

**State of Wisconsin/Department of Transportation**  
 RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: June 30, 2007

<b>Program: SPR-0010(36) FFY99</b>		<b>Part: II Research and Development</b>	
<b>Project Title:</b> North Central Pavement Research Coordination Partnership (Frozen Four)		<b>Project ID:</b> 0092-06-40	
<b>Administrative Contact:</b> Nikki Hatch		<b>Sponsor:</b> Wisconsin Department of Transportation	
<b>WisDOT Technical Contact:</b> Laura Fenley		<b>Approved Starting Date:</b> February 22, 2006	
<b>Approved by COR/Steering Committee:</b> \$25,000		<b>Original End Date:</b> February 22, 2008	
<b>Project Investigator (agency &amp; contact):</b> Hussain Bahia, UW Madison		<b>Current End Date:</b> February 22, 2008	
		<b>Number of Extensions:</b> 0	

**Percent Complete:** 70%

**Request a No Cost Time Extension (Please Select One):**  YES  NO

**Reason for No Cost Time Extension:** NA

**Project Description:** The purpose of this pooled fund project is to maximize the coordination activities of four states in the upper Midwest. Those states include Wisconsin (the lead state), Minnesota, Michigan and Illinois. This purpose will be accomplished through three activities. Those activities are...

- 1) Development and maintenance of a Frozen Four website
- 2) Coordinate quarterly teleconferences
- 3) Coordinate face-to-face meetings

**Progress This Quarter:**

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

A conference call was held on June 15 in Madison. Representatives from WI, MN, and MI participated. The following topics were discussed.

- 1) The teleconference was scheduled in place of a face to face meeting due to difficulties in coordinating a meeting with everyone's busy summer scheduled. The main purpose of the meeting was to discuss action items from the March 28<sup>th</sup> meeting and to discuss the frequency/theme of future meetings.
- 2) This marked the group's first quarterly teleconference. The teleconference was successful in reviewing tasks from last meeting and setting a path forward without taking too much of participants time.
- 3) The details of the March 28<sup>th</sup> meeting have yet to be posted on the Frozen Four website as we arranging a new subcontract with the manager of the website. Once the subcontract issue has been resolved, minutes from the last face to face meeting and the conference call will be made available. The meeting minutes from the conference call have also been attached to provide a detailed summary of the meeting. In summary, there were four major areas discussed:
  - a. Discussion of Geotech Research Summary. TSR created categories based on existing TRB committees and put completed and in progress research of each state in these categories. States were asked to review and re-categorize their projects.
  - b. Discussion of Problem Statement Summary. Each state submitted their problem statements for FY 2007. These were categorized to identify areas of common interest.
  - c. Review of Action Items from last meeting. The following action items and how WHP has been/can facilitate them being completed:
    - i. ME Design Input Collaboration
    - ii. ME Design Calibration Database
    - iii. Summary of Sensitivity Analysis
    - iv. Summary of Areas of Interest and Potential for Collaboration

- v. WHRP FFY 2008 Project solicit interest from other states in contributing to modified work plan.
- d. Plans and Potential Agenda Items for Next Meeting/Workshop. It was decided that the next meeting will consist of 1.5 days. One day focused on a Resilient Modulus Workshop, which will include participation from researchers in member states currently working on the topic. Day two will be the Frozen Four Members only business meeting.
- e. Discuss long term direction of the group/frequency of face to face meetings. The workshop format described above will be evaluated, if successful it was decided that the group would hold similar meetings/workshops biannually. The possibility of collaborating on common practical issues was also discussed. This will be further addressed at next meeting.

**Work Next Quarter:**

- 1) The main task for next quarter is organizing the workshop for October.
- 2) It is possible that a conference call will occur amongst a subset of the Frozen Four group to discuss the workshop agenda/logistics.
- 3) The next face-to-face meeting has been scheduled for mid- October in East Lansing, MI on the MSU campus.

**Circumstances Affecting Progress/Budget:**

None.

