Title:	Development and Enhancement of In Service Performance Evaluation (ISPE) Process for Roadside Safety Devices
The Problem:	Roadside safety hardware is installed on roadways to reduce the risk of serious and fatal injuries to motorists in advertent road departures. Their impact performance criteria are detailed in the MASH standards solely based on full-scale crash testing evaluation. While an important means of checking impact performance, crash tests conducted under ideal site conditions and carefully controlled impact conditions; therefore, they are limited in what they can tell us about field performance. More than three decades of testing standards have recommended in-service performance evaluation (ISPE) as the final step in evaluating roadside hardware, recognizing that crash testing is not a sufficient condition to indicate whether a feature would perform satisfactorily under real-world conditions. Differences between field performance and crash test results can arise due to many factors, including field impact conditions that are not included in crash test guidelines, site conditions, and sensitivity to installation details. One of the objectives of the ISPE for a roadside safety feature is to identify and resolve any problems associated with the installation and maintenance of the feature. The ISPE program should also include a continuous monitoring system to monitor the operational performance of the safety features. Results from a properly developed ISPE program should include the number of locations of installations; a list of problems identified with the construction, installation, and maintenance of the device and subsequent remedies; frequency and severity of reported and unreported crashes; documentation of crashes resulting in fatal or serious injuries; assessment of ISPE of the feature; and recommended modification or changes to the design and application of the feature. This level of information can be achieved when developing a computerized database, which is created by merging highway and traffic data files with maintenance records, roadside feature inventory data, and crash data. Currently, TxDOT does not have a formalized process to perform ISPE of roadside safety features. It is crucial to monitor roadside safety devices on Texas highways to ensure proper functioning after installation. Results of this research will support TxDOT with setting and evaluating its level of safety risk and use quantitative information in the decision making process.
Technical Objectives:	The researchers shall address the following: 1. Perform a literature review of other transportation agency ISPE procedures. 2. Determine which level of ISPE could be performed with the existing information currently in possess by TxDOT. 3. Provide TxDOT with appropriate recommendations for changes or improvements to complement existing information, review of crash data, information collection methods and asset inventory with the objective to improve the quality of the ISPE, reduce the amount of work hours required to perform the ISPE, as well as enable ISPE on additional devices. 4. Develop a guidance document. The expectation of this project is that the end product will obtain a TRL level 4.
Desired Deliverables:	1. Technical memorandum for each task completed. 2. Monthly progress reports. 3. Value of Research (VoR) that includes both qualitative and economic benefits, to be included in the final research report. 4. Research report documenting the findings of the research, including a guidance document with recommendations on how to improve our process in the future, with step-by-step instructions explaining why each recommendation is suggested and an estimated cost to implement each change. 5. Project Summary Report.

Proposal Requirements:	1. Utilize the “Proj/Agre” and “PA_Form” templates located at the TxDOT RTI website. 2. 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, which is also located at the RTI website. 3. Proposals should be submitted in PDF format, 1 PDF file per proposal. File name should include project name and university abbreviation. 4. This project will be tracked during the life of the project using a Technology Readiness Level (TRL) scale. For more information about the use of a TRL, click.