

Evaluation of Suitable Traffic Management Options for Kohuwala Road Intersection

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Abstract: The traffic management at the urban road network has become a serious issue with respect to the present land use and the availability of road reservations for future expansion of roads. The road links, as well as the intersections and junctions, are presently having imbalance carrying capacities and hence the road space is not properly utilized by the users at most of the time of the day irrespective of the peak or non-peak demand. Some road links are heavily congested with the high dense commercial developments whereas some sections are sparsely dense and hence affected by different magnitudes to the traffic flow with respect to the roadside activities. The intersections and the junctions are severely affected by turning movement conflicts with narrow and limited intersection capacities where often the congestion impacts are observed to be higher than that of the mid-blocks of the road links in the network. Therefore, special attention is always given to consider the traffic management at the intersections and nodes of the road network to upgrade the capacity requirements for giving improvements to the overall road network efficiency in the urban areas.

The Kohuwala Intersection formed by Colombo - Horana Road (B084) and Kalubowila - Nugegoda Road (B229, B120) is an important intersection having different approach capacities with significant traffic flows observed in year 2018. There are 58,000 vehicles pass through the intersection over 12 hours period of the daytime where the peak demand is observed to be over 6,000 vehicles in the morning. Since the intersection capacity is a combination of substandard, two lanes and 4 lanes at present, there are significant capacity issues which intersection is managed by traffic signals at present having considerable traffic delays to the users. This research paper is an attempt to investigate the possible options for congestion alleviation at the intersection as well as for approach length of the all road links within the intersection impacted area. Comprehensive traffic flow analysis including present travel time conditions, the queue length of all approaches, existing signal timing and delays are done and the possible alternative options for intersection capacity improvements are also discussed through required economic analysis. The sequence of traffic data analysis was done for various aspects in this study and the verifications were carried out through the latest available simulation software for the conformity of the results. The most workable and practicable solutions are sorted and presented based on the economic returns of each option to suit the present-day traffic management in the urban areas. The proposed public transportation options are also considered to see how such supply attributes are impacted to the selected options at the operational stages of the same.

Keywords: Intersection Traffic Management, Micro-Simulation, Traffic Modelling, Flyover, Urban Traffic,