

TRAVEL SPEEDS AND TIME VARIATION ALONG A ROAD PROFILE: CASE STUDY ON KATUGASTOTA KURUNEGALA ROAD (A10)

Gayani Galappaththi ^a, Loshaka Perera ^b, Saman Bandara ^c

^a Graduate Research Student, Department of Civil Engineering, University of Moratuwa, Sri Lanka

^b Senior Lecturer, Department of Civil Engineering, University of Moratuwa, Sri Lanka

ABSTRACT

Roads are designed to provide access between locations concerning accessibility and mobility requirements. Current practice is to design roads for future traffic forecast based on present conditions. Design guidelines are used to evaluate possible speed reductions due to geometric variations such as horizontal alignment, vertical alignment, number of lanes, lane width, provision of shoulders etc. to some extent. Other than the geometric features, land use pattern, traffic flow and road surface condition have major effect to the speed reduction in a route resulting variations in travel time. Quantification of these effects is important to estimate benefits from road developments. The objective of this study is to identify the travel time variation along a road profile due to various reasons, hence to identify the significance in land use pattern on travel time. In this study different travel time patterns and various speed profiles taken at different times of the day are analyzed for Kurunegala Katugastota road. Travel time data for number of trips were collected and logged for every one second using a GPS along the road at different times of the day (morning, noon and evening). The land use pattern and road way conditions were identified to a certain extent by field visits. The selected road was sub divided in to eleven sections and the time spent on each section, average speed in each trip was calculated after the data filtration. From the data, variation of travel time was examined from the coefficient of variation of time together with the average speed along each segment. Segment from 17.086 km to 25.838 km from Katugastota towards Kurunegala along the A10 road was segmented to subsections and analyzed. Four travel time behaving patterns and the significance of land use pattern on travel time variation was identified in this case study to a greater extent.

Key words: travel time, land use, transport planning