



WisDOT
RESEARCH
PROGRAM



2013
ANNUAL
REPORT

From the Research Administrator

To the transportation research community:

I am pleased to present to you the Wisconsin Department of Transportation's 2013 Annual Report on research activities. This report discusses programs managed by the Research & Library Unit as well as initiatives that represent partnerships across the department, state and nation.

The past year has seen both stability and change. Stability was shown as the Research & Library Program staff completed its first year together in its current partnership between WisDOT and the University of Wisconsin – Madison. The team worked effectively to deliver another quality research program and provide services to the department and the state. Change came about primarily through new implementation activities for the national Strategic Highway Research Program 2 (SHRP2). This program required new financial contributions from WisDOT but also brought opportunities to apply emerging ideas to key projects.

I am proud of our program's accomplishments and grateful for the support from our partners. Please review this report, share its findings with colleagues and continue your involvement with our program.

Sincerely,

Daniel Yeh

Chief

Research & Communication Services Section

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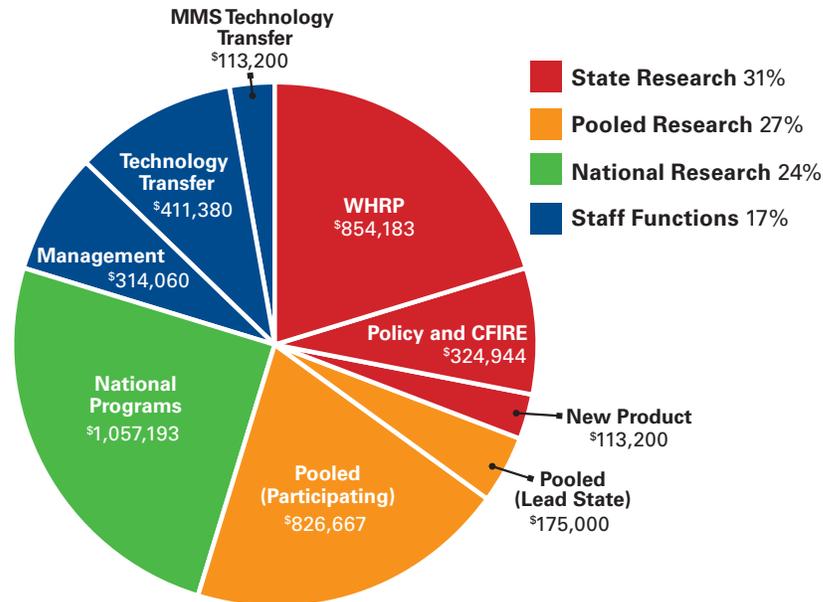
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This is a report of research and technology transfer activities carried out by the Wisconsin Department of Transportation through the Part 2 research portion of the State Planning and Research Program of the Federal Highway Administration, U.S. Department of Transportation. The report describes activities during Federal Fiscal Year 2013, covering October 1, 2012, through September 30, 2013.

Program Overview

WisDOT managed a \$4.2 million program for research, library and technology transfer services during federal fiscal year 2013.

Ninety percent (\$3.76 million) of the program is funded by the State Planning and Research Part 2 (SPR2) federal program with the remaining ten percent from state funds.



State-based research projects

The Wisconsin Highway Research Program (WHRP) is focused on projects to improve the state's highways. WHRP is managed through a partnership with the University of Wisconsin – Madison. The Policy Research Program addresses non-engineering issues such as planning, operations and safety. New Product research funding supports statewide quality assurance and materials testing.

Pooled fund projects

The Transportation Pooled Fund (TPF) Program allows federal, state, and local agencies and other organizations to combine resources to support transportation research studies. The WisDOT research program allocated funds to 41 TPF projects in FFY 2013. Wisconsin was the lead state on three pooled fund projects.

National research

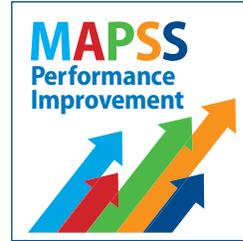
WisDOT helps to sustain national research initiatives through the Transportation Research Board (TRB), the National Cooperative Highway Research Program (NCHRP) and SHRP2.

Technology transfer, library services and program management

The Research Program funds technology transfer activities and library services to coordinate dissemination of research. Funds for WisDOT's Materials Management Section (MMS) technology transfer activities are also included in the research program. Efficient management of the program contributes to continuous performance improvement.

Featured Research

The Wisconsin Department of Transportation MAPSS Performance Improvement Program focuses on five core goal areas: Mobility, Accountability, Preservation, Safety and Service. Examples of research that contribute to achieving the department's strategic mission are featured.



