**TRANSPORTATION POOLED FUND PROGRAM**

**QUARTERLY PROGRESS REPORT**

Lead Agency (FHWA or State DOT): \_FHWA\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**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(019) & SPR-2(174)*  *Full-Scale Accelerated Performance Testing for Superpave*  *and Structural Validation & Accelerated Pavement*  *Testing of Crumb Rubber Modified Asphalt Pavements* | | **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:**  TPF-5(019)  SPR-2(174) | | | |
| **Project Manager: Phone: E-mail:**  Nelson Gibson 202-493-3073 nelson.gibson@dot.gov | | | |
| **Project Investigator: Phone: E-mail:**  Nelson Gibson 202-493-3073 nelson.gibson@dot.gov | | | |
| **Lead Agency Project ID:**  - | **Other Project ID (i.e., contract #):**  **-** | | **Project Start Date:**  January 2002 |
| **Original Project End Date:**  **-** | **Current Project End Date:**  December 2008 | | **Number of Extensions:**  **-** |

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** |
| $983,697.52 TPF-5(019)  + $500,000.00 SPR-2(174)  $1,483,697.52 | $928,480.10 TPF-5(019)  + $470,972.58 SPR-2(174)  $1,399,452.68 | 100% |

***Quarterly*** Project Statistics:

|  |  |  |
| --- | --- | --- |
| **Total Project Expenses**  **This Quarter** | **Total Amount of Funds**  **Expended This Quarter** | **Percentage of Work Completed**  **This Quarter** |
| $0 | $0 | 0 |

**Project Description:**

(Abstract from Draft Final Report)

The primary objective of this full scale accelerated pavement testing was to evaluate the performance of unmodified and polymer modified asphalt binders and to recommend improved specification tests over existing Superpave Performance Grading methodologies. Candidate replacement tests were evaluated via their ability to discern fatigue cracking resistance and rutting. Two fatigue cracking specification tests were identified as being more capable than others; binder yield energy and critical tip opening displacement. Two rutting specification tests that quantify irrecoverable deformations exhibited the best strength to capture rutting; Multiple Stress Creep and Recovery and oscillatory based non recoverable stiffness.

Based on the full scale performance and laboratory tests, crumb rubber (recycled tires) modified asphalt (Arizona wet process) was shown to significantly slow or stop the growth of fatigue cracks in a composite asphalt pavement structure. A hybrid technique to modify asphalt with a combination of crumb rubber and conventional polymers (terminally blended) exhibited good fatigue cracking resistance relative to the control binder, without any special handling procedures needed for some crumb rubber modified asphalts. Also, a simple addition of polyester fibers to asphalt mix was shown to have high resistance to fatigue cracking without the use of polymer modification.

The research study also quantified the capabilities of NCHRP mechanistic-empirical pavement design and analysis methodologies to predict rutting and fatigue cracking of modified asphalts that were not captured in the calibration data from the Long Term Pavement Performance Program. Falling Weight Deflectometer, multi depth deflectometer and strain gauge instrumentation were used to measure pavement response. The results illustrated that the globally-calibrated mechanistic-empirical performance models could differentiate between structural asphalt thickness but had difficulty differentiating the modified from the unmodified asphalt binder performance. Nonetheless, the mechanistic-empirical performance ranking and predictions were enhanced and improved using mixture-specific performance tests currently being implemented using the Asphalt Mix Performance Tester.

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

* The CTOD test method was presented to the FHWA Asphalt ETGs and the draft final report was provided to the ETG for review
* The extended accelerated aged fatigue cracking and ALF extracted study data were analyzed, submitted to the 4th International TRB Conference on Accelerated Pavement Testing and tentatively accepted – the importance of this is that the long term aged ALF performance again confirmed the discriminating abilities of CTOD to capture cracking performance for different levels of aging.

**Anticipated work / close-out activities for next quarter:**

* Gather and address the technical comments from both participant and the FHWA Asphalt ETG.
* Submit final round of comments to editor for hard copy and web publishing
* Complete the mailing package containing (1) flexible silicone DENT CTOD molds + metal specimen tabs, (2) test method protocol for review and (3) DVD containing the audio and video of the first technical close out webinar.
* Develop a schedule for second final close out technical webinar which will allow for sufficient planning and final review of draft report by participants.
* Receive all necessary approvals from FHWA CFO for financial close out.

**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).**