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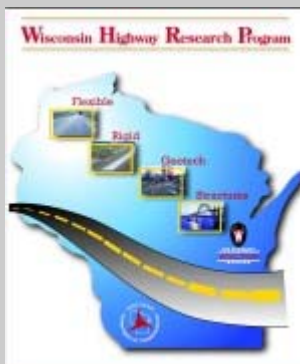
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Message from WisDOT's Jim McDonnell

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

The Technical Oversight Committees have been busy selecting their highest priority research needs for FFY 2008. RFPs for these projects will be sent out in January.

During this past quarter we began outreach efforts to improve the connection of WHRP research to the needs of WisDOT regional offices.

Will Dorsey from the Northeast Regional Office is helping us plan meetings around the state early in 2007 that we hope to report on in our next issue.



Representatives from WisDOT, WHRP, FHWA and multiple state DOTs participated in WisDOT's Research Peer Exchange.

In mid-October Wisconsin DOT hosted a Research Peer Exchange drawing together 24 WisDOT representatives along with visiting team members from five other state DOTs, two universities, and local and national FHWA offices.

The peer exchange team focused on research program evaluation with an emphasis on performance measures, overall effectiveness, organizational structure

and partnerships, especially with universities. We have already begun to implement insights we gained from discussions with our colleagues. See the peer exchange report on WisDOT's Web site:

<http://www.dot.state.wi.us/library/research/reports/peerexchange.htm>

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Program Update

Introducing Daniel Enz

Daniel Enz joined WHRP in October as a program development assistant. The UW-Madison Ph.D. candidate brings years of experience in construction of buildings, aggregate work, and road building. Enz honed his road construction skills in the U.S. Army, including a stint of 16 months through March 2005 in Iraq, where he trained soldiers in grading and earth moving, worked on a helicopter landing expansion project, helped design drainage, and contributed to road projects.

Enz earned his M.S. in Civil Engineering from the University of Minnesota-Minneapolis and joined the Army after a couple years working in commercial construction in Appleton and Green Bay. The Denmark, Wisc. native has also worked a number of years for a Moline, Ill. aggregate producer, most recently as director of operations research.

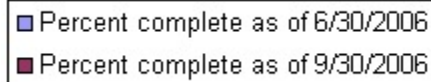
It was during his work in the Army that Enz decided to pursue an advanced degree in civil engineering. "I was given valuable insight and advice from several engineering officers," said the Wisconsin-certified P.E. As a graduate student, Enz is looking forward to working with WHRP to assist in research needs, outreach, and implementation activities.



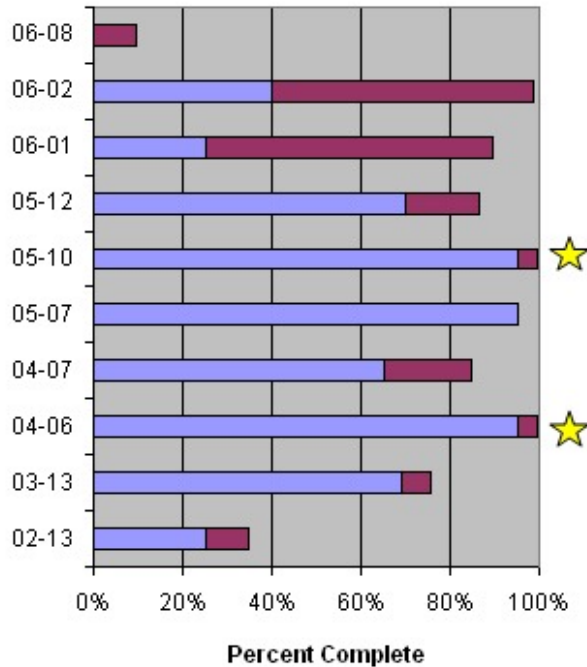
Daniel Enz, WHRP's new program development assistant

