



# Research Project Statement 24-091 FY 2024 Annual Program

<b>Title:</b>	Develop Assessment and Mitigation Guidance for Ancillary Highway Structures with Existing Cracks
<b>The Problem:</b>	With the recent efforts to identify and inspect large numbers of high mast illumination pole, cantilever overhead sign, and traffic signal pole structures throughout Texas, cracks have been found at the column to baseplate connection weld. If the cracking is severe enough, the best course of action is to replace the structure; however, there are situations in which mitigating, monitoring, or repairing the crack would be the more economical option. When a crack is found, there is a need to assess the severity of the crack and determine a remediation plan. Research is needed to develop fast and effective structural assessment techniques, as well as economical mitigation and/or repair options.
<b>Technical Objectives:</b>	<p>If an in-service ancillary structure is found to have cracking, the guidance produced as a result of this research will assist TxDOT district and division personnel to determine the severity of the cracking as well as to develop a safe and economical response. This research will provide a solid basis for these decisions.</p> <p>To meet the objectives of this project, the research team shall:</p> <ul style="list-style-type: none"> <li>• Perform a literature review of research already conducted.</li> <li>• Develop and execute a representative full-scale testing program to include both round and multi-sided bent plate columns, including representatives of TxDOT standard cantilever overhead sign structures (COSS), high mast illumination poles (HMIP), and traffic signal pole structures.</li> <li>• Identify the critical assessment parameters.</li> <li>• Develop clear assessment guidance for TxDOT personnel, which can be used as a tool to determine if a crack can be mitigated/monitored, repaired, or if the structure should be replaced.</li> <li>• Develop mitigation and monitoring guidelines that can be used by TxDOT when cracking is not severe and there is sufficient remaining capacity and fatigue life.</li> <li>• Develop repair guidance that accounts for the relative economic impact of the procedure.</li> </ul> <p>The expected technology readiness level (TRL) for this project is 8.</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. 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.</li> <li>4. Research report documenting the findings of the research, including guidance documentation that describes the assessment and categorization of a cracked COSS, HMIP or traffic signal pole structure. This documentation will also provide the appropriate remediation based on the assessment.</li> <li>5. Project Summary Report</li> </ol>
<b>Proposal Requirements:</b>	<ol style="list-style-type: none"> <li>1. Project duration shall be limited to 36 months.</li> <li>2. Proposal Deadline: 12:00 p.m. Central Time, <b>Monday, March 6, 2023</b>.</li> <li>3. RFP#1 Q&amp;A Deadline: 12:00 p.m. Central Time, <b>Wednesday, February 1, 2023</b>.</li> <li>4. Use the current "ProjAgre" and "PA Forms" templates located at the <a href="#">RTI Forms webpage</a>.</li> <li>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 <a href="#">University Handbook</a>.</li> <li>6. Proposals should be submitted in PDF format; (1) PDF file per proposal. File name should include project name and university abbreviation.</li> <li>7. This project will be tracked during the life of the project using the Technology Readiness Level (<a href="#">TRL</a>) scale.</li> <li>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 <a href="mailto:RTIMAIN@txdot.gov">RTIMAIN@txdot.gov</a> 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.</li> </ol>