



# FY 2025 Annual Program Research Project Statement 25-177

<b>Title:</b>	Synthesis: Develop Design Guidelines for Applications of Light Weight Aggregate in Embankments and Mechanically Stabilized Earth (MSE) Walls – Evaluate Cost Benefit & Performance
<b>The Problem:</b>	<p>It is challenging to place embankment and MSE walls on soft ground locations that have large settlement potential, and it usually requires costlier ground improvement techniques and impacts to the construction timeline. With the application of light weight material, it is possible to largely reduce or limit the use of ground improvement and improve construction time in cases where preloading is necessary.</p> <p>This synthesis project shall provide simplified design guidelines and methodologies that shall aide the long-term performance evaluation guidelines and the applicable process while minimizing the use of alternative costly and complex ground improvement techniques that may eventually minimize the associated construction cost and time and improve overall performance of the structure.</p>
<b>Technical Objectives:</b>	<p>The objectives of this project are:</p> <ul style="list-style-type: none"> <li>• Conduct a literature review and summarize state-of-the practice and key findings of TxDOT and other DOTs for uses in MSE walls and fill applications.</li> <li>• Perform material cost benefit analysis of light weight aggregate (~ 60 pcf) and compare it with the traditional select fills (~120 pcf).</li> <li>• Recommend design guidelines and construction controls for both retaining wall and fill applications.</li> <li>• Discuss limitations, long-term durability, and requirements for the various options for light weight aggregates.</li> </ul> <p>The expected technology readiness level (TRL) for this project is 2.</p>
<b>Anticipated Deliverables:</b>	<ol style="list-style-type: none"> <li>1. Technical memorandum for each task completed.</li> <li>2. Monthly progress reports.</li> <li>3. Project Summary Report</li> <li>4. Research report documenting the findings of this research, including: <ul style="list-style-type: none"> <li>• Key findings of other DOTs.</li> <li>• Material benefit/cost analysis.</li> <li>• Recommended uses and design guidelines.</li> <li>• Construction Controls</li> <li>• Light Weight Aggregate material comparisons</li> </ul> </li> </ol>
<b>Proposal Requirements:</b>	<ol style="list-style-type: none"> <li>1. The project duration shall not exceed 12 months.</li> <li>2. The project budget shall not exceed \$65,000.00.</li> <li>3. RFP#1 Q&amp;A Deadline: 12:00 p.m. Central Time, <b>Tuesday, February 20, 2024.</b></li> <li>4. Proposal Deadline: 12:00 p.m. Central Time, <b>Thursday, March 21, 2024.</b></li> <li>5. Use the current “ProjAgre” and “PA Forms” templates located at the <a href="#">RTI Forms webpage</a>.</li> <li>6. 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 <a href="#">University Handbook</a>.</li> <li>7. 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.</li> <li>8. This project will be tracked during the life of the project using the Technology Readiness Level (<a href="#">TRL</a>) scale.</li> <li>9. 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 <a href="mailto:RTIMAIN@txdot.gov">RTIMAIN@txdot.gov</a>. 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.</li> </ol>