

**OHIO DEPARTMENT OF TRANSPORTATION
QUARTERLY RESEARCH REPORT**



For Quarter Ending: June 30, 2009

Date Submitted: July 8, 2009

Project Title:	Evaluation of Fiber Reinforced Composite Dowel Bars and Stainless Steel Dowel Bars		
Research Agency:	Applied Pavement Technology, Inc.		
Principal Investigator(s):	Roger M. Larson and Kurt D. Smith		
State Job Number:	134411	Agreement Number:	22160
Project Start Date:	October 17, 2008	Contract Funds Approved:	\$54,000
Project Completion Date:	October 17, 2011	Spent to Date:	\$9,875
18.3 % Funds Expended		20 % Work Done	23.6 % Time Expired

List the Technical Liaisons and other individuals who should receive a copy of this report:

Roger Green (Office of Pavement – 614-995-5993)

TPF-5(188) Technical Panel Members: Mark Gawedzinski (Illinois); Andy Gisi (Kansas); Irene Battaglia (Wisconsin); Max Porter (Iowa State University); Seung-Kyoung Lee (FHWA)

SUMMARY OF PROGRESS FOR QUARTER:

*Attach a progress schedule consisting of graphical information depicting (1) a schedule of research activities tied to **each task** defined in the proposal, (2) a comparative status of actual versus estimated expenditures, (3) a percentage completion of the research, (4) and a brief description of the activities accomplished by **each member** of the research team as listed in the project budget.*

The quarterly progress report for the period ending March 31, 2009 was prepared by Roger Larson and Kurt Smith and submitted on April 3, 2009.

Comments from all Technical Panel members on the Revised Evaluation Plan were received. Work on the Revised Interim Report and Annotated Bibliography (including updated Evaluation Plan) by Roger Larson and Kurt Smith was completed and these were distributed to the panel members on April 16, 2009.

The various states have provided a summary of testing status:

IA – IA did not participate in this pooled funds study and Sandra Larson indicated that the Iowa DOT has no evaluations planned of their alternative dowel bar experimental projects.

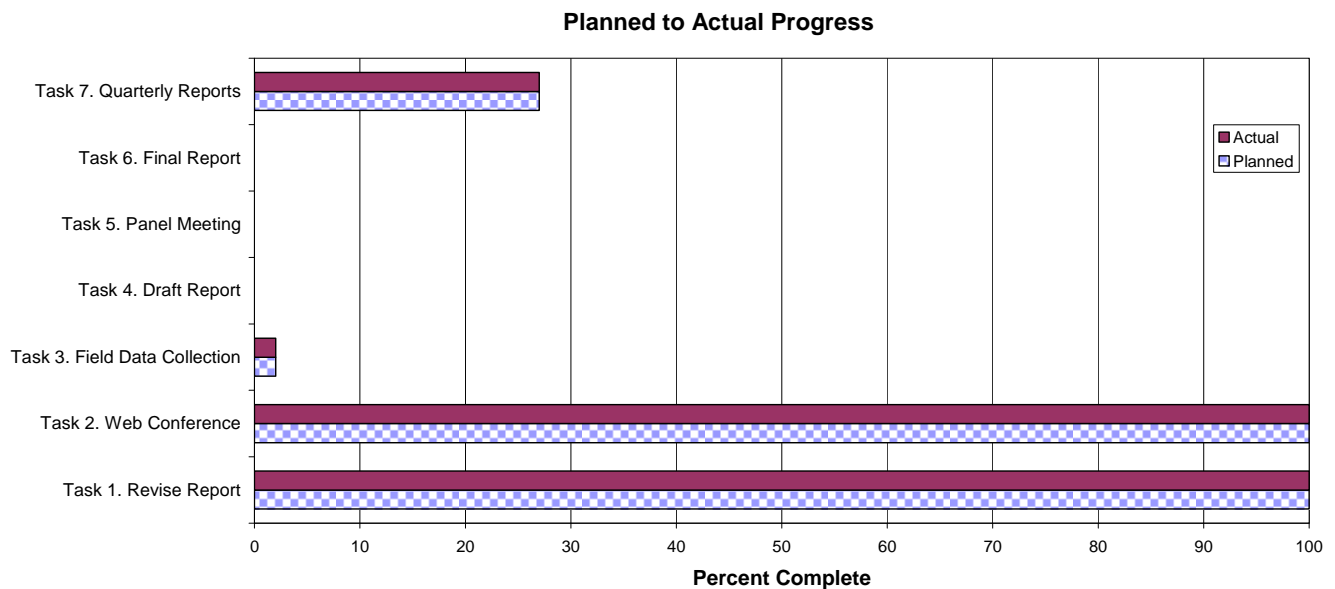
OH – Roger Green provided information. Profile data was taken recently (1-inch sampling). FWD testing will be conducted probably in December. Sampling and testing of cores will begin this fall. Photos of cores taken through plastic-coated dowels on SR 682 in Athens (constructed in 1978 – 29 years in service) showed dowels rusted and pitted.

