OHIO DEPARTMENT OF TRANSPORTATION
QUARTERLY RESEARCH REPORT

For Quarter Ending: December 31, 2009

Date Submitted: February 4, 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:**	$10,971
20 **% Funds Expended**	22 **% Work Done**	30 **% 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); Barry Paye Wisconsin); Max Porter (Iowa State University); Seung-Kyoung Lee (FHWA)

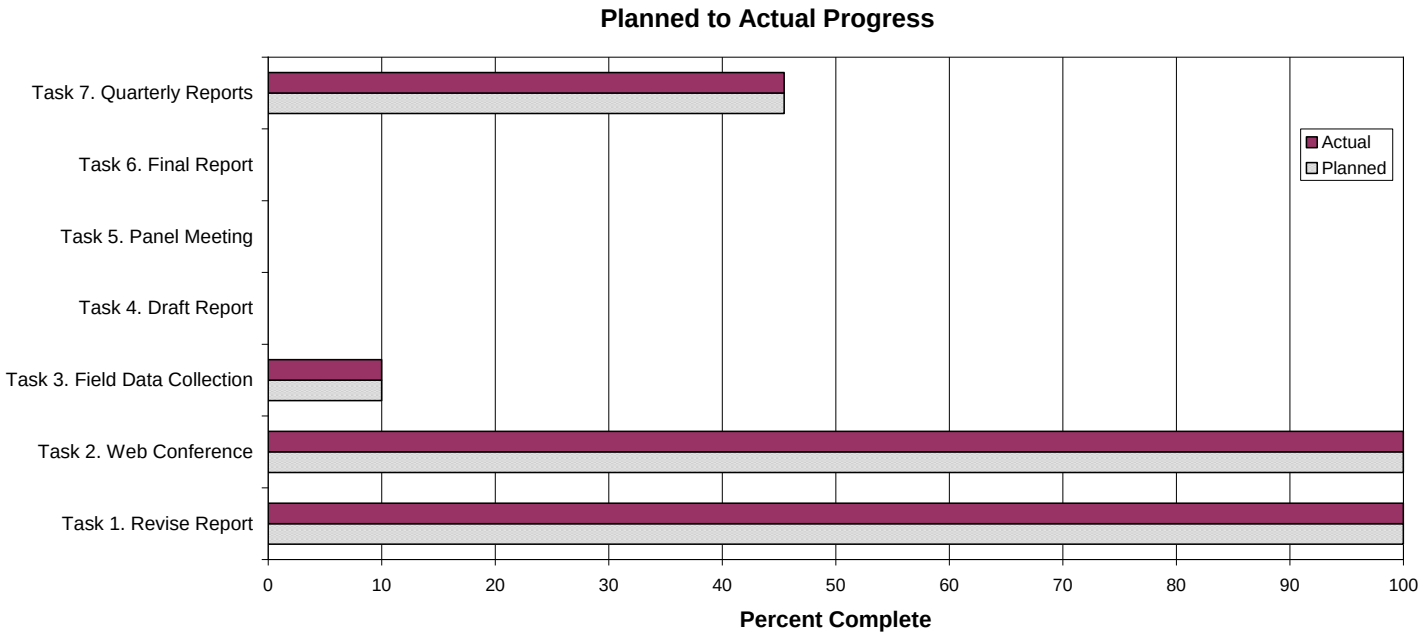
SUMMARY OF PROGRESS FOR QUARTER:

