

TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): _____ Maryland 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 # TPF-5(285)	Transportation Pooled Fund Program - Report Period: <input type="checkbox"/> Quarter 1 (January 1 – March 31, 2014) <input type="checkbox"/> Quarter 2 (April 1 – June 30, 2014) <input type="checkbox"/> Quarter 3 (July 1 – September 30, 2014) <input type="checkbox"/> Quarter 4 (October 1 – December 31, 2014) <input type="checkbox"/> Quarter 5 (January 1 – March 31, 2015) <input type="checkbox"/> Quarter 6 (April 1 – June 30, 2015) <input type="checkbox"/> Quarter 7 (July 1 – September 30, 2015) <input type="checkbox"/> Quarter 8 (October 1 – December 31, 2015) <input type="checkbox"/> Quarter 9 (January 1 – March 31, 2016) <input type="checkbox"/> Quarter 10 (April 1 – June 31, 2016) <input checked="" type="checkbox"/> Quarter 11 (July 1 – September 30, 2016)	
Project Title: Standardizing Lightweight Deflectometer Measurements for QA and Modulus Determination in Unbound Bases and Subgrades		
Name of Project Manager(s): Rodney Wynn	Phone Number: 443-572-5043	E-Mail RWynn@sha.state.md.us
Lead Agency Project ID: TPF-5(285)	Other Project ID (i.e., contract #):	Project Start Date: January/15/2014
Original Project End Date: December/31/2015	Current Project End Date: November/30/2016	Number of Extensions: 2

Project schedule status:

On schedule
 On revised schedule
 Ahead of schedule
 Behind schedule

Overall Project Statistics:

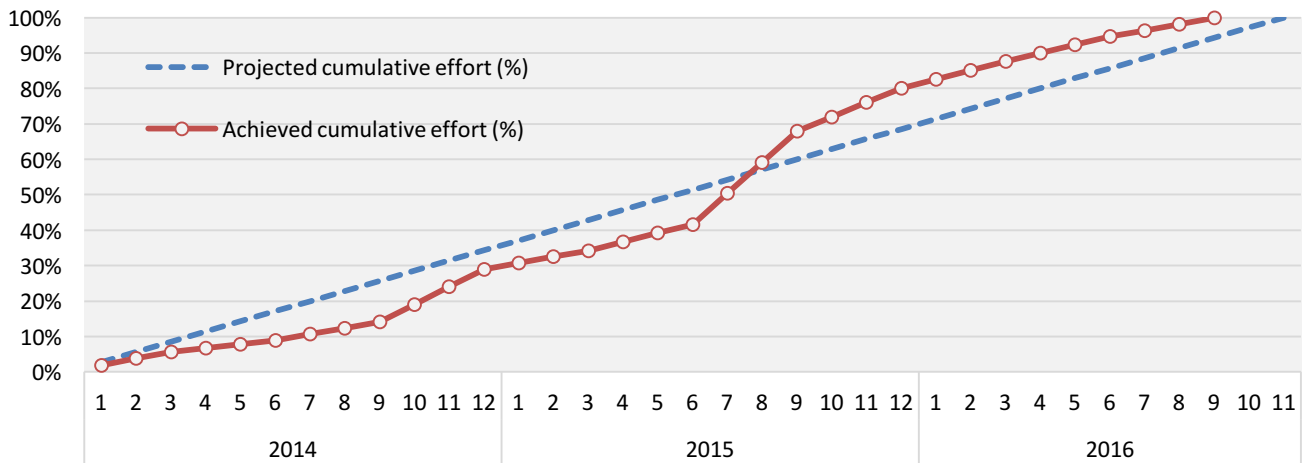
Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
\$371,984.00	\$366,766.12	98.6%

Quarterly Project Statistics:

