

**State of Wisconsin/Department of Transportation**  
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: December 31, 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> \$40,000		<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:** 90%

**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.)

All activities for the project for this quarter were focused preparations and conducting the Resilient Modulus Workshop held on October 17<sup>th</sup> and 18<sup>th</sup>. Follow up activities involved development of a report of the proceedings of the Resilient Modulus Workshop. The following specific tasks have been performed:

- 1) Conduct Resilient Modulus Workshop.
- 2) Travel reimbursement for invited participants. Summary of reimbursements attached.
- 3) Development of Resilient Modulus Report
  - a. Summarize and Compare lab procedures for Resilient Modulus
  - b. Summary of past, in-progress, and planned Resilient Modulus research by partner states.
  - c. Presentations from all invited researchers.
  - d. QC/QA Practices of each state to evaluate the stiffness of subbases and bases. (Pending extension of pooled fund)
  - e. TSR on Field practices. (Pending Pooled fund Renewal)
- 4) Conduct Frozen Four Business Meeting – Draft Minutes attached.

Furthermore, discussions were held with WisDOT to identify the logistics and set the schedule for solicitation for pooled fund renewal.

The draft work plan was prepared and submitted to WisDOT and partner states for review and comment. The draft work plan is attached to the quarterly report.

**Work Next Quarter:**

- 1) Focus on renewal of the pooled fund.
- 2) Finalize resilient modulus report and distribute to all parties.

- 3) Use available funds to schedule one more conference call/meeting to discuss future direction of the group and strategic areas of interest for year 2.
- 4) Solicit participation and develop work plans for renewal of the pooled fund.
- 5) Work with CTC to completely update and maintain Frozen Four website throughout remainder of the project.

**Circumstances Affecting Progress/Budget:**

None.

## Quarter 4 2007 Report of Resilient Modulus Travel Reimbursement

### FROZEN FOUR TRAVEL REIMBURSEMENT

Resilient Modulus Workshop, Lansing MI

October 17-18, 2007

First	Last	Organization	Amount Expensed	Paid By UW
Hussain	Bahia	WHRP		
Irene	Battaglia	WisDOT	\$201.10	X
Pat	Casey	CTC	\$91.50	
Shongtao	Dai	Minnesota DOT	\$1,084.20	X
Laura	Fenley	WisDOT	\$210.60	X
Andrew	Hanz	WHRP	\$1,184.10	X
Ralph	Hodek	MTU		
Joe	Labuz	Univ. Minnesota, Civil Eng.	\$888.90	X
Peg	Lafky	WisDOT	\$204.10	X
Forsten	Mayrbreger	MTU		
Deb	Mishra	University of Illinois	\$412.35	X
John	Siekmeier	Minnesota DOT	\$805.50	X
Hani	Titi	University of Wisconsin - Milwaukee	\$438.55	X
<b>Total to Date</b>			<b>\$5,520.90</b>	<b>69%</b>

**Note:** It is expected that approximately \$2500 will be needed to cover the outstanding reimbursements.

## Financial Summary 2007 Q4

<b>Summary of Expenditures</b>	
<b>Annual Budget</b>	<b>\$25,000.00</b>
<b>Contract Amendmnet</b>	<b>\$15,000.00</b>
<b>Total Budget</b>	<b>\$40,000.00</b>
<b>Expense</b>	<b>Amount</b>
Other Expenditures	\$ (11,268.66)
Subconsultant Expenditures	(\$5,250.00)
<b>Total Expenditures</b>	<b>(\$16,518.66)</b>
<b>Encumbrances</b>	<b>\$ 7,988.21</b>
Subcontracts	\$ 5,025.00
Indirect Costs	\$ 2,963.21
<b>Remaining Budget</b>	<b>\$15,493.13</b>
<b>Percent Budget Used</b>	<b>61%</b>
<b>Summary of Other Expenditures</b>	
Domestic Travel	\$ 9,210.77
Supplies	\$ 12.50
Indirect Cost	\$ 2,045.39
<b>Total Expenditures</b>	<b>\$ 11,268.66</b>

<b>Summary Subconsultant Invoices</b>			
Invoice Number	Jrnl ID	Jrnl Date	Amount
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	JRT0000432	10/11/2007	(\$725.00)
Purchase Order		8/1/2007	\$5,025.00
		<b>Subcontract Budget</b>	<b>\$10,275.00</b>
		<b>Total Expenditures</b>	<b>(\$5,250.00)</b>
		<b>Remaining Budget</b>	<b>\$5,025.00</b>
		<b>Percent Budget Used</b>	<b>51%</b>

**Scope of Services**  
**ADMINISTRATION AND OVERSIGHT OF THE NORTH CENTRAL**  
**PAVEMENT RESEARCH PARTNERSHIP (FROZEN FOUR)**

**Task 1: Development and Maintenance of a Frozen Four website**

As the representative for the lead agency, WHRP will develop and maintain a Frozen Four website. This website will serve as a clearinghouse of information regarding pavement related research for the pooled fund's participating agencies. This may include goals and objectives, organizational structure, bylaws and procedures, meeting minutes, posting of research problem statements from individual partner agencies, information related to technology transfer and individual and agency website research links and contact information. A subcontract with CTC & Associates will be used to complete this task.

