MANAGEMENT OF TRAFFIC FLOW AT KELAMBAKKAM INTERSECTION IN CHENNAI

Submitted in partial fulfilment of the requirements for the award of
Bachelor of engineering degree inCivil Engineering

By

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(DEEMED TO BE UNIVERSITY)

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MAY 2022

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of Tamilarasan.S (Reg. No. 38200036) and Sanjay.S (Reg. No.38200029) who carried out the project entitled **"MANAGEMENT OF TRAFFIC FLOW AT KELAMBAKKAM INTERSECTION IN CHENNAI"** under my Supervision from January 2022 to April 2022.

23/4/22

Internal Guide

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Submitted for Viva voce Examination held on _____

Internal Examiner **External Examiner**

DECLARATION

We **Tamilarasan.S (Reg. No. 38200036)** and **Sanjay,S (Reg. No.38200029)** hereby declare that the Project Report entitled **"MANAGEMENT OF TRAFFIC FLOW AT KELAMBAKKAM INTERSECTION CHENNAI"** done by us under the guidance of Dr. V.SAMPATHKUMAR at Sathyabama University,Chennai is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Civil Engineering.

1. 

2. 

DATE :

PLACE: **SIGNATURE OF THE CANDIDATE**

TABLE OF CONTENT

CHAPTER 1

INTRODUCTION

1.1 General

With the high growth of city traffic, the conflict between traffic demand and supply has increased, and the traffic becomes congestion. Traffic congestion can be characterized by the decline in speed, the rise in travel time and the increase of vehicle's queue on the road. Traffic congestion happens when the road demand exceeds the road capacity. The road intersection is not sustainable if its capacity exceeds the volume, but this condition exists only in certain intersections and it has dominated over entire city. Rajiv Gandhi IT Expressway and Kelambakkam-Vandalur Road, Chennai seems to be talk of the town, specifically from Kelambakkam intersection to Vandalur. The volume of traffic on the IT corridor is more than 3 Lakhs vehicles on weekdays. In this paper we discuss more about how to reduce the traffic volume at Kelambakkam junction.

1.2 Definition of Road

A long narrow path with a smooth and paved surface, especially for traveling by motor vehicles, carriages, etc. between two or more points; Road or highway.

1.2.1 Types of roads

- Freeways,
- Express ways,
- Highways,
- Arterials,

- Local streets,
- Collector streets

1.3 Definition of Intersections

An intersection is a road junction where two or more roads either meet or cross. An intersection must be maintained by most traffic lights, roundabouts or an island.

1.3.1 Types of Intersection

Intersections are classified as

- 3-way intersection
- 4-way intersection
- 5-way intersection
- 6-way intersection

1.4 Intersection Improvement

Intersections are important for road traffic; They control the speed, safety, cost and efficiency of a road. The turning movements of vehicles directly reduce safety and efficiency, making left turns the most important design factor in intersection development and operation, hence deducing congestion on the road. The most used methods include improvising signal timing, eliminating the factors that reduce sight distance, making drivers know that they are nearing an intersection, and improving bicycle or pedestrian facilities at the intersection.

Prohibited right turning schemes:

i. T turn

Diversion of the right turning traffic to an alternative intersection further along the road where there is more capacity for dealing with a right-turn. It is often useful for dealing with a difficult right turn for a minor road into a major road. The right turn gets shifted to a minor-minor junction.

ii. G turn

Diversion of the right-turning traffic to the left before the junction. It is useful for a right-turn from a major road, since it is converted to a left turn from major road and a straight-over movement at the original junction.

iii. Q turn

Diversion of the right turning traffic beyond the junction .This entails three left turns and requires the driver to travel twice through the original junction, thus increasing the total volume of traffic handled by the junction. Since only left turns are involved in it is considered the lease obstructive.

1.4.1 Definition of Traffic

Road traffic includes pedestrians, animals, vehicles, buses, and other communications such as road users, using public avenues for travel purposes. Whereas Traffic flow is the study of the interlink between road users (pedestrians, cyclists, drivers and their vehicles) and infrastructure (highways, signs, and traffic control equipment), understanding and creating an optimal traffic network with efficient movement of traffic is aimed at. And minimum traffic congestion issues.

1.4.2 Traffic Improvement

Temporary solution-free road capacity that is soon filled with induced demand: people adapt their lifestyles to the prevailing road conditions.

