

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: Sep 30, 2003

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Investigation of Bridge Approach Settlements	Project ID: 0092-00-13
Administrative Contact: Nina McLawhorn	Sponsor:
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: Apr 18, 2000
Approved by COR/Steering Committee: \$99,979.00	Approved Ending Date: Apr 18, 2007
Project Investigator (agency & contact): Sam Helwany: UW-Milwaukee	

Description: The study will be conducted over 7 years (84 months), and the five (5) tasks will be completed in two (2) phases.

Phase I: Synthesis of Previous and Current Work on Bridge Approach Settlement

Task 1: Literature Review and Personal Interviews

Task 2: "Best Practices" Summary Report

Task 3: Methods for Settlement Calculations

Phase II: Effectiveness of the Selected Mitigation Methods

Task 1: Instrumented Full-Scale Tests

Task 2: Interim and Final Reports

Background:

This study will be broken into two phases. Phase one will consist of personal interviews and a literature search of all existing work and research in this area. After this portion of the study is completed, a 'best practices' summary report will be submitted. This report will discuss which methods appear to be the most promising for solving the identified approach problems. Phase two will involve performing field pilot studies of a limited number (2-5) of the 'best practice' methods that show the most promise for WisDOT use. This will include construction of the bridge approaches as well as monitoring of them for a period of several years. Monitoring may include such items as pavement distress, maintenance history and vertical displacement. A cost comparison of the various methods will also be performed. Interim reports will be submitted yearly until the final report is written at the conclusion of the testing period.

Total Study Budget	Current FFY Budget	Expenditures for Current Quarter	Total Expenditures to Date	Percent Complete
\$99,979.00	\$12,497.37	\$0.00	\$62,069.29	62 (%)

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Progress This Quarter:

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

Monitoring of the two bridges (Cranberry bridge and Hemlock) in District 4 continues. The last readings were taken in September 2003. Excellent inclinometer measurements were obtained in terms of consistency with previous measurements. Little lateral displacements were noted in the top 10 ft of the approach fills. No significant difference between regular backfills and special backfills (CLSM and Geosynthetic-reinforced) was noted.

Monitoring of the College avenue bridge in District 2 (South Milwaukee) continues. The search for two or three more bridges is ongoing. The PI is currently discussing the possibility of these new bridges with Mr. R. Kumapayi from WisDOT Headquarters and Mr. S. Maxwell and Mr. J. Liptack (District 2). Several options are being studied: B-28-98, B-67-284, B-28-99, and B-67-262. It seems that these bridges have good foundation soils and shallow backfills (2-4 ft only). It is therefore expected that the approach settlements will be very small. Bridges of weaker foundation soils and deeper approach fill are still being sought in D2 for this research project.

The research team is conducting cost comparison between the following approach settlement alleviation procedures: Hydraulic fill, CLSM, and Geosynthetic-reinforced fill. The research team is also updating the literature review to look at recent advances in this research area.

Work Next Quarter:

Monitoring of the two bridges in District 4 will continue. Monitoring of the College avenue bridge in District 2 (South Milwaukee) will continue. The search for two or three more bridges will also continue. In these bridges the following alleviation procedures will be tested: Hydraulic fill, CLSM, and Geosynthetic-reinforced fill.

Circumstances affecting progress/budget:

Gantt Chart:

Note: Gantt chart shown in State Fiscal Year Quarters

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: Sep 30, 2003

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Determination of Influences on Support Strength of Crushed Aggregate Base Course Due to Gradational, Regional and Source Variations	Project ID: 0092-02-01
Administrative Contact: Nina McLawhorn	Sponsor:
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: Sep 6, 2001
Approved by COR/Steering Committee: \$99,972.00	Approved Ending Date: Jul 6, 2003
Project Investigator (agency & contact): Richard Reusser: OMNNI	

Description: This study will be conducted over 22 months, and will be completed in four (4) phases.

- Phase 1: Literature Research
- Phase 2: Examination of Existing Aggregate Sources in Wisconsin
- Phase 3: Sampling and Testing of Individual Sources
- Phase 4: Data Analysis and Reporting

Background:

The State of Wisconsin uses approximately 10,000,000 tons of crushed aggregate base course (CABC) annually, primarily as a base course layer, in it's highway improvement projects. CABC is produced from both sand and gravel deposits, typically deposited in glacial and fluvial environments, and stone quarries. It is intended not only as a pavement support layer, but also as a stable working platform during the construction of the surface layer.

Total Study Budget	Current FFY Budget	Expenditures for Current Quarter	Total Expenditures to Date	Percent Complete
\$99,972.00	\$33,324.00	\$0.00	\$87,522.14	87 (%)

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Progress This Quarter:

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

Because of the demands placed on us during the construction season, we did not perform any work on the project during the third quarter other than some minor project administration duties.

Work Next Quarter:

Final analysis and final report preparation.

Circumstances affecting progress/budget:

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: Sep 30, 2003

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Investigation of Testing Methods to Determine Long Term Durability of WI Aggregate Resources Including Natural Mat... Materials, Industrial By-Product	Project ID: 0092-02-03
Administrative Contact: Nina McLawhorn	Sponsor:
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: Oct 29, 2002
Approved by COR/Steering Committee: \$202,084.00	Approved Ending Date: Sep 15, 2005
Project Investigator (agency & contact): Richard Weyers: Error! Bookmark not defined.	

Description: This study will be conducted over 30 months, and will be completed in five (5) phases.

- Phase 1: Literature Search
- Phase 2: Aggregate Durability Test Methods
- Phase 3: Laboratory Investigation
- Phase 4: Analysis of Test Results
- Phase 5: Reports (Quarterly, Final, Implementation)

Total Study Budget	Current FFY Budget	Expenditures for Current Quarter	Total Expenditures to Date	Percent Complete
\$202,084.00	\$67,361.33	\$0.00	\$0.00	0 (%)

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Progress This Quarter:

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

The development of the preliminary aggregate test method- performance matrix was initiated. The preliminary matrix is based on three NCHRP Reports: 405 Aggregate Tests Related to Asphalt Concrete Performance in Pavements; 453 Performance-Related Tests of Aggregate for Use in Unbound Pavement Layers; Project 4-20C Aggregate Tests for Portland Cement Concrete Pavements: State of the Knowledge. As these three reports each contain a literature review, future literature review of these three subject areas will primary focus on the literature published after the respective literature review completion dates.

Work Next Quarter:

Continue the above literature review, Expand the subject to structural concretes and the use of recycled materials as aggregate, and continue to develop and expand the test method- performance matrix.

Circumstances affecting progress/budget:

The Principal investigator, Richard E. Weyers, when on research leave short after the sign research contract was put in- place, he was on research leave at the Virginia Transportation Research Council from December 16,2002 to May 15,2003. From May 16,2003 to September 15, 2003 he was on a research assignment conducting field surveys of 40 bridge decks, commitment to this research assignment was made prior to the start date of this project. With the field work now completed and research associates assigned to the laboratory testing and data analysis tasks, Richard Weyers can now concentrate on this (Wisconsin Aggregate) project and recruit research assistants.

Gantt Chart:

Note, as of September 30,2003, no project funds have been spent and technical progress has been minimal, see above statement on circumstances affecting progress/budget.

Note: Gantt chart shown in State Fiscal Year Quarters