Project Status at a Glance

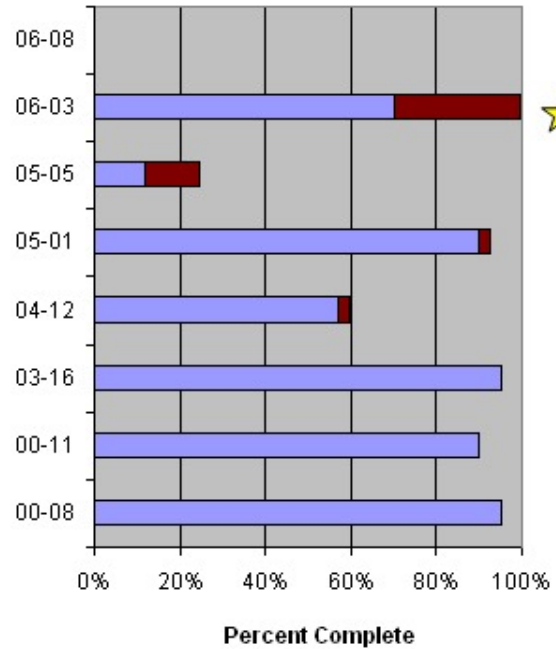
As of September 30, 2006, there were 31 active WHRP projects. Three of these projects were completed during the last quarter.



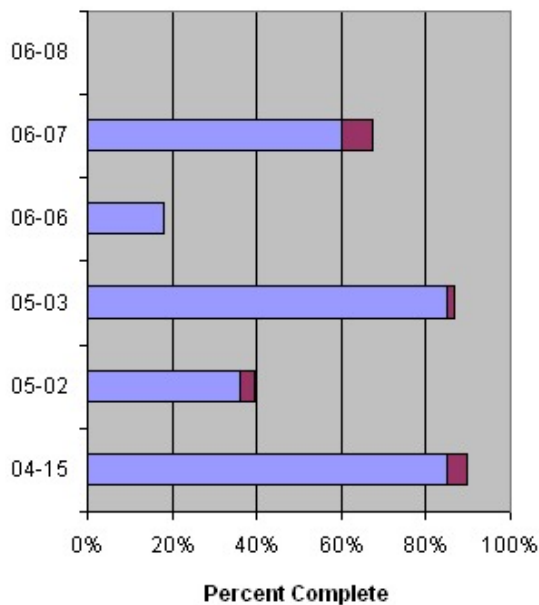
Flex TOC Project Status



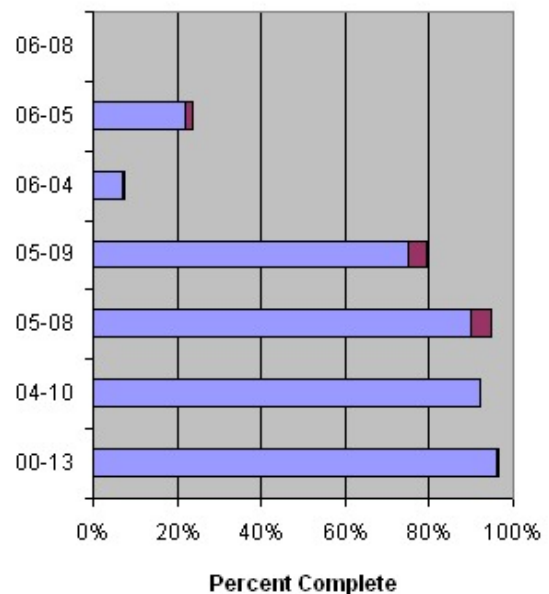
Rigid TOC Project Status



Structures TOC Project Status



Geotech TOC Project Status



Research in Focus

Coated beam ends fend off corrosion

0092-01-06, Rehabilitation Techniques for Concrete Bridges

Concrete bridges must battle steadily increasing traffic loads, deicing salts, and water seepage at joints. These conditions shorten bridge life and leave telltale signs - spalling, cracks and corrosion of reinforcing steel.

The Structures Technical Oversight Committee recently completed research on new approaches to slowing deterioration of damaged concrete beam ends.

Professor Habib Tabatabai led a University of Wisconsin-Milwaukee research team that tested the effectiveness of various protective coatings on the ends of five new prestressed concrete beams. The beams were exposed in a weathering room for six months to salt-water sprays and impressed electric currents to accelerate corrosion. At the end of the six months, the beam ends were patched, coated again and then subjected to an additional 12 months of the harsh treatment.

