

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Effectiveness of Geosynthetics in Stabilizing Soft Subgrades	Project ID: 0092-45-15
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: 9/1/1999
Approved by COR/Steering Committee: \$55,000	Approved Ending Date: 5/1/2002
Project Investigator (agency & contact): Tuncer Edil, UW-Madison, Dept. of Civil and Environmental Engineering, 608-262-3225.	

Percent Complete: 95%

Progress This Quarter:

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

PI is making final revisions based on July meeting and will have final report completed by 10/31/05.

Work Next Quarter:

Once the revisions are finalized, the report will go to final print.

Circumstances Affecting Progress/Budget:

See comments under "Progress this Quarter."

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: June 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Field Performance of Geosynthetics in Stabilizing Soft Subgrades	Project ID: 0092-45-18
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: 9/1/1999
Approved by COR/Steering Committee: \$95,000	Approved Ending Date: 5/1/2002
Project Investigator (agency & contact): Tuncer Edil, UW-Madison, Dept. of Civil and Environmental Engineering, 608-262-3225.	

Percent Complete: 95%

Progress This Quarter:

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

PI is making final revisions based on July meeting and will have final report completed by 10/31/05.

Work Next Quarter:

Once the revisions are made, report will go to final print.

Circumstances Affecting Progress/Budget:

See comments under "Progress this Quarter."

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Equivalency of Subgrade Reinforcement Methods	Project ID: 0092-00-12
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: 10/1/1999
Approved by COR/Steering Committee: \$100,617	Approved Ending Date: 8/31/2003
Project Investigator (agency & contact): Craig Benson, UW-Madison.	

Percent Complete: 95%

Progress This Quarter:

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

PI is making final revisions based on July meeting and will have final report completed by 10/31/05.

Work Next Quarter:

Once the revisions are made, the report will go to final print.

Circumstances Affecting Progress/Budget:

See comments under "Progress this Quarter."

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99		Part: II Research and Development	
Project Title: Investigation of Bridge Approach Settlement		Project ID: 0092-00-13	
Administrative Contact: Nina McLawhorn		Sponsor: WHRP	
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			

Percent Complete: 90%

Project Description:

Progress This Quarter:

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

An Interim Report has been submitted for the TOC review. It summarizes all work done and up-to-date measured behavior of instrumented abutments. It also includes a comprehensive and up-to-date literature review.

Monitoring of the two bridges (Cranberry bridge and Hemlock) in District 4 continues. Monitoring of the College avenue bridge in District 2 (South Milwaukee) continues. Also monitoring of the two bridges: Beloit Ave in Milw Co, and Western Ave in Washington Co. continues (inclinometer readings and surveys of surface deflections are being taken periodically).

Work Next Quarter:

Monitoring of the five instrumented abutments will continue. No more instrumentation is needed.

Circumstances Affecting Progress/Budget:

None

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Investigation of the DCP and SSG as Alternative Methods to Determine Subgrade Stability	Project ID: 0092-01-05
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: 5/1/2001
Approved by COR/Steering Committee: \$58,075	Approved Ending Date: 6/30/2004
Project Investigator (agency & contact): Tuncer Edil, UW-Madison, Dept. of Civil and Environmental Engineering, 608-262-3225.	

Percent Complete: 95%

Progress This Quarter:

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

PI is making final revisions based on July meeting and will have final report completed by 10/31/05.

Work Next Quarter:

Once the revisions are made, the report will go to final print.

Circumstances Affecting Progress/Budget:

See comments under "Progress this Quarter."

State of Wisconsin/Department of Transportation
 RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99		Part: II Research and Development	
Project Title: Investigation of Testing Methods To Determine the Long Term Durability of WI Aggregate		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: Oct 28,2005	
Project Investigator (agency & contact): Recharad Weyers, Virginia Tech			

Percent Complete: 95%

Project Description:

Assessing aggregate strength,freezing and thawing, and chemical degradation test methods for the ability to predict the long term durability of aggregate in the unbound base course, portland cement and asphalt concrete.

