

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING March 31, 2008

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Perpetual Pavement Instrumentation For the Marquette Interchange Project	Project ID: 0092-06-01
Administrative Contact: Nikki Hatch	Sponsor: Wisconsin Department of Transportation
WisDOT Technical Contact: Leonard Makowski	Approved Starting Date: Oct 20, 2005
Approved by COR/Steering Committee: \$1999,937	Approved Ending Date: June 30, 2008
Project Investigator (agency & contact): Marquette University, James A. Crovetti	

Percent Complete: 98% (Phase 1) – 90% (Phase 2) – 95% (Total)

Request a No Cost Time Extension (Please Select One): YES NO

Reason for No Cost Time Extension:

Project Description:

This project is investigating the in-service performance of the HMA perpetual pavement being constructed within the North Leg of the Marquette Interchange project. A wide variety of pavement sensors will be procured and installed within the pavement structure during normal construction operations. The sensors are intended to provide real-time recordation of axle loads and resultant stress/strain at critical pavement locations.

Progress This Quarter:

(Includes project committee mtgs, work plan status, contract status, significant progress, etc.)

General maintenance on the system has continued. All sensors were still producing logical data with the exception of the replacement pavement temperature gradient probe which was installed during the Summer of 2007. This sensor began acting erratically on February 2, 2008. Diagnostics of this sensor indicate that replacement will be warranted as soon as a new probe is fabricated and weather/traffic conditions permit safe installation.

The web-server launched to host project data www.mchange-strain.com has been maintained and operation continued. The program that was developed to analyze the pavement strain data was deployed. This program analyzes individual sensor strain traces, correctly matches them their respective wheel loads, and computes peak tensile strains, time of loading, and area under the tensile strain pulses. All program subroutines have been verified. The program was run against the database with the results stored in a separate database table. Program outputs have been tested to ensure that proper results are being generated.

The draft final report was prepared for submission to the Flexible Pavement TOC. This report documents all Phase II activities and provides recommendation for implementation and further research activities.

Work Next Quarter:

System maintenance will continue as usual. A replacement temperature gradient probe will be fabricated and installed into the shoulder immediately adjacent to the failed probe that was installed during the summer of 2007. The existing surface channel cuts will be cleaned and re-used for sensor wire placement. The draft final report will be finalized prior to April 10, 2008 and electronically submitted for review to all Flexible Pavement TOC members. A final project presentation will be made to the Flexible Pavement TOC on May 10, 2008. Comments received

during the project presentation, and from the draft report reviews completed prior to May 31, 2008, will be incorporated into a Final Project Report, which will be produced, copied and submitted to WHP prior to June 30, 2008.

Circumstances Affecting Progress/Budget:

None

Gantt Chart – Phase I:

Phase I Project Task	CY 2005			CY 2006												CY 2007								
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	
Task 1: Literature Review (7% of Total)	P A	P A	P A																					
Task 2: Installation Plan (9% of Total)		P A	P A	P A	R A	R																		
Task 3: Procurement and Installation (74% of Total)							P A	P A	P A	P A	P A													
Task 4: System Demonstration (4% of Total)												P												A
Task 5: Final Report (6% of Total)										P	P	P A	R A	P A										A

Gantt Chart – Phase II:

Phase II Project Task	CY 2007							CY 2008					
	J	J	A	S	O	N	D	J	F	M	A	M	J
Task 1: Maintain System Integrity (27% of Total)	P A	P A	P A	P A	P A	P A	P A	P A	P A	P A	P A		
Task 2: Develop Data Packages (24% of Total)	P A	P A	P A	P A	P A	P A	P A	P A	P A	P A	P A		
Task 3: Develop Automated Data Analysis Techniques (25% of Total)	P A	P A	P A	P A	P A	P A	P A						
Task 4: Report Preparation (24% of Total)				P A	P A	P A	P A	P A	P A	P A	R A	R A	P

P – Proposed
A – Actual
R – WisDOT Review