1.5 METHODOLOGY

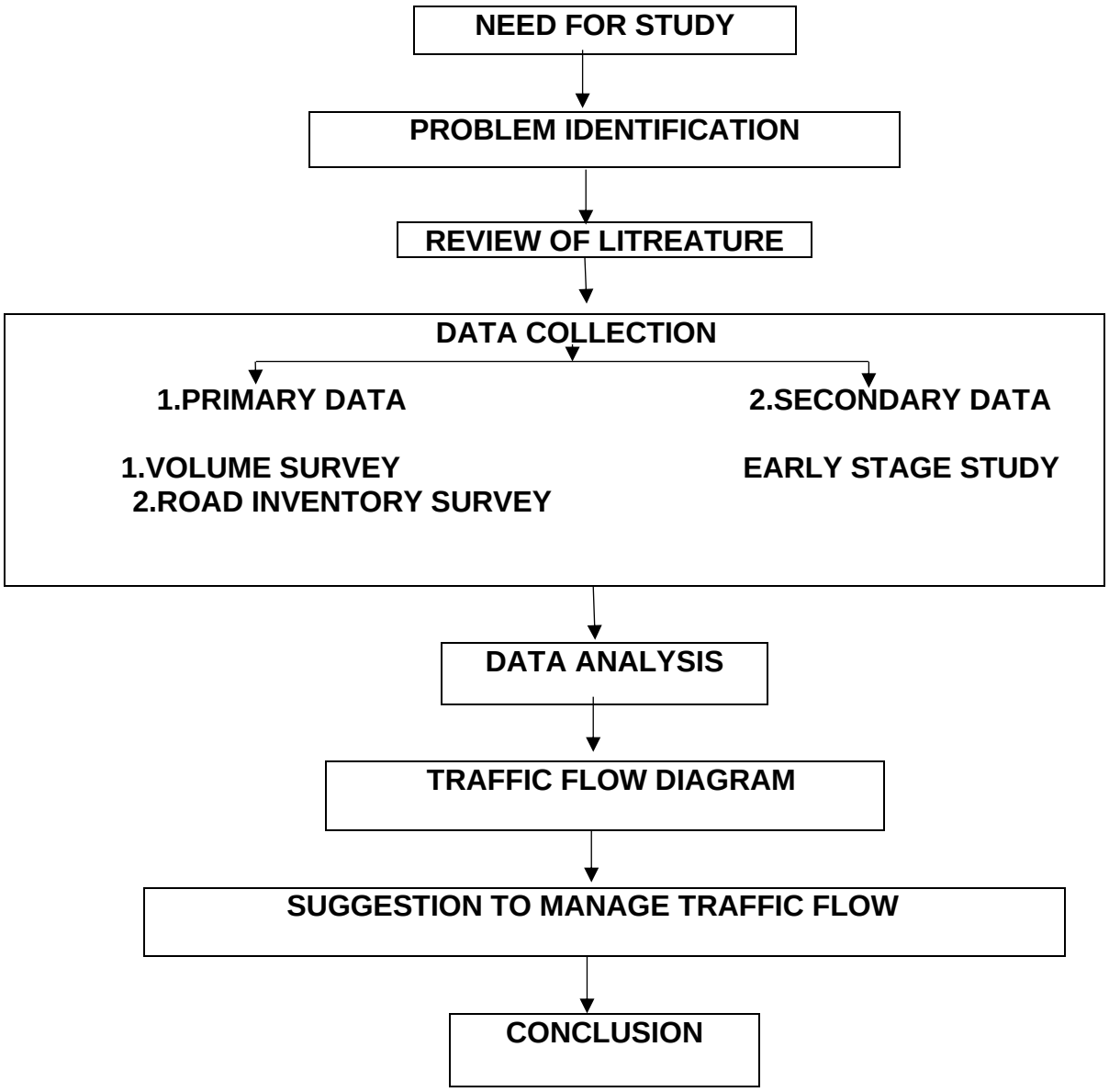

Fig 1.1 Methodology Flow Chart

CHAPTER 2

OBJECTIVE AND SCOPE OF STUDY

2.1 Objective of the project

- ❖ To collect traffic volume at study area.
- ❖ To Asses volume to capacity ratio.
- ❖ To suggest traffic flow improvement measures.

2.2 SCOPE OF THE STUDY

- To minimizes the traffic accidents and traffic congestion.
- The safety , as well as the smooth flow of traffic.
- To ensure the safety of passengers ,drivers and pedestrians.
- To build and execcute a model which would allow vehicles to reach their destination in the shortest possible time using the fullest roadw capacity.

2.3 REVIEW OF LITERATURE

[1] Velmurugan S, Reddy TS, Prasad Rao I (2005), Traffic operational characteristics and its impact on urban air pollution - A case study of Chennai, India. Proceedings of the East Asia Society for Transport Studies.

Traffic in urban areas of India is growing rapidly and managing traffic operations on the limited road network of cities has become a major task for

the authorities concerned. Finally, a major study was conducted by the Government of India to determine the amount of urban travel of road and allied air pollutants coming from automobile exhaust in eight cities such as Delhi, Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Kanpur and Agra. The main objective was to correctly estimate the total number of vehicles and to develop a database and technique for estimating road traffic and pollution load in each city. This paper describes the characteristics of the operation and volume of traffic and air pollution loads on the major road network of Chennai city.

[2] Phillips S. Strengthen Road transport research cooperation between Europe and the emerging international market; 2006.

The Intelligent Transport System (ITS) has evolved with Chinese social and economic change. In the 1990s, China began building large-scale road infrastructure, and ITS was considered a futuristic and expensive tool box. It was important for the Chinese government to know when and how to integrate new technologies into transportation systems and to formulate an appropriate development strategy, especially with the ITS. Through more than 20 years of development, the Chinese ITS has achieved remarkable achievements.

[3] Manuj Darbari, Sanjay Medhavi and Abhay Kumar Srivastava (2008), "Development of effective urban road traffic management using workflow technology for upcoming metro cities like Lucknow (India)", Hybrid Information Technology, Vol. 1, No. 3, pp. 99–107

Unless attention is immediately given to designing and implementing an optimal system and efforts are made on an ongoing basis to build continuous carrying capacity, we will never be able to overcome the congestion, Lucknow of India. The eight most ensuing cities are the ones that have seen a sudden increase in population during the last five years. According to the estimated survey. Lucknow's population will double in 2013. The main areas in and out of the city are inadequate, with no smooth flow of

traffic. The absence of rail-based transport system and inadequate city buses leads to frequent use of private vehicles leading to congestion.

[4] Issac I. (2008) Comparison of preliminary analysis measured FWD and traffic data measured responses.

The purpose of this paper is to present the findings where the measured suboptimal stress and falling weight Deflectometer (FWD) from the vehicle movement are compared. Both loading techniques were employed on a heavy instrument pavement under similar conditions in the period immediately after construction. The presented analysis clearly showed that there was a difference in pressure response in the narrow suburb of the thin flexible pavement Statistically significant with the movement of vehicles producing high values in every instance. FWD readings, on average, will need to increase the factors of 3.73 and 2.39 for the front and rear axles, respectively, so that statistical differences can be detected. Such a large difference in pressure response is important because FWD is routinely used, among many other functions, to perform back strain softening soil layer measurement calculations.

[5] Gong Yan (2009) Fusion Framework of Urban Traffic Control and Route Guidance based on Cyber Traffic System.

The cyber-physical system provides a new principle for the application of information to improve the performance of traffic control systems. This paper, oriented to the integration of information and transport processes, discusses the information gateway role of information flow, control command, behavior control utility and control instruction of behavioral control and reconstruction of traffic control system model. Also, this paper analyzes the information flow between passengers in computer systems, traffic sign systems and traffic control systems. The integration of information and transport processes can be realized by cyber the traffic control process.

Finally, this paper discusses the application of new technologies in computing and communication in traffic control cyber-physical systems.

[6] Gethu Lal, Nitin KJ, Divya LG (2010): "Permanent traffic improvement for urban road intersections in developing countries".

This paper examines traffic problems and permanent improvements in Ettumanoor, India. The spatial and temporal formation of vehicles as well as pedestrian traffic at intersections was investigated and the characteristics of the junction inducing delay problems were identified. Data about traffic volume, land use and walking activities are collected through a direct field survey. Analysis of the data collected revealed that improper planning of junctions, lack of traffic signals and unauthorized parking are the major factors contributing to traffic congestion. Various remedial measures are also proposed, focusing on junction correction, alternative operation planning and junction signalization.

[7] R . GAYATHIRI AND A . AMUDHA (2011) “Solar powered traffic control system based on traffic density with emergency vehicle albert”

Conventional traffic signal system are time based and they don ‘t vary on the existing traffic density therefore a new model is designed by using solar panel which consist of solar panels wireless sensors.

[8] Bhargavi PS And N. Kannaiya Raja (2011), "A Study on Effective Traffic Management of Roads to Reduce Road Accidents in Tamil Nadu", Enterprise Innovation Management Study, Vol.2. No. 2, pp. 172–190.

The main objective of this study is identified and analyzed the causes of road traffic accidents in Tamil Nadu. Also, this study investigated the various causes of accidents in Tamil Nadu in the past years. Tamil Nadu had the highest rate of road accidents in one of the accident prone area in India. This

study examines why Tamil Nadu reported the number of top accidents. What are the causes of accidents and how do they resist accidents.

[9] A.VINIDHA ROC ,P.R.BANUPRAKASH ,G .PAUL ASIR NIXON ,L.PASSAS (2012) “Smart traffic light system”

The application used function on two modules that on two modules that is image processing module and speech recognition module and speech recognition module with sound sensor the image is taken with camera the camera captures the amount cars and signal is lighted according to it

[10] Amudupuram Mohan Rao and Kalaga Ramachandra Rao (2012), "Measuring Urban Traffic Congestion - A Review", for Traffic and Transport Engineering, 2012, 2 (4): 29308-305, available at http / web. ITD. Ac.In/~ Rrkalaga / Pubs / Ijtte_2012-Congestion.Pdf

A systematic review is carried out based on measurements such as speed, travel time / delay and level of service. The review definition covers various aspects such as; Measurement criteria by various countries / organizations. The strengths and weaknesses of these measures are discussed. In addition, a small criterion of the measurement criterion is presented.