Mobility

0092-11-15 Understanding the Decision-Making Process for Drivers Faced with Lane Restrictions or Closures on Wisconsin Highways

Final report and brief: <http://wisdotresearch.wi.gov/project?id=819>

The Wisconsin Department of Transportation (WisDOT) owns and operates a state highway network of 12,000 miles, which carries approximately 80 percent of vehicle miles traveled in the state. Because of the heavy traffic volumes carried, lane restrictions or closures on state highways have the potential to significantly impact drivers. WisDOT developed numerous strategies for identifying alternate routes that drivers can use when highway travel times are affected by planned or unplanned events. Many of these routes are marked with trailblazer signs, and WisDOT made significant efforts to communicate information to drivers regarding traffic conditions, incidents and closures along the state highway network and to provide recommendations regarding alternate routes. Despite these efforts, WisDOT observed that many alternate routes are underused, even when those routes would save drivers significant travel time.

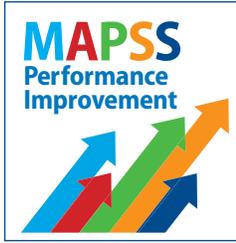
IMPACT: The research team developed a set of recommended communication strategies that WisDOT can use for informing and encouraging drivers to take alternate routes when advantageous. The toolbox of communication strategies draws on successful practices from other states and localities, as well as feedback from drivers in Wisconsin regarding what factors influence their route decisions both prior to and during a given trip. The recommendations are intended to maximize the effectiveness of WisDOT's current communications media while offering ideas for new media such as smartphone applications.

0092-12-09 New Framework and Decision Support Tool to Warrant Detour Operations during Freeway Corridor Incident Management

Final report: <http://wisdotresearch.wi.gov/wp-content/uploads/CFIRE-0092-12-09-final-report.pdf>

Mobility and reliability of the highway systems in the United States are significantly undermined by traffic delays on freeway corridors due to non-recurrent traffic congestion. Many of those delays are caused by the reduced capacity and overwhelming demand on critical metropolitan corridors coupled with long incident durations. In most scenarios, if proper detour strategies were implemented in time, motorists could circumvent the congested segments by detouring through parallel arterials, which will significantly improve the mobility of all vehicles in the corridor system.

IMPACT: This study focused on developing a new multi-criteria framework along with an advanced and computation-friendly tool for traffic managers to decide whether or not and when to implement corridor detour operations. The products of the study include: 1) Designing a well-calibrated corridor simulation network and a comprehensive set of experimental scenarios to take into account many potential factors affecting a traffic manager's decision-making process and ensure the effectiveness of the proposed detour warrant tool; 2) Developing detour decision models, including a two-choice model and a multi-choice model, based on generated optimal detour traffic flow rates for each scenario from a diversion control model to allow responsible traffic managers to make the best detour decisions during real-time incident management; 3) Estimating the resulting benefits produced by the diversion decision model from the socioeconomic perspective; and 4) Developing a detour decision choice tool for incident management. The proposed model, with features of computational convenience and operational flexibility, has the ability to allow potential users to customize its application depending on the operational requirements in the target region.



Featured Research *(continued)*

Mobility *(continued)*

TPF-5(218) Clear Roads Winter Highway Operations Pooled Fund

Lead Agency – Minnesota DOT: <http://www.pooledfund.org/Details/Study/446>

WisDOT participates in the Clear Roads Winter Highway Operations Pooled Fund. One of the projects completed in 2013 was Snow Removal at Extreme Temperatures – Phase I. Using salt to keep roads clear works very well down to approximately 10 degrees Fahrenheit. It also works at lower temperatures but it requires higher volumes and becomes less cost effective. The goal of this project was to review best management practices for maintaining clear roads at extremely low temperatures and develop some cost effective strategies for getting the roadway to a bare/dry condition in extreme temperatures and keeping it at that condition. The final report compiled strategies for winter maintenance during extreme cold that have been used by DOTs and other jurisdictions. Visit the Clear Roads website for more information. <http://www.clearroads.org>

IMPACT: Research completed by this pooled fund has led to Wisconsin looking into using the Weather Severity Zones in its Severity Index calculation. A video on field testing of deicing materials has been distributed to all 72 Wisconsin counties. Wisconsin is also leading the effort in developing snowplow driver training.

Accountability

0092-12-14 Focus Group Assessments of Transportation Financing Options in Wisconsin

Final report: <http://wisdotresearch.wi.gov/project?id=817>

The Wisconsin Commission on Transportation Finance and Policy was created in the 2011–2013 biennial state budget to identify and evaluate transportation finance options to address future needs. During the summer of 2012, researchers with the University of Wisconsin Survey Center (UWSC) conducted focus groups on matters related to transportation in Wisconsin. The groups explored motorists' assessment of highway pavement and congestion conditions, their preferred future scenario of transportation in Wisconsin and their willingness to pay to support that future scenario.

