TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Date: 01/04/2019

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.

Transportation Pooled Fund Program Project #	**Transportation Pooled Fund Program - Report Period:**
TPF-5(332)	☐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:		
LTPP Forensic Evaluations		
Name of Project Manager(s):	**Phone Number:**	**E-Mail**
Jeff Uhlmeyer, P.E. Mustafa Mohamedali P.E. M.ASCE PMP	360-709-5485 360-704-6307	UhlmeyJ@wsdot.wa.gov MohameM@wsdot.wa.gov
Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:**
Y-12005	Y-12005	December 11, 2017
Original Project End Date:	**Current Project End Date:**	**Number of Extensions:**
November 30, 2019	November 30, 2019	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) Current funds = $265,000 Total commitments = $545,000	$37,821.86 ($140,116.10 of $210,000 obligated to date)	27.0% (based on obligated funds) 18.0% (based on contract funds)

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$37,821.86 (53.1% spent this quarter)	$20,086.05	14.0% (based on hours under obligated funds)

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 following four tasks:

1. Project Management (Task Order AA)
2. Test Section Selection (Task Order AB)
3. Forensic Evaluations
4. Final Project Report

To date, task orders have been executed for the first two tasks; i.e., funds have been obligated. These two task orders are ongoing and on schedule. All project management activities are up to date and on schedule. In terms of Task 2, more than 100 LTPP test sections have been identified for potential forensic evaluation. Nominations have been submitted for LTPP test sections in Arizona, Kansas and Washington State, and they have been approved by WSDOT for forensic desktop study. The Washington State desk top study was completed during the reporting period in question and the other two will be completed during the upcoming reporting period. Also, nominations for other LTPP test sections are either being considered or prepared by the Wood E&IS team.

Separate task orders will be executed for each forensic evaluation under Task 3, but none have been issued to date. Accordingly, there is no progress or schedule update to report at this time. Execution of Task 4 is not anticipated until later in the Project, and therefore progress and schedule reporting are not appropriate at this time.

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

Task Order AA Project Management

- Executed master agreement and Task Orders AA and AB with the University of California – Davis personnel to prepare and execute master agreement and Task Orders AA and AB.
- 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 second quarterly progress report for the project covering the period of October 1 to December 31, 2018. Also, prepared and submitted invoices for the months of September, October and November 2018.
- 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. During the reporting period in question conference calls were held on October 25 and November 29, 2018. The conference call corresponding to December 2018 will be held on January 10, 2019.
- As needed, communicated with WSDOT staff via telephone or e-mail message to address issues related to the project.

Task Order AB Test Section Selection

- During the previous reporting period, the nomination form for WSDOT LTPP test section 531005 was approved for conduct of the first desktop study under TPF-5(332). The desktop study was completed during the reporting period in question. A draft technical memorandum detailing the desktop study and its findings was submitted to WSDOT on December 4, 2018. Comments on the draft technical memoranda were received from WSDOT via

phone call and e-mail message on December 12, 2018. The draft technical memorandum was revised based on those comments, and a final version was submitted to WSDOT on December 20, 2018.

- The Wood E&IS team completed new nomination forms for LTPP test sections located in the Arizona and Kansas LTPP SPS-2 projects – 4 test sections per project. In the case of the Arizona LTPP SPS-2 project, most test sections are performing extremely well, but some are reaching the end of their service lives. Accordingly, it was suggested that an investigation be performed into whether the difference in performance is related exclusively to the influence of the section-specific design features, or if there are other contributing factors. Examining the performance of doweled vs. un-dowelled transverse joints was also recommended. With regards to the Kansas LTPP SPS-2 project, as part of the recent Tech Day on this project, it was observed that cracking mirroring the presence of dowel bars was present in many sections across the transverse joints, particularly on the 8" thick test sections. Therefore, a study of existing MIT scan data was recommended to see if the depth of the dowel bars was an issue. Depending on the findings, additional investigations could also be warranted.
- The Arizona and Kansas LTPP SPS-2 project test section nomination forms were submitted to WSDOT on November 12, 2018. Initial input on the nomination forms was received from WSDOT via e-mail message on November 15, 2018. Approval to proceed with the two desktop studies was provided by the WSDOT via phone call on December 11, 2018. Accordingly, the Wood E&IS team began working on these two desktop studies. It is anticipated that both studies will be completed during the early part of the first quarter in 2019.
- The Wood E&IS team also began working on the nomination form for the Colorado LTPP SPS-2 project test sections. The goal of this investigation is to explore changes in IRI over the course of a day. Initial investigation into this phenomenon is an office study to evaluate the role of locked-in surface curvature, temperature, and PCC pavement structure properties that potentially influence significant changes in IRI over the time of a single day, as shown with existing LTPP diurnal measurements on JPCC test sections. The results of this analysis have implications on agency specifications on how to interpret IRI measurements on JPCC measurements relative to slab curvature, and how to specify when IRI measurements are performed for new pavement construction quality assurance and quality control agency purposes. It is anticipated that the nomination form will be completed during the early part of the first quarter in 2019.
- Working with the FHWA LTPP Team and its LTPP Data Collection Contractor (DCC), the Wood E&IS project team continued to evaluate active LTPP test sections for possible inclusion in the TPF-5(332). As a result of these efforts, the Wood E&IS team is considering submitting nomination forms for LTPP test sections in California and Texas. It is also possible that nomination forms will be prepared for LTPP test sections in other States.

Anticipated work next quarter:

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. The referenced work activities will be conducted throughout the period of January 1 through March 31, 2019.

.

Task Order AB Test Section Selection

The following work activities will be carried out throughout the period of January 1 through March 31, 2019:

- Working with WSDOT, consider possibility of carrying out field and office investigations recommended in the final December 20, 2018 WSDOT LTPP test section 531005 desktop study technical memorandum.
- Complete desktop studies for LTPP test sections located in the Arizona and Kansas LTPP SPS-2 projects. This includes preparation of draft and final technical memoranda detailing each desktop study and the associated findings. Also, as appropriate, pursue follow-up investigations.
- Complete nomination form for the Colorado LTPP SPS-2 project test sections and, if approved by WSDOT, proceed with the associated desktop study.
- Continue to work on the identification of LTPP test sections for consideration for forensic evaluations (i.e., Task 2.a) and, as sections are approved by WSDOT, conduct preliminary investigation (i.e., desktop study) and prepare either detailed forensic evaluation plan or preliminary investigation report (i.e., Task 2.b).

Significant Results:

The initial desktop study was completed and two others were started during the reporting period in question. Other LTPP test sections for forensic evaluation have been identified and nomination forms for those test sections are being completed. It is anticipated that the LTPP test section identification, nomination, preliminary investigation and follow-up field/office investigations process will become better established during the upcoming reporting period.

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 problems, challenges or issues have been encountered to date and none are anticipated

Potential Implementation:

Nothing to report at this time, but now that the desktop studies (and soon to be followed by forensic evaluations) have started in earnest, data explaining the performance of the LTPP test sections will be generated, which can serve two purposes: (1) input into the LTPP database or Ancillary Information Management System (AIMS) for use by data analysts and other users, and (2) support respective State Highway Agencies with M&R decision making processes related to the test section(s) in question.