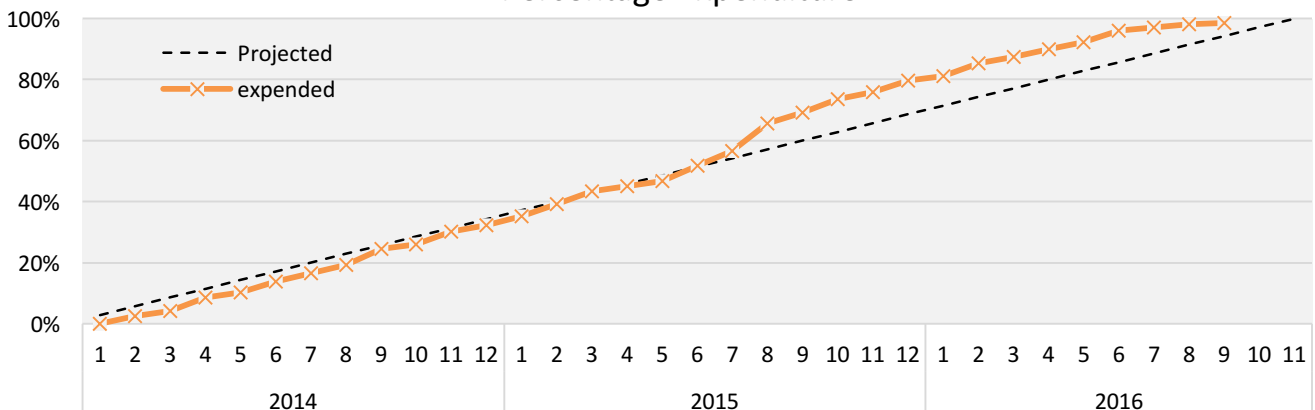
Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
\$9,443.50 (2.5%)	\$31,884.34	99.8%

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

Percentage Effort



Percentage Expenditure



The progress with respect to each Task is as followed:

Literature Review. Percent completion of Task 1: 100%

Existing specifications on QC/QA testing using LWD for Indiana, Nebraska, Minnesota, and Florida states plus the NCHR 10-84 study were reviewed and adapted in developing the proposed specifications.

Project personnel participating in these activities: Schwartz, Khosravifar, and Afsharikia.

Equipment Evaluation. Percent completion of Task 2: 100%

Target moduli values from LWD drops on proctor mold were compared for different LWDs. The Dynatest LWD annular plug option was also investigated.

Project personnel participating in these activities: Schwartz, Afsharikia, and Khosravifar.

Model Refinement/Development. Percentage completion of Task 3: 100%

Several of the models in Task 3 were refined in conjunction with laboratory efforts in Task 4, and Task 5.

Project personnel participating in these activities: Schwartz, Afsharikia, and Khosravifar.

Controlled Trials. Percentage completion of Task 4: 100%

This task was completed during the earlier quarters.

Project personnel participating in these activities: Schwartz, Khosravifar, and Afsharikia.

Field Validation. Percentage completion of Task 5: 100%

The target moduli from LWD on compacted molds of base material were compared to the field-measured moduli to assess compaction quality. The LWD testing on Proctor mold procedure has been validated.

Project personnel participating in these activities: Schwartz, Afsharikia, and Khosravifar.

Draft Test Specifications. Percentage completion of Task 6: 91%

Two proposed specifications were prepared in AASHTO format for implementation of (1) LWD on mold method of target surface modulus derivation, and (2) field quality control using LWD:

- (1) The sample preparation in lab along with the LWD testing has been illustrated in details. Field range of acceptable compaction moisture content to be determined and reported. Then the target calculation was explained based on LWD deflection measurements on mold, within the acceptable moisture range, for one-layer or two-layer systems.
- (2) In this specification, in-situ LWD testing, procedure, and comparison to the lab determined target modulus was provided. Recommendations for choosing the type of material, placing, compaction, and gravimetric water content measurement were also offered.

Project personnel participating in these activities: Schwartz, Afsharikia, and Khosravifar.

Workshop and Final Report. Percentage completion of Task 7: 84%

Progress was made during this period on documenting the results of LWD testing on Proctor mold for the field test sites, as well as the overall transcript of the final report. This comprehensive report will include the findings from each task and the final conclusions and recommendations for this project in the main body. Furthermore, the complete literature review, controlled trials construction, and field validation details will be provided in the appendices. The report will also include suggestions for future work. This report will be delivered to SHA in a format suitable for online publication.

UMD personnel contact information:

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Anticipated work next quarter:

- Delivering the Final Report draft and specifications.
- Scheduling the final workshop focusing on the research findings from Tasks 3 through 5 and the draft specification from Task 6.
- Applying potential feedbacks from technical advisory committee.

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).

Potential Implementation:

LWDs should be implemented more widely using standardized testing procedures and data interpretation methods. LWDs are a tools for performance based construction quality assurance testing that not only result in a better product but also provide the quantitative measures critical to better understanding the connection between pavement design and long term pavement performance. As the benefits of performance based quality assurance testing become increasingly apparent, more public agencies and private consultants are expected to acquire these tools and implement the standardized procedures. The product of this research will allow state DOT construction specifications to be modified to include this new lightweight deflectometer (LWD) option for construction quality assurance.