



Florida Department of Transportation Research Integrated Database and Analysis System for the Evaluation of Freeway Corridors for Potential Ramp Signaling BDK80 977-08

Ramp signaling involves installing traffic signals on freeway on-ramps to improve traffic flow. Studies have shown that in many locations, ramp signaling helped alleviate traffic congestion and improve safety. However, not all freeway locations are suitable for ramp signaling. In this project, researchers from Florida International University undertook to develop a system for ramp signal warranting, which is the process of evaluating ramps and deciding whether they would be candidates for ramp signal implementation.

The first step in the process was to develop guidelines to help transportation engineers and planners determine the suitability of ramp signaling for specific freeway locations. Researchers reviewed ramp signaling guidelines from a number of jurisdictions in the U.S. and abroad. From this collection of guidelines, the researchers developed a set of recommendations that were appropriate and implementable in Florida.

Guidelines are only part of what is needed. Evaluation of specific sites requires the proper data. The researchers found that the necessary data was scattered in a variety of datasets maintained separately in various Florida Department of Transportation (FDOT) offices. For example, traffic volume on ramps is maintained in the Florida Transportation Information database, but information about ramp length, speed limits, and other aspects of roadway geometry, are maintained in the Roadway Characteristics Inventory database. In all, the researchers found required data in five separate databases. Therefore, the second objective of the project was to create a system that would bring the required data together.

The researchers developed a system, including interface, programming, and networking, that links the various databases and makes them accessible to users as the Florida Highway Information System (FHIS). Through the FHIS,



A car waits at a ramp signal before entering I-95 in South Florida. Regulating the rate at which cars enter the interstate can improve overall traffic flow on the highway.

planner and engineers can access all the data relevant to evaluating ramp signal warrants. Data is integrated into a GIS framework that automates, to the extent possible, the process of evaluating potential ramp signaling sites. FHIS greatly reduces the data acquisition effort, which is often the most time-consuming part of the evaluation process. Although FHIS was developed specifically to evaluate ramp signaling for this particular location, it has potential applications in many transportation planning and design tasks.

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