

**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, 2022) Quarter 2 (April 1 – June 30, 2022) Quarter 3 (July 1 – September 30, 2022) X Quarter 4 (October 1 – December 31, 2022)	
Project Title: Performance Engineered Concrete Paving Mixtures		
Project Manager: Todd Hansen	Phone: 239-1471	E-mail: todd.hansen@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:	Current Project End Date: 12/31/2022	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
\$2,230,000	\$2,123,970	NA

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Completed This Quarter
\$150,048		

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 through a growing use of a 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, but with intent for 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.):

- A TAC meeting was held on Dec 13, 2022
- The final report was submitted to the TAC for review shortly after that, comments received were incorporated and the draft report was submitted to IA DOT on December 30, 2022

Anticipated work next quarter:

- An extension to March 31, 2022 was requested in order to make final revisions and post the final report on the website.

Significant Results:

Through the PEM pooled fund, the project team learned the following:

- Each state agency is unique in the way it specifies concrete pavements; Table 2 in AASHTO R 101 gives agencies choices in the PEM properties and standard test methods to use.
- The success of the PEM shadow projects was the result of coordination and communication between state agencies and industry.
- New test methods require training and practice in following standard methods for the tests to achieve the desired results.
- Contractors involved in the shadow projects were supportive and continue to use the tools provided through the PEM pooled fund project.
- Concrete pavement sustainability is improved when PEM approaches are used.
- Additional technology transfer activities are needed to further expose agencies and industry to PEM and its benefits.
- The goals of the pooled fund project were achieved, including the implementation of PEM in practice, the delivery of education and training on the PEM approach and tests for PEM properties, adjustment of the specification values used in concrete paving, and the continued development of tools to relate early-age concrete properties to performance.

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

Praul, Mike & Bob Conway / Federal Highway Administration
Baer, Patricia / Pennsylvania Department of Transportation
Richard Bradbury / Maine Department of Transportation
Covay, Jeff / Arkansas Department of Transportation
Dennis, Dan / New York State Department of Transportation
Dietz, Dana / Idaho Transportation Department
Hanson, Todd/ Iowa 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
Wadley, Dan / Kansas Department of Transportation
Mellons, Jason/Tennessee Department of Transportation
Miller, Dan / Ohio Department of Transportation
Parry, Jim / Wisconsin Department of Transportation
Prieve, Eric / Colorado Department of Transportation
Johnson, Daryl / Oklahoma Department of Transportation
Bahmer, Thomas / Michigan Department of Transportation
Waters, Jason / Georgia Department of Transportation