

## KANSAS DOT RESEARCH PROJECTS QUARTERLY PROGRESS REPORT

Lead Agency (University or Contractor):           Kansas DOT          

**INSTRUCTIONS:**

*Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.*

<b>KDOT Project Number</b> RE-0738-01	<b>Transportation Pooled Fund Program - Report Period:</b> <input type="checkbox"/> Quarter 1 (January 1 – March 31, 2018) <input type="checkbox"/> Quarter 2 (April 1- June 30,2018) <input type="checkbox"/> Quarter 3 (July 1 – Sept 30, 2018) <input checked="" type="checkbox"/> Quarter 4 (October – December 31, 2018)	
<b>Project Title:</b> Utilization of Laser Induced Breakdown Spectroscopy for Real-Time Quality Control Monitoring and Characterization of Aggregate Materials Used in Highway Construction using		
<b>Project Manager:</b> Randy Billinger, P.G., KS DOT, TAC Member <b>Phone:</b> 785-291-3037 <b>E-mail:</b> Randyb@ksdot.org		
<b>Project Investigator:</b> Warren Chesner <b>Phone:</b> 516-431-4031 <b>E-mail:</b> wchesner@chesnerengineering.com		
<b>Lead Agency Project ID:</b> RE-0738-01	<b>Other Project ID (i.e., contract ):</b>	<b>Project Start Date:</b> July 1, 2017
<b>Original Project End Date:</b> June 30, 2020	<b>Current Project End Date:</b> June 30, 2020	<b>Number of Extensions:</b> 0

Project schedule status:

On schedule            On revised schedule            Ahead of schedule            Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Total Percentage of Work Completed
\$870,000.	\$432,843.88.	49.8 %

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Complete This Quarter
\$870,000.	\$99390.69.	11.4%

**Project Description:**

The primary objectives of this research effort is to develop a near-real-time laser-scanning system to rapidly classify aggregates used in highway construction. The intent is to employ this classification process to

- Quantify specific engineering properties (e.g., acid insoluble residue, soundness, LA Loss, etc.)
- Assess whether an aggregate will pass or fail a defined engineering property test
- Identify and/or quantify the presence of deleterious materials (e.g., ASR, chert, shale, reactive aggregate)
- Determine the composition of blends in stockpiled aggregate
- Determine the source of an unknown aggregate

Six states are part of this TPF program. They include: KS, MD, OK, OH, NY and NM.

Each State is supplying aggregates that will be tested and evaluated to determine the efficacy of the technology; and an AASHTO standard of Practice will be prepared as part of the effort.

**Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**

During this period, modeling studies proceeded with a focus on KS, MD, NY and OH. The first TPF Panel Review Meeting was held in Latham New York (Dec 4) and a site demonstration and laser testing demo was held (Dec 5) at the laser scanning lab in Coeymans, New York. A detailed review of all modeling to-date was discussed at the Latham meeting. Software and mechanical features are continual being upgraded. New samples from OH and KS and NY were received and are in the queue for scanning. .

**Anticipated work next quarter:**

Aggregate sample scanning of State samples will continue. Model development will continue. Follow-up technical discussions with each state will be scheduled to plan for new sample collection and modeling activities with each State.

**Significant Results:**

Modeling of New York and Maryland friction properties were successful using carbonate samples. Kansas D cracking Models were successfully developed for samples of a given formation. Chert counting models for Ohio will require additional studies. There is a lack of adequate sample volume from Oklahoma and New Mexico to pursue modeling activities at this time

**Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, with recommended solutions to those problems).**

Additional work on sample collection (types and quantities) and modeling will be required. Discussions are being held with State Agency to address these issues. We do not anticipate any significant project disruption at this time.