



FY 2025 Annual Program Research Project Statement 25-015

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| Title: | Evaluating Minimum Virgin Binder Contents for Durable Recycled Asphalt Pavement (RAP) Mixes |
| The Problem: | Economic factors and environmental sustainability are driving the use of more reclaimed asphalt pavement (RAP); however, durability of those mixes has been a concern because the aged RAP may make the mixes brittle and prone to cracking. Many different approaches (limiting amount of RAP usage, reducing Ndesign, increasing lab-molded density, reducing RAP binder availability, or performance tests through balanced mix design) have been tried in the lab and field to improve mix durability. All the approaches and studies pointed to one essential factor for durable mixes: minimum virgin binder content. By determining the minimum virgin binder contents for the most often mixtures used in Texas, RAP may be used primarily as a coated potentially less absorptive aggregate. This may result in using significant amounts of RAP that may extend resources and lower cost without compromising durability. |
| 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; to identify minimum virgin binder contents for asphalt mixes. • Develop an experimental design to determine and/or verify the minimum binder contents for durable asphalt mixes, considering mix type, aggregate type, RAP amount, additives, and performance properties. • Conduct laboratory testing of the experimental design. • Analyze the test results and recommend minimum virgin binder contents for different asphalt mixes commonly used by TxDOT with RAP amounts. • Develop guidelines for asphalt mixes to meet the minimum virgin binder contents with RAP. • Recommend specifications changes. <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. Training and training materials. 4. Project Summary Report. 5. Research report documenting the findings of this research, including: <ul style="list-style-type: none"> • Recommended updates to specifications. • Guidelines for asphalt mixes to meet the minimum virgin binder content with RAP. • 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. |