

TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Date: 03/03/2020

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 # TPF-5(332)	Transportation Pooled Fund Program - Report Period: <input checked="" type="checkbox"/> Quarter 1 (January 1 – March 31) <input type="checkbox"/> Quarter 2 (April 1 – June 30) <input type="checkbox"/> Quarter 3 (July 1 – September 30) <input type="checkbox"/> Quarter 4 (October 1 – December 31)	
Project Title: LTPP Forensic Evaluations		
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Lead Agency Project ID: Y-12005	Other Project ID (i.e., contract #): Y-12005	Project Start Date: December 11, 2017
Original Project End Date: November 30, 2019	Current Project End Date: December 31, 2020	Number of Extensions: 1

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 = \$502,959.08 (Y-12005)	\$250,984.68	50.0%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
\$250,984.68 (14.3% spent this quarter)	\$71,788.16	59.8%

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 consists of the four tasks detailed below. The task orders associated with each task have been executed and a summary of the progress to date for each task is also detailed below:

1. Project Management (Task Orders AA and AE)

All project management activities under this task are up to date and on schedule. Work on this task through November 30, 2019 was performed under Task Order AA. Work since December 1, 2019 through December 31, 2020 is being performed under Task Order AE.

2. Test Section Selection (Task Orders AB and AF)

Well over 100 LTPP test sections have been identified for potential forensic evaluation. Nominations have been submitted and approved for 44 test sections in Arizona, California, Colorado, Florida, Georgia, Iowa, Kansas, Mississippi, Montana, New Mexico, Ohio, Oklahoma, Texas and Washington. Most of these nominations were submitted prior to November 30, 2019, which was the end date for Task Order AB. However, three new nominations were submitted under Task Order AF, which extended the period of performance for the task through December 30, 2020. It is anticipated that an additional nominations will be submitted through the end of August 2020, which should allow for adequate time to complete any required follow-up investigations.

Desktop studies and the associated technical memoranda documenting the studies have been completed or will be completed by the first week of April 2020 for 41 of the 44 approved test sections. The studies and preparation of the associated memoranda have also been started for the remaining 3 test sections – Montana, Georgia and Texas. Work on the desktop studies was performed under Task Order AB until November 30, 2019, which was the end date for Task Order AB, and subsequently work has been performed under Task Order AF, which extends the period of performance through December 30, 2020.

3. Forensic Evaluations (Task Orders AC and AG)

Follow-up forensic evaluations and the associated documentation were completed for Washington State LTPP test section 53_1005 during a previous period. Field activities were completed at the Colorado SPS-2 project during a previous period. The resulting data have now been processed and entered into the LTPP database. In addition, those data have been analyzed and the desktop study technical memorandum has been update and it is presently undergoing internal review. It is anticipated that the updated memorandum will be submitted to WSDOT during the first half of April 2020. Field activities were also completed at the Texas test section 48_1111 during a previous period. Processing and entry of those data into the LTPP database were recently completed, so efforts are now underway to analyze the data and to update the desktop study technical memorandum. Follow-up field activities were completed for California test section 06_7452, but those data have not yet been processed and entered into the LTPP database. In addition, communication and coordination activities are on-going for follow-up investigations at Mississippi test section 28_5025 and Ohio test section 39_5003. Follow-up investigations also continued to be pursued for the Arizona SPS_2 project, but the agency remains unresponsive.

Activities on this task were performed under Task Order AC through the middle of March 2020, which is when the available funds were expended. Subsequently, the task activities have continued and will continue through December 31, 2020 under Task Order AG.

4. Final Project Report (Task Order AD)

Activities associated with the preparation of the final report are not anticipated to commence until October 2020. The period of performance for this task order was extended from November 30, 2019 to December 31, 2020.

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

Project Management (Task Orders AA and AE)

- 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 eighth quarterly progress report for the project covering the period of January 1 to March 31, 2020. Also, prepared and submitted invoices for the months of January, February and March 2020.
- Prepared for and participated in routine 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 and the associated task orders.
- Worked with WSDOT staff to produce LTPP forensic evaluations presentation that was delivered at the annual TRB meeting in Washington, D.C. on January 13, 2020.
- Worked with WSDOT staff to produce LTPP forensic evaluations presentation to be delivered at the April 2, 2020 FHWA LTPP webinar.
- Completed execution of updated NCE subcontractor agreements and task orders extending period of performance through December 30, 2020.
- Provided impact response to WSDOT concerning Covid-19 constraints and research project schedule. While on-going issues may impact some field activities, overall impact on project is anticipated to be small in nature.
- Continued communication and coordination activities with the FHWA LTPP team and the LTPP Data Collection Contractor (DCC) team.

