Summary of Final Report, BC354-14
March 2003

CRITERIA FOR SETTING SPEED LIMITS IN URBAN AND SUBURBAN AREAS IN FLORIDA

PROBLEM STATEMENT

It is common knowledge within the traffic engineering community that most drivers (about 85%) travel at a reasonably safe speed under various roadway conditions. Current methods of setting speed limits include maximum statutory limits set by road class and geometric characteristics, and speed zoning practice for the roads where the legislated limit does not reflect local differences. Speed limits in speed zones are based on 85th percentile speed and adjusted as a result of such factors as crash experience, roadside development, and roadway geometry. This method, however, is based on practitioner experience, and it may not always be the most appropriate approach for setting speed limits in urban and suburban areas (i.e., to optimize the safe and efficient movement of vehicles). Furthermore, speed limits that are not set on an empirical basis need to be justified to mitigate the safety concerns of local developments and/or residents.

OBJECTIVES

The objectives of this project are to assess the approaches that determine the speed limits of roadways in urban and suburban areas and to develop methodologies or models that can establish criteria for setting speed limits based on more objective factors and approaches. This study focuses on nonlimited-access arterial roads in urban and suburban areas in Florida. These roads are characterized by a great variation in geometry, roadside development, and traffic movements, and, therefore, legislated speed limits may not be appropriate.

FINDINGS AND CONCLUSIONS

This study demonstrated that most multi-lane nonlimited-access arterial roadways in urban and suburban areas in Florida currently have 85th percentile speeds approximately 5-10 miles higher than the posted speed limits. This finding may imply that (a) local differences are not encountered (existing speed limits posted were merely set by the statutory maximum speed limit or the design speed, both of which cover a wide area), (b) speed limits were set by the 85th percentile speeds and then adjusted after taking into consideration other constraints such as crash rate, access density, and land use, or (c) speed limits set by speed zoning investigation were higher than the maximum statutory speed.

Researchers successfully established a speed limit model, based on engineering investigations, with an acceptable level of accuracy. The main idea behind the adjustment factor model is that a speed limit shall be set at the maximum allowed by statute, as long as the conditions are ideal. The maximum limit then is decreased depending on the actual road, roadside, and traffic

conditions so that a realistic speed limit is set. Drivers' speed selection was also considered when designing the adjustment factor modules. The factors included in the model were access density, roadside clearance, lane width, functional road class, and signal spacing.

BENEFITS

The results of this study will assist FDOT in its efforts to quantify speed limits and to provide more objective justifications for setting speed limits. Researchers found that the developed engineering-based model was better able to predict traveler speeds than the 85^{th} percentile method. This model also provides the ability to diminish the degree of subjectivity with regard to adjusting the 85^{th} percentile speed. Consequently, FDOT will be better able to quantify and objectively justify the setting of speed limits. Another advantage of the developed model is its open structure, which can be used to allow other methodologies to be used to design adjustment factor modules. Modified adjustment modules can replace existing modules and allow for the correction of regional and temporal differences. Finally, this model may be a good starting point for developing future generation, more complex, and more accurate models.

This research was conducted by John Lu, Ph.D., of the University of South Florida. For more information, contact Mark Wilson at (850) 414-4870, mark.wilson@dot.state.fl.us.