

In This Issue

Program Update

- > [New WisDOT Research Staff](#)
- > [10 Projects Awarded](#)
- > [Data Integration RFPs Posted](#)
- > [All Projects at a Glance](#)

Research in Focus

- > [FRP Bridge Deck Forms](#)

Regional and National

- > [Specs for Low Temp Cracking](#)
- > [Multi-State Research Needs](#)

Outreach

- > [Improving WHRP Awareness](#)
- > [Survey on Specs Manuals](#)

Implementation

- > [Structures Research at Work](#)

Welcome from WisDOT's Nikki Hatch

Welcome to the fourth edition of WHRP E-News, a quarterly update on the activities of the Wisconsin Highway Research Program.

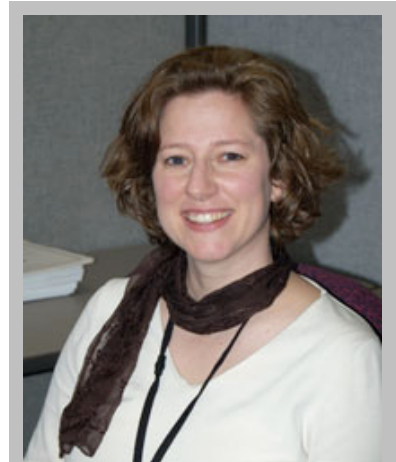
I am a relative newcomer to WisDOT. I joined the department in February as chief of the Research and Communication Services Section in the Bureau of Business Services. Research activities such as WHRP are a part of this section, along with the WisDOT Library, department Web services, graphic design, records, forms and organizational development.

My background includes research responsibilities. Prior to my recent work as an executive budget and policy analyst with the State Budget Office, I led a research and planning unit for the Oakland (California) Police Department, organizing and providing critical data and analysis to the Oakland PD's executive managers.

I have been impressed with WHRP's activities, many of which are highlighted in this issue of E-News. As chair of the WHRP Steering Committee, I look forward to becoming actively involved and meeting more of you who have contributed to the success of this important research program.

Please feel free to contact me at any time with your suggestions.

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Nikki Hatch, WisDOT's Research and Communication Services Section Chief

Program Update

WisDOT Fills Research Vacancy

Peg Lafky has joined WisDOT's Research & Library Unit as a program analyst. She brings tremendous experience and enthusiasm to the unit, which will be of great benefit to WHRP and WisDOT's entire research program.

Peg comes to Research from WisDOT's Expenditure Accounting Unit, where she served as program supervisor for more than 15 years. During that time she was responsible for ensuring the conformance of 40 different contract and grant programs to Wisconsin statutes, federal regulations, and WisDOT and Department of Administration policies and guidelines. She has a bachelor's degree in political science from UW-La Crosse.

Peg will be the point person at WisDOT for WHRP financial issues and will work closely with program analyst Ann Pahnke on a variety of other programs and tasks.

[Peg](#) can be reached at (608) 266-3663.



Peg Lafky, Program Analyst for WisDOT Research

WHRP Selects Investigators for FFY 2008 Projects

WHRP recently selected principal investigators for 10 new FFY 2008 projects slated to begin in October. Four of the technical oversight committees reviewed 23 proposals, including bids from California, Illinois, Michigan, Mississippi, North Dakota, Texas, Virginia, Washington state and Wisconsin. The Data Integration TOC will make PI selections later in the summer.

The WHRP steering committee awarded contracts to the following researchers:

Flexible Pavements TOC

- Pavement repair prior to overlay: Haifang Wen, Bloom Consultants, Wisconsin, with UW-Milwaukee
- Mixture characterization using the SPT: Ramon Bonaquist, Advanced Asphalt Technologies, Virginia, with UW-Madison

Joint Project, Flexible and Geotechnics TOCs

- Intelligent compaction: Harold Von Quintus, Applied Research Associates, Texas, with UW-Milwaukee

Rigid Pavements TOC

- Reducing cementitious material content: Larry Sutter, Michigan Technological University
- Whitening performance - Haifang Wen, Bloom Consultants, Wisconsin

Geotechnics TOC

- Resilient modulus determination for plastic soils: Hani Titi, UW-Milwaukee
- Deep soil compaction: Peter Bosscher, UW-Madison

Structures TOC

- Permit vehicle loads: Jian Zhou, UW-Milwaukee
- Friction coefficients for stainless steel/PTFE bearings: John Stanton, University of Washington
- Cantilever sign fatigue: Baolin Wan and Christopher Foley, Marquette University

See all Requests For Proposal on the WHRP [Web site](#). For more information, contact WHRP Program Manager [Andrew Hanz](#).