Progress This Quarter:

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

- 1.Completed the draft final report and submitted for comments on August 11,2005

Work Next Quarter:

1. Address the comments on the draft final report and submit the final report.

Circumstances Affecting Progress/Budget:

1. None this quarter which the exception that the return of the draft final reort comments are going to be late, projected date is Sept 20, 2005

Gantt Chart:

PHASE	Percent Completion
1. Literature review	100
2. Test methods & interim report	100
3. Laboratory investigation	100
4. Analysis of results	100
5. Final report	95

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Determination of Typical Resilient Modulus Values for Selected Soils Representative of the Soils Distributions of Wisconsin	Project ID: 0092-03-11
Administrative Contact: Nina McLawhorn	Sponsor:
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: Jan 31, 2003
Approved by COR/Steering Committee: \$103,049.00	Approved Ending Date: September 30, 2005
Project Investigator (agency & contact): Hani Titi: UW-Milwaukee	

Percent Complete: 95%

Project Description:

The study will be conducted over 24 months, and be completed in 5 phases:

Task 1: Literature Review on Resilient Modulus of Subgrade Soils

Task 2: Selection of a Wide Spectrum of Subgrade Soils that Comprise Core Soil Types in Wisconsin

Task 3: Evaluate the Effects of Soil Properties and Stress Levels on the Resilient Modulus of Wisconsin Sugrade Soils

Task 4: Analyses of Test Results and Development of Models to Predict Resilient Modulus

Task 5: Final Report

Progress This Quarter:

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

1. Submitted the draft of the final report to the POC committee

Work Next Quarter:

1. Meet with the project committee and do final presentation on the project
2. Address the comments of the committee members
3. Submit the final report

Circumstances Affecting Progress/Budget:

Non

Gantt Chart:

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Development of Methodology to Include Strength Contribution of Select Subgrade Materials in Pavement Structures	Project ID: 0092-03-12
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: 7/25/2002
Approved by COR/Steering Committee: \$120,034	Approved Ending Date: 12/25/2004
Project Investigator (agency & contact): Tuncer Edil, UW-Madison, Dept. of Civil and Environmental Engineering, 608-262-3225.	

Percent Complete: 95%

Progress This Quarter:

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

PI is making final revisions based on July meeting and will have final report completed by 10/31/05.

Work Next Quarter:

Once the revisions are made, the report will go to final print.

Circumstances Affecting Progress/Budget:

See comments under "Progress this Quarter."

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Monitoring and Evaluation of Fly Ash Stabilized Subgrade Constructed by the Wis DOT	Project ID: 0092-04-10
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: June 21, 2003
Approved by COR/Steering Committee: \$84,603	Approved Ending Date: May 21, 2006
Project Investigator (agency & contact): Tuncer B. Edil, UW-Madison	

Percent Complete: 80%

Project Description: This project will determine how fly ash stabilization for subgrade improvement impacts construction and pavement design parameters. The project includes the following phases:

Phase 1- Development of Laboratory Testing and Field Monitoring Program

Phase 2- Implementation of Data Collection and Monitoring Plan

Phase 3- Long-term Monitoring

Progress This Quarter:

Material Property Testing:

Factors controlling laboratory soil strength tests of the untreated subgrade and the stabilized subgrade are being reviewed to explain the benefits of stabilization. Non-destructive in situ tests from soil stiffness gauge and dynamic cone penetrometer are being interpreted with the laboratory mechanical property results from M_r , CBR, and q_u . Rolling weight deflectometer test results have been analyzed.

Additional laboratory study was conducted to investigate the effect of different water content on the fly ash stabilization. Three representative subgrade soils were selected and four different water contents used for each soil. The laboratory mixtures of fly ash and subgrade soils were conducted with CBR test.

A testing protocol has been developed by numerous pilot tests to evaluate the effect of freeze-thaw on long-term modulus degradation.

Field Instrumentation:

Volumetric water content, soil temperature, precipitation and air temperature data are being downloaded and collected with remote-controlled modem. The condition of the equipment is being checked periodically by site visits.

Non Destructive Quality Control Tests:

A new FWD test will be performed in October 2005.

Leachate Quality Data Collection:

Over the past quarter the lysimeters installed at STH 12 have been sampled three times. The samples have been filtered and preserved and will be analyzed from cadmium, chromium, selenium, and silver.

Column leach test data are being evaluated.

Work Next Quarter:

The backcalculated modulus from FWD test will be compared with the laboratory measured resilient modulus, and elastic modulus calculated from SSG stiffness as well as the previous FWD tests. A final report summarizing the US 12 project data is in process.

