

Traffic Congestion Analysis: A Case Study of Kacherithazham - Muvattupuzha Road

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Abstract - Traffic congestion is one of the major problem faced by the Muvattupuzha municipality. The high rate of growth of vehicle population, on road parking and above all the indiscipline among the road users are the factors contributing to the present scenario of traffic congestion. Road intersections and junctions create a lot of problems during morning and evening peak hours.

The objective of this study is to suggest managerial measures to improve the traffic flow.

Key Words: Travel Time, Congestion, Heterogeneous, Traffic, peak hour volume.

1. INTRODUCTION

Our urban centres are experiencing rapid increase in population and vehicular growth. Urban traffic is heterogenous in character with all kinds of vehicles. This causes heavy traffic congestion and delay in traffic movement. One such point is the Muvattupuzha Kacherithazham road. The site is a center of traffic congestion and heavy queue formation during peak hours. Hence for better traffic flow, traffic surveys has to be conducted and proper solutions has to be discussed.

1.1 Aim of Study

The aim of study is to analyze travel time and congestion under heterogeneous traffic conditions.

1.2 Scope and Objective

The scope of this project is to suggest remedial measures for avoiding congestion and to allow easy movement of traffic without causing delay. It also makes the road capable of handling large traffic loads considering the safety of passengers as well as pedestrians.

2. LITERATURE REVIEW

Traffic management studies entails alterations to the geometric layout, improvement to the layout of the existing intersections, traffic controls etc. It covers provision of adequate parking bays for standing vehicles, lay bays for buses and unloading bays for commercial vehicles. Traffic management also includes reduction of conflicts by use of one way streets, restrictions of turning movements at

intersections, access control depending on the importance of roads.

2.1 Traffic Volume Count

The most common method adopted is manual count method. Traffic volume study was conducted at Muvattupuzha Kacherithazham road for a period of one week from 7A.M to 7P.M. for morning, evening and noon peak time the traffic volume survey was conducted continuously and for the other off peak hours the traffic volume survey was conducted by short count method. The obtained data is the converted to PCU/hr and the highest traffic volume was obtained as 2584 PCU/hr for the time 4 A.M to 5 P.M. Volume by capacity ratio was conducted and it was found to be greater than one.

2.2 Speed and Delay Study

Speed study was conducted by photographic method and moving car method. Photographic method is done using a camera fixed at desired location and observations are made by noting down the entry time and exit time of vehicles for non-stretch of road. The flow was thus obtained. The study was conducted for peak hour as obtained from the traffic volume survey conducted and the lowest flow speed was obtained as 15.47km/hr among both the directions

By moving car method the observations were made for morning and evening peak hours for the day having the highest congestion. For the collection of data the test vehicle was done over the specified stretch 3 times and the journey time, stopped delay time, no. of vehicles overtaken, no. of vehicles overtaking, no. of vehicles in the opposite direction was noted and the table was formulated.

Table -1: Sample of Moving Car Survey

| Direction | Time: 4P.M to 5P.M | |
|-----------|------------------------------|------------------|
| | P.O to Kacherithazham | Flow(q)(PCU/hr) |
| | Average journey time(min) | 6.7 |
| | Average journey speed(km/hr) | 5.38 |
| | Average stopped delay(min) | 1.1 |
| | Average running time(min) | 4.28 |
| | Average running speed(km/hr) | 8.05 |

3. CONCLUSION FROM THE ABOVE SURVEYS

From the traffic volume count, volume/capacity ratio was calculated. It was found to be greater than one and thus it can be concluded that the roadway is congested.

From moving observer method survey it was concluded that on Friday evening 4P.M to 5P.M (P.O to Kacherithazham) which has got the highest traffic volume has the highest average journey time (6.7 min), highest average journey speed (5.38 km/hr), highest average stopped delay (1.1 min), highest average running time (4.28 min) and the highest average running speed (8.05 km/hr).

From photographic survey it was concluded that on Friday evening 4P.M to 5P.M (P.O to Kacherithazham) which has got the highest traffic volume has got an average free flow speed of 15.47 km/hr with flow of 2990 PCU/hr and a density of 193.27 PCU/km.

4. REMEDIAL MEASURES

Traffic congestion is a major problem faced by passengers and pedestrians. Traffic congestion depend upon the nature of the area, volume of traffic etc. some of the possible remedial measures are

1) Road widening

The current width of the road ranges from 7-10m a proposition of 15m along the length will improve traffic flow to an extent and also provision of .5m of footpath on both sides of the road.

2) A bye pass connecting Chalikadavu palam and KK Road Muvattupuzha.

3) Relocation of bus stop in front of Grand Central Mall.

4) Providing adequate street parking and parking spaces.

4. CONCLUSION

Various traffic volume surveys were done and from their analysis various remedial measures were suggested for reducing traffic congestion and delays for the Kacherithazham- Muvattupuzha road.

5. REFERENCES

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