[11] Anastasios Kallianiotis and Dimitrios Kaliampakos (2012) : “Evaluation of Underground Spaces evacuation Effectiveness.

The purpose of this paper is to evaluate underground spaces in relation to the effectiveness of their emptying and to compare them with similar buildings on the same ground. To accomplish this, on the one hand the factors influencing withdrawal effectiveness have been defined and on the other hand a tailor made deduction assessment system has been developed. Among the factors affecting evacuation effectiveness, the location of the exit gates / routes is of primary importance.

[12] Abrar Alam. And Faisal Ahmed (2013), "Urban Transport Systems and Congestion: A Case Study of Indian Cities", Transport and Communications Bulletin for Asia and the Pacific.

This paper studies the traffic landscape in selected Asian cities and the policy measures taken by their governments. It revisits relevant policies in India and assesses gaps that prevent the desired impact of such policies on reducing traffic congestion. It also suggests policy measures to overcome these gaps and the way forward.

[13] G.Krishnaiah and P.Rajesh (2014),” Traffic signal control system based on wireless technology”

Review on different types of techniques used in the traffic signal control system, Traffic management schemes based on image processing and wireless sensor networks are using to control traffic.

[14] Nikita A haribhakta, Rohini R jagtap Ujjwala jagtap Priyanka bayas and deepthi (2015) “Intelligent traffic surveillance system using swarm technology”

An increased population growth rate leads to create traffic congestions, swarm is based on adaptive and self-organization properties, this paper briefly covers implementation of swarm technology in traffic signal.

[15] Vaishali mahavar and DR.jayesh mahavar May (2018)” Traffic control systems used worldwide”

Adaptive traffic signal controllers as the principle part of intelligent transportation systems has a primary role to effectively reduce traffic congestion by making a real time adaptation in response to the changing traffic network dynamics.

[16] K. Priya ,S.K.Manikandan(2019) “Automatic traffic control system based on vehicular density”

Redesigned a new traffic signal to help freely passage of vehicle and change the timing of traffic signal with IR sensor LCR micro controller

[17] Dr.v. Sampathkumar “Traffic management at sterling Road intersection in Chennai”

A Case study: The sterling road in one of the major intersections in Chennai metropolitan area which need attention to decongest . It is supported only by roadways .The increase in traffic volume with lack of road geometry result in congestion

[18] Zinabu Hailu “Design of intersection with Traffic signal”

To evaluate and analysis the level of service of T –intersection around variety (Negus palace)

CHAPTER 3

STUDY AREA AND PRIMARY DATA COLLECTION

3.1 STUDY AREA

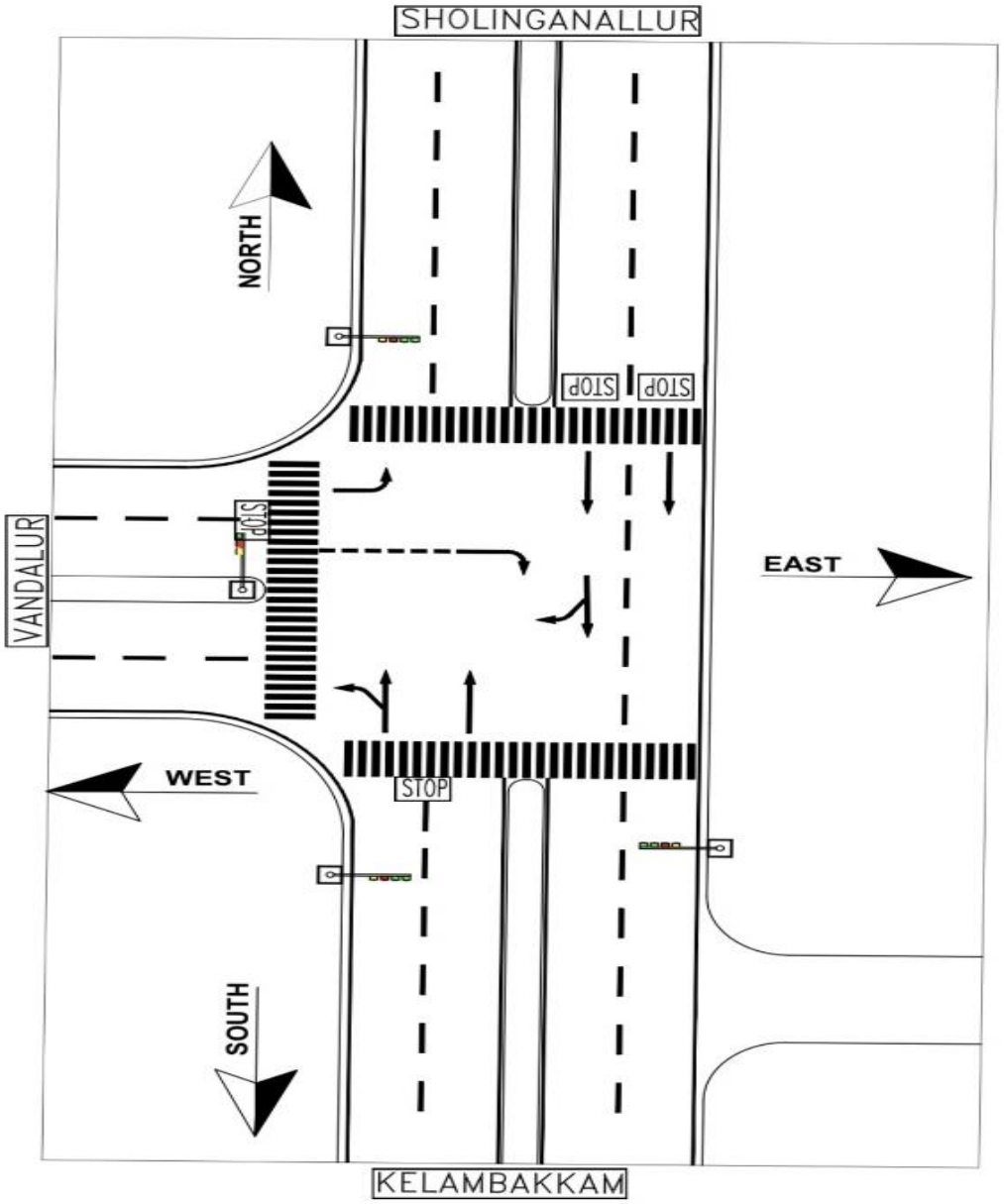

Fig: 3.1 Study Area of Kelambakkam

Intersection is as an area where two or more roadways cross each other. This area is meant for the vehicles to turn to different directions to reach their destination. The study of intersections is very important for the traffic engineers especially in the case of urban scenario. The study is from Kelambakkam intersection.

1. Towards North **:** Sholinganallur

2. Towards West **:** Vandalur

3. Towards South **:** Kelambakkam

To consist the intersection vehicle traffic flows and the volumes consider.

Kelambakkam is a large residential neighborhood in South Chennai, Tamil Nadu, India. Kelambakkam saw its economy grow with the construction of the SIPCOT(State Industries Promotion Corporation of Tamil Nadu) IT Park in neighboring Siruseri Chennai's dedicated technology office space.

Kelambakkam is a suburban and residential neighborhood of Chennai, India. It is located in the south-eastern portion of the city along the Old Mahabalipuram Road (OMR), and is about 5 km from Siruseri IT park and 12 km from Sholinganallur junction. It is another important junction after Sholinganalur, which connects GST road (Vandalur) and ECR road (Kovalam). Kelambakkam is considered as the southern gateway to Chennai city on OMR Road and comes under (Sholinganalur to Kelambakkam stretch) of OMR Road.

