Title:	Develop Enhanced Cold Recycling Methods and Specifications
The Problem:	Texas continues to utilize cold recycling for pavement rehabilitation. Most of these projects are full depth reclamation (FDR) with cement; however, usage of FDR with emulsified asphalt or foamed asphalt continues to grow in the state. Each of these treatments exhibit factors that are not fully understood or could be improved. Cement treatment, although cheapest in upfront cost, produces materials that can create challenges in early traffic handling and has a constrained design modulus due to shrinkage cracks that may occur over time. The industry also faces a likely transition from Type I and Type II to Type IL cement. Emulsified and foamed asphalt treatments, although more expensive in upfront cost than cement, provide higher allowable design modulus but require extra testing in mix design. Exploratory results show potential influences of type and amount of recycled asphalt pavement (RAP) on the designs, where current guidelines for selecting rates with high-RAP mixes may produce dosages higher than necessary. Recent interest also exists in using alternative binders in the cold recycling treatment process, placing sections thinner than typical standard practice, and evaluating next-generation cold recycling equipment and technology that could provide further advantages in speed of construction and more flexibility in treatment options.
Technical Objectives:	This research will develop enhanced methods and specifications for the proper use of cold recycling for flexible pavements in Texas. To meet the objectives of this project, the research team shall: • Recommend new technologies and emerging issues for strategic initiative in Texas. • Identify existing constructed sections for performance analysis. • Analyze performance of the identified existing constructed sections. • Perform project selection testing from upcoming construction projects and recommend viable treatments including those utilizing next-generation cold recycling technologies. • Conduct a comprehensive laboratory program; identify and recommend factors of interest and develop and perform a lab program to evaluate these factors. • Conduct pavement performance modeling of the cold-recycled mixtures. • Recommend updates to test procedures, specifications, and pavement manual. • Develop and deliver workshops. The expected technology readiness level (TRL) for this project is 8.
Anticipated 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. This is not a stand-alone deliverable. 4. P1: Pavement Manual. 5. P2: Workshops. 6. Research report documenting the findings of the research, including recommended updates to test procedures and specifications. 7. Project Summary Report.

Proposal Requirements:	1. Project duration shall not exceed 36 months. 2. Proposal Deadline: 12:00 p.m. Central Time, **Monday, March 6, 2023**. 3. RFP#1 Q&A Deadline: 12:00 p.m. Central Time, **Wednesday, February 1, 2023.** 4. Use the current "ProjAgre" and "PA Forms" templates located at the RTI Forms webpage. 5. 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. 6. Proposals should be submitted in PDF format; (1) PDF file per proposal. File name should include project name and university abbreviation. 7. This project will be tracked during the life of the project using the Technology Readiness Level (TRL) scale. 8. 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 in advance of a proposal submission. Universities found to not submit a completed and signed TSQ in advance of proposal submitting will be held in non-compliance and unable to participate in the Program.