One FFY 2008 project for the Flexible Pavements will study pavement repair prior overlay, such as base patching.

Three RFPs and Peer Exchange on Data Access/Integration

At its April meeting, WHRP's new Data Integration Technical Oversight Committee approved three new research projects for funding. The following RFPs are available on the WHRP [Web site](#), with a July 16 deadline for proposals:

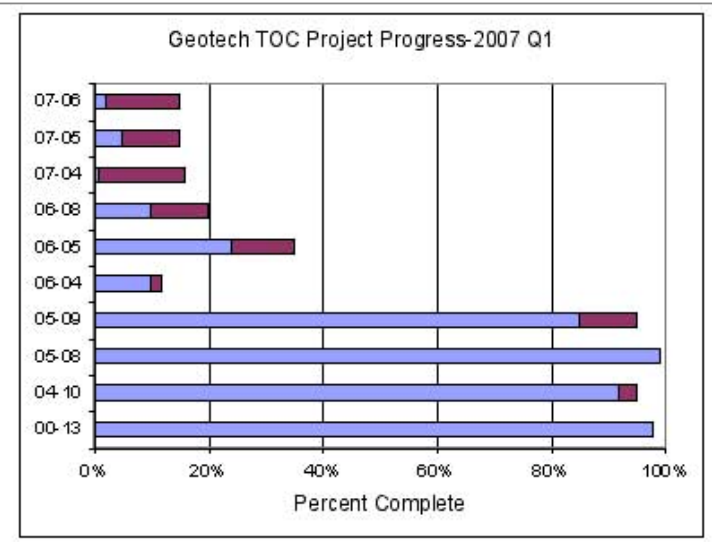
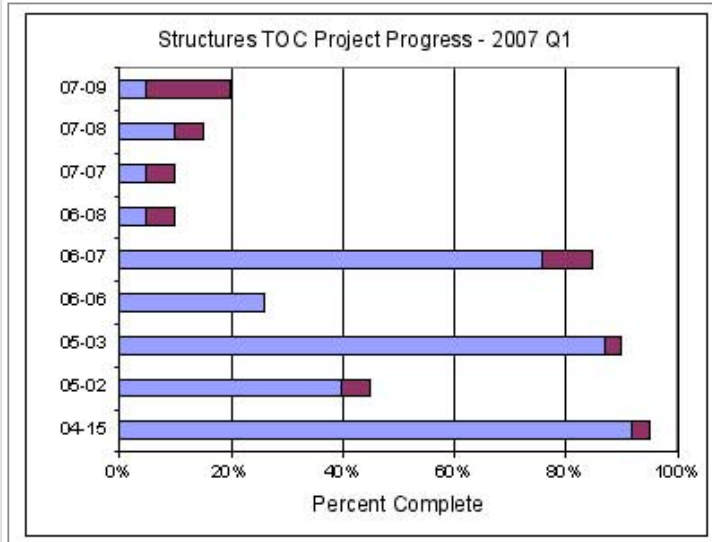
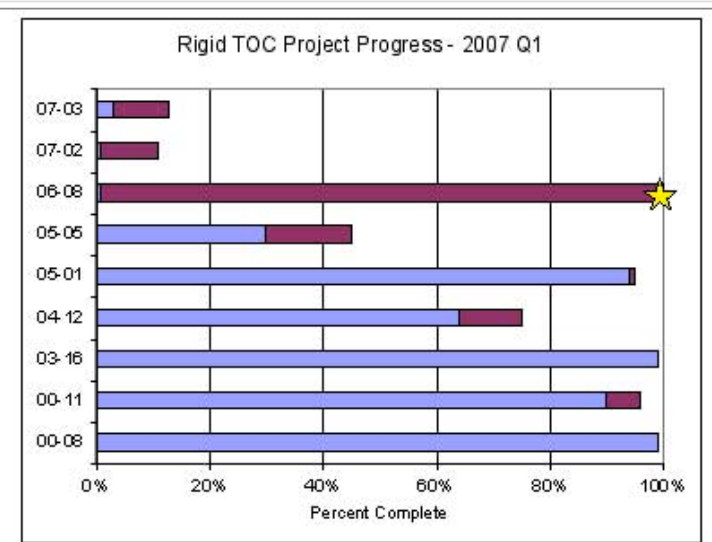
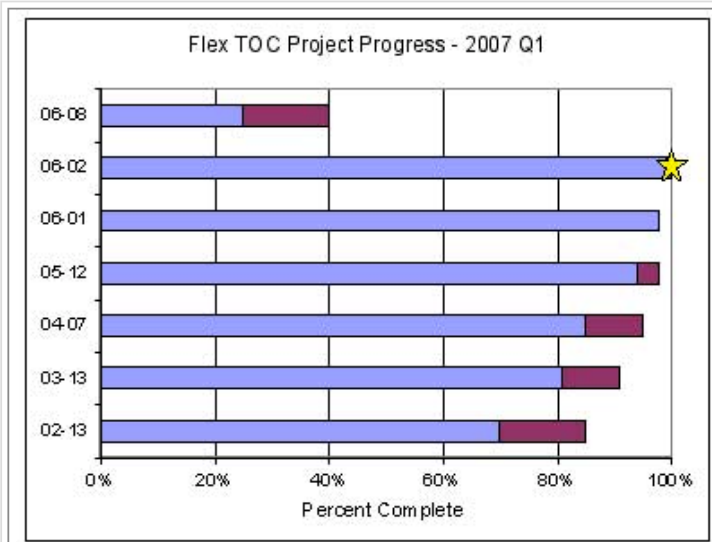
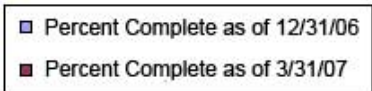
- [Data Integration and Partnership for Statewide Transportation Planning](#)
- [Evaluation and Recommendations for Further Development of the WisDOT Pavement Information Files \(PIF\) Database](#)
- [Development of a Database Framework and Implementation Plan for Integrating WisDOT Materials and Construction Databases](#)

