

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2004

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 Materials and Industrial By-Products	Project ID:0092-02-03
Administrative Contact: Nina McLawhorn	Sponsor:WisDot
WisDOT Technical Contact: Dan Reid	Approved Starting Date: Oct.29,2002
Approved by COR/Steering Committee: \$ 202,084.00	Approved Ending Date: Sept 15,2005
Project Investigator (agency & contact): Virginia Tech, Richard E. Weyers	

Description:

Total study budget	Current FFY budget	Expenditures for current quarter	Total Expenditures to date	Percent Complete
\$202,084.00	\$67,361,33	\$23,451.99	\$66,935.94	33.1

Progress This Quarter:

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

1. Visited a total of 74 quarries, pits, and recycled stock piles, sampled a total of 74 aggregates and transported to the aggregate to the Civil Engineering Materials Research Laboratory in Blacksburg, VA. Aggregate distributions are as follows: 48 crushed stone (10 poor, 20 intermediate and 18 good quality), 22 gravels (6 poor, 7 intermediate, and 9 good quality), and 4 recycled (1 RCA, 1 Slag, and 2 RAP).
2. Completed the vacuum saturated specific gravity (VSSG) and absorption (VSA) for 72 aggregate, 70 natural and 1 RCA and 1 Slag. RAP will be completed when we determine the best method for removing the asphalt cement.
3. Plot of VSSR vs VSA result is a linear continuum as expected. Plotted various graphs of VSSG vs VSA as categories of good, intermediate, and poor quality. There is weak agreement as to the graph positions and the WisDOT given quality categories of good, intermediate, and poor quality which was based on field performance and some cases test results which may be the reason of the weak agreements in some cases.
4. Selected 30 natural aggregate for initial testing. Initial seven tests are Gradation, Lightweight Particles, LA Abrasion, Micro-Deval Abrasion, Sodium Sulfate Soundness, Unconfined Freezing and Thawing, and British Crushing Strength.
5. Completed 10 LA Abrasion, and Micro-Deval Abrasions tests.
6. Sent a 2 pound representative samples of the 74 aggregates to subcontractor Steve Lane at VTRC for characterization of mineral types and identification of potential alkali silica (ASR) or alkali carbonate (ACR) reactive aggregate. ..Forty aggregate have been characterized as to mineral types.

Work Next Quarter:

1. Continue initial testing of 30 aggregate at Virginia Tech.
2. Complete characterization of the 74 aggregate as to mineral type and identify aggregate that are potential ASR or ACR aggregate.
3. Select 30 additional aggregate and send them to subcontractor VTRC for the initial seven tests and begin testing at VTRC.

Circumstances affecting progress/budget:

None this quarter.

Gantt Chart:



Note: Gantt chart shown in State Fiscal Year Quarters

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2004

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Application of Electromagnetic Geophysics (EMG) Technology to Subsurface Investigations	Project ID: 0092-04-08
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bob Arndorfer/Dan Reid	Approved Starting Date: January 7, 2004
Approved by COR/Steering Committee:	Approved Ending Date: March 31, 2005
Project Investigator (agency & contact): Michael Kalinski, University of Kentucky (859-257-6117)	

Description:

Total study budget	Current FFY budget	Expenditures for current quarter	Total Expenditures to date	Percent Complete
29824		4663	16618	56

Project Description: The scope of this research includes describing the current state of practice of electromagnetic geophysics (EMG) technology, compiling a list of contractors and vendors for performing transportation-related studies in Wisconsin, and developing guidelines for selecting providers for specific types of field studies.

Progress from July 1 – September 30, 2004: The list of geophysical contractors was completed, and a Request for Qualifications (RFQ) was sent out in late August. The RFQ requested information with respect to qualifications for performing EMG surveys for transportation-related problems in soils commonly encountered in Wisconsin, including the soil conditions identified in the literature search. Each firm was asked to list their methods and equipment, provide relevant project descriptions and publications, and provide a generic fee schedule. Statements of Qualifications (SOQs) were due on September 30, 2004. A total of 38 RFQs were sent, and 9 SOQs were received. In addition, compilation of a list of 20 equipment vendors was completed.

Work Next Quarter: The contractor SOQ information will be assimilated into a set of guidelines for selecting contractors to perform EMG. The PI will also begin contacting equipment vendors to ask for information regarding equipment capabilities, purchase costs, lease costs, and training options. A request for information will be sent out to the equipment vendors no later than October 31, with a due date of November 30. Specific information to be requested will include lists of new and refurbished equipment offered, methods that can be applied using the equipment, costs associated with equipment acquisition, leasing, and maintenance, required data reduction software, available training to use the equipment and associated costs, and relevant publications describing the applicability of the equipment. Once acquired, this information will be assimilated into a useful set of guidelines for selecting equipment vendors to perform in-house EMG studies.