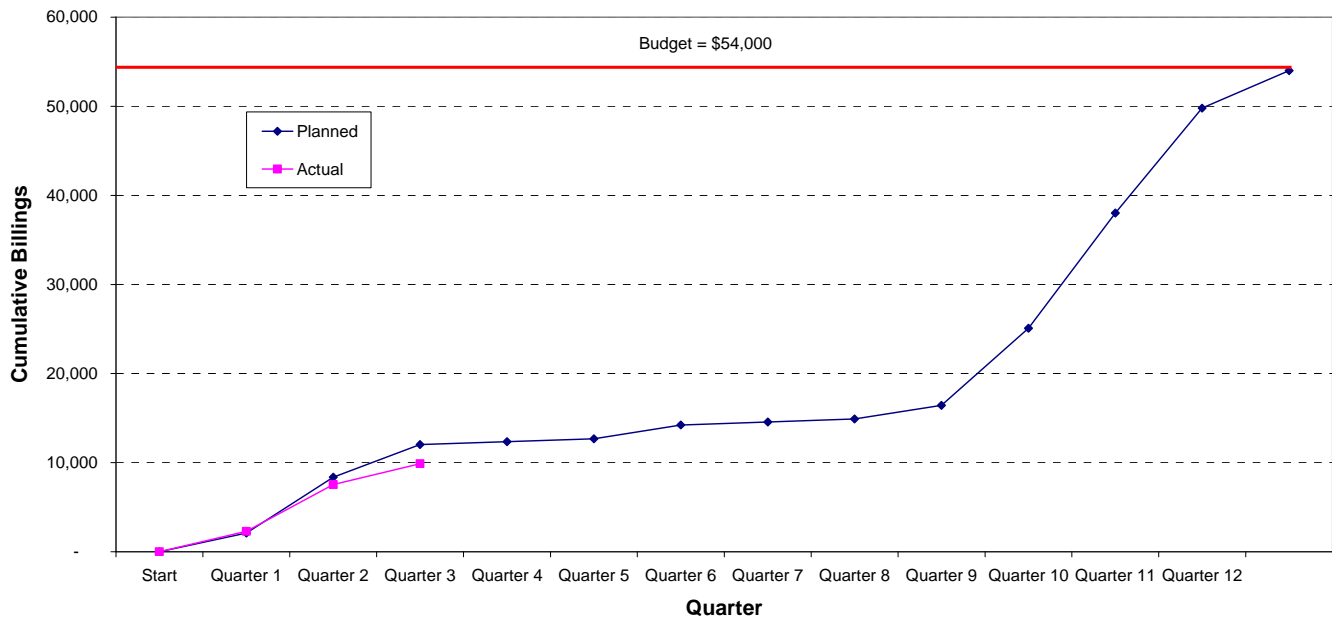
KS – Andy Gisi indicated that the state is short handed and out of money. As a result, they likely will not be able to do any testing this year.

IL – Mark Gawedzinski indicated that they also may not be able to provide any data except perhaps FWD testing by a consultant but even that may be questionable.

WS – Irene Battaglia indicated that the State is in the process of hiring a consultant to help collect the data for the pooled funds evaluation in conjunction with work for another internal DOT study of alternative dowel bars. Cores from three epoxy coated doweled projects 19 and 20 years in service were in good condition and one project 32 years in service was in fair condition.

The current status of S-K Lee's (FHWA) report on metallic dowel bar testing is not known.





PROPOSED WORK FOR NEW QUARTER:

Continued monitoring of data collection by the various States will be conducted. Actual analysis will not begin until 2009 and 2010 monitoring data are available.

IMPLEMENTATION (if any):

It is suggested that the States evaluate their epoxy-coated dowel bar specifications to help ensure that best practices are being followed. Report UCPRC-RR-2005-10 (FHWA No. S/CA/RI-2006/27) dated January 2007 provides the following recommendations:

It is recommended that: a) Quality control checks to control holidays be implemented, and b) Bar ends should be coated with epoxy, and care must be taken during shipping, storage, and installation. Stainless steel clad, hollow stainless steel, or microcomposite steel dowels should be considered for locations with high risk of chloride exposure.

This interim guidance is suggested until the results of this research are available. Also, the FHWA TechBrief *Long Life Concrete Pavements* includes dowel specifications used by Washington State and Minnesota for their long-life PCC pavements that can be considered if more corrosion-resistant dowels are currently required.

PROBLEMS & RECOMMENDED SOLUTIONS (if applicable):

*(Describe any problems encountered or anticipated that might affect the completion of the project within the time, scope, and fiscal constraints set forth in the contract, along with recommended solutions to those problems. NOTING DIFFICULTIES IN THIS SECTION DOES **NOT** CONSTITUTE A REQUEST TO MODIFY THE PROJECT. Requests for additional time, money, or scope revisions must be submitted in a separate letter to the Office of R&D Administrator.)*

A revised evaluation plan has been prepared with recommended testing by the states to complete the evaluation of the various alternative dowel bar material projects that were constructed in 1997-1998. FWD testing, coring, and profile evaluation of field projects by the states in calendar years 2009 and 2010 was recommended.

The revised Evaluation Plan also recommended taking cores of epoxy-coated dowels in 15 to 30⁺-year-old concrete pavements to help evaluate their condition and long-term performance so the relative cost effectiveness of either FRP dowels or stainless steel dowels can be evaluated. No project funding for the chloride testing of the concrete cores taken for the experimental dowels or for the coring and chloride testing of the older epoxy-coated dowel projects is available. This work would have to be conducted by the participating States.

As noted above, it is likely that evaluation data will only be available from Ohio and Wisconsin in 2009. The amount of data actually collected during 2009 and planned evaluations for 2010 may dictate the need for a modification of the proposed project schedule next spring.

EQUIPMENT PURCHASED (if any):

None.

CONTACTS & MEETINGS:

(Describe any meetings or contacts with ODOT technical liaisons and other pertinent individuals relative to this project.)

As noted above, comments were received (by e-mail) on the draft Interim Report and revised evaluation plan and the Revised Interim Report was distributed on April 16, 2009.

Also, as noted above, the state contacts provided status reports on testing for the proposed pooled funds evaluation.