



Florida Department of Transportation Research

Traffic and Rural Intersection Monitoring with a
Solar-based Infrared Wireless System
BD548-26

This study concerns the development and evaluation of a dynamic speed monitoring (DSM) system for use at rural intersections. The purpose of the DSM system is to give traffic speed feedback to drivers via an advisory sign, with the goals of improving speed limit compliance and reducing crashes.



Dynamic speed monitoring system prototype

In a prior phase of this work, the researchers developed a low-cost, solar-powered DSM system that incorporates radar and wireless data technologies. Sensors attached above the roadway collected speed data, which was immediately transmitted to the advisory sign for display. The researchers installed the DSM

system in the southbound loop of the U.S. 27 and Florida State Road 192 interchange in Polk County. This interchange has a history of traffic incidents resulting from high approach speeds.

In the present study, the researchers evaluated the DSM system's performance and effect on driver behavior. They collected traffic speed data at the site before and after installation of the DSM system. They also collected data six months after installation to monitor the DSM system's long-term effectiveness. The researchers evaluated speed changes in response to the advisory sign, while considering variables such as time of day, day of the week, and presence of rain.

Analysis showed that immediately after DSM system installation, there was an average speed reduction of 3.58 mph. While the reduction in average speed due to the system was relatively small, the major contribution of this system was to reduce by approximately 22% the number of drivers who exceed the posted speed limit of 55 mph. There was a 42% reduction in the vehicles traveling from 57 to 59 mph, and a 74% reduction in the vehicles traveling faster than 69 mph.

Long-term analysis was complicated by safety improvements intended to improve the interchange curve were made to the site during the course of this project. Additional study of the DSM system at the site is needed to validate its long-term performance. However, analysis of the available data indicates that the DSM system has potential to be a cost-effective and efficient method for warning drivers about excess speed and improving intersection safety.

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For more information, visit <http://dot.state.fl.us/research-center>.