Title:	Synthesis of Engineered Cementitious Composites (ECC) for Applications in Texas
The Problem:	Engineered Cementitious Composites (ECC) is a special type of high-performance fiber reinforced cementitious composite (HPFRCC). ECC has been proposed as a novel alternative for infrastructure materials, such as overlay applications (jointless overlay systems, pavement repair) and impact resistant structures (external bridge girder, bridge piers, bridge decks, crash barriers, pavements), and have found use in a number of large-scale applications worldwide, including the U.S. as well. Unlike ordinary Portland cement (OPC) and fiber reinforced concrete (FRC), ECC provides the following main benefits: 1. ECC uses only short fibers with a moderate volume fraction of typically around 2 percent or less. 2. Tensile strain capacity can reach up to several hundred times that of OPC and is significantly greater than that of FRC. 3. Microcracks maintain a constant width rather than widening with greater strain, as in typical FRC. The objective of this project is to identify the applications in which the use of ECC can be applicable in Texas transportation system. Different approaches and mix designs corresponding to ECC applications along with cost-benefit analysis will provide TxDOT insight for where ECC should be used.
Technical Objectives:	The researchers shall perform a synthesis based on an extensive review of the state-of-the-art and state-of-the-practice and performance history of ECC applications from both national and international perspectives. The expectation of this project is that the end product will obtain a TRL level 1.
Desired 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. 4. Research report documenting the findings of the research, including a literature survey, state DOT survey of practice, and recommendations for applicable applications in Texas. 5. Project Summary Report.
Proposal Requirements:	1. Project duration shall not exceed 12 months. 2. Project budget shall not exceed $65,000. 3. Utilize the “Proj/Agre” and “PA_Form” templates located at the TxDOT RTI website. 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, which is also located at the RTI website. 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 a Technology Readiness Level (TRL) scale. For more information about the use of a TRL, click.