

Title:	Determine Adequacy of Installation of Existing Roadside Barriers on High-Speed Roadways
The Problem:	<p>TxDOT has a significant mileage of roadways with posted speeds of 75 miles per hour (mph) and greater. The highest safety hardware design impact speed defined by the AASHTO Manual on Assessing Safety Hardware (MASH) standards for safety hardware design and testing is 62 mph, which was derived from analyses of reconstructed crash data that is approximately 20 years old.</p> <p>For economic reasons, roadside safety barriers are optimized for the currently prescribed design impact conditions and have little or no factor of safety for accommodating more severe impacts. Preliminary data from recent NCHRP 17-43, Long-Term Roadside Crash Data Collection Program, indicates that when limited to highways with a posted speed limit of 70 mph or greater, the 85th percentile impact speed is approximately 77 mph. This indicates that there may be a need for higher speed tests for higher posted speed highways.</p> <p>There is a need to investigate the design impact speeds that would be appropriate for different posted speeds of 75 mph and greater using recent and available crash data. The determination of appropriate design impact speeds allows for proper safety hardware design suitable for use on high-speed roadways posted at speeds of 75 mph and greater. There is also a need to investigate the performance of identified existing safety barriers at the higher impact speeds using engineering analysis and finite element simulation to guarantee appropriate safety to the traveling public.</p>
Technical Objectives:	<p>This project will provide TxDOT with guidance on:</p> <ol style="list-style-type: none"> 1. The ability of identified generic barrier systems to acceptably perform when installed on higher posted speed limit roadways. 2. Deployment of such barrier systems on roadways with a specific maximum posted speed limit. 3. The need of systems design modifications to adequately perform on higher posted speed limits. <p>To achieve these objectives, the work to be performed shall include:</p> <ol style="list-style-type: none"> 1. Conduct analyses of reconstructed crash data for posted speed limits of 75 mph and greater to determine real-world impact conditions of errant passenger vehicles for higher posted speed highways. 2. Propose new impact conditions for testing and evaluation of safety systems on highways with posted speed limits of 75 mph or greater. 3. Use finite element simulations to investigate the impact performances of identified generic barrier types predominantly used by TxDOT when impacted at higher impact conditions. 4. Provide guidance for selection and installation of commonly used generic roadside safety barriers at higher posted speed limit highways. <p>The expectation of the project end product(s) shall attain a Technology Readiness Level of 8.</p>
Anticipated Deliverables:	<ol style="list-style-type: none"> 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; <u>not a stand-alone deliverable</u>. 4. Research report documenting the findings of the research, including design modifications of existing barriers with detailed drawings of such proposed systems suitable for potential investigation through physical testing. 5. Project Summary Report
Proposal Requirements:	<ol style="list-style-type: none"> 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.