



FY 2025 Annual Program Research Project Statement 25-023

Title:	Determine Hydroplaning Potential Using Existing Pavement Asset Data
The Problem:	<p>Determining hydroplaning potential of the paved roadway surface was the focus of two previous studies:</p> <ul style="list-style-type: none"> • 0-6896, Developing a Surface Drainage Rating for Inclusion in TxDOT's Asset Management System, • 0-7098, Determine Drainage Basin Mapping and Estimation of Hydroplaning Potential. <p>The research developed a technique that required data to be gathered from a mobile light detecting and ranging (LiDAR) devices.</p> <p>Currently, implementing the hydroplaning potential at the state-wide level would be very difficult since mobile LiDAR data is not collected as part of TxDOT's asset management program. Alternatively, transverse laser scans and macrotexture scans are collected at the network level and may be used in lieu of the mobile LiDAR. There is a need to adapt the hydroplaning potential system to use existing TxDOT pavement asset data.</p>
Technical Objectives:	<p>The objectives of this project are:</p> <ul style="list-style-type: none"> • Conduct a literature review and summarize state-of-the practice and key findings. • Identify and obtain data sets. • Compare LiDAR pavement surface data to TxDOT transverse profile and macrotexture data. • Develop a hydroplaning potential calculation that relies on transverse profile, macrotexture, and any other network-level data sets. • Determine hydroplaning potential at the network level in select districts. • Compare hydroplaning predictions to rates of wet-weather accidents. • Produce District heat maps of hydroplaning potential and overlay on wet-weather accident locations. • Determine if there is geometry that is predictive of incidents, not only for wet surfaces. • Provide suggested improvements to TxDOT's Wet Surface Crash Reduction Program. <p>The expected technology readiness level (TRL) for this project is 8.</p>
Anticipated Deliverables:	<ol style="list-style-type: none"> 1. Technical memorandum for each task completed. 2. Monthly progress reports. 3. Project Summary Report 4. Research report documenting the findings of this research, including: <ul style="list-style-type: none"> • Results of hydroplaning predictions. • District heat maps. • Value of Research (VoR) that includes both qualitative and economic benefits.
Proposal Requirements:	<ol style="list-style-type: none"> 1. RFP#1 Q&A Deadline: 12:00 p.m. Central Time, Tuesday, February 20, 2024. 2. Proposal Deadline: 12:00 p.m. Central Time, Thursday, March 21, 2024. 3. Use the current "ProjAgre" and "PA Forms" templates located at the RTI Forms webpage. 4. Proposals will be considered non-responsive and will not be accepted for technical evaluation if they are not received by the deadline or do not meet the requirements stated in RTI's University Handbook. 5. Proposals should be submitted by the University Liaison in PDF format; (1) PDF file per proposal. File name should include project name and university abbreviation. 6. This project will be tracked during the life of the project using the Technology Readiness Level (TRL) scale. 7. The 2021 Texas Legislative Session requires that universities be in compliance with Senate Bill 475 by submitting a completed and signed TxDOT Security Questionnaire (TSQ) to RTIMAIN@txdot.gov. Universities that have not submitted a completed and signed TSQ one week after award will be considered non-compliant and unable to participate in the Program.