Effect of freeze-thaw will be evaluated by carrying representative samples through 5 cycles of freeze-thaw and determining the resilient properties at the end of each cycle. A control sample not subjected to freeze-thaw will also be tested. The procedure for the freeze-thaw testing has been developed.

Additional samples will be collected from the lysimeters, and the results from the field samples will be compared with the results from the lab column tests.

Circumstances Affecting Progress/Budget:

None

Gantt Chart:

Phase 1: 90% complete

Phase 2: 90% complete

Phase 3: 40% complete

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Determination of Shear Strength Values for Granular Backfill Material Used by the Wisconsin Department of Transportation	Project ID: 0092-05-08
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bruce Pfister	Approved Starting Date: September 1, 2004
Approved by COR/Steering Committee: \$ 99,901.	Approved Ending Date: August 31, 2006
Project Investigator (agency & contact): Tuncer B. Edil, UW-Madison	

Percent Complete: 50%

Project Description:

The technical objective of the proposed study is to conduct a statewide examination of the shear strength and other physical properties of naturally occurring sands suitable for use as backfill for MSE walls and reinforced slopes. The range of values, variations, trends and correlation with controlling factors and regional impacts will be explored. The project consists of the following two phases and tasks:

Phase 1 – Review of Physical Provinces and Sampling

Task 1 - Initial AASHTO Requirements Testing

Task 2 – Detailed Sample Characterization Testing

Task 3 - Shear Strength Testing

Phase 2 – Analysis and Interpretations

Progress This Quarter:

All proposed sampling locations have been sampled. Individual sample characterization and traditional (small-scale) direct shear testing (2.5" x 2.5") has been completed on all sands. Regression analysis of all sample characteristics on friction angles from small-scale direct shear is currently under way to investigate significant model predictors. A new large-scale (12" x 12") direct shear box was fabricated and tested with three different sands. Comparisons between small-scale and large-scale test results varied and current work on the large-scale box involves an investigation of normal load transferred through side friction and increased frictional resistance due to machine friction between the upper and lower boxes. Lastly, an analysis of geologic origin and its importance to physical characteristics of granular materials is also in progress.

Work Next Quarter:

The work will include the following:

Investigate load transfer and machine friction in large-scale direct shear,

Shear testing in large-scale direct shear,

Interpret geologic setting and its importance to physical sand properties,

Begin assembling report.

Circumstances Affecting Progress/Budget:

None

Gantt Chart:

Phase 1 – 100%

Task 1 - 90%

Task 2 - 70%

Task 3 - 40%

Phase 2 – 20%

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Investigation of Vertical Members To Resist Surficial Slope Instabilities	Project ID: 05-09
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Bob Arndorfer	Approved Starting Date: Nov 4, 2004
Approved by COR/Steering Committee: \$29,714	Approved Ending Date: June 4, 2006
Project Investigator (agency & contact): Hani Titi: UW-Milwaukee	

Percent Complete: 50%

Project Description:

The study will be conducted over 18 months, and be completed in 5 phases:

- Task 1: Conduct a Comprehensive Literature Search and Review of Methods for Stabilizing Surficial Slope Failures Using In-Situ Short Structural Members
- Task 2: Conduct a National Survey to Obtain Information/Data on Methods of Stabilizing Surficial Slope Failures Using In-Situ Short Structural Members
- Task 3: Synthesize the Literature Materials on Methods of Stabilizing Surficial Slope Failures Using In-Situ Short Structural Members
- Task 4: Conduct Cost-Benefit Analysis of Methods that have Potential Implementation for Stabilizing Surficial Slope Failures in Wisconsin
- Task 5: Conduct Comprehensive Slope Stability Analysis using Wisconsin Data to obtain Parameters for Methods of Stabilizing Surficial Slope Failures by In-Situ Short Structural Members
- Task 6: Select Future Project for Implementation in Wisconsin
- Task 7: Prepare and Submit Final Report

Progress This Quarter:

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

1. Continued the literature search, review, and reduction of collected information
2. Continued synthesizing literature information and data
3. Identified computer programs and started evaluating them
4. Started collecting cost data for cost benefit analysis

Work Next Quarter:

1. Continue literature review and collection. The TRB 2006 is a very good source of the latest research in this regard. The research team will attend the meetings and collect information and data pertaining to this subject
2. Communicate with WisDOT to identify project(s) for field investigation
3. Start preparing the draft of the final report

Circumstances Affecting Progress/Budget:

Non