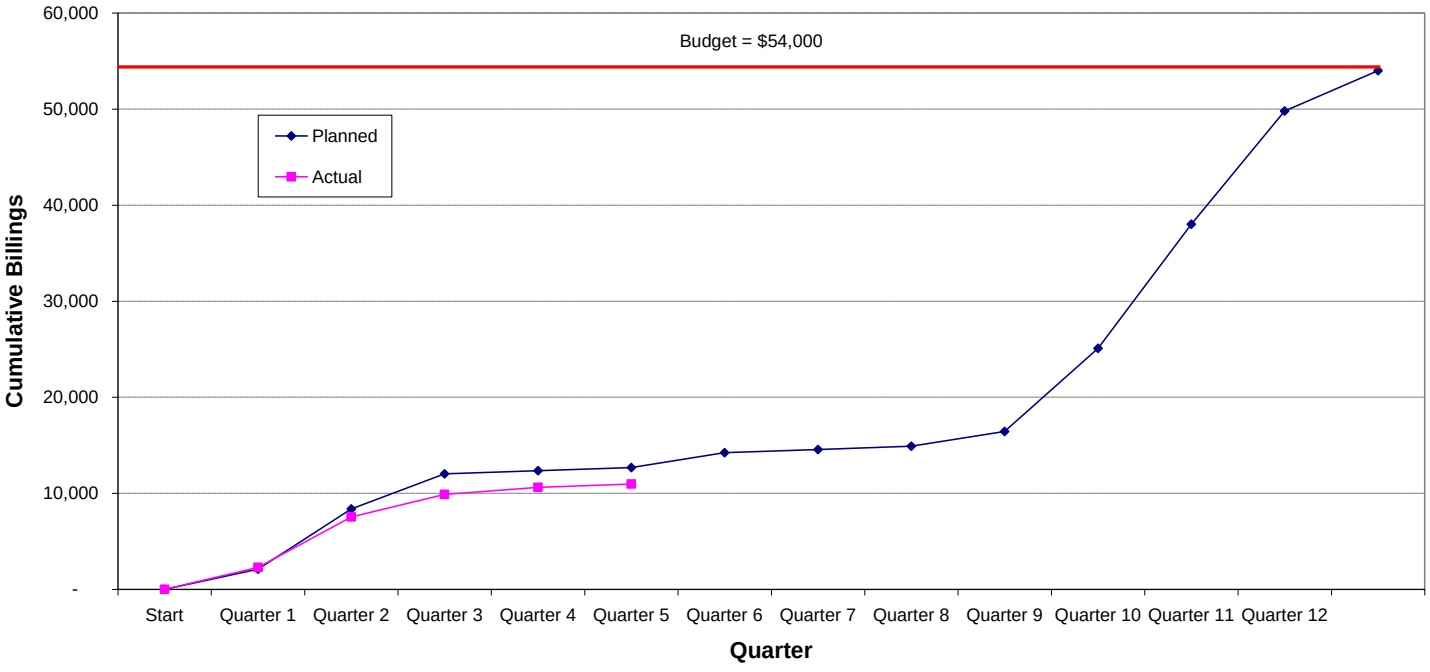
*Attach a progress schedule consisting of graphical information depicting (1) a schedule of research activities tied to **each task** defined in the proposal, (2) a comparative status of actual versus estimated expenditures, (3) a percentage completion of the research, (4) and a brief description of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

The quarterly progress report for the period ending September 30, 2009 was prepared by Roger Larson and Kurt Smith and submitted on October 26, 2009.

Only Ohio and Wisconsin are proceeding with project monitoring including evaluating the condition of epoxy-coated dowels in older JCP projects to evaluate the extent of the corrosion problem in their State. Both States will be using the acid soluble test in accordance with ASTM-C 1152 which is compatible with Dr. S-K Lee's research at TFHRC. The other States' activities are on hold due to funding limitations.

No other activity other than updating the quarterly progress report was undertaken during this quarter.


Planned to Actual Progress
Task 7. Quarterly Reports
Task 6. Final Report
Task 5. Panel Meeting
Task 4. Draft Report
Task 3. Field Data Collection
Task 2. Web Conference
Task 1. Revise Report
Actual
Planned
0
10
20
30
40
50
60
70
80
90
100
Percent Complete


Budget = $54,000
Planned
Actual
Cumulative Billings
60,000
50,000
40,000
30,000
20,000
10,000
-
Start
Quarter 1
Quarter 2
Quarter 3
Quarter 4
Quarter 5
Quarter 6
Quarter 7
Quarter 8
Quarter 9
Quarter 10
Quarter 11
Quarter 12
Quarter

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 become available.

IMPLEMENTATION (if any):

No change from previous quarter which is included below:

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,* FHWA-HIF-07-030 dated July 2007 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. A TechBrief on alternative dowel bar coatings is being developed under the FHWA CPTP and should be available this quarter.

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, ODOT has decided to conduct corrosion testing of the cores at the dowel bar level using ASTM C 1152, acid soluble test. Cores have been taken in Ohio and submitted to their laboratory for testing. Monitoring by Ohio and Wisconsin is underway.