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Southeastern Transportation Research,
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2018 Research Project Abstract

Project Title: Evaluation of Work Zone Mobility by Utilizing Naturalistic Driving Study Data (Project B2)

Principal Investigator: Huaguo Hugo Zhou, Ph.D., Civil Engineering, Auburn University
Email: zhouhugo@auburn.edu

Research Team: Rod Turochy, Ph.D., Civil Engineering, AU

ABSTRACT: The objective of this research is to evaluate work zone mobility by utilizing naturalistic driving study (NDS) data. NDS includes times series data, forward view, and rearview video data for many trips traversing through the various work zones. Time series data includes variables such as speed, acceleration, and pedal position at 0.1 second intervals. In this study, time series traces which traverse the selected work zones will be collected. The speed data at 0.1 second intervals will be collected for the trips traversing through the entire work zones. Work zone configurations can be determined by using the forward view videos, including: number and type of closed lanes, type and location of temporary traffic control devices, area types, presence of dynamic message signs (DMS) or other intelligent transportation systems (ITS) technologies, presence of workers, and presence of equipment. The forward- and rear-view videos will be watched to identify the number of other vehicles in the videos to estimate the traffic density around the naturalistic driving vehicle in addition to the front radar data. The average traffic flow rate can be estimated based on the observed speed and density. The capacities of different work zone sections and configurations can be estimated based on the developed speed-flow relationships. The work zone capacity obtained from NDS data can be utilized to verify and calibrate the work zone capacity method defined by the new edition of Highway Capacity Manual (HCM). The probability of breakdown can then be estimated for each level of flow rates and volume to capacity (v/c) ratios and can be used to verify the results by the model in the HCM.