Request for Research Funding for FY 2022-2023			
SPR Subpart B Project: SMO-23-01			
Requesting Office	SMO	**Priority**	1 of 10
Proposed Title	3D Pavement Surface Data to Enhance Roadway Safety		
Justification	FDOT is transitioning to the use of 3D pavement imaging systems for network-wide automated pavement condition assessment. While the primary motivation behind such systems is to enhance network level pavement management applications, it is recognized that other important pavement characteristics can be extracted from the 3D data and existing pavement management practices that may be used to identify areas with potential safety concerns. The primary objectives of this research are to investigate 3D pavement surface data to identify and validate relationships with pavement macrotexture, which is a critical input to assess roadway hydroplaning potential.		
Impact	Several safety-related characteristics can potentially be extracted from 3D pavement surface data and/or inertial profiling systems including geometric design parameters such as longitudinal grade and cross-slope; critical distresses such as rutting, raveling, and roughness; and surface properties related to hydroplaning potential. FDOT has previously studied the impact of cross-slope, grade, and macrotexture on hydroplaning potential. If successful, this project will provide a method to assess potential roadway safety concerns due to hydroplaning on a network level. This method will allow the Department to proactively address these areas.		
Affected Offices	Safety, Maintenance, Design, Materials		
Existing Work	3D systems are relatively new and existing research is not available. FDOT sponsored similar research to assess the quantity and severity of raveling (BE939). A similar approach is expected to be successful in this research.		
Keywords Used In Existing Work Search **(Cannot leave blank)**	3D pavement surface data, hydroplaning, macrotexture		
Related Contracts (Give contract numbers)	BE939		
Funding Request	$200,000	**Anticipated Duration**	18 months
Project Manager	James Greene	**Contracting Method**	Direct contract with Georgia Institute of Technology
Equipment	NA	NA	
Urgency	1 of 10	If successful, the measurement of pavement surface macrotexture on a network level will allow identification of areas with hydroplaning potential when combined with other network level measurements such as rut depth and cross-slope.	
Implementability	2 of 5	Given the success of a similar project to identify and quantify raveling, the likelihood is high that an implementable solution will be developed.	

Project Benefits

The Department is transitioning from visual pavement condition surveys to automated surveys using 3D pavement surface data. In addition to pavement cracking information, 3D data can be leveraged to determine other pavement surface characteristics such as macrotexture. Macrotexture is a critical pavement feature related to hydroplaning potential and other roadway safety characteristics. Macrotexture along with other pavement data collected on a network level can be used to assess hydroplaning potential and allow the Department to proactively address potential hazards.

Project Benefits	**Quantifiable Benefits**	**Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits**

○ Lives Saved/Injuries Prevented	Risk assessment	Potential benefits of proactively identifying roadway safety concerns measurable with 3D pavement surface data will be a research deliverable