TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Wisconsin 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 # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)*	**Transportation Pooled Fund Program - Report Period:**
TPF-5(302)	☐ 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:		
Modified Binder (PG+) Specification and Quality Control Criteria		
Name of Project Manager(s):	**Phone Number:**	**E-Mail**
Barry Paye	(608)246-7945	barry.paye@dot.wi.gov
Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:**
0092-14-20/22 (original/amendment)		9/30/2014
Original Project End Date:	**Current Project End Date:**	**Number of Extensions:**
9/30/2015	12/31/2016	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
$250,000	$185,819.00	80%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$21,122.21, 8.4%	$21,122.21	78%

Project Description:

The intent of this project is to provide essential information to five partner state agencies (Wisconsin, Ohio, Idaho, Kansas and Colorado DOTs) to support standardization of PG+ specifications by identifying those PG+ test methods that are reproducible and show promise in simulating actual field performance.
Based on the stated needs and goals, the main objectives of the proposed pooled fund research include:
1- Perform detailed assessment of current PG+ and modified binder quality control procedures in partnering states in terms of reliability, applicability, and relevance to performance and quality of modified asphalt binders.

2- Use a range of modified binders, representative of the products currently specified by partner states, to develop unified test procedures and specification criteria based on products placed in the field.

3- Improve product quality and reliability through conduct of ruggedness studies and development of precision and bias statements for selected tests.

4- Introduce consistency to current products supplied by elimination or reduction of differences in modified binder acceptance tests and criteria throughout member states.

5- Validate and establish relevance of suggested PG+ and quality control procedures in terms of mixture performance

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

Over the course of this Quarter, the following bullet points summarize the sprogress:

-White Papers: At the end of April and early May, three White Papers were submitted to the Pooled Fund members regarding Multiple Stress Creep and Recovery (MSCR) binder grading, Intermediate temperature cracking binder test methods, and low temperature cracking binder and mixture testing. The papers were written based on the asphalt binder testing completed to date that included PG grading, MSCR, Linear Amplitude Sweep, Binder Yield Energy, Elastic Recovery DSR, and Single Edge Notched Beam testing. Each binder testing method was conducted on 3 binders provided by each member state. In addition, the low temperature cracking white paper was also based on testing completed from 13 mixture specimens provided by member states.

-Teleconference call: On June 2nd, 2016, University researchers hosted a call to discuss the results presented in the White Papers and outstanding action items to complete the project. A summary of the significant results and discussion points regarding the white papers are provided in the significant results section of the Quarterly Report. During the teleconference call, University researchers and the member states agreed to revise the original mixture performance testing work plan to include i-Fit SCB testing after long term oven aging and to removed the IDT fatigue testing for the time being. In addition, the Pooled Fund member from Idaho, Mike Santi, offered to provide IDT creep compliance data to be included into the Pooled Fund database.

-Mixture Performance Testing: The revised mixture performance testing plan includes the following tests: ATCA low temperature cracking test (100% completed), i-Fit short term aging SCB testing, and i-Fit long term aging SCB testing. Results form the ATCA testing were reported in the low temperature performance white paper. Both short and long term aging i-Fit SCB testing procedures are currently underway (all samples have been prepared and tested for the short term

Anticipated work next quarter:

Three tasks remain to complete the required work outlined in the proposal:

1) Ruggedness Testing: Results from ruggedness testing will be completed to determine what factors associated with running the AASHTO TP 123 testing procedure are rugged. Findings from the ruggedness testing will be summarized in an independent report for the member states .

2) Collection of Field Survey data: Member states indicated that they will have a better understanding regarding the status survey collection and when in can be provided on June 30th. The desired collection date of all the survey data for the is July 30th. This date may be revised at the beginning of next quarter.

3) Completion of i-Fit SCB mixture performance testing report: All SCB testing procedures are anticipated to be completed early next quarter. Upon completion, UW researchers will prepare a stand-alone document summarizing the results of the SCB testing and the relationship with binder testing results collected to date; similar to White paper number #3 regarding the low temperature cracking test methods.

4) Completion of final report draft: completion of the aforementioned out-standing tasks will encompass the testing and analysis outlined in the original work plan. A draft version of the final report is projected to be completed by the week of August 29th for review. The final report will then be written based on comments from the members states.

Significant Results:

Significant results during this quarter were provided in the three white papers circulated to the member states. In addition, significant results and discussion points during the June 2nd teleconference call were summarized in a meeting minutes document that was also provided to all member sates. The following highlights the significant takeaways from the teleconference call and white papers:

1. White Paper #1: MSCR specification development.
   i. At the end of the white paper, there are two recommended options for implementation of the MSCR.
      a. Option 1: Maintain identical binder formulations and replace ductilometer bath.
      b. Option 2: Develop specification limits using the Jnr parameter as the indicator for polymer loading in a similar way to AASHTO M332.
   ii. Based on the discussion, there are two pieces of information required to help support partner states specification development:
      a. For those member states who identify with Option 1, an alternative test method is available to indicate polymer loading: Elastic Recovery DSR (AASHTO TP 123). UW will analyze the available data to recommend new ER DSR limitations based on the data collected from the Pooled Fund and WCTG binders.
      b. For those member states who identify with Option 2, no information was provided regarding the relationship between G*/sinδ and Jnr. MARC researchers will provide a correlation between MSCR Jnr and G*/sinδ to better understand the correlation between grade bumping and M332 traffic level designations.
   iii. Member states are interested in addressing how grade “softening” or “dumping” will be addressed in a specification that uses the AASTO T350 and M332 grading procedure. This concern may be addressed through future testing of blended RAP/RAS binder with modified binders.

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).

WisDOT has approved an amendment adding $54,314.00 and extending the project to December 31, 2016 (pending). The amendment was considered for the total project budget, of $250,000, and project end date shown in the quarterly statistics at the top of the report.

Potential Implementation: