



Research Project Statement 20-179 FY 2019 Annual Program

Title:	Accelerating Mix Designs for Base Materials
The Problem:	<p>TxDOT's current stabilization design procedures take too long and require too much material. It is not uncommon for a lab design to take 25 to 30 days. In addition, the different stabilizers currently require different sample preparation, different curing, and different acceptance criteria. With the move towards more in-place stabilization for pavement rehabilitation, there is an urgent need to develop a harmonized accelerated design procedure for base materials which can produce acceptable design recommendations for any stabilizer within 7 days.</p> <p>This study will research methods to develop effectively stabilized base materials using procedures and mix design criteria across stabilizer types including cement, lime, FA, LFA, asphalt emulsion, and foamed asphalt. The project will focus on rapid mix design turnaround time, appropriate lab curing techniques to rapidly simulate cured field conditions, inclusion of moisture susceptibility in the mixture design, and performance-related mix design criteria to ensure an effectively stabilized material.</p> <p>In the past two years small sample procedures have been developed for both emulsion and foamed asphalt treated materials where the main criteria is wet and dry strengths as measured in the IDT test, and the entire process takes less than 7 days. This study will focus on evaluating if the other well used stabilizers including cement, lime, fly ash and LFA can be designed using accelerated procedures.</p>
Technical Objectives:	<p>The researchers shall address the following:</p> <ol style="list-style-type: none"> 1. Review national and international literature on accelerated small sample mix design. 2. Conduct an extensive laboratory program comparing existing procedures with accelerated methods. 3. Demonstrate the procedures on upcoming projects. 4. Develop test procedures and suggest modifications to existing specifications. 5. Conduct training workshops. <p>The expectation of this project is that the end product will obtain a TRL level 8.</p>
Desired 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. 4. Research report documenting the findings of the research, including comprehensive laboratory test results, mix design recommendations for upcoming projects, and recommended test procedures and modifications to specifications. 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.