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A Review on Traffic Regulation on Highway Intersection

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***Abstract*— For the efficient and effective management and control of transport networks when traffic operations are saturated a firm understanding of the importance of intersections within a road network is a key factor. Basic indices (e.g. level of service, degree of saturation, capacity or delay) reflect the states of an intersection itself, but lack the ability to describe the influences among the intersections within a road network. Construction of flyover at intersection is one method to reduce traffic congestion at a grade intersection. The flyover allows the traffic to flow in the direction of bridge, but this infrastructure cannot fully solve all the problems especially on the secondary roads. For more safety and efficiency, Channelized intersection are used. It reduces the number of possible conflicts by reducing the area of conflicts available in a carriageway. If channelizing is not provided the driver will not be able to reduce the speed while entering the intersection from the carriageway. while passing through the intersection, presence of traffic islands, markings etc. indicates the driver to reduce the speed and become more cautious. These islands also serve as a safety for pedestrians and makes pedestrian crossing safer. Existing of bottlenecks at intersections is a major problem in India and traffic congestion on major roads depend on it.**

***Index Terms*— channelized, traffic, intersections, pedestrian, transport.**

I. INTRODUCTION

An area where two or more roads cross at the same or different elevations is called an intersection. In most of the urban centers of the world interruption of traffic flow is a daily experience and it occurs primarily at intersections. This study helps us to analyze the importance of an intersection within a road network. Traffic control measures have been developed for the improvement of the operational efficiency and safety of intersections. Traffic control mechanisms at intersections include prioritization, traffic personnel control, channelization, signalization, rotary intersections and by grade separation.

A. Traffic Signals at Intersection

Traffic signals offers a maximum control to any road intersections. These provide you information of both what you must do and what not to do as a driver. The primary function of the traffic signals is to assign the right of way to the contradicting movements of traffic in an intersection. This is actually done by allowing the conflicting traffic streams to share the same intersection by way of separating the time.

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B. Classification of Traffic Signals

Using of red and green traffic light signals automatically at intersections directs to stop and proceed traffic alternatively. The signals are classified into the following types:

- Traffic Control Signals
- Fixed time signals
- Manually operated signals

Fixed Time Signal

Fixed time signals are the simplest type of automatic traffic signals which are electrically operated. These signals are set to repeat regularly a cycle of red, amber yellow and green lights. Depending upon the traffic intensities, the timings of each phase of the cycle is predetermined.

Traffic Actuated Signals

In these signals the timings of the phase and cycle are changed according to traffic demand. the normal green phase of a traffic stream may be extended up to a certain period of time for allowing the vehicles to clear off the intersection, In semi-actuated signals. In fully-actuated signals, computers provide the right of way for the traffic movement on turn basis of traffic flow demand.

Manually Operated Signals

In these types of signals, during the peak hours at the intersection the traffic police watch the traffic demand from a suitable point and varies the timings of these phases and cycle accordingly. When the vehicular traffic remains stopped by red or stop signal on the traffic signals of the road intersection, these signals give the right of way of pedestrians in order to cross a road during the walk period.

II. LITERATURE REVIEW

Parsonson and Walker (1992) This research was prompted by a serious accident that occurred after a tripped conflict monitor initiated flashing operation at a signal. The research effort for this study focused primarily on the effect that sight distance has on safety at flashing signals. [1]

Al- Masaeid and Faddah (1997) developed an empirical model for estimating entry capacity as a function of circulating traffic and geometric characteristics in 1997. Ten roundabouts located throughout Jordan were studied. Regression analysis was used to develop the entry capacity model and its performance was then compared with results of German, Danish, and French capacity models. [2]

Al-Omari et al. (2004) developed a model for estimating round about delay as a function of traffic and geometric factors. A total of twenty hours of field traffic and geometric data were collected from fourteen rotaries located throughout Jordan. Data were collected from locations with good pavement conditions and during times when there were no

policemen in the area. [3]

Bass and Patricia (2006) investigated on congestion and quality of Intersections. This review addresses traffic congestion, with literature that determines its effects - both positive and negative -on neighborhoods, residents, and business, as well as methods to measure and rate these effects. The review address intersections by listing the factors that affect users‟ intersection experiences, and the ways these factors can be used to make a measurement of intersection quality. This paper provides a context for transportation issues. neighborhood. Background knowledge of congestion and intersections is not only necessary for understanding and responding to city transportation action, but for discovering and pursuing one's own transportation goals. [4]

Taylor and Knight (2012) gives assessment criteria available to priorities metropolitan level crossings for grade separation. That include conventional economic, social and environmental measures and a „strategic fit‟ criteria that reflect the relative importance of different roads to the transport network overall. Keeping in view the above literature, in this work, it has been found that traffic signals, channelized intersection and grade separation is necessary for the efficient movement of traffic, which causes delay and a number of accidents [4]

III. CONCLUSION

It is concluded that there could be a problem that needs to be addressed by the traffic engineering profession. If major street volumes are too heavy for minor-street traffic to enter or cross, or if minor-street traffic cannot see far enough along the major street for safety, there appears to be no acceptable mode of flashing operation. Installation of a single left-turn lane on a major-road approach would be expected to reduce total intersection accidents at rural signalized intersections.

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