<b>Summary of Expenditures</b>	
<b>Annual Budget</b>	<b>\$25,000.00</b>
<b>Expense</b>	<b>Amount</b>
Other Expenditures	\$ (4,139.68)
Subconsultant Expenditures	(\$5,250.00)
<b>Total Expenditures</b>	<b>(\$9,389.68)</b>
<b>Remaining Budget</b>	<b>\$15,610.32</b>
<b>Percent Budget Used (FY 06)</b>	<b>38%</b>

<b>Summary of Other Expenditures</b>	
Domestic Travel	\$ 2,984.59
Indirect Cost	\$ 1,155.09
<b>Total Expenditures</b>	<b>\$ 4,139.68</b>

<b>Summary Subconsultant Invoices</b>			
<b>Invoice Number</b>	<b>Jrnl ID</b>	<b>Jrnl Date</b>	<b>Amount</b>
Purchase Order	PO00000080	10/18/2005	\$5,250.00
FF 2006-01	MW10731015	8/11/2006	(\$1,450.00)
FF 2006-02	MW12702006	12/5/2006	(\$2,125.00)
FF 2006-03	MW12702006	12/5/2006	(\$950.00)
FF 2006-04	Pending Payment		(\$725.00)
		<b>Subcontract Budget</b>	<b>\$5,250.00</b>
		<b>Total Expenditures</b>	<b>(\$5,250.00)</b>
		<b>Remaining Budget</b>	<b>\$0.00</b>
		<b>Percent Budget Used</b>	<b>100%</b>

**Conference Call Minutes**  
**North Central Pavement Research Coordination Partnership (Frozen Four)**  
**WisDOT Truax Building**  
**June 15, 2007**

**Attendees:**

Mike Eacker	MDOT (Call In)	Hussain Bahia	WHRP
Maureen Jensen	MNDOT (Call In)	Andrew Hanz	WHRP
Laura Fenley	WisDOT	Matt Mullins	CTC and Assoc.
Peg Lafky	WisDOT		

**I. Discussion of Geotech Research Summary**

- The following is a summary of general comments provided during the meeting:
  - Instrumentation and Testing is a specialized topic unique to MNRoad. Not many states have the facilities available to conduct extensive research on full scale instrumentation and testing.
  - Non-Destructive Testing would fit in under Track 10 (Surveying, Subsurface Investigation, and Geospatial Data Acquisition).
  - Research related to Intelligent Compaction would fit under Track 7 – Instrumentation and Testing.
- How will this document and the ones generated for asphalt and concrete be used?
  - Summary of research allows for identification of common interest areas and researchers working on the area in each state. The information could be used to develop a workshop in which the researchers come in to present general project results/challenge and participate in a discussion with the state representatives.

**Action Items**

- States will review document to verify research tracks and descriptions are accurate. States will also be given an opportunity to put their research efforts in the correct categories.
- Pooled funds that states are currently participating in will be added to the geotech, concrete, and asphalt summaries.
- The document will be used to generate topics for our research workshop at the next meeting in October.

**II. Problem Statement Summary**

- To provide accurate information the problem statement summary must be updated as problem statements turn into research projects.
- Michigan selects and ranks the top 10 problem statements and funds them in order until their research money is spent. (Typically around 6 projects).
- It was decided that a project should be moved from the problem statement summary when a research contract is signed, it should then considered in the appropriate road map analysis.

- It was discussed that the Problem Statement summary should be linked to current pooled fund opportunities and possibly ongoing AASHTO Regional Activities.
- A revised problem statement summary can be used to identify areas of interest and possible collaboration for an upcoming research project. The summary will also provide partner states with more ideas for research funding.

**Action Items**

- Partner states should review Problem Statement Summary and identify problem statements that have turned into in-progress research projects.

**III. Review and Progress Update on Tasks from Last Meeting:**

Andrew provided supplemental materials that he had prepared as some of the tasks defined after the March 28<sup>th</sup> meeting. The meaning of the materials was to summarize some of the discussions regarding possible areas of collaboration and get them on paper so contacts could be made to pursue some of these areas.

▪ **ME Design Inputs**

- Similar worksheets were created for ME Design Input Areas identified as areas of interest in the last Frozen Four meeting.