**Task 2: Coordinate Teleconferences**

WHRP staff will coordinate teleconferences of the pooled fund's participating agencies to allow for the exchange of ideas, discussion of the Frozen Four's goals and objectives, identification of means to initiate and monitor priority research projects, and collaboration of research efforts, including research needs, data and solutions to research and technology challenges as well as implementation of research results on an on-going basis. Teleconferences will serve as a substitute to business meetings if the group does not wish to take the time to meet face to face.

**Task 3: Coordinate Frozen Four Face-to-Face Meetings and Research Workshops.**

WHRP staff will work with the participating states to coordinate face-to-face meetings of the Frozen Four to discuss the goals and directions of the group. It is expected that a maximum of four business meetings annually will be necessary. WHRP will also coordinate all facets of an annual research workshop, the topic of the workshop will be determined by the Frozen Four voting members.

**Task 4: Investigate Potential Processes and Potential Topics for Pilot Projects**

WHRP will work with the Frozen Four Partners to identify potential administrative processes that would provide the opportunity for funding and oversight of pilot projects to further investigate areas of great interest. WHRP would coordinate all activities related to the research award process from work plan development to researcher selection and contracting. WHRP will also facilitate the identification and prioritization of candidate topics for pilot projects. Upon execution of the contract WHRP would be responsible for coordination of Frozen Four Technical Review and monitoring of researcher reporting.

**Duration**

It is expected the pooled fund will be extended an additional 24 months.

**Cost**

Each state is expected to provide an annual contribution of \$20,000

**North Central Pavement Research Partnership (Frozen Four)  
Business Meeting Minutes  
MDOT Meeting Facilities  
Lansing, MI  
October 18th**

**List of Attendees**

Calvin Roberts	MDOT	Laura Fenley	WisDOT
Andre Clover	MDOT	Peg Lafky	WisDOT
Mike Eacker	MDOT	Deb Mishra	University of Illinois - Champaign
Dave Phillips	MDOT	Ralph Hodek	Michigan Tech University
Shongtao Dai	MnDOT	Torsten Mayrberger	Michigan Tech University
John Siekmeier	MnDOT	Hussain Bahia	WHRP
Irene Battaglia	WisDOT	Pat Casey	CTC & Assoc. (WI)
Andrew Hanz	WHRP		

- I. Overview of MDOT’s Research Program and Plans for the Future – Andre Clover MDOT**
- a. Overview: Research Administration and Logistics is being revamped.
    - Office of Research created in 2005 (used to be housed in Construction and Technology)
    - Now merges technology advancements and business practices. Current focus is on streamlining administrative procedures.
    - One Research Analyst on staff.
  - b. Process
    - Research Needs: Defined by regular meetings between state universities and MDOT.
    - Focus on follow up for all research ideas submitted.
    - January – February: MDOT scopes research projects.
    - Research Projects presented at an annual meeting that involves MDOT technical staff and industry to develop RFPs.
    - Research is kept in state. Universities compete for a percentage of funding in broad areas – not specific projects.

- Examples of Past, Current, and Future MDOT Research Projects related to Frozen Four focus areas were provided by Andre at the meeting.
- c. Research Administration
  - MDOT Project person is responsible for technical and administrative oversight of projects.
  - Research Administration manual is under development to aid universities and MDOT in project management.
  - Target August of every year to present a two fiscal year program.
  - Review Meeting
    1. Approval of projects based on strategic plan.
    2. Encumber 20% matching funds from the state.
    3. Only funding for current fiscal year is approved.
  - MDOT is moving towards the philosophy of bringing all research areas to the table to develop proposals and compete for funding.
- d. MDOT Research Programs that may be of interest to Frozen Four
  - MTRB: University and MDOT: Informal meeting, report on activities is pending.
  - TRIM: Similar to WHRP. MDOT will provide funding for director and administrator.