Investigators learned that coating beam ends with polymer resins is the fastest and most cost-effective way to fend off corrosion. While treatment helps after corrosion has begun, prevention is best; coatings work most effectively if placed on beam ends during initial installation. See the final report on the WHRP Web site: http://www.whrp.org/Research/Structures/struct_0092-01-06/index.htm



After six months of laboratory exposure to salt spray cycling, an uncoated concrete beam (left) suffered significant end corrosion. An adjacent beam, this one coated with a polymer resin, showed little damage.

Regional and National Collaboration

National Asphalt Road Map

FHWA has released a draft version of the National Asphalt Road Map, the flexible pavement community's version of the excellent Concrete Pavement Road Map developed in recent years at Iowa State University.

The National Asphalt Road Map is intended to guide the development of asphalt pavement technology in coming years. The guidelines encompass five themes for maximizing research impact: Safety, Pavement Performance, Work Force Growth and Development, Environmental Stewardship, and Economics.

Using these themes the Road Map identifies seven research areas ranging from materials to contracting and construction management, and identifies short-term and long-term research tasks in each of these areas.

The Road Map will be fluid, rerouting research goals and objectives as needs and priorities shift. Even with the necessary time and funding, the Road Map clearly will require collaboration to realize its projected benefits. The success of the nation's commitment to asphalt research and technology will depend on the ability of academia, government, and industry to come together as they do in WHRP and work towards the common goals of durable, safe, smooth, and environmentally friendly asphalt pavements.

Read the draft National Asphalt Road Map online:

[http://www.asphaltmodelsetg.org/AC_Roadmap_Report082806_\(final_draft\).pdf](http://www.asphaltmodelsetg.org/AC_Roadmap_Report082806_(final_draft).pdf)

Comments and feedback are solicited.

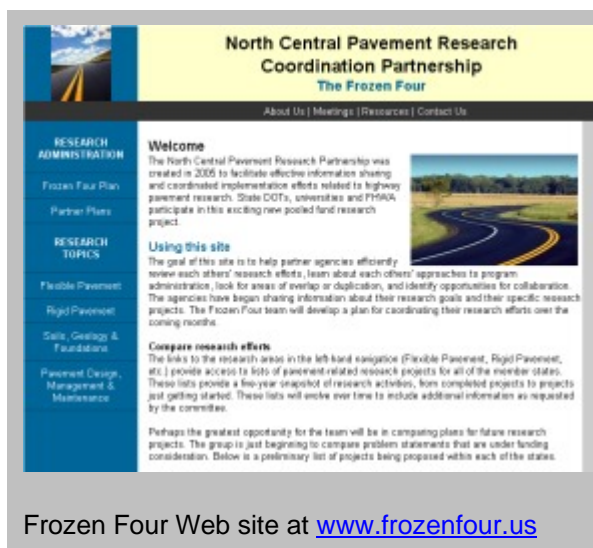


FHWA's draft National Asphalt Road Map will guide asphalt pavement research down its most promising highways.

Interstate research collaboration

On December 5, the North Central Pavement Research Coordination Partnership held its fourth quarterly meeting on the UW-Madison Campus. Currently called the Frozen Four, this pooled fund study draws together representatives of state pavement-related research programs in Illinois, Michigan, Minnesota, and Wisconsin to discuss topics of common interest. Participants at the meeting discussed:

- Analysis of problem statements for common research themes and collaboration opportunities
- Analysis of projects completed and in progress in the area of rigid pavements as related to the Concrete Pavement Roadmap
- Mechanistic Design inputs and sensitivity analysis
- Practices and research plans for whitetopping
- QC/QA of unbound materials, and prevention of reflective cracking
- Better methods for linking in-progress WHRP research and implementation projects to efforts of participating states



A meeting highlight was a presentation demonstrating how the databases of this pooled fund collaborative effort can pay off. The databases of active and completed research generated by the four states (and housed on the Frozen Four Web site) were compared with the research tracks of the Concrete Pavement Road Map. The resulting report allows the states to examine their recent regional pavement research efforts and how they match up with national research goals. The group plans to generate similar reports on their research efforts in flexible pavements and geotechnics.

The Illinois Department of Transportation will host the next meeting in early March. Discussion will focus on coordinating current research efforts and problem statements, expanding participation to other states, and sharing information with state transportation departments, academia, and industry partners.

