Title:	Develop an Interactive Unit Price Estimation and Visualization Tool
The Problem:	Historical bids-based estimating is the primary method used in TxDOT to determine unit prices of pay items, and ultimately an engineer's estimate of a project. The engineer's estimate is used to assess the bids and select the bidder, thus accurate and reliable unit price estimating is of vital importance for the optimum use of the available project budget. Currently, TxDOT maintains and regularly updates the catalog of unit price data in the form of statewide and districtwide low bid unit prices; i.e., 3-month and 12-month moving averages of low bid unit prices. However, the unit price of a work item is heavily affected by the project location and quantity of the work; consequently, this tabular format of unit prices falls short of making proper location and quantity adjusted unit prices, which may result in unrealistic unit prices.
Technical Objectives:	Geographic Information System (GIS) provides a powerful platform for effective spatial analyses using geo-spatial interpolation methods. The proposed project will develop a GIS-based algorithm imbedded in a tool that will import and analyze historical bid data. This tool will interpolate and estimate the location, quantify specific unit prices, and visualize the unit price information on a computer screen. The interpolated and processed data will be easily transferable to a spreadsheet format for documentation purpose. The outcome of this project is expected to significantly improve the accuracy of unit price estimation while reducing the estimator's time to reach realistic unit prices. The tool can consider several input variables such as project type, project size, project location as filters to help TxDOT to perform specific analyses of unit prices. The tool can show the comparison results between estimated and actual prices. 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. Product P1: GIS add-on tool and its computer programming code as an implementation resource. 5. Product P2: Workshop to be provided to TxDOT estimators for rapid implementation of the tool. 6. Research report documenting the findings of the research, including a detailed description of the entire process of developing a GIS-based unit price estimation and visualization framework, its computational algorithm, and a GIS add-on tool. 7. Project Summary Report.
Proposal Requirements:	1. Proposal Deadline: 12:00 p.m. Central Time, **Monday, March 6, 2023**. 2. RFP#1 Q&A Deadline: 12:00 p.m. Central Time, **Wednesday, February 1, 2023.** 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 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 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.