

## 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.*

<b>Transportation Pooled Fund Program Project #</b> TPF-5(300)	<b>Transportation Pooled Fund Program - Report Period:</b> Quarter 1 (January 1 – March 31, 2015) X Quarter 2 (April 1 – June 30, 2015) Quarter 3 (July 1 – September 30, 2015) Quarter 4 (October 1 – December 31, 2015)	
<b>Project Title:</b> Performance and Load Response of Rigid Pavement Systems		
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<b>Lead Agency Project ID:</b>	<b>Other Project ID (i.e., contract #):</b> Addendum 504	<b>Project Start Date:</b> 5/29/14
<b>Original Project End Date:</b> 5/31/2017	<b>Current Project End Date:</b> 5/31/2019	<b>Number of Extensions: PFS</b>

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
\$1,520,000.00	\$149,696.74	30%

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Completed This Quarter
\$46,389.15		10%

**Project Description:**

The modern approach to highway design is embodied in the Mechanistic-Empirical Pavement Design Guide (MEPDG), which incorporates models embedded in dedicated software, such as AASHTOWare Pavement ME Design, to predict pavement performance in greater detail than before. Full implementation of the MEPDG by state departments of transportation requires customizing or calibrating the software to state and local conditions, which in turn requires collecting data on climate, material properties, load response, and pavement performance.

The MEPDG software uses these data inputs to more accurately simulate the load response of pavements and long-term pavement performance. Local calibration of the software involves comparing long-term performance simulation results to actual performance data at local sites if possible or from matching pavements in the LTPP database. New York is one of the states that have previously instrumented test pavement sections to acquire local data to improve calibration of the MEPDG software. The installed sensors are still functioning to an extent that permits collection of additional useful data. This project has these objectives:

- Collecting load response and performance data and environmental monitoring at selected test pavements in New York for four years.
- Installing new instrumented sections as needed for a better understanding of rigid pavement response, including monitoring for the duration of the project.
- Determining the impact of a base on long-term performance of rigid pavement utilizing the data acquired in fulfilling the first two objectives and other nationally available data on the topic.

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

NYS DOT priority task list:

- Task 1. Develop relationships between PCC slab thickness and pavement performance
- Task 2. FWD Analysis Procedures

**April:**

For the month of April 2015, efforts included continuing to create catalogue tables using the calibrated Pavement ME program. The attached Excel sheet shows the effort to date. In April Regions 1 and 10 were added. Figure 1 below taken from the Excel data shows the design thickness versus the AADTT categories listed in Table 1. The figure tentatively shows a lower and upper bound to the design thicknesses for the state of NY.

Information given at an LTPP meeting at Ohio University in April indicated that LTPP will soon have the ability to use NASA weather database MERRA to create virtual weather stations at any location in the US. This information will be used to create virtual weather stations at various locations in the State of New York as requested by the DOT.

The research team will continue efforts in May to finish the design tables for additional regions. Also, the team will implement the overlay design Excel program. Data were sent to ORITE to design an overlay project. This will be given high priority in the next weeks.

Table 1 AADTT Categories used in Figure 1

Initial AADTT	80 kN ESALs (million)	Chart Category
AADTT<=1577	ESALs<=22	1
1577<AADTT<=2588	22<ESALs<=36	2
2581<AADTT<=4660	36<ESALs<=65	3
4660<AADTT<=7170	65<ESALs<=100	4
7170<AADTT<=11830	100<ESALs<=165	5
11830<AADTT<=17924	165<ESALs<=250	6
17924<AADTT<=28678	250<ESALs<=400	7

