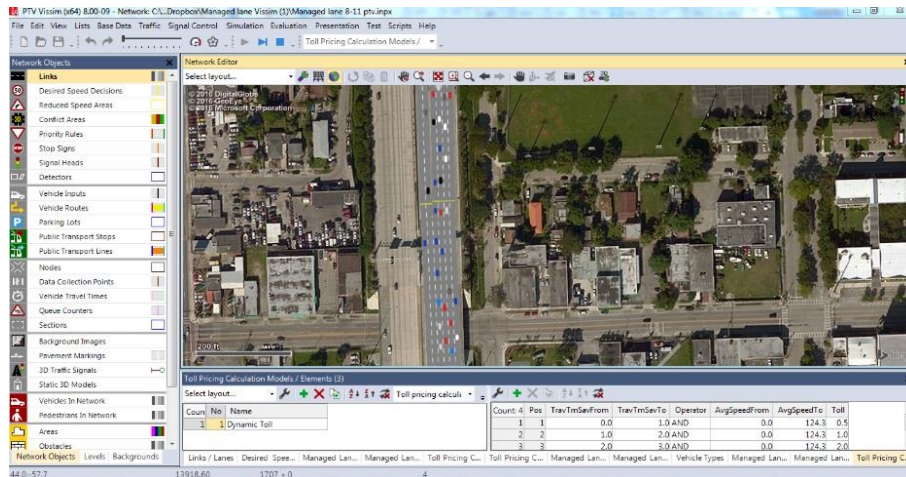


Research Report Summary



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Phase II: Operational and Safety-Based Analyses of Varied Toll Lane Configurations



Study area (I-95) in Miami-Dade County, Florida



Managed lanes on I-95

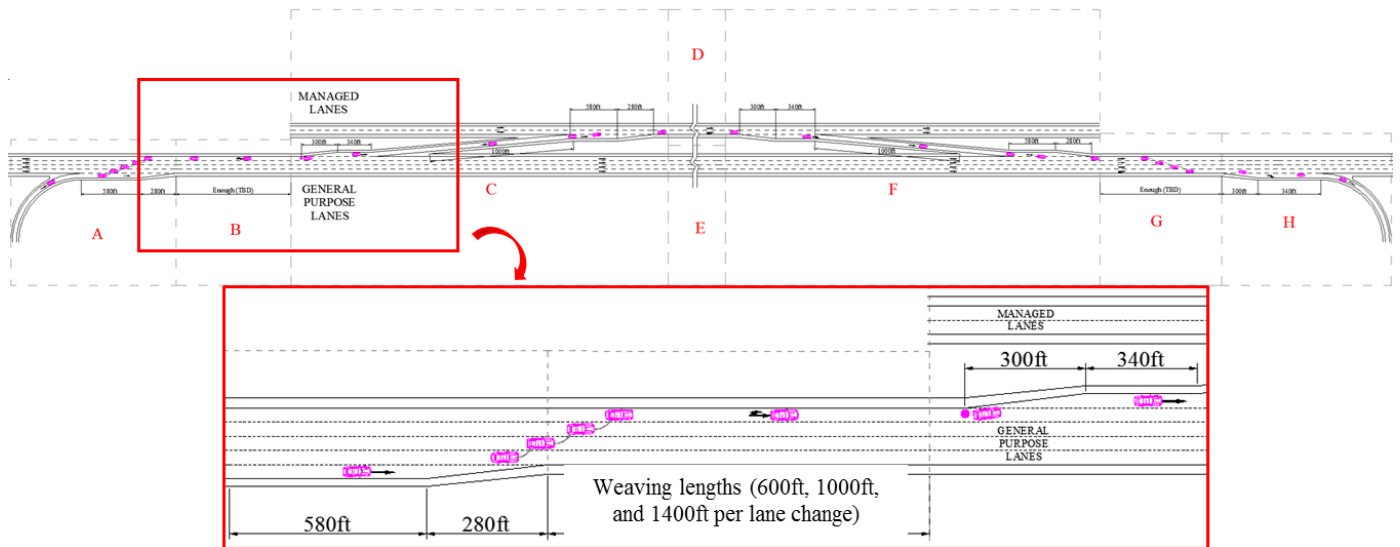
Overview

This project was undertaken to design the accessibility of the managed lanes (MLs) and to evaluate the safety and the operation of the sections near access zones. The objective of the study was determining the optimal accessibility level and deciding the sufficient length of the access zones in different traffic conditions utilizing

