



Project Number

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Development of Delineator Material/Impact Testing Specific to Managed Lane Use for Optimization of Service Life

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Current Situation

South Florida drivers have become used to the presence of managed lanes on I-95. This program, called I-95 Express, reserves the leftmost lanes for drivers willing to pay a toll that varies with traffic volumes. Managed lanes reduce congestion by moving drivers who are traveling to more distant exits from drivers planning to exit the highway sooner.

I-95 Express lanes are separated from general traffic lanes by delineators. These devices take a fair amount of abuse, by being run over or being bumped. They are easy to replace, but a more robust delineator could greatly reduce replacement and crew costs and improve safety by reducing the exposure of crews to the hazards of roadway work.



Managed lanes on I-95 are defined by miles of orange delineators.

Research Objectives

Researchers from the Texas A&M Transportation Institute developed a testing program for the performance evaluation of delineators. A number of manufacturer's products were tested to identify the -robustness of the delineators available on the market and to identify criteria to define higher delineator performance standards that could be used for managed lanes.

Project Activities

Delineators have four main parts that can require repair or replacement: retroreflective sheeting for night visibility; the post, a plastic tube that can have a round or oval profile; the attachment mechanism connecting the post to the base; and the base assembly, including its attachment to the pavement and the pavement itself. Any one or a combination of these can fail.

The researchers traveled to South Florida to examine two delineator installations and to document failure modes and replacement rates. Of all the damaged delineators, half failed at the point where the post attaches to the base connection mechanism. Over a quarter failed to return to a vertical position. The remaining failures were divided (in this order) among connection mechanism failure (sheared bolt, etc.), sheeting failure, epoxy device surface attachment failure, and pavement failure.

The researchers tested all delineators from department-approved manufacturers, including the brand used on I-95. Rows of delineators were installed on a test track, positioned to receive either a tire rollover or a bumper strike. They were tested for 200 hits or to failure, defined as deviation from the vertical in the direction of vehicle travel (lean) or at a right angle to that direction (list), broken or severely damaged post, connection mechanism separation, device epoxy or ground mount surface detachment, and pavement failure. Sheeting performance was noted but was not included as a failure. Broadly, there was clear distinction between delineators that performed robustly and those which were much less robust. Recommendations were made to raise the performance standards for traffic delineators in Florida, based on the survey of products used in this project and ensuring that multiple manufacturers would be able to meet the standard.

Project Benefits

Higher performance standards for traffic delineators can benefit the Florida Department of Transportation by reducing replacement and repair costs and reducing worker exposure to roadway work hazards. Driver safety is also improved when markers are in place and performing in accordance with their intended function.

For more information, please see dot.state.fl.us/research-center