

## TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Date: 10/02/2019

Lead Agency (FHWA or State DOT): Washington State 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>Transportation Pooled Fund Program Project #</b>  TPF-5(332)	<b>Transportation Pooled Fund Program - Report Period:</b> <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input type="checkbox"/> Quarter 2 (April 1 – June 30) <input checked="" type="checkbox"/> <b>Quarter 3 (July 1 – September 30)</b> <input type="checkbox"/> Quarter 4 (October 1 – December 31)	
<b>Project Title:</b> LTPP Forensic Evaluations		
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<b>Lead Agency Project ID:</b> Y-12005	<b>Other Project ID (i.e., contract #):</b> Y-12005	<b>Project Start Date:</b> December 11, 2017 (Task Order AB executed in May 2018)
<b>Original Project End Date:</b> November 30, 2019	<b>Current Project End Date:</b> November 30, 2019	<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	Percentage of Work Completed to Date
Current contract = \$210,000 (Y-12005)	\$146,760.50	69.9%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
\$146,760.50 (31.6% spent this quarter)	\$46,327.38	66.5%

**Project Description:**

The objective of this project is to perform forensic evaluations on Long-Term Pavement Performance (LTPP) test sections as they go out of service, in general accordance with the guidelines provided in the Transportation Research Board's National Cooperative Highway Research Program (NCHRP) Report 747: "Guide for Conducting Forensic Investigations of Highway Pavements."

The forensic evaluations are to be performed on LTPP test sections, capturing data on exactly why the section performed as it did, and what ultimately led to its removal from the program. Consistent with the NCHRP Report 747 Guidelines, LTPP test sections considered for forensic evaluation will first undergo a desktop study to determine additional data needs, if any, to explain its performance. Follow-up investigations may entail trenching and coring, measuring lift deflection, and potential lab testing of field samples for materials characteristics.

The project is task order based and its scope of work (SOW) consists of the four tasks detailed below. All four tasks have been executed and a summary of the progress to date for each task order is also detailed below:

1. Project Management (Task Order AA)

All project management activities under this task order are up to date and on schedule.

2. Test Section Selection (Task Order AB)

More than 100 LTPP test sections have been identified for potential forensic evaluation. Nominations have been submitted and approved for 32 LTPP test sections in Arizona, California, Colorado, Florida, Kansas, Mississippi, Ohio, Texas and Washington State. Additional LTPP test section nominations are being pursued for a LTPP SPS-2 project targeted at investigating the effects of PCC slab-lean concrete base bonding on the performance of the pavements. No further nominations have been pursued since August 23, 2019 as the current contract ends on November 30, 2019, which does not allow sufficient time to carry out forensic investigations (referred to as desktop studies) and follow-up investigations.

Preliminary desktop studies have been completed for 17 of the 32 accepted test sections and technical memoranda documenting the study have been prepared for 16 of the 32 test sections, with the technical memorandum for the remaining test section undergoing internal review prior to submittal to WSDOT. Desktop studies for the remaining 15 test sections, which were just recently approved, are expected to get underway during the early part of October 2019.

3. Forensic Evaluations

Follow-up forensic evaluation activities got off to a good start during the previous reporting period with the completion of the recommended investigations for Washington State test section 53\_1005. During the current period, follow-up forensic evaluations were started for the Colorado SPS-2 project, Texas test section 48\_1111 and Ohio test section 39\_5003. Follow-up investigations are also being pursued for the Arizona and Kansas SPS\_2 projects, but so far the respective agencies have not been responsive. Follow-up forensic evaluations were not recommended for the Kansas SPS-2 project test sections, as the desktop study findings confirmed that the data available in the LTPP database adequately explained the performance of those test sections and properly addressed the issue of cracking mirroring the presence of dowel bars present in many sections across the transverse joints, particularly on the 8" thick test sections.

4. Final Project Report

Activities associated with the preparation of the final report are not anticipated to commence until October 2019.

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

**Task Order AA Project Management**

- Continued working on those management activities necessary for the successful completion of the project including cost control, subcontractor control, preparation of progress reports and invoices, and participation in meeting/conference calls with WSDOT.
- As part of the above bullet item and working with WSDOT staff, completed and submitted the sixth quarterly progress report for the project covering the period of July 1 to September 30, 2019. Also, prepared and submitted invoices for the months of July, August and September 2019.
- Prepared for and participated in monthly internal project status meeting to review the work done and planned as well as to address issues that may be affecting the project.
- As needed, communicated with WSDOT staff via telephone or message to address issues related to the project.
- Prepared for and participated in the July 17, 2019 Technical Advisory Committee meeting, and provided support to WSDOT staff with preparation of the agenda, presentation and meeting minutes.