The subsequent uplift of some colleges, hospital, research centers and offices around Kelambakkam proved fortunate for Kelambakkam, as many of the workers in these offices often made Kelambakkam their home.

Details of study area :

The area is easily accessible by **Metropolitan Transport Corporation (MTC)** buses and has a large bus terminus. The MTC bus stop in that area is Kelambakkam Bus Stand,

near Kelambakkam market.

SIPCOT known as ,State Industries Promotion Corporation of Tamil Nadu is located in Siruseri IT Park near Kelambakkam,.

Existing Roads:

The Old Mahaballipuram Road starting at Sholinganallur leads to Kelambakkam and Pondicherry.The chettinad hospital is located about 100 meters south of Kelambakkam

Intersection and it connect kovalam at east and vandulur at west.

Fig 3.2 Location of Kelambakkam intersection

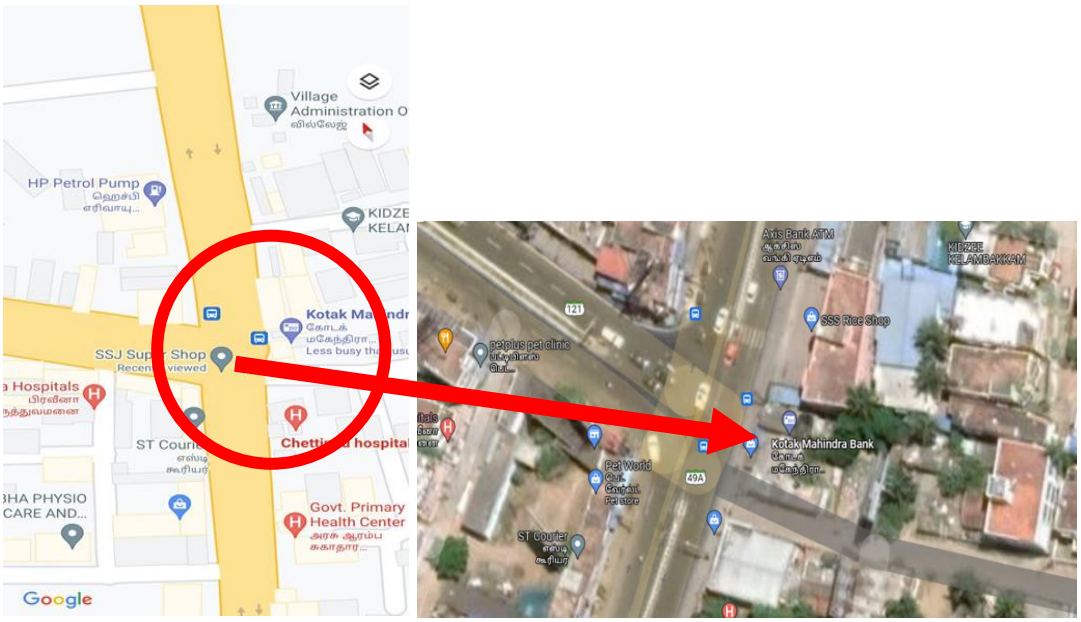

Fig 3.3 Kelambakkam intersection 2

Fig 3.4 Traffic Congestion at Kelambakkam intersection

Fig 3.5 Traffic Congestion at Kelambakkam intersection

3.2 DATA COLLECTION

Data collection is the process of collecting and measuring information on target variables in an established systematic fashion, which then enables one to answer relevant questions and evaluate the results.

The data needed for the analysis of the traffic flow at the study area is done by:

- **Geometric Surveying**
- **Traffic Volume Count Surveying**

3.2.1 Geometric Surveying

This surveying is used to find the dimensions of the place which has to be surveyed, length and breadth of road lanes, dividers, foot path, bus stops, pedestrian path, parking space etc.., are measured.

At Kelambakkam intersection the vehicles moving in different directions want to occupy same space at the same time. 1800 pedestrians per hour also seek same space for crossing. Kamarajar statue signal with **16.3m** wide, Vinayaga Complex signal with **16.3m** wide, Jesus statue signal with **13.3m** wide.(Representing in Fig 3.5; Geometry of Kelambakkam intersection.)

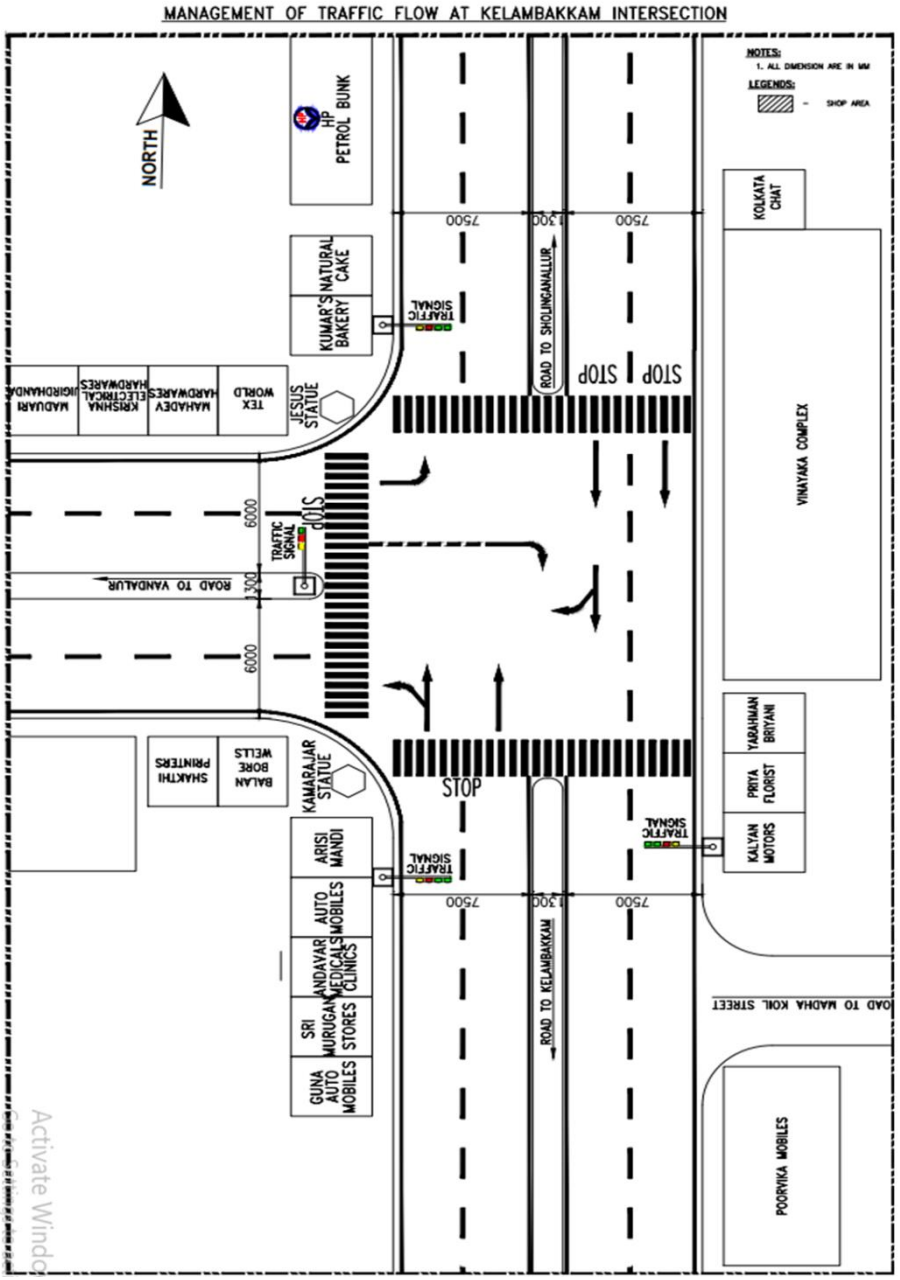

Fig 3.6 Road Geometry at Kelambakkam Signal Intersection

3.2.2 Traffic volume count surveying

Traffic Surveying is carried out to analysis the traffic characteristics. It helps in geometric design and traffic control, which tends to a safe and efficient traffic movement. The traffic studies for collection of data is also known as Traffic Census.