## **II. Minnesota Research Update – Shongtao Dai – MnDOT**

- a. **Local Road Research Board Projects (LRRB):**
  - Porous Pavements (PCC and HMA) both have test sections on MnROAD.
  - Evaluation of the effects of using a PG52-34 binder on pavement performance.
  - Evaluation of Ground Penetrating Radar – This ties in to the next potential Frozen Four Workshop Topic.
  - Pavement Rehabilitation Selection – Cold In Place Recycling.
  - Full project summary available at <http://www.lrrb.org/>
- b. **MnRoad Pooled Fund Activities:** Dr. Dai provided a hand out of MnROAD's current research and construction project. Information available at <http://www.mnroad.dot.state.mn.us/research/mnresearch.asp>

## **III. Wisconsin Research Update – Andrew Hanz – WHRP**

- a. **FY 2008 Research projects:** A summary of the projects for FY 2008 was provided in the meeting materials. All of these projects have an assumed start date of October 1, 2007.
- b. **FY 2009 Research ideas:** The WHRP Flexible Pavements TOC met prior to the workshop and developed research ideas that were provided to the Frozen Four group in the meeting packet.

## **IV. Illinois Research Update – Deb Mishra – UIC**

- a. Deb did not have specific details regarding current IDOT research efforts however the following websites provide information regarding current research efforts and past research reports:
  - Past Research Reports: [http://www.dot.il.gov/materials/research/reports.html#Quarterly Reports](http://www.dot.il.gov/materials/research/reports.html#QuarterlyReports)
  - Current Research Projects: <http://ict.uiuc.edu/default.asp>

**Action Items:**

- The following attendees were identified as points of contact for any information regarding in progress research projects or research ideas:
  - Minnesota: Shongtao Dai
  - Michigan: Mike Eacker
  - Wisconsin: Andrew Hanz
  - Illinois: Imad Al Qadi
- WHRP will work with UIC to get an IDOT research update.

**V. Discussion of Potential Opportunities for Collaboration**

- a. Identify project from common research areas of interest and combine funding and technical expertise to develop and oversee a larger research project.
  - Challenges: Differences in research administrative cycles make this option very difficult to accomplish.
- b. Add funding to existing Frozen Four pooled fund to incorporate a research element into our activities. Incorporation of research would provide a technical aspect to the deliverables of the pooled fund to supplement the research administration and coordination tasks the group continues to pursue.
- c. Develop a small pilot projects to help more clearly define collaboration mechanisms and processes.

**VI. Feedback on Resilient Modulus Workshop**

- a. Overall feeling of the group was that the workshop went extremely well and would like to pursue future workshop activities.
- b. Comments from Ralph Hodek – Michigan Tech University
  - The Frozen Four states should work move specification and design procedures away from classifying soils and base materials using dry density ( $\gamma_D$ ).
  - Use information from presentation and related research projects to develop a report justifying the Frozen Four's claim that  $\gamma_D$  is insufficient to accurately characterize soils in design or construction activities. The report will also propose alternative methods for characterizing soils. The report will be distributed to the Departments of Transportation of the Frozen Four Partner States and could serve as a tangible deliverable and call for action from the Frozen Four group.



- There is a great need to improve the understanding and inputs for level 2 and 3 Mechanistic Pavement Design.
- It is imperative that the group define a common nomenclature for soil descriptions to allow researchers and practitioners to facilitate understanding of the soils being evaluated and the conclusion drawn from the research projects.

### **Action Items**

- WHRP will develop a report on the Resilient Modulus Workshop to include the following
  - Presentations by all the invited researchers.
  - Summary and comparison of lab procedures used by partner states.
  - Summary of past, in-progress, and planned Resilient Modulus Research.
  - Summary of State QC/QA practices to evaluate stiffness of bases and subbases. (Pending extension of pooled fund).
  - Transportation Synthesis Report on Field Practices for acceptance of base and subbase materials (Pending extension of the pooled fund).
- The report will be made available on the Frozen Four website: [www.frozenfour.us](http://www.frozenfour.us)

### **VII. Potential Ideas for Future Workshops**

- a. Methods of Field Measurement for Subgrade and Base Stiffness
- b. Workshop on how best to leverage funding and take advantage of collaboration opportunities: Research Administration.

### **VIII. Extension of the Pooled Fund**

- a. The current Frozen Four pooled fund ends on February 21<sup>st</sup> 2008 the possibility of extending the pooled fund was brought forth to the group, specifically the following topics were discussed:
  - The main objectives and direction the group wants to pursue moving forward.
  - Frequency and potential topics for future workshops.
  - Potential for pursuing pilot projects and investigating other possible deliverables for state agencies.
  - Level of funding needed to accomplish desired workplan tasks.
- b. Based on discussion it was decided that WHRP would draft a workplan to include the following.
  - Two workshops
  - 4 Business Meetings
  - Pilot Projects
  - Funding: \$20,000 - \$25,000/yr/state

### **Action Items:**

- WisDOT will send a formal request to extend the pooled fund, including required level of funding.

- WHRP will draft a workplan detailing the terms discussed above and distribute to partner states as a request for renewal.

**IX. Financial Update:**

- a. Andrew gave a financial update; currently the group has spent about 25% of the overall budget. It is expected that due to all the travel funding, the expenditures will greatly increase in the next quarter.

**X. Next Meeting: TBD** based on pooled fund renewal.