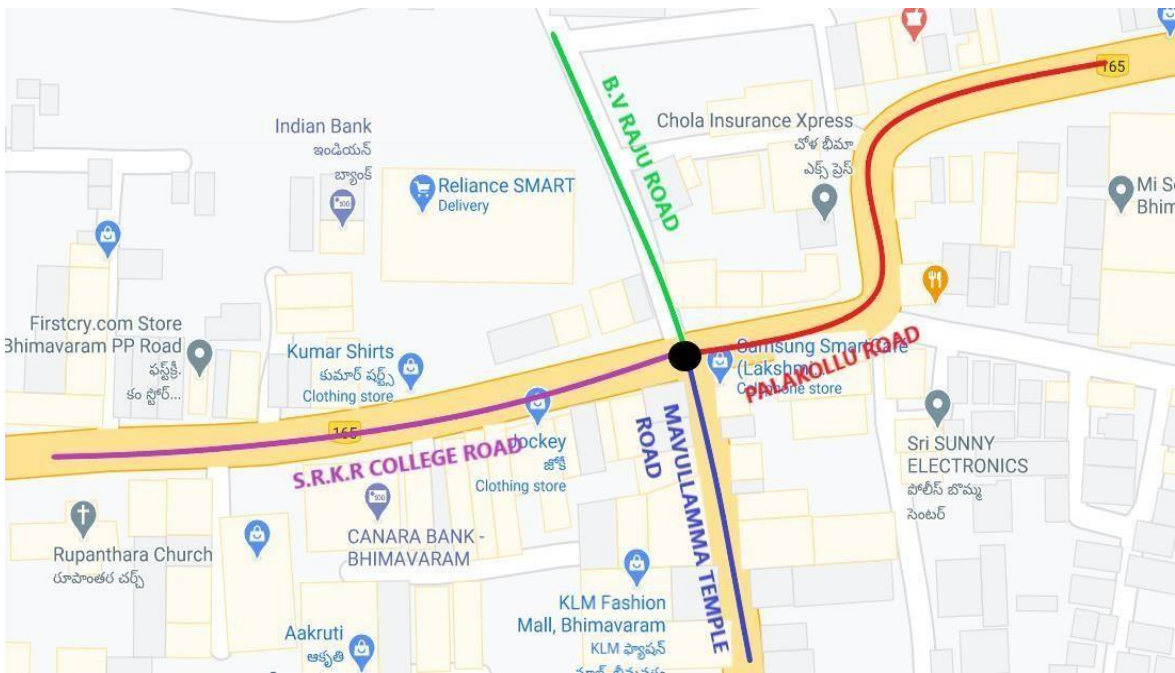


Figure 24: Traffic management measure at bhimavaram using road

CHAPTER 7

CONCLUSION:

Southwest of Godavari district, Bhimavaram is situated. This field encompasses many areas of aquaculture. This is the intersection of the road B.V. Raju (N), Palakollu (E), the temple road Mavullama (S) and the school road S.R.K.R. (W). Survey and number of volumes are carried out on route inventory. Road edges are filled with predators and illegal road parking is reducing vehicle speed. This project concludes with a reduced traffic congestion in the city of Bhimavaram. And by the bypass of the heavy vehicles. For heavy vehicles to pass the city, time constraints should be compulsory. The government should make adequate parking slots available. Awareness campaigns should be carried out by the department of traffic.

Hence diverting the heavy vehicles to pass through by-pass road reduces most of the traffic because of its narrow roads and also people uses same narrow roads for parking their vehicles due to unavailability of proper parkingslots.

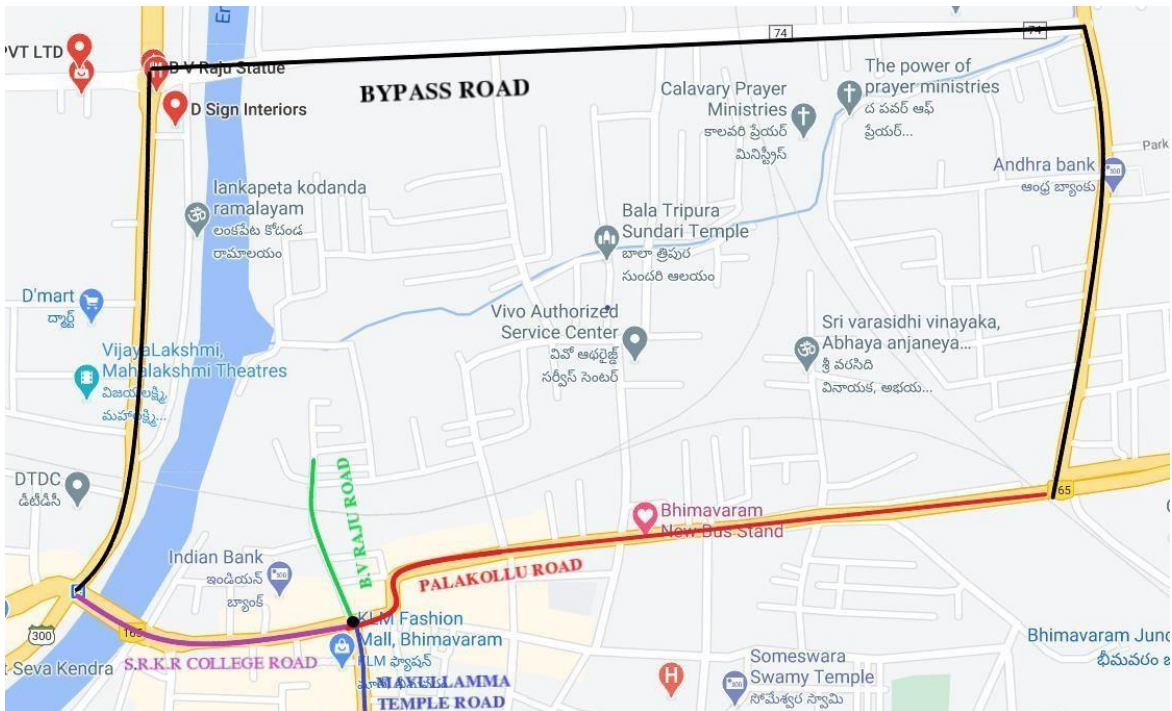


Figure 25 : Proposed bypass road in bhimavaram

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