Types of Traffic Studies:

- Traffic Volume Study
- Speed Study
- Origin and Destination study
- Traffic flow characteristics study
- Traffic capacity study
- Accident study

Traffic volume study:

Traffic volume study is the volume of vehicles crossing a portion of the road per unit time in any selected period.

❖ The uses of traffic studies are as follows:

- Planning
- Traffic operation and control
- Traffic pattern
- Structural design of pavement
- Regulatory measures

➢ **Methods Of traffic volume study:**

- Automatic Volume study
- Manual volume study

➢ **Automatic Volume study:**

➢ Automatic counters are also known as mechanical counters. They can automatically record the total number of vehicles crossing a portion of the road in the desired time.

• **Advantages:**

- It can work throughout the day and night for the desired duration, which is impractical in the manual.

• **Disadvantages:**

It doesn't give the detail of the traffic like various classes, stream and turning movement.

Manual *Volume Study:*

- Manual method is the method in which a group of people are trained to record the total number of vehicles crossing a section of road in a desired period on a record sheet manually.

• **Advantages:**

It gives the full detail of the traffic like various classes, stream and turning movement etc.., of the vehicles.

• ***Disadvantages:***

It cannot work throughout the day and night for all days of year.

Table 3.1 Traffic volume survey data sheet

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FIELD DATA SHEET FOR TRAFFIC CENSUS

Date:
Time: From: To:
Road Junction

Location:
Place : Sterling

Types of Vehicles / Hour Count	CARS, JEEPS, VANS & Three Wheelers	BUSES	TWO WHEELERS
1	2	3	4
VEHICLES TURNING LEFT			
VEHICLES PROCEEDING STRAIGHT			
VEHICLES TURNING RIGHT			
TOTAL			

Traffic volume count survey is done on a sheet in which the volume of traffic is being counted and written at specific time duration at equal interval of time.

- Details about the direction of road, intersection of road and number of two wheelers, autos and cars, buses and trucks going in that particular direction is counted and written on this sheet. Signal time cycle is also noted.

- The traffic flow at particular section will increase with time and decrease after a particular time interval.

- The time where the traffic flow is most, is known as PEAK TIME.

- Traffic volume count survey is done for all directions and mean traffic volume is calculated.

Traffic Count Surveying

The traffic count surveying is done at each direction at each intersection and the flow of traffic is written on the traffic count data sheet, respectively graphs are made according to the values.

This fig 3.4 consists of overall view of Kelambakkam junction, which shows, Kamarajar Statue, Vinayaka Complex signal and Jesus statue. The traffic control have been studied for an hour to hour from morning 8a.m to 9p.m.The study were made for 2wheelers, 3wheelers, 4wheelers, Buses and Trucks.

3.3 PASSENGER CAR EQUIVALENCE (PCE)

In British practice it is usual to express capacity in terms of "**passenger car Equivalence**". This system is also being followed in India. The basic consideration behind this practice is that different types of vehicles offer different degrees of interference to other traffic and is necessary to bring all types to common units.The common unit adopted is the passenger car unit (PCE) as shown in bellowtable 2.1

Table 3.2 Conversion Factors of Car Equivalent (PCE)

Vehicle type	PCE Equivalency factor
Two-wheeler	0.5
Three-wheeler, Car	1
Bus , Truck	3.0

CHAPTER 4

DATA COLLECTION AND TRAFFIC ANALYSIS

4.1 DEFINITION

One of the important functions is to organize and implement various services and studies aimed at collection of data pertaining to traffic characteristics. Such study include origin and destination survey, volume count, speed , travel time and delay measurements, accident statistics, parking characteristics, pedestrian behavior and use of streets, capacity studies , economic loss caused by inferior traffic facilities etc.

4. 2 . Traffic DATA

- Traffic volume count
- Traffic Flow Diagram and Road Geometry
- Plan of intersection

4.2.1. Traffic volume at survey at Intersection

One of the fundamental measures of traffic on a road system is the volume of traffic using the road in a given interval of time. It is also termed as flow and it is expressed in vehicles per day. When the traffic is composed of a number of types of vehicles it is the normal practice to convert the flow into equivalent passenger car per unit (PCE), by using certain equivalency factors. The flow is then expressed as PCE per day as shown in table 4.1.

Table 4.1 Peak traffic flow at Kelambakkam intersection (Time 18.30 to 19.30) Date: 10/01/2022 in PCE

Hour	Two wheeler	Car / Three Wheeler	Bus /Truck	Volume In PCE
7.00 -7.30	2267	828	278	2795.5
7.30-8.00	2541	1074	313	3283.5
8.00-8.30	2833	1293	328	3693.5
8.30-9.00	3119	1541	365	4195.5
9.00-9.30	3468	1665	389	4566
9.30-10.00	3462	1744	372	4591
10.00-10.30	3247	1628	367	4352.5
10.30-11.00	3151	1385	326	3938.5
15.00-15.30	2890	1429	369	3981
15.30-16.00	3146	1570	417	4394
16.00-16.30	3179	1594	434	4485.5
16.30-17.00	3245	1727	461	4732.5
17.00-17.30	3539	1815	478	5018.5
17.30-18.00	3639	1864	503	5192.5
18.00-18.30	3555	1882	533	5258.5
18.30-19.00	3626	1970	512	5319
19.00-19.30	3796	2008	498	5400
19.30-20.00	3084	1794	474	4758
20.00-20.30	2734	1653	383	4169
20.30-21.00	2378	961	341	3173

4.2.1. TRAFFIC FLOW DIAGRAM

- The traffic volume in terms of PCE from each leg is dissipated in in PCE at Peak hour (18.30-19.30hrs) at ***Kelambakkam signal intersection.***