IMPACT: This research complemented other public input measures used by the Commission.

0092-13-15 Evaluation of Wood Species and Preservatives for WisDOT Sign Posts

Final report and brief: <http://wisdotresearch.wi.gov/project?id=832>

WisDOT uses preservative-treated wood posts for much of the signage along state highways because wood is relatively inexpensive, easy to install, and has the necessary strength properties to tolerate typical Wisconsin wind loads. Although WisDOT's experience with wood sign posts has been generally positive, there are some areas of concern, as well as potential opportunities for diversifying the wood species and preservatives used. WisDOT worked with the USDA Forest Products Laboratory to study the issues.

IMPACT: The researchers found that WisDOT's current wood species and preservatives used are the optimum combination currently available. However, they recommended that WisDOT pilot the usage of wood sign posts that have been treated with copper naphthenate, an oil based preservative that could penetrate the wood more effectively and reduce warpage of posts. WisDOT will initiate a second phase of research to test this preservation treatment in selected areas.

Featured Research *(continued)*



Preservation

0092-10-11 Laboratory Study of Concrete Properties to Support Implementation of the New AASHTO Mechanistic-Empirical Pavement Design Guide

Final report and brief: <http://wisdotresearch.wi.gov/project?id=53>

WisDOT is exploring implementation of the Mechanistic-Empirical Pavement Design Guide (MEPDG) for more efficient and cost effective concrete pavement designs. The empirical relations contained within the MEPDG provide alternative approaches to the selection of concrete modulus of rupture and modulus of elasticity for pavement distress and response calculations. This research evaluates the effects of different concrete component materials in Wisconsin on key concrete mechanical and thermal properties used in the MEPDG model. The researchers updated the MEPDG model empirical relationships from the results of comprehensive laboratory tests on concrete specimens made from aggregate and cementitious materials found in Wisconsin.

IMPACT: The researchers recommend replacing two new sets of empirical relations to correlate concrete compressive strength values to concrete modulus of rupture and modulus of elasticity values in the level 2 MEPDG model.

0092-11-08 Procedures, Cost and Effectiveness for Deteriorated Bridge Substructure Repair

Final report and brief: <http://wisdotresearch.wi.gov/project?id=110>

Degradation of bridge substructure members in Wisconsin is a serious concern. Concrete, steel and timber members all require distinct repair methods which not only address the true cause of the deterioration, but also protect the members from future damage. Deterioration of bridge substructure members in Wisconsin is caused by deicing chemicals, the cycle of wetting and drying, scour, erosion, improper design and many other damaging processes.

IMPACT: The researchers highly recommend that WisDOT start tracking longevity of repairs throughout Wisconsin. Keeping a better record of simple concrete repairs, and making that record available through the Highway Structures Information System (HSI) would help to determine why some repairs are considered unreliable. Consideration should be placed on repair life in addition to repair cost.

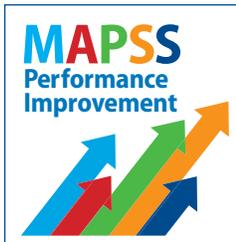
Safety

0092-09-07 Fatigue Risks in the Connection of Sign Support Structures: Phase II

Final report and brief: <http://wisdotresearch.wi.gov/project?id=106>

The latest edition of the AASHTO design specifications (AASHTO 2001) introduced provisions for fatigue design. However, many structures presently in service were designed before fatigue provisions were part of the design specifications. The fatigue design procedures now included in these specifications do not address the variability in fatigue life that is likely for structures in service, nor do these provisions allow engineers to quantify the risk of fatigue-induced fracture for structures that have been in service. As a result, Wisconsin undertook a research effort to assess the risk of fatigue-induced fracture in existing sign support structures that were designed before the latest AASHTO specification revisions. This research effort develops a reliability-based approach for prescribing inspection intervals corresponding to user-specified levels of fatigue-induced fracture risk. The resulting level of risk for a particular structure is dependent upon its geographical location, the type of connection it contains, the orientation of its mast-arm and the number of years it has been in service. The results of this research effort indicate that implementation of state-of-the-art reliability-based assessment procedures can contribute very valuable procedures for assigning inspection protocols (i.e. inspection intervals) that are based upon probabilities of finding fatigue-induced cracking in these structures.

IMPACT: The engineering community can use the results of this research effort to design inspection intervals based upon risk and thereby better align inspection needs with limited fiscal and human resources.