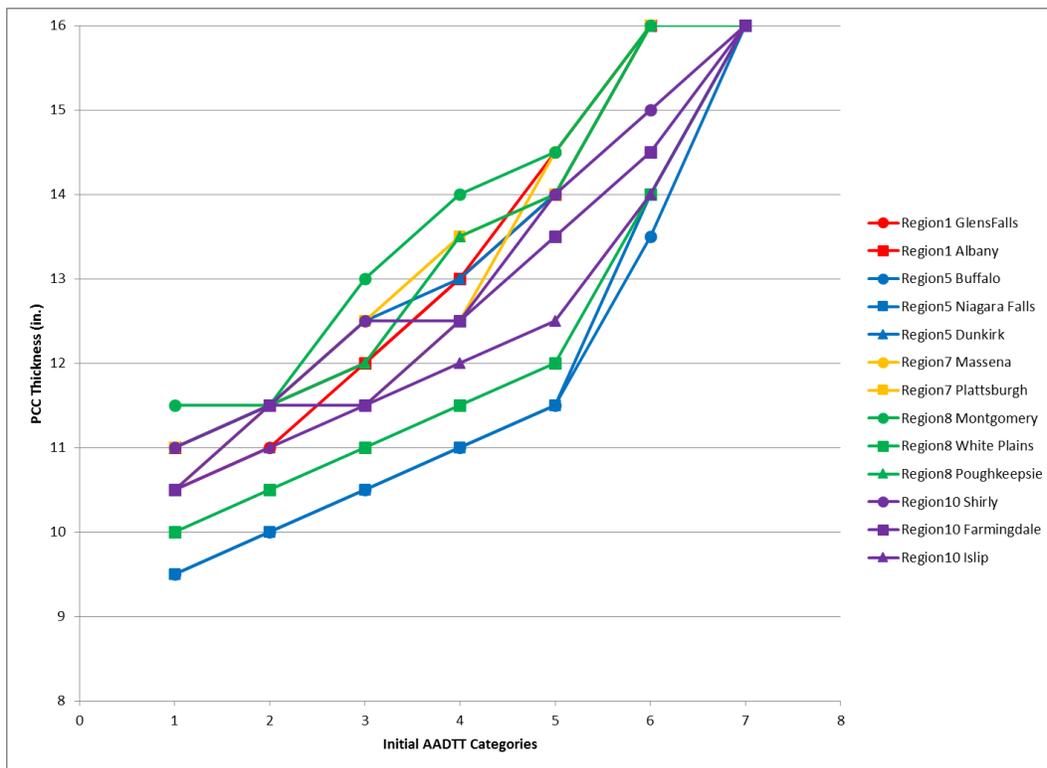


Figure 1 PCC Thickness versus AADTT for NY Regions

**May:**

- Work continued with the MEPG runs for the remainder of the NY regions. All regions were completed by the end of the first full week of June.
- The research team received FWD data from the I81 project and is working to use the Excel software to complete the overlay design. The data files used by NY are not coded properly for use by the program. The data files provided were modified by inserting the proper codes. The

codes required include the location of the drops with respect to cracks or other distress in the pavement. In addition the data required the last sensor to be at 60". As of today the data files have been fixed and the program adjusted to accept the last sensor at 48". The overlay design will be sent to within the early part of next week.

- Work continues to schedule site visits to the I90 Syracuse test section as well as the Rochester test sections. Preliminarily the site visits are set for the week of June 15<sup>th</sup> 2015.
- The contractor is in the process of buying the cabinet for the Rt9A project. As soon as that is installed the research team will plan a trip to the project site.

## **June:**

The progress for the month of June included;

- Completion of the study for Task 2 on the overlay design. A memo with the results was prepared and sent to Dr. Bendaña. Work continues on a procedure document to enable more efficient FWD data collection that will allow the data analysis to be completed more quickly.
- Work on the MEPDG catalog is continuing with creation of catalog tables underway. A draft revision was reviewed by Dr. Bendaña. Following his suggestions the research team is completing work on the tables as requested. To date several regions are being completed.
- Field trips to I-90 Thruway project and I-490 both east and west bound test sections were conducted during the week of June 15. Data were downloaded from the systems on I-90. The data loggers were reset and are continuing to collect data. FWD data and forensic investigations were conducted on all three sites following the LTPP SHRP protocols. The pavement on both I-90 and I-490 showed no signs of distress and pavement sections are still performing well.

## **Anticipated work next quarter:**

- Continue creating design tables for NYSDOT regions
- Install new cabinet on the RT9A project site when requested.
- Discussions are continuing on selection of a site for instrumented pre-cast slabs.

NYSDOT priority task list:

- Task 1. Develop relationships between PCC slab thickness and pavement performance: has been nearly completed waiting on feedback from NYSDOT, then we will issue a short report on the findings
- Task 2. FWD Analysis Procedures for overlay design will continue. We have adopted software used by ODOT to be used by the NYSDOT. We will continue writing the procedure to collect FWD data and run the program.

## **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).**