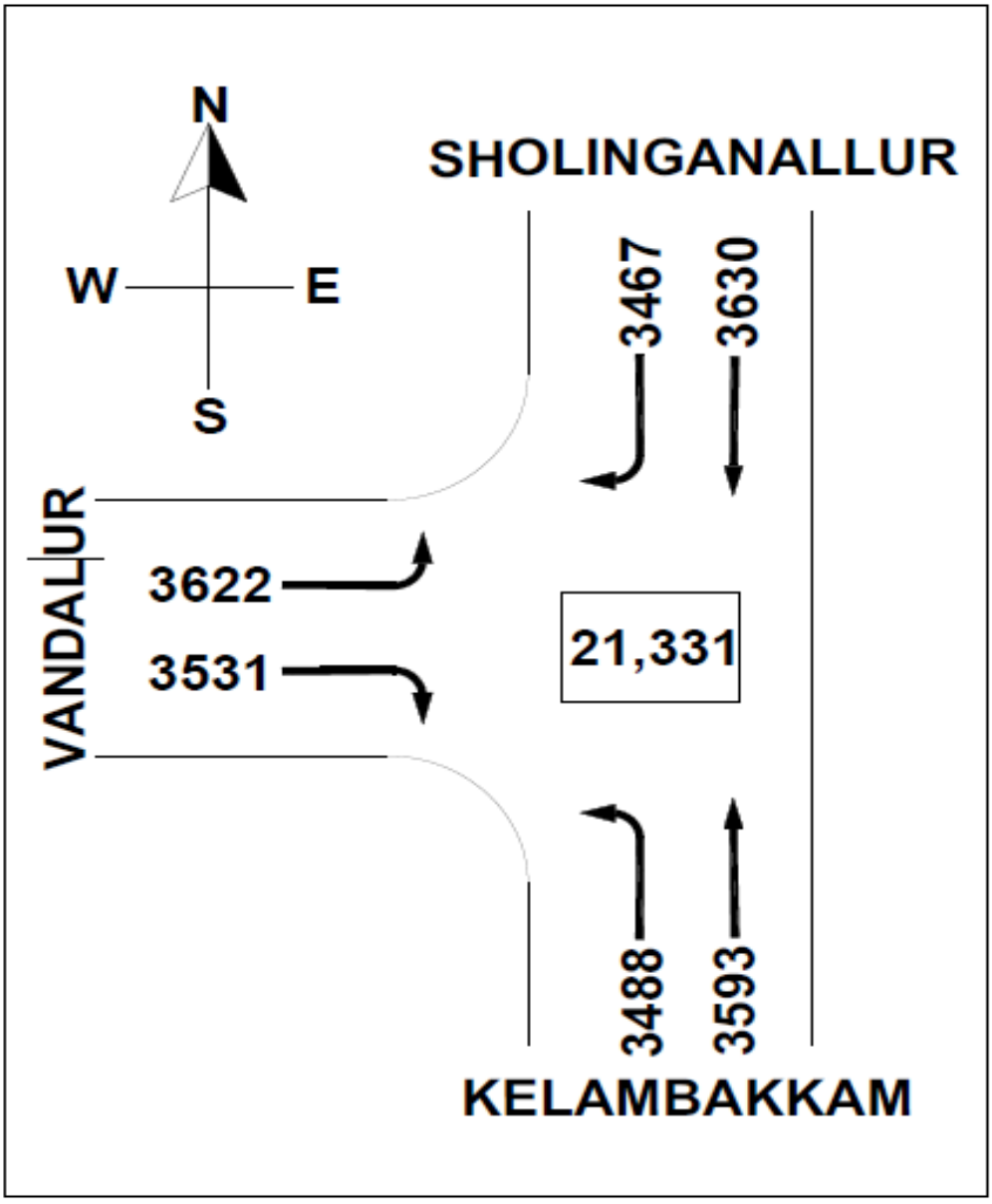

Fig 4.1 peak Traffic flow at Kelambakkam intersection.

4.3 TRAFFIC ANALYSIS

The various survey and studies aimed to collection of data retaining to Traffic characteristics. Such studies include. Origin destination survey, volume count,accident statistics,

- Peak hour
- Peak hour factor
- V/C ratio
- Mode of share

4.3.1 Peak hour flow at study area

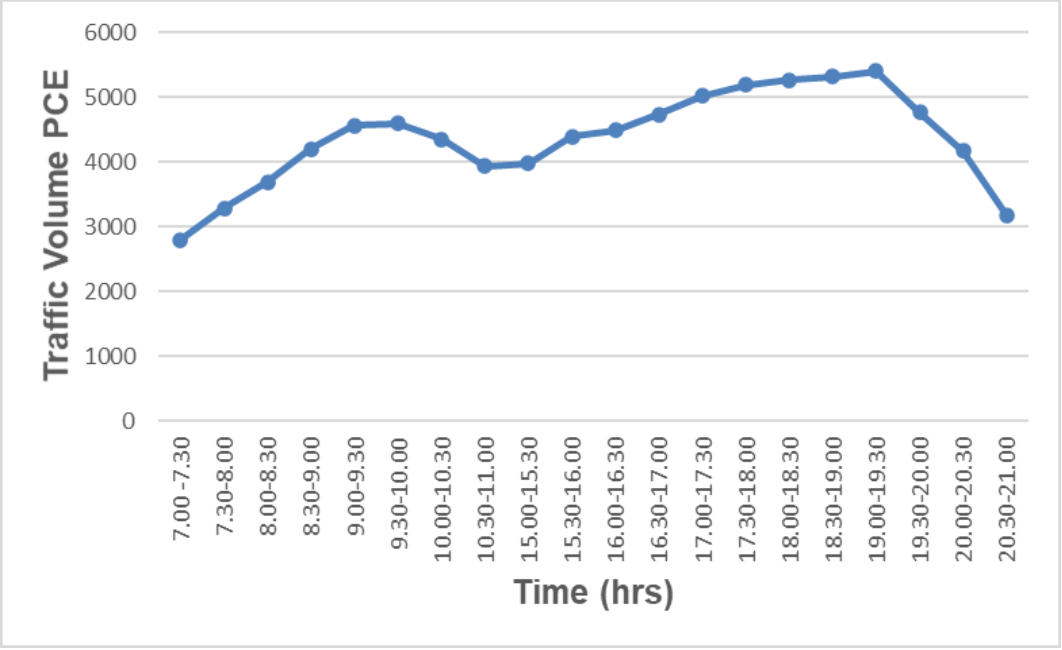

Fig 4.2 Volume Accumulation at Kelambakkam intersection in PCE

4.3.1 Peak Hour Factor

It is a measure of the variation in demand during the peak hour and defined as the ratio between the number of vehicles counted during the peak hour and fourtimes the number counted during the highest 30 consecutive mins. It can range from 0.25 to 1.00

4.3.2 V/C Ratio

The ratio of the service volume to capacity.

Peak of peak time: (18.30 to 19.30hrs)

Table 4.2 Volume of Capacity at Study Intersection

S.No	Intersection	Volume (V) in PCE	Capacity (C) in PCE	V/C
1	Kelambakkam	21331	9200	2.31

Source:

- For capacity ref: Table 21.19 Practical capacities of two-way roads, p535, Chapter 21, Section 11, Highway capacity, “Traffic engineering and transportation planning” by L.R.Kadiyali, Khanna publishers, 8th Edition 2013, ISBN 81-7409-220-X.

4.4.3 Model share of vehicle

Process of separating the person-travel by the mode of travel in Peak hours.

