

## 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 checked="" type="checkbox"/> Quarter 2 (April 1- June 30,2018) <input type="checkbox"/> Quarter 3 (July 1 – Sept 30, 2018) <input 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.	\$294, 847.	33.9 %

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Complete This Quarter
\$870,000.	\$59,974.46	6.9%

**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 laser scanning was initiated. Over 250 aggregate samples were scanned Additional samples were received from MD, and NM. Work on enhancing the software for system operations and analytical modeling are continuing.

**Anticipated work next quarter:**

Aggregate sample scanning of State samples will continue. Model development will be the priority.

**Significant Results:**

Sufficient samples have been scanned from four states (KS, NY OH and MD) to initiate modeling activities.

**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).**

Some mechanical problems were encountered requiring part replacement. Varying line voltage required the installation of a Uninterruptible Power Supply (UPS) to attempt to stabilize laser operations, We do not anticipate any significant project disruption at this time.