**Task Order AB Test Section Selection**

- Completed and submitted to WSDOT on August 23, 2019 the nomination for LTPP test sections in California, Florida and Mississippi.
  - The California nomination is intended to evaluate the 43-year performance of an asphalt concrete (AC) over bound base pavement test section that received two AC overlays. The test section has performed well in most areas, but not in terms of longitudinal and transverse cracking. The focus of the proposed investigation is on the cracking of the test section, especially the amount of transverse cracking prior to application of the first AC overlay, which on average was one transverse crack every 5 feet.
  - The Florida nomination is intended to investigate the performance of the test sections that make-up the Florida SPS-5 project plus its control test section over the period of 1995 to 2014, under very high moisture conditions, and determine the primary factors that are affecting the performance of each test section.
  - The Mississippi nomination is intended to investigate the influence of the very short transverse crack spacing on the performance of a continuously reinforced concrete pavement (CRCP) structure. This crack spacing is much shorter than thought to be appropriate at the time it was constructed. Factors to explore include amount of reinforcement used and influence of climatic conditions.

Further nominations are not being pursued at this time as the current contract is scheduled to end on November 30, 2019, which would not provide adequate time to carry out desktop studies and follow-up investigations.

- Completed and submitted to WSDOT technical memoranda for the following desktop studies:
  - Colorado SPS-2 project on July 9, 2019. The memorandum was revised based on input from Mr. Larry Scofield and re-submitted on August 14, 2019.
  - Texas test section 48\_1111 on August 15, 2019.
  - Ohio test section 39\_5003 on September 6, 2019.
  - California test section 06-7452 on September 28, 2019.

In addition, it is anticipated that the Mississippi test section 28-5025 desktop study technical memorandum during the first half of October 2019, while the one for the Florida SPS-2 project will be completed by early November 2019.

**Task Order AC Forensic Evaluations**

- Worked with DOT staff and LTPP contractor staff to carry out follow-up forensic evaluations for the following test sections:
  - Colorado SPS-2 project. Several attempts were made to carry our distress and IRI surveys as well as FWD testing, but it has not been possible to complete due to various changes in the contractor requirements and CDOT staff availability. The work is scheduled to be completed on October 19-20.
  - Kansas SPS-2 project. A couple of attempts have been made to communicate with Mr. Rick Miller of the Kansas DOT, but so far they have proved unsuccessful.
  - Texas test section 48\_1111. Mr. Robert Trevino of the Texas DOT has provided pavement design information. In addition, a conference call is scheduled for October 9, 2019 with Mr. Trevino to discuss coring operations. Also, communications are ongoing with FHWA and LTPP data collection contractor personnel to address the collection of new distress, IRI and FWD data.
  - Ohio test section 39-5003. Communications have recently commenced with Mr. Adam Au of the Ohio DOT and with FHWA and LTPP data collection contractor personnel to pursue the values recommended follow-up forensic evaluations.

Most of these follow-up forensic evaluations include one more round of distress and IRI surveys, FWD testing, coring, and the pursuit of pavement design information via the review of records or interviews.

- The WSDOT test section 53\_1005 follow-up forensic evaluations were completed during the previous reporting period. A revised technical memorandum updating the study findings was completed and submitted to WSDOT on July 8, 2019. This memorandum represented the completion of the forensic investigations for the referenced test section and, consequently, it was submitted to the FHWA LTPP program for posting on the LTPP Ancillary Information Management System (AIMS) so that data analysts and other users have access to the information.

#### **Task Order AD Project Report**

- No work was performed under this task order.

#### **Anticipated work next quarter:**

The following work activities will be conducted throughout the period of October 1 through November 30, 2019.

#### **Task Order AA Project Management**

Continue working on those management activities necessary for successful completion of project including cost control, subcontractor control preparation of progress report, preparation of invoices, and participation in meetings/conference calls with WSDOT and other TPF personnel. Also, work with WSDOT staff to execute Task Orders AC Follow-up Investigations and AD Final Project Report.

#### **Task Order AB Test Section Selection**

- As noted earlier, further nominations are not being pursued as the current contract is scheduled to end on November 30, 2019, which would not allow enough time to carry out desktop studies and follow-up investigations.
- Complete desktop studies for the Mississippi test section 28-5025 and the Florida SPS-5 project. This includes preparation of draft technical memoranda detailing each desktop study and the associated findings.

#### **Task Order AC Forensic Evaluations**

- Complete follow-up forensic evaluations of Texas test section 48\_1111 and Ohio test section 39-5003. This includes preparation of updated technical memoranda. Follow-up forensic evaluations will also be pursued for the Arizona and Colorado SPS-2 projects, but this will depend on the respective agency.

#### **Task Order AD Project Report**

- Begin work on final project report.

#### **Significant Results:**

Technical memoranda for desktop studies addressing 17 LTPP test sections have been completed. These memoranda provide valuable information explaining the performance of the 17 test section pavements and, as appropriate, recommended follow-up investigations to better explain their performance. In addition, the technical memoranda that has been generated to date could potentially support the respective agencies with their M&R decision-making processes related to the test section(s) in question.

Follow-up forensic evaluation activities have been or are being carried out for seven of the 17 test sections, and as appropriate, the associated technical memoranda has been or is being updated to include the results from these evaluations. In turn, the resulting memorandum has been or will be submitted to the FHWA LTPP for inclusion into the LTPP AIMS for use by data analysts and other users.

**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).**

No significant problems, challenges or issues have been encountered to date and none are anticipated

#### **Potential Implementation:**

Please see "Significant Results" write-up at the top of this page.