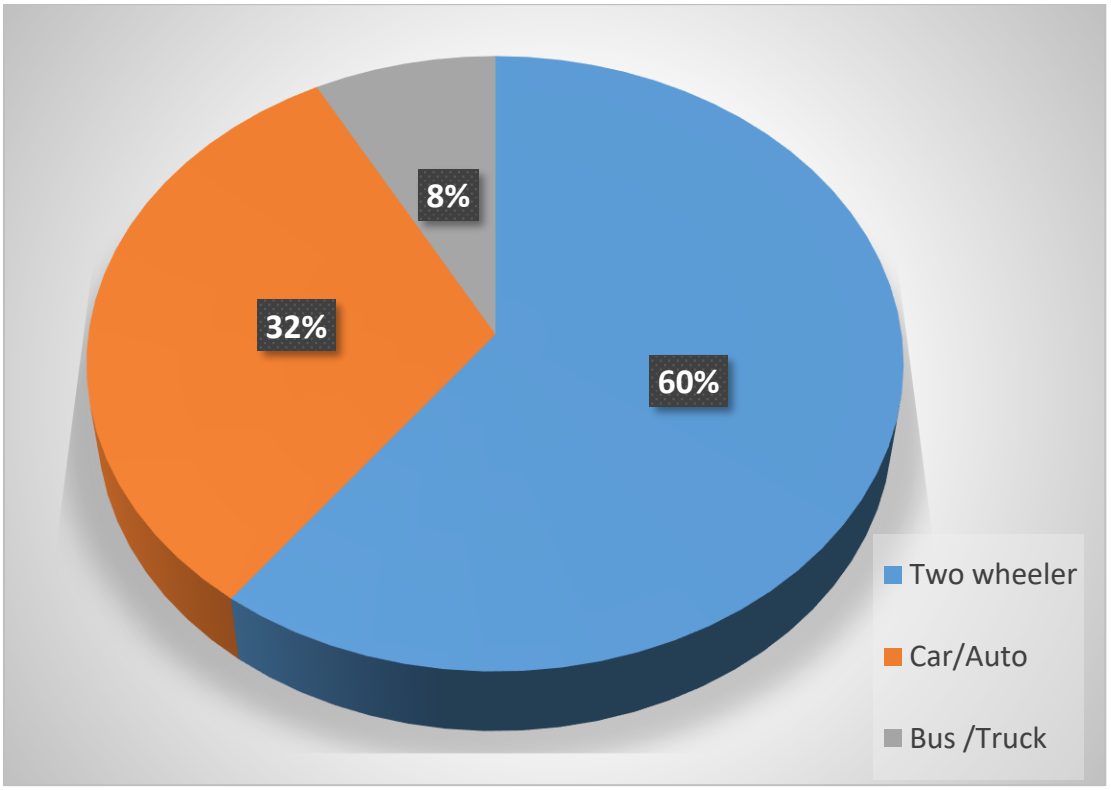

Fig 4.3 Pie Chart for share of vehicle

- *T*otal vehicle composition at **Kelambakkam intersection** between 18.30-19.30hrs

CHAPTER 5

TRAFFIC FLOW MANAGEMENT

5.1 GENERAL

As the traffic on the existing road system in cities grows, congestion becomes a serious problem. Medium and long term solution like widening roads, providing elevated fly overs and constructing by passes and urban expresswaysare costly. Simple and inexpensive solution can tide over the crisis for some time.

- Kamarajar statue Intersection
- Jesus Statue Intersection

5.2 KAMARAJAR STATUE INTERSECTION

As a short term measure, by restricting straight and left turn traffic from Kelambakkam main road near kamarajar statue Signal permitting them as left turn to connect towards Vandalur and straight to connect Kelambakkam-vandalur main road towards Vandalur the intersection we are suggesting is about 700m, diverting 2 and 4 wheelers, bus/truck to alternate routes to reach Vandalur in short period of time. From scenario 1 we are able to reduce the passenger car equivalence from 21331 PCE to 17843 PCE.

SCENARIO 1:

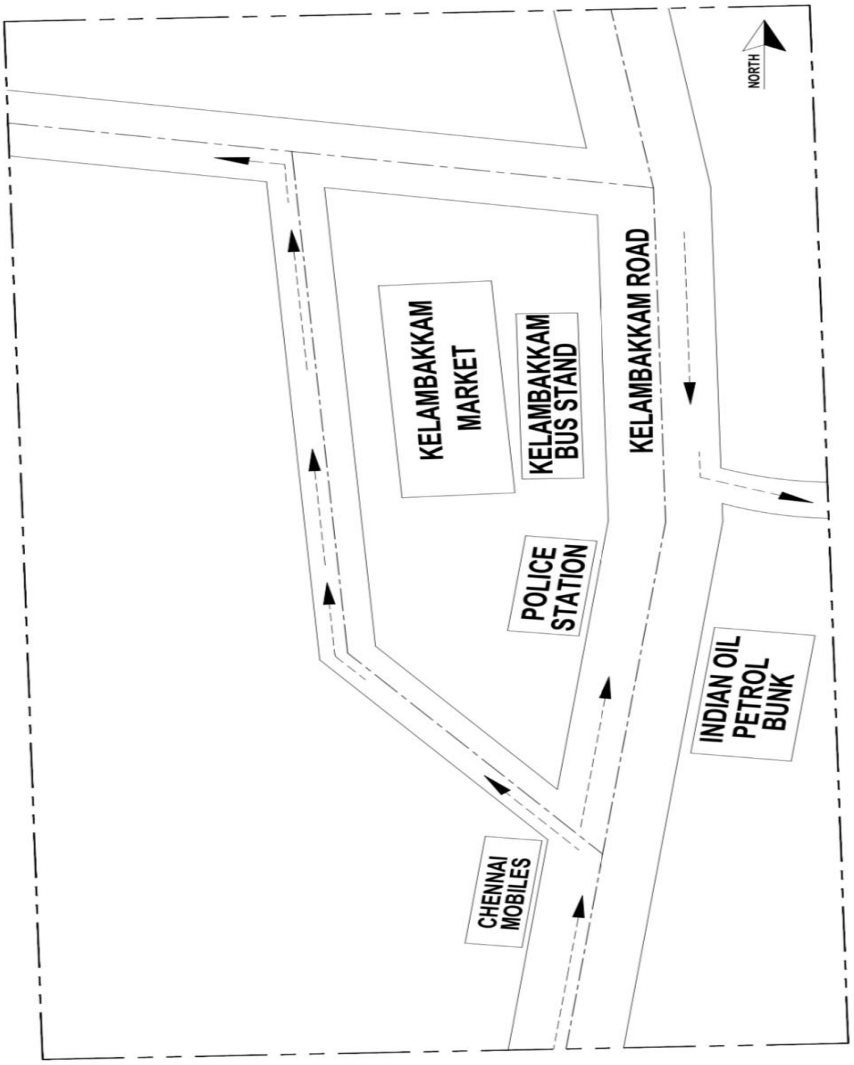

Fig 5.1 Proposed flow at Kamarajar statue

As a management measure, by diverting the vehicles north to west direction taking **Chennai mobiles road** (left) which connects to **Kelambakkam-vandalur road** that leads to **Kelambakkam**.

