

# ***SUSTAINABLE TRAFFIC SIGNAL IMPROVEMENT IN PARAKANDAM JUNCTION***

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**Abstract—** Traffic jams and fatal car accidents are just two of the significant social issues brought on by the spectacular increase in the number of motor vehicles on the road. The distressing human misery and the serious economic loss caused by the road accidents demand the alertness of society and call for the solution of the problem. It is therefore necessary to give increasing awareness to operational characteristics of highway transportation and study the needs of better geometric design, capacity, intersections and traffic signs and signals, parking facilities, design of bus stands and street lighting.

**Keywords:** geometric design, capacity, intersection

## I. INTRODUCTION

The constant growth in traffic flow and the resulting congestion at intersections have been a challenge to transportation engineers in recent years. Parakandam being one of the dominant developing junction in Kottayam district faces a major problem – traffic congestion. Three major roads come and meet at central junction are the roads from Pala, Ettumanoor, Ernakulum, and Kottayam. Since proper traffic signal can control accidents and delay and can lead to systematic movement of traffic. The work generally includes engineering survey, traffic study, planning & design of traffic signal to develop existing road to lane width required as per standards.

## II. SCOPE AND OBJECTIVE

The traffic signs emphasise reducing the traffic load on the current road network using various travel demand management strategies. Congestion should

be reduced, traffic signals should work better, and intersection geometry should be improved.

The main objective of the study is to redesign the traffic signal through traffic engineering, management and control measures for Parakandam junction. Towards achieving that, broad objective of study is as follows,

- (i) To develop ideas for traffic improvement based on scientific analysis.
- (ii) To analyse adequacy of the improvement of junction.
- (iii) To carry out traffic survey such as traffic volume count, pedestrian survey within the study area.
- (iv) To workout appropriate regulatory and engineering measures for improving function of traffic signal and junction.
- (v) To identify existing issues affecting smooth traffic flow.
- (vi) To analyse of pedestrian movement at junction.
- (vii) To analyse of traffic movement at junction

## III. LITERATURE REVIEW

*Allen geo Varghese, (2022)* studied the traffic congestion problems at kacheripadi junction. The traffic survey includes the pedestrian and traffic volume studies. As the number of vehicles on the road increased, traffic flow became less safe. The problem of traffic accidents and congestion in urban

roads is being viewed with grave concern in the past years. The main cause for this problem is inadequate traffic planning of road network and other roadway facilities. Redesigning signals can provide significant benefits by reducing vehicle stops, travel times, and fuel consumption. The main objective of the traffic engineering is to achieve the efficient free and rapid flow of traffic, with least number of traffic accidents. Main objectives of the study is to learn about the road's characteristics and current traffic flow, to lower accident rates, to calculate the fundamental traffic stream variables for the chosen road.

**Tariq Azizr ,Er. Neeraj Kumar.** (2021) examined that the lights and traffic signals provide for easier traffic control. The three major light components of traffic signals are red for stop, yellow for ready to go/halt, and green for go. For efficient/smooth traffic, all road users must abide by the signal instructions. This dissertation will examine one signal that was chosen for examination in an effort to determine how we might make it more user-friendly and efficient; Signals are an effective way to manage traffic without obstructing vehicles. Designing a, fixed-timed traffic light for 4-leg, two-way signal-controlled junctions was the goal of this work. Using Webster’s concept, the intersections under consideration are the ‘SRS’ and ‘B Division’ crossings designing a fixed time traffic signal control systems for the intersections and monitoring the effectiveness over time.

IV. METHODOLOGY

A. SELECTION OF JUNCTION

Three major roads come and meet at intersection is the road from Pala, Ettumanoor, Ernakulum, and Kottayam. Under the guidance of NATPAC, Parakandam junction is to be improved through IRC standards and also improving. The work generally

includes engineering survey, traffic study, planning & design to develop existing road to lane width required as per standards



Fig 1:Parakandam junction

B. TRAFFIC DATA COLLECTION

The following data’s were collected for the study of the project.

