

Traffic Signal Design and Its Coordination

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ABSTRACT

Transportation should be safe, rapid, comfortable, convenient, economical and ecofriendly. But transportation also consumes a lot of resources like time. Traffic management plays a vital role in the field of transportation engineering to reduce congestion and travel time to improve service volumes especially in urban areas. Present road stretch is of length 2.5Km, from kothi char rasta to lalbaugh bridge with four crossings and. In the present study an effort is made to understand and evaluate the performance of the study road stretch. After traffic engineering survey, optimum cycle length and saturation flows, green time signal phase are designed and likewise red, amber phases based on Websters method & IRC guidelines. In this road stretch, adjacent signals are coordinated and the coordinated signal time plans are also developed. This paper solves the traffic congestion causing delays, decrease the travel time and increases the travel speed of vehicles by design of coordinated traffic signals and gives the management measures to reduce the traffic congestion which is of low cost and easily executable.

Keywords : Traffic Volume 1, PCU 2, Coordinated Traffic Signal System 3, Webster, IRC method 4

I. INTRODUCTION

The site selected is from kothi char rasta to the lalbaugh bridge which is a busy stretch of 2.5Kms. This is the road connecting Surat city with Warangal state highway, many schools, RTC and colleges, industrial trucks and buses and a plenty of personal vehicles like cars, bikes is running on this road.

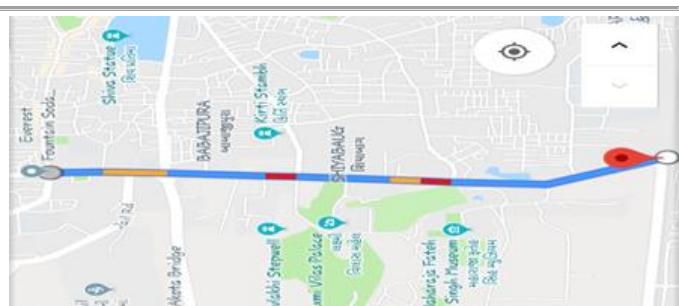


Fig -1: GOOGLE MAP OF THE ROAD

The above picture shows the stretch of the road which is used for regulation of traffic by signal designing. Here five cross roads are selected one at Lalbaugh bridge bus stand, second at Inoxmultiplex theater, third at the Akota turning. I.e. after kothi char

rasta. Five cross roads are selected to install signals and to regulate the traffic by signals.

II. METHODS OF SURVEY

- i. Home interview method
- ii. Licence plate method
- iii. Tag on car method
- iv. Written post card method
- v. Road side interview method



Fig-4: LALBAUGH BRIDGE

III. PICTURES OF CONGESTION



FIG-2: KOTHI CHAR RASTA



Fig-3: RAJ MAHAL ROAD

IV. TRAFFIC SURVEY

1. ROAD TRAFFIC VOLUME COLLECTION DATA SHEETS

The equivalent PCUs Factors are obtained from IRC: 106-1990.

No of PCUs at respected cross roads are listed below in the table form. These values are collected with the video recording data counting.

DIRECTIONS	PCUs
KCR-ACR	3233
ACR-RMR	679
RMR-LBB	158

Table 1: Hourly Traffic Volumes At Kothi Char Rasta To Lalbaugh Bridge

2. TRAFFIC SIGNAL TIMINGS AT THREE INTERSECTIONS

Phase	Direction	Green	Inter green	Red	Total
1	KCR-ACR	270	5	55	330
2	ACR-RMR	30	5	295	330
3	RMR-LBB	18	5	307	330

Table 2: Hourly Signal timings At Kothi Char Rasta To Lalbaugh Bridge

V. CONCLUSION

The average speed of the vehicles in the kothi char rasta was 10 km/ph, level of service is F, and there are many crossings just in 2.5 km distance road, due to mixed traffic and improper moving or turning of vehicles. This caused a major disturbance to the major road traffic. The design of signals had been done with proper cycle lengths and coordinating among themselves with the headway and the distance travel time. This had increased the speed of the vehicles to 30 km/ph. and the level of service had reached to C, and it indirectly decreases the travel time. A major road vehicle can pass through this stretch of 1836 m in 10 minutes. Finally the travel time is improved (decreased) and the flow is stable. It also allowed the minor road vehicles to cross the road in given intervals. Some management techniques have to be changed time to time for the better performance. The management measures can be suggested for the future traffic flow by forecasting the existing and the past traffic flow.

VI. REFERENCES

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