5.3 JESUS STATUE INTERVIEW

SCENARIO 2:

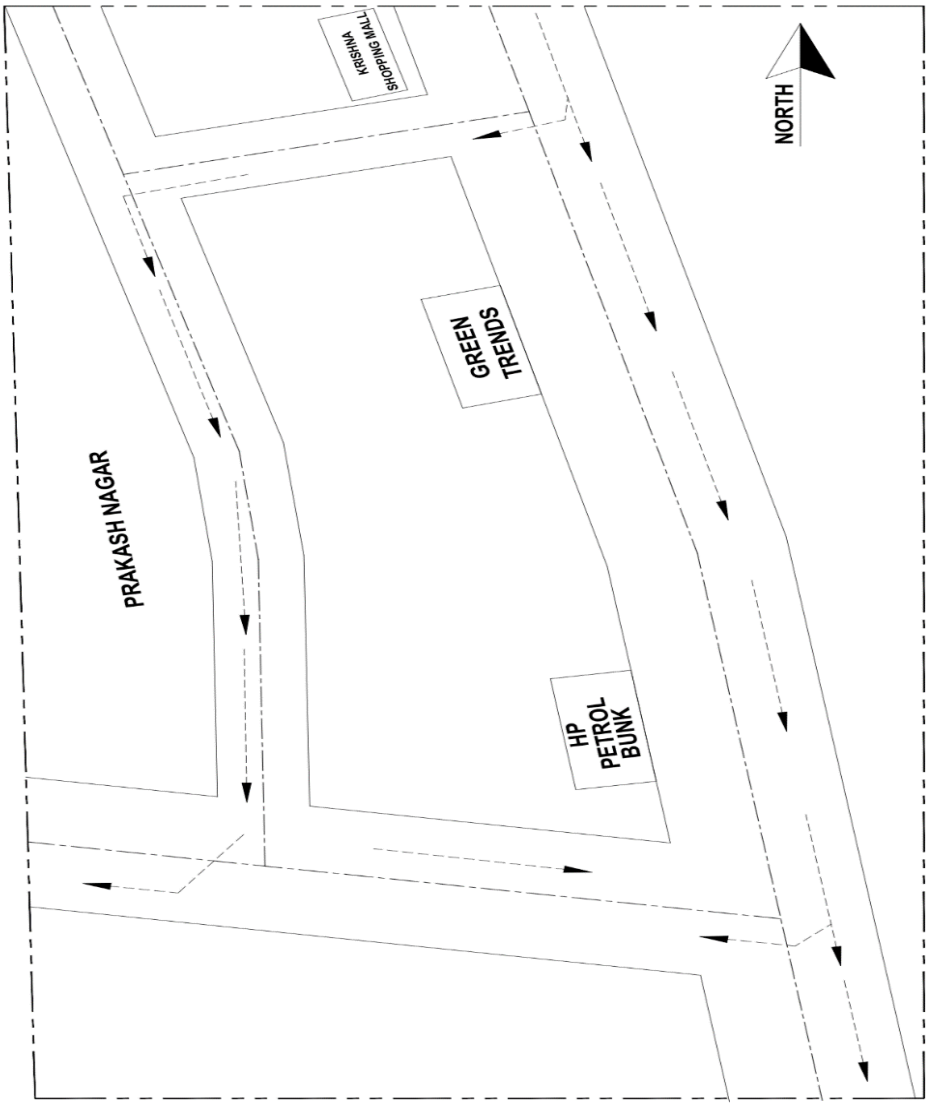

Fig 5.2 Proposed flow at Jesus statue

Similarly in scenario 2, As a short term measures by restricting traffic flow from Kelambakkam near Jesus statue Signal, we are suggesting a right turn through chettinad road which is 400m before the intersection and diverting 2 and 4 wheelers to alternate routes to reach vandalur with less traffic and time. Thus reducing the passenger car equivalence from 21331 PCE to 17864 PCE

As a management measure, by diverting the vehicles south to west direction taking **Chettinad road (right)** and taking **Prakash nagar (left)** and connects through **Kelambakkam-Vandalur Road**.

5.4 V/C RATIO

The ratio of the service volume to capacity **after** traffic Management The ratio of the service volume to capacity, Peak of peakime: (18.30 to 19.30hrs)

Table 5.1 Volume to Capacity at Study Intersection

S.No	Intersection	Volume (V) in PCE	Capacity (C) in PCE	V/C
1	Kamarajar statue statue	17843	9200	1.94
2	Jesus statue signal	17864	9200	1.94

Source:

- Capacity(C) in PCE is taken from L.R. KADIYALI Book (pg.no:520)
- Table 21.4 (Uninterrupted flow capacities under Ideal Conditions)

SCENARIO 3: (Combination of scenario 1 & Scenario 2)

Kelambakkam is a highly congested area in traffic flow., where on 10.01.2022 as our per survey and further calculations the Volume in PCE is identified as 3488 PCE,3467 PCE passenger car equivalence (PCE) Two intersection during the peak hour(18.30-19.30). In which the two intersection gets the total **V/C Ratio** as to be **1.56** the total volume of **21331** PCE, whereas the average be 14376 PCE.

Thus by introducing scenario 1, the volume in PCE listed as **21331 PCE has been dragged to 17843 PCE** and by **scenario 2**, the volume in PCE listed as **21331 PCE has been dragged to 17864 PCE** respectively. Which furtherly concludes that the **V/C ratio** at the intersection be 0.77 with total volume of 21331 PCE, whereas the average be 7153 PCE.

CHAPTER 6

SUMMARY &CONCLUSION

6.1 SUMMARY

Traffic intersections are problem spots on any highway, which contribute to a large share of accidents. For safe operation, these locations should be kept under some level of control depending upon the traffic quantity and behavior. Based on this, alternative routes were suggested at intersections and interchanges. This is studied and analyzed at Kelambakkam intersection.

6.2 CONCLUSION

The conclusion of this work is to provide congestion less traffic movement. This is done by diverting.

- Kelambakkam is highly congested area which has a three way intersection present with two lane roads.

- In this project, from the above survey of traffic volume for an each area, the highest peak traffic volume was attained at the area of Kelambakkam intersection from kelambakkam to Vandalur.

- According to scenario 1,the V/c ratio obtained was found to be 17843 PCE in peak hour(18.30-19.30) where the volume per capacity ratio reaches above 1, hence for improving the traffic flow at the intersection

- Similarly in scenario 2, by restricting traffic flow from Kelambakkam near Jesus statue **Signal,** we are suggesting a right turn through chettinad road which is 400m before the

intersection and diverting 2 and 4 wheelers to alternate routes to reach vandalur with less traffic and time. Thus reducing the passenger car equivalence from 21331 PCE to 17864 PCE.

- As a long term measure, by implementing the above mentioned solution for two scenarios we conclude that the V/C Ratio at the intersection found to be 1.56 with total volume of 21331 PCE whereas the average was found to be 14376 PCE which leads the heavy traffic flow to runs with less congestion for upcoming years

- By providing the Bridge kelambakkam to vandalur traffic ratio will be reduce to 0.77

6.3 SCOPE OF THE PROJECT

- The alternate routes has given much advantage, where they can reach destination at an specific time without any troubles like traffic or any obstacles occur on the main road. By the use of these routes we are suggesting, the traffic can be reduced, transport can be increased, time can be saved and most importantly the accident can be avoided.

- The solutions stated in the project are only short term local solutions.

- In a larger perspective the root of the problem has to be identified, analyzed and solution should be formulated.

- The intersection may be receiving more traffic in future years due to the rapid urban development in its neighborhood areas.

- The ultimate solution to the intersection would only be an multilevel interchange.

- But it is to be clearly understood that the solution is only for this particular intersection and not to the entire area (police booth and cotton house junction).
- This in turn triggers the necessity to analyze the transportation planning of the whole area.
- The study can be further extended as an area level traffic and transportation planning project.

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