

**Request for Research Funding for FY 2024-2025**

**Project Number** (Research Center Use Only): TEO-25-03

<b>Requesting Office</b>	District 5 Traffic Ops	<b>Priority</b>	3 of 8
<b>Proposed Title</b>	Shockwave Propagation Characterization and Potential Safety Benefit on I-75		
<b>Justification</b>	TDOT has been implementing a variable speed limit subsystem that has reliable upon shockwave theory to reduce the occurrence of crashes as part of Advance Traveler Management System on SR 24. I-75 capacity challenges stem from nonrecurring congestion causes like crashes. With major infrastructure plans for the corridor evaluation the potential to implement a similar system in Florida relies upon a timely evaluation. The work as can determine the feasibility of the generalization of the algorithm used in Tennessee.		
<b>Impact</b>	The research would allow us to know the feasibility of implementation of a VSL system in Florida with the MFF widening projects to reduce crashes and preserve capacity.		
<b>Affected Offices/ Districts</b>	District 2 and 5 TSM&O would be the primary affected office with the results potentially leading to direct changes in their operations.		
<b>Existing Work</b>	Operational and safety impacts of integrated variable speed limit with dynamic hard shoulder running, <a href="https://doi.org/10.1080/15472450.2022.2078664">https://doi.org/10.1080/15472450.2022.2078664</a> ; Adaptive Control Strategy of Variable Speed Limit on Freeway Segments under Fog Conditions, <a href="https://doi.org/10.1061/JTEPBS.TEENG-7699">https://doi.org/10.1061/JTEPBS.TEENG-7699</a> ; I-95 Variable Speed Limit Evaluation Phase 2, Cho, Hyun; Robartes, Erin; Fontaine, Michael		
<b>Keywords Used In Existing Work Search</b>	Variable Speed Limits		
<b>Related Contracts</b>	None.		
<b>Funding Request</b>	\$250,000	<b>Anticipated Duration</b>	24 months
<b>Project Manager</b>	Jeremy Dilmore, PE	<b>Contracting Method</b>	RFP to all registered vendors
<b>Equipment</b>	N/A	Based on existing detectors	
<b>Urgency</b>	1	I-75 nonrecurring congestion is a well known issue and application with the widening work would be the ideal delivery method.	
<b>Implementability</b>	1	Has already been implemented in TDOT. TDOT uses virtually the same sensors and software as FDOT, meaning the ability to translate is extremely likely with few complications	

The project will determine the applicability of TDOT work to Florida. Including the suitability of our existing hardware, design criteria, and infrastructure generally. Further the work would look at the underlying algorithm to determine if further changes are needed to allow the software to be applied in Florida. This would benefit traffic engineer as a whole as it would also determine if the shockwave propagation is influence by factors that are different between the two corridors.

<b>Project Benefits (Select all that apply and explain)</b>	<b>Quantifiable Benefits (units, dollars, etc...if applicable)</b>	<b>Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits</b>
<input type="checkbox"/> Materials Enhancement		
<input type="checkbox"/> Financial Impact		
<input type="checkbox"/> Time Savings		Travel time savings would occur based on the reduction in crashes

○ Lives Saved/Injuries Prevented		Early results in TDOT are a 10% reduction in crashes on I-24
○ Other (Explain)		As part of the work in TDOT researchers improve accuracy of detection. This will provide better data during hurricane evacuations by virtue of the corridor.

\*Comments should explain and support urgency, financial benefit, and implementability scores