In addition, TOC members targeted October for a WisDOT-sponsored peer exchange on data access issues. Potential topics for discussion include managing and integrating pavement databases, access policies, and tools for data dissemination.

For more information, contact WHRP Program Manager [Andrew Hanz](#) or TOC Chair [James McDonnell](#).

Project Status at a Glance

As of March 31, 2007, there were 35 active WHRP projects. Two of these projects were completed during the last quarter.



Research in Focus

FRP Bridge Deck Forms May Save Time and Money

0092-06-07, *Specification and Design of Fiber Reinforced Bridge Deck Forms for Use on Wide Flange T-Girders*

As concrete bridge spans grow longer, spacing between girders shortens to carry loads. Bridge construction crews currently build plywood forms for wide-flange girders, pour concrete into the forms, and remove the forms after curing.

Permanent fiber-reinforced plastic bridge deck forms may change this process. Manufactured FRP forms reduce preparation and installation time and the amount of concrete used, and eliminate stripping expenses after deck placement. FRP forms may even improve bridge performance by adding strength to the concrete.

UW-Madison principal investigator Larry Bank is three-quarters finished with a project in which he is evaluating various types of stay-in-place forms, including strictly FRP forms, FRP-enhanced cement forms, Fortacrete panels, and more. Results will include suggested specifications and design procedures for WisDOT consideration, and cost-benefit calculations. The final report is expected in October.

For more information, see the [project quarterly reports](#) or contact [Larry Bank](#).

Regional and National Collaboration

Pooled Fund Project on Low-Temperature Cracking Nearly Complete

TPF-5(080), *Investigation of Low Temperature Cracking in Asphalt Pavements*

In cold weather, asphalt pavements shrink to relieve tensile stress, too often to the point of cracking. Superpave specifications for performance-graded HMA binders have begun to address low-temperature cracking problems by characterizing low-temperature behavior of the asphalt binder itself.

