

TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): IOWA 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(368)	Transportation Pooled Fund Program - Report Period: Quarter 1 (January 1 – March 31, 2018) Quarter 2 (April 1 – June 30, 2018) X Quarter 3 (July 1 – September 30, 2018) Quarter 4 (October 1 – December 31, 2018)	
Project Title: Performance Engineered Concrete Paving Mixtures		
Project Manager: Todd Hanson	Phone: 239-1471	E-mail: todd.hanson@dot.iowa.gov
Project Investigator: Peter Taylor	Phone: 515-294-9333	E-mail: ptaylor@iastate.edu
Lead Agency Project ID:	Other Project ID (i.e., contract #): Addendum 629	Project Start Date: 10/1/17
Original Project End Date: 12/31/2019	Current Project End Date:	Number of Extensions: PFS

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	Total Percentage of Work Completed
\$1,345,000	\$314,152.32	2%

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Completed This Quarter
\$117,453.50		

Project Description:

Concrete for pavements has historically been specified and field controlled around acceptance criteria that do not relate well to durability (slump, air content, strength). Paving concrete specifications need to be built upon engineering properties that directly relate to good field performance. With the recent advancements in research knowledge on failure mechanisms, and the parallel development of better tests, this is possible.

A review of many current and new specifications has found that they are still largely based on strength, slump, and air, which provide limited correlation with the mechanisms of pavement failure currently observed. The need for change in the way we specify concrete, especially concrete for paving mixtures, is becoming increasingly apparent as mixtures become more complex with a growing range of chemical admixtures and supplementary cementitious materials. Traffic loadings continue to increase, more aggressive winter maintenance practices are implemented, and demand increases to build systems more quickly, cheaply, and with increased longevity.

Tasks include:

- Task 1: Implementing What We Know
- Task 2: Performance Monitoring and Specification Refinement
- Task 3: Measuring and Relating Early Age Concrete Properties to Performance

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

For Quarter ending September 30, 2018

- The CP Tech Center/PEM Team joined the FHWA MCT group, the Minnesota DOT, the Minnesota Concrete Paving Association and Shafer Contracting Co. on July 18, 2018 to highlight the PEM initiative, discuss project specifics and demonstrate testing methods at an Open House on an I-35 concrete overlay project in Washington County, near Minneapolis/St. Paul. Forty-seven representatives of state and local agencies, consultant engineering firms and industry attended the event.
- The Iowa DOT conducted the first PEM shadow testing project on US 20 in NW IA in August 2018 in conjunction with the FHWA/PEM incentive program. On August 1, 2018 CP Tech Center/PEM Team again collaborated with the FHWA MCT group, Iowa DOT, the Iowa Concrete Paving Association and Cedar Valley Corporation to share the intent and progress of the PEM initiative and demonstrate testing methods at an Open House near the US 20 project. Twenty six representatives of state and local agencies, consultant engineering firms and industry attended the event.
- In July, 2018 the California DOT joined the TPF-5(368) pooled fund project, bringing the participation level to 16 states. We have welcomed new TAC member David Lim and are working with the Department to plan and schedule a PEM Workshop this coming winter in California.
- On August 22, 2018, a PEM presentation was part of the program for the annual Arkansas Concrete Paving Workshop in Little Rock, AR.
- A PEM update was provided to the PCA Products and Standards Committee in Chicago on August 28, 2018.
- The Pennsylvania Department of Transportation is conducting FHWA/PEM shadow testing on a project near Pittsburgh.
- The South Dakota DOT is conducting PEM shadow testing under the FHWA/PEM incentive program on an I-90 concrete pavement project in Western SD. A meeting was held on site with 11 state employees and the general contractor to discuss the side by side testing. The Department

is collecting SAM test data as well as performing Box tests and resistivity tests per the FHWA incentive program.

- It should be noted that MN, MI, WI and NY have informed the PEM Team that they are shadow testing for PEM on several of their projects.
- The PEM TPF-5(368) TAC gathered for their second live meeting on Tuesday evening, September 18, 2018 in Saratoga Springs, NY. The agenda included brief updates from members of the PEM Team, FHWA and Industry. The remaining portion of the meeting was dedicated to an open forum discussion of future direction and strategy for the initiative. The meeting was held in conjunction with the Fall NC² meeting in Saratoga Springs, NY.
- A PEM update was also included on the agenda for the NC² meeting enjoying record attendance of 185 individuals with 30 state agencies and the Illinois Tollway participating. PEM Presentations focused on the Minnesota and Iowa experiences with FHWA/PEM implementation, an FHWA report on variability of PEM tests, and an industry reflection on SAM testing and the effects of changing variables.
- PEM Team members worked throughout the quarter, refining and responding to industry comments as they prepared the PP-84-19 submitted to the AASHTO COMP Technical Committee.
- Conversations continue with state DOT participants to identify and respond to their needs, questions and plans for PEM shadow testing in 2019 or beyond. Currently, NC, NY and ID and KS are discussing events/training/shadow testing for 2019.
- Refinements of the PEM Website are ongoing. Users will find valuable information about PEM, test method summaries, videos, slideshows or You Tube links, a schedule of shadow projects and information pertinent to test data entry. The link is www.cptechcenter.org/pem.

Anticipated work next quarter:

- PEM Team calls with state TAC members to assess progress.
- Development and distribution of Tech Briefs: “What Contractor’s Need to Know About PEM” and “What State Agencies Need to Know About PEM”
- Completion of a one day PEM Workshop that will be available to agencies and industry.
- PEM update at the NRMCA Concrete Works meeting on October 1, 2018 in the Washington, D.C. area.
- Planning for PEM Workshops/Demos for California DOT and in conjunction with ACPA Concrete Paving Workshops in SD (Jan) and PA (Feb).
- A PEM focus session at the ACPA Annual Meeting in Ft. Lauderdale in November.
- Outreach and assistance to SHA and industry as requested.
- Continued effort to expand participation in the study.
- Review and update of PP-84 for the 2020 edition.

Significant Results:

Progress in acquainting agency and industry about the PEM initiative. Growth of interest and participation in shadow testing. Discussions about where we are and where we going next in the process, including how the PEM approach will eventually impact QA/QC and performance based specifications.

Circumstances affecting project or budget (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).

TAC members

Ahlstrom, Gina / Federal Highway Administration
Baer, Patricia / Pennsylvania Department of Transportation
Covay, Jeff / Arkansas Department of Transportation
Dennis, Dan / New York State Department of Transportation
Hanson, Todd / Iowa Department of Transportation
Hayes, Chad / Wisconsin Department of Transportation
Hodges, Darin / South Dakota Department of Transportation
Hunter, Brian / North Carolina Department of Transportation
Krstulovich, James / Illinois Department of Transportation
Lim, S. David / California Department of Transportation
Masten, Maria / Minnesota Department of Transportation
Meggers, Dave / Kansas Department of Transportation
Miller, Dan / Ohio Department of Transportation
Prieve, Eric / Colorado Department of Transportation
Romero, Matt / Oklahoma Department of Transportation
Staton, John / Michigan Department of Transportation
Wielenga, Craig / Idaho Transportation Department