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2004

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Investigation of Standard Penetration Torque Testing (SPT-T) to Predict Pile Performance	Project ID: 0092-04-09
Administrative Contact: Nina McLawhorn	Sponsor:
WisDOT Technical Contact:	Approved Starting Date: October 9, 2003
Approved by COR/Steering Committee: \$79,029.65	Approved Ending Date: October 9, 2005
Project Investigator (agency & contact): Al Wagner, Wagner Komurka Geotechnical Group	

Description:

Total study budget	Current FFY budget	Expenditures for current quarter	Total Expenditures to date	Percent Complete
79,029.65		0.00	27,535.38	35

Progress This Quarter:

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

Project on hold pending direction from WisDOT oversight committee

Work Next Quarter:

Project on hold pending direction from WisDOT oversight committee

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: Jun 30, 2004

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Monitoring and Evaluation of a Fly Ash Stabilized Subgrade Constructed by the Wisconsin Department of Transportation	Project ID: 0092-04-10
Administrative Contact: Nina McLawhorn	Sponsor:
WisDOT Technical Contact: Error! Bookmark not defined.	Approved Starting Date: Jul 21, 2003
Approved by COR/Steering Committee: \$84,603.00	Approved Ending Date: May 21, 2006
Project Investigator (agency & contact): Tuncer Edil: UW-Madison	

Description: This study will determine how fly ash stabilization for subgrade improvement impacts construction and pavement design parameters. It will allow field validation and refinement of the design and construction concepts developed in previous research by the PIs. The study will recommend pavement design parameters for fly ash stabilized soils and investigate impacts to the construction process. The results of the study will provide WisDOT with the basis for making informed policy decisions on inclusion of fly ash stabilization in pavement design and construction.

This Project includes the following phases:

Phase I - Development of Laboratory Testing and Field Monitoring Program

Phase II - Implementation of Data Collection and Monitoring Plan

Phase III - Long-term Monitoring

Total Study Budget	Current FFY Budget	Expenditures for Current Quarter	Total Expenditures to Date	Percent Complete
\$84,603.00	\$21,150.75	\$1,113.72	\$11,564.76	0 (%)

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Progress This Quarter:

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

A paper entitled "Case Study of Subgrade Stabilization Using Fly Ash: State Highway 32, Port Washington, Wisconsin" has been written and accepted for publication in a special geotechnical publication by the Geo Institute of ASCE entitled "USE OF RECYCLED MATERIALS IN GEOTECHNICS". The paper is available from the PIs upon request.

During this quarter major effort was spent in connection with the fly ash stabilization taking place in STH 12 west of Fort Atkinson. This project was identified by the WisDOT Soils Unit for monitoring as part of our research. During difficult construction conditions as a result of very wet conditions several activities were initiated and accomplished:

1. The subgrade along the entire fly ash stabilization route (about 5000 ft) was sampled and subjected to nuclear density gauge (NDG), soil stiffness gauge (SSG) and dynamic cone penetration (DCP) testing at 200 ft intervals.
2. Three lysimeters (two in fly ash sections and one control) were constructed in the subgrade to sample leachate.
3. Two sections were instrumented to collect continuous ground temperature and moisture data in the subgrade and fly ash layer and also air temperature and humidity.
4. During fly ash stabilization, mixed samples were obtained and field compacted to the field densities as determined from NDG for laboratory CBR, resilient modulus, and unconfined compression test after 7 days of curing at 200 ft intervals.
5. After fly compacted and several days passed, a rolling weight deflectometer (RWD) survey was conducted. RWD was developed for WisDOT by Marquette University. It was reactivated for this project. Additionally SSG and DCP surveys were conducted on the finished stabilized subgrade at 200 ft intervals.
6. Falling weight deflectometer test of the highway after concrete pavement has been scheduled.

Work Next Quarter:

- Continue laboratory tests.
- Analyze collected field data.
- Have FWD test conducted and analyze results.

➤ Hook up data collection system and start collecting data.

Circumstances affecting progress/budget:

None

Gantt Chart:

The main part of this project started nearly 12 months late. i.e., in 2004 instead of 2003 construction season.

Phase I: 60% complete

Phase II: 50% complete

Phase III: 0% complete.

Note: Gantt chart shown in State Fiscal Year Quarters