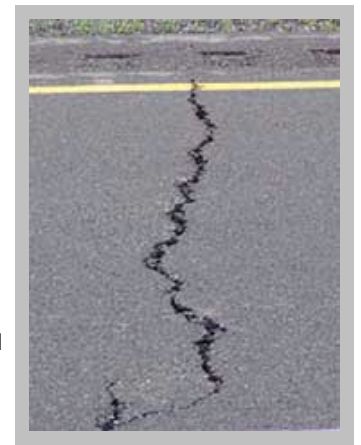
However, polymer additives are used in some HMA binders to address high-temperature performance, and these mixed polymer-modified asphalt binders have not been studied thoroughly for low-temperature behavior.

The objective of this pooled fund study is to develop a nationally accepted specification for polymer-modified asphalts with the ultimate goal of eliminating low-temperature cracking in both new and rehabilitated HMA pavements.

Since 2004, 10 states including Wisconsin have guided investigators at the Iowa State University, University of Illinois Urbana-Champaign, University of Minnesota, and UW-Madison in the evaluation of samples and mix designs and in field testing on sections in four states. Test sections on US 45 in Antigo and WIS 73 in Hannibal have performed well.

Recent projections put final costs for this phase of the study at \$665,000, well beyond what any individual DOT would likely be able to fund on its own, pointing again to the value of collaborative research. The study was recently renewed.

A draft final report submitted in March includes not just findings and recommendations, but also databases of lab and field performance results, and protocols for binder and mixture selection aimed at resisting crack formation and propagation. For more information, see the study's [project page](#) on the Pooled Fund Program Web site or contact WisDOT's [Len Makowski](#) or UW-Madison's [Hussain Bahia](#).



Frozen Four Partners Compare Problem Statements

The North Central Pavement Research Coordination Partnership, or the Frozen Four (Illinois, Michigan, Minnesota and Wisconsin DOTs), recently completed an initial analysis of research problem statements under consideration by their respective agencies.

Fifty-two problem statements were put in 19 categories related to flexible pavements, rigid pavements, soils and foundations, and design and pavement management. In five categories, three states were considering related research; in rigid pavement repair and rehabilitation, every state had developed a problem statement. When partners meet later this summer, they hope to identify areas in which research interests warrant collaboration and cost savings.

Frozen Four partners will also review an analysis of their geotechnics research projects as they relate to national goals and trends identified in the draft Geotechnics Research Road Map.

For more information on this regional pooled fund project aimed at increased collaboration, see the Frozen Four [Web site](#).



Partner states will explore collaboration opportunities in techniques for rigid pavement rehabilitation.

Outreach

Early Returns From Regional Office Visits

WHRP conducted its sixth and final visit to WisDOT regional offices in April, aimed at improving awareness of and participation in WisDOT research. Presentations were made to approximately 20 managers in each office, followed by question-and-answer sessions, suggestions for future interactions and completion of a one-page survey.

A few themes are emerging from the meetings. Survey results included:

Participants that had previously heard of WHRP - 77%
Participants that had reviewed WHRP reports - 42%
Participants that had visited the WHRP Web site - 28%
Participants that found the visits useful - 91%

Comments included:

- Suggestions that WHRP staff attend specific WisDOT meetings and conferences, including Project Development and Technical Services Chiefs' meetings.
- Recommendations that WHRP should return every year after the construction season to present completed research and identify needs.

In March, WHRP Program Manager Andrew Hanz presented plans at a PDS Chiefs' meeting for involving regions in Identifying research needs and implementing study results, a first follow-up to recommendations from the regional visits.

In the next few weeks, a detailed report on the regional visits will be posted on the WHRP [Web site](#).