➤ VOLUME COUNT

Traffic volume count is taken from Parakandandam junction

➤ PEDESTRIAN SURVEY

Pedestrian movement and characteristics are studied for providing a pedestrian safety and minimizing the vehicle delay and also reduce the conflicts between vehicles and pedestrians.

C . ACCIDENT DATA

TABLE 1:Accident data

YEAR	ACCIDENTS	DEAD	GRIEVED	INJURED
2020	37	3	1	33
2021	52	2	1	48
2022	75	6	3	66

DATA ANALYSIS

Finding the traffic problems in parakanadam junction using collected data

➤ ACCIDENT ANALYSIS

Graph plotted using last 3 years accident data.

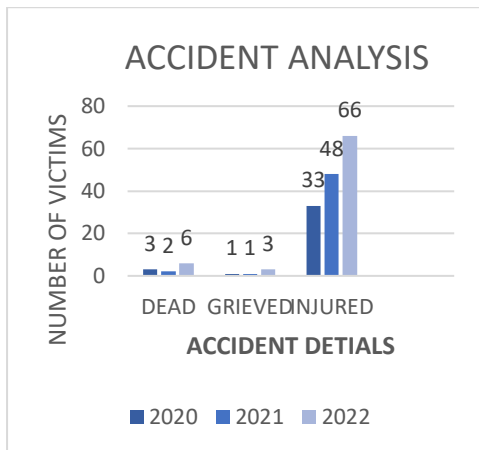


Fig2: Accident count

D.VOLUME COUNT ANALYSIS

Collected values are converted to PCU then combination and peak values are taken.

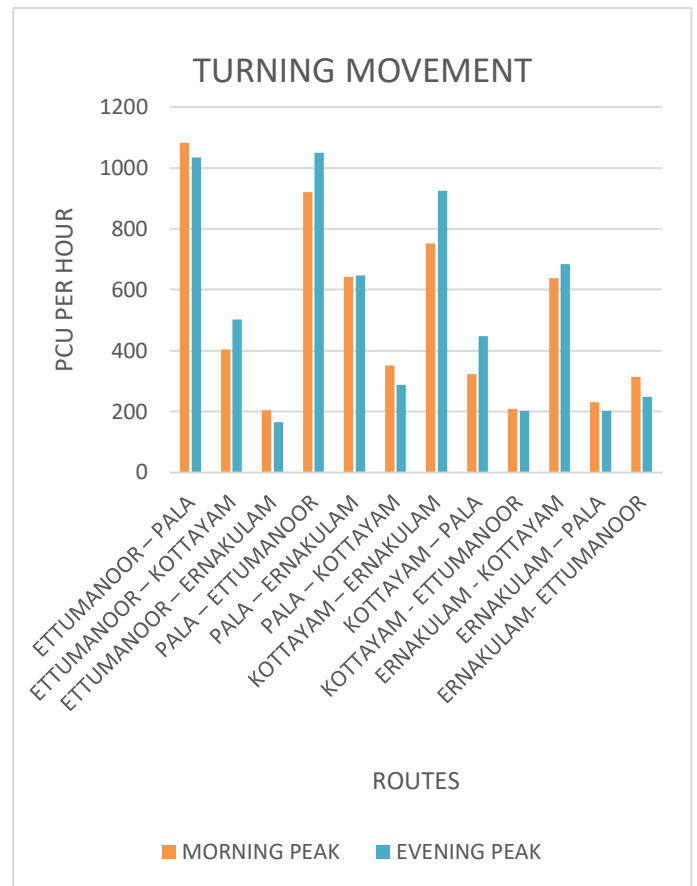


Fig3: Turning movement

E. PEDESTRIAN SURVEY ANALYSIS

Finding the combination value and peak value using collected data

V. CONCLUSION

Pedestrian movements, volume count and accident data were obtained during field survey and data collection. According to the data analysis, traffic congestion at Parakandam junction was caused by insufficient time period of green signal and poor markings.

VI.REFERENCE

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