Outreach

Marquette Asphalt Conference

WHRP took center stage in mid-November at the 49th annual Marquette Asphalt Paving Conference in Pewaukee attended by 160 pavement professionals from Illinois, Indiana, Minnesota and Wisconsin.

Two of the six presentations at the conference featured WHRP research. The first was an update on the Marquette Interchange Smart Road project, an instrumentation of perpetual asphalt pavement on the huge reconstruction project in downtown Milwaukee.

Jim Crovetti, a professor at Marquette University, discussed the various strain and load gauges installed in the asphalt pavement during construction and the Web site at which real-time data from traffic loading can be viewed beginning in early January. He described how such data can be used to advance specifications and practice in Wisconsin. Contact Jim at james.crovetti@marquette.edu for more information.

The second presentation featured Bob Schmitt, an associate professor at UW-Platteville, reviewing his work for WHRP on non-nuclear density gauges. Schmitt presented his data and discussed its use, showing how non-nuclear gauges can be effective if calibrated properly with daily, project-specific information, including limited data from nuclear gauges. Contact Bob at schmitro@uwplatt.edu for more information.

Conference participants also heard presentations on intelligent compaction, warm-mix asphalt and use of roof shingles in asphalt pavement. A final presentation on performance graded binders and mix selection also drew on WHRP research.



Tom Brokaw of WisDOT, at the podium, and Scot Schwandt, far right, discuss performance graded binder selection recommendations drawn in large part from WHRP research.

WAPA Conference

WHRP staff actively participated in the 2006 Wisconsin Asphalt Pavement Association (WAPA) Annual Conference in Middleton attended by over 250 Wisconsin highway professionals. WHRP Technical Director Dr. Hussain Bahia spoke on

- Raising awareness of WHRP and what it can do for industry
- The Flexible Pavement TOC's 2006 implementation project on using the Superpave gyratory compactor to evaluate mixture strength, stability, and workability
- Research opportunities through the new Asphalt Research Consortium at UW-Madison

WHRP's Andrew Hanz and Daniel Enz worked an information booth that displayed completed flexible pavement research reports and technical information on the gyratory compactor project. The WHRP station attracted conversations on research needs throughout the state, including interest in a program that would investigate pavement and construction failures in the field.

WHRP will keep these suggestions at the forefront of its deliberations in the coming months. A great success, and a valuable experience for WHRP staff, the WAPA Conference was ably managed by Scot Schwandt and Pat Goss of WAPA, and WHRP thanks them for the invitation to attend and present. WHRP looks forward to participating in similar events in the rigid pavement, structures, and geotechnics areas as well.



WHRP's Dan Enz mans a booth at the annual Wisconsin Asphalt Pavement Association Conference in Middleton.

Implementation Report

Longitudinal tining for safety and sound

0092-00-08, Wet Pavement Crash Study of Longitudinally and Transversely Tined PCC Pavements

For decades FHWA and WisDOT have required portland cement concrete pavements to be tined transversely with small grooves cut into the concrete surface to improve traction in wet weather. However, when vehicle tires roll over transverse tines, the interaction can generate a loud hum that annoys drivers and nearby residents as well.

A pooled fund study carried out by Marquette University concluded in 2000 that longitudinal, randomly spaced tining can significantly reduce road hum. But is longitudinal tining as safe for drivers as transverse tining?

WHRP contracted a follow-up study with Marquette University Associate Professor Alexander Drakopoulos, who evaluated wet pavement crash statistics for longitudinally and transversely tined pavements. Drakopoulos presented data to the Rigid TOC in the summer of 2004 showing that longitudinal tining was indeed as safe as transverse. Though a final report was not yet finished, the TOC immediately began to work with WisDOT's Concrete Pavement Technical Committee to allow longitudinal tining as an alternative to transverse tining. The result: safe road surfaces that also reduce tire-pavement noise.



Randomly spaced, longitudinal tining is a simple process that WisDOT immediately began employing when WHRP research showed it was as safe for drivers as transverse tining, and reduced tire-pavement noise.

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 four Technical Oversight Committees chaired by WisDOT engineers. The TOCs focus their work on Flexible Pavements, Rigid Pavements, Geotechnics and Structures. The Steering Committee and TOCs are composed of representatives from WisDOT, FHWA, academia and industry.

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About this newsletter

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