Online Surveys Give Engineers Direct Input in 30 Minutes or Less

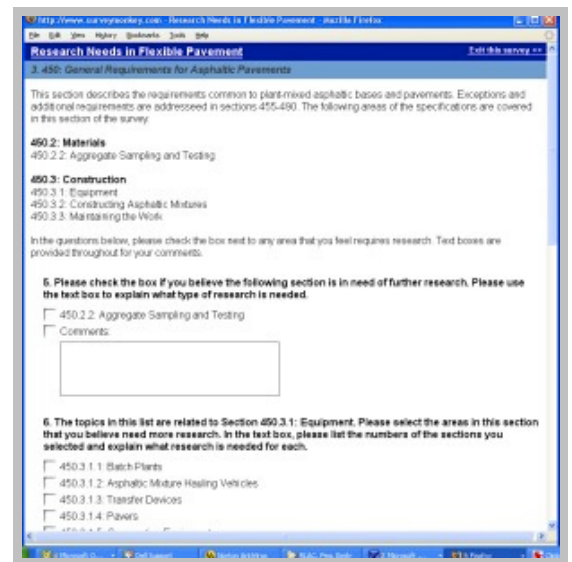
WHRP has developed rigid and flexible pavement specifications surveys that collect comments on specific sections of WisDOT manuals that may benefit from research.

The surveys allow engineers to review WisDOT's Standard Specifications, Construction and Materials Manual, and Facilities Development Manual. In 30 minutes or less, survey takers mark sections they think require adjusting and post specific comments on those sections.

WHRP Program Manager Andrew Hanz presented this new tool for input to the Project Development and Technical Services Chiefs' and three WisDOT bureau directors in March. WHRP has also distributed the flexible pavements survey to members of the Wisconsin Asphalt Pavement Association and the American Council of Engineering Companies of Wisconsin, and intends to share the rigid pavements survey with ACEC-Wisconsin and Wisconsin Concrete Pavement Association membership.

Results of the surveys will be shared with TOCs to assist the groups in developing new research topics for investigations aimed at improving policies and procedures.

The Flexible Pavements Survey was posted March 5, and the Rigid Pavements Survey on June 5. If you would like to take the survey, please contact [Andrew Hanz](#). WHRP intends to summarize survey results in mid-August for the TOCs.



Implementation Report

WHRP Structures TOC Putting Research to Work

Of the nine projects finished since 2002 under Structures TOC supervision, two-thirds have enjoyed some level of implementation or have prospects for implementation in the very near future.

Findings from three of the projects have already been implemented, a fourth project produced a guidebook for inspectors, a fifth will be implemented as a formal implementation project, and a sixth that addresses small bridges may be implemented on the state system if follow-up research is conducted.

The six implemented projects include:

- 0092-00-16, Structural Analysis of Sign and Luminaire Support Structures (finished September 2004) - *Recommended changes in support mast size requirements and inspection procedures now included in Bridge Manual, Chapter 39.*
- 0092-03-09, Evaluation of Concrete Deck and Crack Sealers (January 2006) - *Updated approved products list in the Construction and Materials Manual.*
- 0092-03-10, Integrated Field and Office Tools for Bridge Management (January 2004) - *Many regions now use handheld, Tablet PCs for bridge inspection.*
- 0092-00-15, Non-Destructive Testing of Highway Bridge Structures for the Purposes of Structure Evaluation (June 2005) - *A guide to available tests has been distributed to state bridge inspectors as a resource.*
- 0092-01-06, Rehabilitation Techniques for Concrete Bridges (June 2005) - *FFY 2006 Implementation Project, to add Bridge Manual and Construction and Materials Manual changes for pre-stressed girder ends.*
- 0092-02-14b, Rapid Strengthening of Reinforced Concrete Bridges (December 2003) - *Fiber-reinforced polymer strips fastened mechanically work well on flat slab bridges, 20 to 30 feet in length; more research is needed for application to other bridge types.*

For more information, see each study's project page on the WHRP [Web site](#) or contact Structures TOC Chair [Scot Becker](#) or WHRP Program Manager [Andrew Hanz](#).



Inspection of base plate anchor rods was found to be critical.

About WHRP

www.whrp.org

The Wisconsin Highway Research Program was established in 1998 by the Wisconsin Department of Transportation to conduct research on highway materials and construction methods. WHRP is administered by the UW-Madison Department of Civil and Environmental Engineering. A Steering Committee chaired by the WisDOT Research Administrator provides policy direction to the WHRP Technical Director, Program Manager and five Technical Oversight Committees chaired by WisDOT engineers. The TOCs focus their work on Flexible Pavements, Rigid Pavements, Geotechnics, Structures and Data Integration. The Steering Committee and TOCs are composed of representatives from WisDOT, FHWA, academia and industry.

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Don Miller

WisDOT Bureau of Project Development

Beth Cannestra

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