microsimulation techniques. In addition, driving simulator experiments were conducted to suggest the optimal length by considering the weaving section between general purpose lanes (GPLs) and MLs. In the driving simulator experiments, the effect of a variable speed limit (VSL) strategy was evaluated.



Driving simulator experiment



Layout of I-95 Study Area (Driving Simulator Experiments)

Micro Traffic Simulation Study

The main objective of the microsimulation study is to identify the optimal weaving lengths and access zone density. The micro simulation experiments revealed that the conflict rate is the lowest with weaving segment of 1,000 feet per lane and one access zone on 9-mile network. From the revenue point of view, the highest revenue was generated from the case of two access zones..

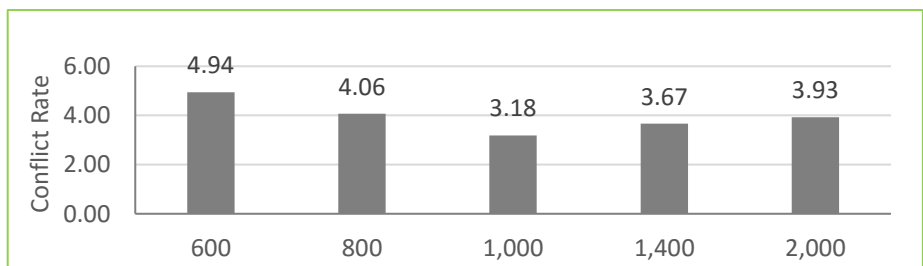
Driving Simulator Study

The driving simulator study aimed at suggesting the optimal weaving length by considering traffic safety at the weaving section. Also, the effects of the implementation of variable speed limit (VSL) strategy were evaluated in this study. Three different weaving lengths per each lane change were

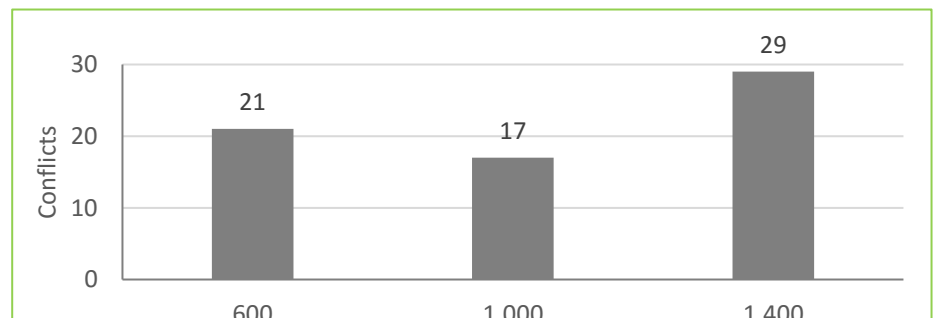
considered: 600 ft, 1,000 ft, and 1,400 ft. Considering the results of drivers' speed control and lane changing maneuvers, it was recommended that 1,000 ft would be the optimal weaving

length for lane change. The VSL strategy is effective in harmonizing the travel speed and improving the efficiency of lane change maneuver.

"The microsimulation experiment revealed that one access zone with weaving segment of 1,000 ft per lane has the safest and optimal design. This result is consistent with that from the driving simulator experiment, which recommended 1,000 ft for weaving segment."



Conflict rates vs. weaving length (ft) from the microsimulation



Conflicts vs. weaving length (ft) from the driving simulator