Test Section Selection (Task Orders AB and AF)

- Completed and submitted to WSDOT nominations for forensic investigations at the following three LTPP test sections:
 - Montana GPS test section 30_8129 – objectives are to: (1) inspect available seasonal monitoring program (SMP) data to help understand the development of fatigue and transverse cracking in relationship to climatic and other variables.
 - Georgia GPS test section 13_7028 – primary objective is to determine if JPCP layer information, including steel reinforcement, that could be critical to understanding the performance of the test section is missing. In addition, the test section offers the opportunity to confirm the observed longitudinal and transverse cracking is reflection cracking as well as the effect of that cracking (and possibly information on steel reinforcement) on pavement smoothness. Moreover, the presence of WP longitudinal cracking (albeit only a small amount) on the test section requires an explanation.
 - Texas GPS test section 48_1096 – objectives are to: (1) examine the rapid rise in wheel path/fatigue related cracking after the 2001 overlay, (2) provide a history of crack sealing performed on the test section in order to update the contents of the LTPP database, (3) look at how the cracking and use of the lime treated layer may have contributed to mitigating the effects of moisture changes on the volume change and hence performance of the test section, and (4) perform a comparison between pavement design models predictions and observed pavement performance.
- Worked on the technical memoranda for the following forensic investigation desktop studies:
 - Completed Iowa GPS test section 19-1044 desktop study; technical memorandum was submitted to WSDOT on February 27, 2020.
 - Completed New Mexico SPS-8 desktop study; technical memorandum was submitted to WSDOT on February 29, 2020.
 - Completed Florida SPS-2 project (15 test sections) desktop study; technical memorandum was completed and it was submitted to WSDOT on April 3, 2020.
 - Completed Oklahoma SPS-10 project (6 test sections) desktop study; draft of technical memorandum was completed and it is undergoing final internal review with expectation of submitting it to WSDOT by April 9, 2020.

Forensic Evaluations (Task Orders AC and AG)

- Worked with DOT staff and LTPP contractor staff to carry out follow-up forensic evaluations for the following test sections:
 - Completed field activities – coring, FWD deflection testing, manual distress survey, and longitudinal and transverse profile surveys – associated with the follow-up forensic evaluations at California GPS test section 06_7452.

- LTPP program completed processing and entry of data resulting from the Colorado SPS-2 project (4 test sections, but FWD testing was only completed for two of the four sections) as well as the update to the desktop study technical memorandum, which is presently under-going internal review. It is anticipated that this memorandum will be submitted during the first half of April 2020.
- LTPP program completed processing and entry of data resulting from the Texas GPS test section 48_1111 and began to update the desktop study technical memorandum. It is anticipated that this memorandum will be completed and submitted to WSDOT by late April or early May 2020.
- Continued to pursue follow-up forensic evaluations for the Arizona SPS-2 project, but this has not been fruitful to date as the staff have been too busy to respond.

Project Report (Task Order AD)

- No work was performed under this task.

Anticipated work next quarter:

The following work activities will be conducted throughout the period of April 1 through June 30, 2020.

Project Management (Task Orders AA and AE)

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.

Test Section Selection (Task Orders AB and AF)

- Continue to identify candidate LTPP test section for forensic evaluation and, as appropriate, submit to WSDOT for review and approval consideration.
- Complete and submit desktop study technical memorandum for the Oklahoma SPS-10 project (6 test sections) and continue to work on desktop studies for Montana GPS test section 30_8129, Georgia GPS test section 13_7028, and Texas GPS test section 48_1096, including preparation of draft technical memoranda detailing each desktop study and the associated findings.

Forensic Evaluations (Task Orders AC and AG)

- Complete update to Colorado SPS-2 project (4 test sections) desktop study technical memorandum to reflect outcomes from the follow-up forensic evaluations and submit to WSDOT during first half of April 2020.
- Complete analysis of data resulting from the follow-up field investigations at the Texas GPS test section 48_1111 as well as update to desktop study technical memorandum based on data analysis findings.
- If processing and entry into the LTPP database is completed during the upcoming period for the follow-up field evaluation data for the California GPS test section 06_7452, begin data analysis and updated of the desktop study technical memorandum.
- Continue to coordinate follow-up forensic evaluations for the Mississippi GPS test section 28_5025 and Ohio GPS test section 39-5003 and proceed with review of information received for those two test sections to date.
- Continue to pursue follow-up forensic evaluations for the Arizona SPS-2 project, but this will depend on the agency.

Project Report (Task Order AD)

- No work is scheduled under this task until October 2020.

Significant Results:

Technical memoranda for desktop studies addressing 41 LTPP test sections have been or will soon be completed and similar memoranda for another 3 test sections are presently being prepared. These memoranda provide valuable information explaining the performance of the 44 test section pavements and, as appropriate, recommended follow-up investigations to better explain their performance. In addition, the technical memoranda that have been generated to date or are under preparation 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 the above referenced 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. However, should Covid-19 impact the follow-up field investigations past the end of August 2020, it is the intention of the project team to shift effort towards the nomination of test sections and to the desktop studies.

Potential Implementation:

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