1. **Resilient Modulus ( $M_R$ ):**

- All states have past and/or research in progress looking at the  $M_R$  of both subgrades and bases. There was interest from all states in pursuing collaboration in this area and using  $M_r$  as the theme of the first Frozen Four workshop.
- There are three main areas of concern:
  - Protocols
  - Testing Equipment: What are the consequences of having differences?
  - Can  $M_r$  be accurately estimated using basic material properties?
- FHWA Pooled Fund Solicitation: Improving  $M_r$  Test Procedures.

**Action Items**

- WHRP will work with states to develop a short list of past and current projects related to  $M_r$  and their PI. PI's will then be invited to workshop to discuss results and whether or not there are opportunities for collaboration.
- Partner states and PI's should review the scope of the pooled fund study and submit comments to sponsor.

2. **Other Inputs of Interest:**

- States were encouraged to complete the Coefficient of Thermal Expansion and HMA Dynamic Modulus worksheets. These topics may be the theme of future worksheets.

**Action Items:**

- WHRP will send out CTE and  $E^*$  worksheets for review and completion by partner states.

▪ **Sensitivity Analysis:**

Andrew reviewed reports/progress updates received from the Michigan and Wisconsin in terms of analysis approach and their identification of sensitive inputs. The following researchers have been involved in past/current sensitivity analysis efforts. The summary was included in the meeting packet.

**Action Items:**

- The group as a whole decided not to actively pursue Sensitivity Analysis due to states' differing commitments in implementation of MEPDG.
- Andrew will send Dr. Buch the UW report for his review and comment.

• **ME Design Calibration:**

The database template used as part of a WisDOT research project for collection of pavement design and performance inputs was presented. States were asked if they had an interest in populating the database with 1 – 2 projects/year to develop a large data set for local calibration of MEPDG.

**Action Items:**

- The group as a whole decided not to actively pursue Calibration due to time requirements in populating the database and differing levels of commitment by states in implementation of MEPDG.

• **Summary of Common Areas of Interest**

Andrew presented a summary of the each states' activities in the areas of Common Interest defined in the 3/28 meeting. Each state should review/revise the list and identify specific areas they would like discussed in future meetings. Those participating in the conference call identified reflective cracking/pre-overlay repair/rubbilization and QC/QA of Unbound Materials as potential topics for next meeting.

**Action Items:**

- Discussion of state activities/specifications for QC/QA of unbound materials and reflective cracking/preoverlay repair/rubbilization will be included as potential agenda items for the next Frozen Four meeting.

• **WHRP FFY 2008 Projects**

The meeting packet also included a list of FFY 2008 WHRP Research projects. Final work plans for these projects are still in development. If states have any interest in being involved/providing comments for any work plan, they should contact Andrew.

**IV. Plans and Potential Agenda for Next Meeting/Workshop**

The following is a brief summary of the agenda items for the next meeting. It is anticipated that the meeting will be 1.5 days long.

- **M<sub>R</sub> Workshop:** Invite Hani Titi (UWM), Shong Tao Dai (MNDot), and Gilbert Baladi (MSU)/Ralph Hodek (MTU). Following items for discussion:
  - Results of Research
  - Effect of using different protocols

- Effect of using different testing equipment.
- Is there opportunity to collaborate on future research?
- Best practices for state agencies.
- Discussion of Interest Areas
  - Reflective Cracking/Pre-Overlay Repair/Rubbilization
  - QC/QA of Unbound Materials

#### **V. Long Term Direction of the Group/Frequency of Face to Face Meetings**

- First main task was to set up databases of completed and in-progress research. That task has been completed.
- What's next?
  - Workshops – Use summaries prepared by CTC to identify common areas of interest for workshops. Each workshop would focus on one specific area. Hold one or two a year.
  - Small projects we can work on together (ie summarizing state of practice in each state)?

#### ***Action Items:***

- CTC will prepare list of potential workshop areas.
- Andrew will work on scheduling the next Frozen Four meeting in MI for sometime in October.

#### **VI. Next Meeting**

The date of the next meeting is TBD, it will be held in Michigan. **Please give Andrew your availability October 8 – October 19.** The meeting will be scheduled based on everyone's availability; a more detailed list of tasks/preparation for the meeting will be distributed once the date of the meeting is set.