**TRANSPORTATION POOLED FUND PROGRAM**

**QUARTERLY PROGRESS REPORT**

Lead Agency (FHWA or State DOT): State DOT- Massachusetts 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 #**  *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)*  TPF-5(146) | | **Transportation Pooled Fund Program - Report Period:**  □Quarter 1 (January 1 – March 31)  □Quarter 2 (April 1 – June 30)  ⌧Quarter 3 (July 1 – September 30)  □Quarter 4 (October 4 – December 31) | |
| **Project Title:** Evaluation of Modified Performance Grade Binders in Thin Lift Maintenance Mixes and a Reflective Crack  Relief Layer Mix | | | |
| **Project Manager: Phone: E-mail:** | | | |
| **Project Investigator: Phone: E-mail:**  Professor Walaa S. Mogawer, PE (508) 910-9824 wmogawer@umassd.edu | | | |
| **Lead Agency Project ID:** | **Other Project ID (i.e., contract #):** | | **Project Start Date:**  5/1/2007 |
| **Original Project End Date:**  5/31/2009 | **Current Project End Date:**  12/31/2011 | | **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** | **Total Percentage of Work**  **Completed** |
| $365,000 |  |  |

***Quarterly*** Project Statistics:

|  |  |  |
| --- | --- | --- |
| **Total Project Expenses**  **This Quarter** | **Total Amount of Funds**  **Expended This Quarter** | **Percentage of Work Completed**  **This Quarter** |
|  |  |  |

**Project Description:**

Pavement experts have long believed that a superior Hot-Mix Asphalt (HMA) used in thin lifts can be prepared by using a high performance elastic binder. This type of HMA is essential for rehabilitation and maintenance purposes throughout the northeast United States. A mix with a high performance elastic binder can also be used in new pavement construction, like Open Graded Friction Course (OGFC) and Stone Matrix Asphalt (SMA).

The primary objective of this research project is to design and evaluate thin lift maintenance and rehabilitation HMA mixes as well as develop a Reflective Crack Relief Layer (RCRL) mix utilizing modified binders. Specifically, thin lift mixes will be developed using Superpave design methodology. These mixes will then be evaluated for their resistance to low temperature cracking and rutting and the performance of these modified mixes will be compared.

HMA mix designs with Nominal Maximum Aggregate~~s~~ Sizes (NMAS) of 4.75 mm and 9.5 mm will be designed and evaluated using different modified binders. These mixes are the type that could be used for maintenance and rehabilitation. One additional mix RCRL mix will also be developed utilizing modified binders.

Several modified asphalt binders currently being used by the pooled fund states for similar applications will be included in the mix design process. An attempt will be made to use the same base asphalt for all modified asphalt binders.

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

1. UMass Dartmouth continued work on a draft outline of the final report for this project.
2. UMass Dartmouth received approval from MassDOT, the lead state, to host a workshop as part of the next meeting tentatively scheduled in October 2011. The workshop will be conducted by Dr. Donald Christensen, Ph.D., P.E. and is related to the outcomes of the National Cooperative Highway Research Program (NCHRP) Project 9-33 “A Mix Design Manual for Hot-Mix Asphalt.” UMass Dartmouth began preparations for hosting this workshop.
3. Awaiting the final low temperature creep compliance data (2 mixes) from University of New Hampshire.
4. UMass Dartmouth requested a no cost extension for the project. The basis for this request is to allow time for additional testing of the mastics and asphalt binders. The current performance graded (PG) binder specification uses parameter G\*sinδ to quantify binder fatigue property, which has long been known to be the weakest part of the specification. Research has shown that a newly developed test, namely the Linear Amplitude Sweep (LAS) test, correlated fairly well with LTPP field fatigue cracking data. The LAS test will be used to evaluate the fatigue characteristics of the binders and mastics used in this study. Furthermore, the LAS results will be correlated to the fatigue characteristics of the mixtures evaluated in this study. The new proposed end date of the project is December 31st, 2012.

**Anticipated work next quarter:**

1. Setup and conduct next committee meeting for this project.

2. Start to setup a new test to evaluate the fatigue characteristics of asphalt binders.

3. Continue work on the final report.

**Significant Results:**

**Circumstance 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).**