TRAFFIC ENGINEERING STUDIES USING A DRIVING SIMULATOR, YEAR 2

PROBLEM STATEMENT

Poor geometric design is responsible for substandard quality of service on urban roads as well as at signalized intersections. Sound principles of traffic engineering are employed in the design stage to mitigate the possibility of problems developing after construction is completed. However, unforeseen operational problems do arise occasionally. There is a need for additional tools to complement traditional traffic engineering analysis to address this issue.

OBJECTIVES

Driving simulators have been used predominantly for training specific target audiences such as novice drivers, law enforcement officers, and truck drivers. Visual databases and traffic scenarios have been developed to support the training mission. The steady improvements in simulator technology has opened the door to the possibility of using driving simulators in research applications involving both human factors and traffic operations.

The primary objective of this project was to demonstrate the feasibility of using The University of Central Florida's interactive driving simulator to perform traffic engineering studies, specifically, the quality of service at a signalized intersection.

FINDINGS AND CONCLUSIONS

This project demonstrated the utility of using a high fidelity driving simulator to study how drivers respond to

- A lane dropping on the downstream side of an intersection
- Misalignment of traffic lanes between the approach and downstream side of an intersection
- Shared left turn and thru traffic lane or separate lanes for each approaching the intersection

BENEFITS

The simulator can be a valuable asset to test new designs prior to implementation or simply to optimize one or more features relative to an existing geometric design. For example, further testing could help to determine what the minimum length should be for the dropped lane to minimize driver anxiety when confronted with a dropped lane after an intersection. Less anxiety translates into safer conditions and lower accident rates.

This research project was conducted by Harold Klee, of the Center for Advanced Transportation System Simulation at the University of Central Florida. For more information, contact Elizabeth Birriel, Project Manager, at (850) 410-5606, elizabeth.birriel@dot.state.fl.us.