TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Alabama Department of Transportation

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.

Transportation Pooled Fund Program Project # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)*	**Transportation Pooled Fund Program - Report Period:**
TPF-5(267)	☒Quarter 1 (January 1 – March 31) ☐Quarter 2 (April 1 – June 30) ☐Quarter 3 (July 1 – September 30) ☐Quarter 4 (October 1 – December 31)

Project Title: Accelerated Performance Testing for the NCAT Pavement Test Track

Name of Project Manager(s):	**Phone Number:**	**E-Mail**
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Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:**
930-822P		May 8, 2012
Original Project End Date:	**Current Project End Date:**	**Number of Extensions:**
September 30, 2015	September 30, 2015	None

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	Percentage of Work Completed to Date
$11,991,511	$11,344,816	98%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
95%	$228,683	85%

Project Description: The Pavement Test Track is a full-scale accelerated performance test (APT) facility managed by the National Center for Asphalt Technology (NCAT) at Auburn University. The project is funded and directed by a multi-state research cooperative program in which the construction, trafficking, and pavement evaluation are carried out on 46 different 200-foot test sections around the 1.7-mile oval test track. Each test section is constructed utilizing the asphalt materials and design methods used by individual sponsors. A fleet of heavy trucks is operated on the track in a highly controlled manner in order to apply a design life-time of truck traffic (10 million equivalent single axle loads, or ESALs) in two years. The 2012 research cycle represents the fifth three-year research cycle of the NCAT Pavement Test Track.

The primary objectives of the pooled fund project are as follows:
1. Constructing 200 ft test sections on the existing 1.7 mile NCAT test oval that are representative of in-service roadways on the open transportation infrastructure;
2. Applying accelerated performance truck traffic in the 2 years following construction;
3. Assessing/comparing the functional and structural field performance of trafficked sections;
4. Validating the M-E approach to pavement analysis and design using surface and subsurface measures;
5. Calibrating new and existing M-E approaches to pavement analysis and design using pavement surface condition, pavement load response, precise traffic and environmental logging, and cumulative damage;
6. Supplementing Track research with test sections on Lee Road 159 in order to precisely quantify the life extending benefit of various pavement preservation alternatives;
7. Correlating field results with laboratory data; and
8. Answering practical questions posed by research sponsors through formal (i.e., reports and technical papers) and informal (e.g., one-on-one responses to sponsor inquiries) technology transfer.

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

Planned truck traffic (i.e., 10 million ESALs) was completed on the 2012 NCAT Pavement Test Track on October 18, 2014. Final surface condition and performance measurements were made thereafter, followed by destructive forensics. Cores were cut from all sponsored test sections. Both longitudinal and transverse trenches were cut from all structural sections that will be rebuilt for the 2015 research cycle in order to map cracks that were not yet visible on the surface. Results from performance measurements and forensic testing were presented at the end-of-cycle Track Conference that was hosted at Auburn University (AU) on March 3-5, 2015. Two hundred and thirty-five people attended the Track Conference, not counting those affiliated with AU and/or NCAT. Tours of both the NCAT Pavement Test Track and Lee Road 159 were included in the Track Conference agenda. A synthesis report is being prepared to document these findings.

Performance data from Lee Road 159 through October of 2014 was also presented at the Track Conference, although data collection from off-Track pavement preservation sections is ongoing. Test sections on Lee Road 159 have been exposed to commercial truck traffic associated with the quarry and the asphalt mixing plant since the summer of 2012. Tare and gross load data are provided to NCAT by both businesses as a function of day and time, which is facilitating the construction of life extending benefit curves. The outbound land on Lee Road 159 has experienced approximately 10 times the ESALs as the inbound lane.

The next Track Conference for the 2015 research cycle is already being planned for March 6-8, 2018.

Anticipated work next quarter:

The synthesis report for the 2012 research cycle will be completed and provided to Track research sponsors in draft form in the next reporting quarter. The data collection process for Lee Road 159 will continue. In fact, off-Track preservation research will be continued on Lee Road 159 and expanded onto nearby US-280 in the 2015 research cycle. Old test sections will be removed to make way for the next round of research on the NCAT Pavement Test Track.

Significant Results:

The 2012 research cycle includes high RAP content mixes, RAS mixes, high binder replacement (RAP +RAS) mixes, high recycled ground tire rubber mixes, high durability porous friction course mixes, alternative binder modifiers, interlayers for the prevention of reflective cracking, low volume road mixes, comparative tack methods and materials, and an array of pavement preservation alternatives (on the Track as well as on Lee Road 159).

Sustainable pavement sections carefully designed and built with higher percentages of reclaimed and recycled materials again outperformed conventional pavements. Smaller nominal maximum aggregate size (NMAS) mixes and mixes designed on the fine side of the maximum density line that are commonly relegated to low volume road applications have proven to be the most durable and crack resistant surface mix options. Although more time and traffic are necessary to fully construct multi-distress life extending benefit curves for pavement preservation, control section comparisons have facilitated the construction of crack reducing benefit curves for all treatments and treatment combinations.

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, along with recommended solutions to those problems).

The project is expected to be completed on time and within the allotted budget.

Potential Implementation:

It is expected that the findings previously mentioned will be implemented by sponsoring state DOTs. The 2012 research cycle includes a significant focus on sustainability. Included experiments are designed to study high RAP content mixes, RAS mixes, high aged binder (RAP+RAS) content mixes, high recycled ground tire rubber mixes, high durability porous friction course mixes, alternative binder modifiers, interlayers for the prevention of reflective cracking, low volume road mixes, comparative tack methods and materials, and an array of pavement preservation alternatives (on the Track as well as on Lee Road 159) with an emphasis on implementation. Life extending benefit curves from all the treatments and combinations will provide DOTs with an objective selection process for pavement preservation that can be calibrated to local conditions, materials, contractors, etc. using feedback from their own pavement management system. Findings for mixes containing higher percentages of reclaimed and recycled materials were communicated to state DOTs in off-season annual meetings throughout the US. Lessons learned from the premature failures and successful reconstructions should lead to significant savings in DOTs who choose to implement similar changes.