Featured Research *(continued)*

Safety *(continued)*

TPF-5(193) Midwest States Pooled Fund Crash Test Program

Lead Agency – Nebraska Department of Roads:

<http://www.pooledfund.org/Details/Study/418>

Through participation in this pooled fund WisDOT had research performed in the state to address the needs of guiderail systems and the type of wood used in these systems, which will ultimately lead to development of more accurate computer simulation models of wood post guardrail strength.

IMPACT: WisDOT used research from the Midwest States Pooled Fund Crash Test Program to update the department's standards and policies in the following areas: Midwest guardrail system, single slope concrete barrier, shielding warrants, retrofit for beam transitions, cable barrier, shallow fill culvert applications of barrier and other modifications to temporary barrier. In addition to these larger scale applications of the research, access to the pooled fund has helped on a number of project specific situations by providing technical assistance.

Service

0092-12-10 WisDOT Customer Satisfaction Survey

Final report and brief: <http://wisdotresearch.wi.gov/project?id=830>

WisDOT is a major public agency with numerous customers utilizing a variety of services and programs to support the entire statewide multimodal transportation system. The department also houses the Division of Motor Vehicles (DMV) and the Division of State Patrol (DSP). Every resident of Wisconsin is in some way a customer of the department. WisDOT did not have an effective way to measure and track overall customer satisfaction, so the Policy Research Program sponsored this research to collect customer satisfaction data and establish baseline performance measures that can be compared to future data. The purpose of the survey was to develop a new customer satisfaction tool to objectively assess WisDOT's performance.

IMPACT: The research team identified opportunities for improvement based on current levels of satisfaction and the relative importance that respondents placed on various services. In addition to the recommendations of the research team, senior WisDOT managers participated in a workshop using the survey results to identify next steps for the department.

0092-10-21 Aligning Oversize/Overweight Fees with Agency Costs: Critical Issues

Final report: <http://wisdotresearch.wi.gov/wp-content/uploads/WisDOT-CFIRE-project-0092-10-21-final-report.pdf>

This project provides an elementary analysis of issues and a proposed framework for the state to evaluate cost recovery options due to oversize/overweight (OSOW) operations. The researchers provide a review of current permitting practices, a sampling of fee structures, and preliminary trends for OSOW demand in the foreseeable future. The basis for the project is the Midwest states, but the findings incorporate national trends and data as appropriate. The research team surveyed state DOTs for information on permit fee structures and the respective distribution and allocation of permit revenue. A series of best practices is provided to help guide the operations of a permitting process.

IMPACT: Departments of transportation should consider multiple changes to the fee structure that would better reflect agency costs and take into consideration the high infrastructure impacts caused by OSOW loads. In general, harmonization across states will greatly reduce costs and the regulatory burden for carriers.

Completed Research Projects

Program	Project ID	Performing Organization	Principal Investigator	Project Budget	WisDOT Project Manager	Project Title	Completion Date
Policy	0092-11-15	Texas A&M University	Laura Higgins	\$100,000	Paul Keltner	Understanding the Decision-making Process for Drivers faced with Lane Restrictions or Closures on WI Highways	3/26/2013
Policy	0092-12-10	ETC Institute	Christopher Tatham	\$74,990	Peg Schmitt	WisDOT Customer Satisfaction	3/4/2013
Policy	0092-12-14	University of Wisconsin – Madison	John Stevenson	\$35,347	John Swissler	Focus Group Assessments of Transportation Financing Options in WI	12/10/2012
UTC	0092-10-21	University of Wisconsin – Madison	Teresa Adams	\$80,000	Daniel Yeh	Aligning Oversize and Overweight Permit Fees and Policies with Agency Costs	9/3/2013
UTC	0092-11-09	University of Wisconsin – Madison	Teresa Adams	\$100,000	Scott Brummond	Air Cargo in the Mississippi Valley Freight Coalition Region	10/10/2012
UTC	0092-12-09	University of Wisconsin – Madison/UW Milwaukee	Teresa Adams/ Yue Liu	\$44,944	John Corbin	New Framework and Decision Support Tool to Warrant Detour Operations during Freeway Corridor Incident Management	8/14/2013
UTC	0092-12-12	University of Wisconsin – Madison/ UW Superior	Teresa Adams/ Richard Stewart	\$45,000	Dennis Leong	Evaluating Export container Pooling Options In Minn, Wisconsin and Michigan's Upper Peninsula	6/20/2013
WHRP – Flexible Pavement	0092-09-02	Marquette University	James Crovetti	\$71,934	Tom Brokaw	Performance Evaluation of Tack Coat Materials	10/1/2012
WHRP – Flexible Pavement	0092-11-02	University of Wisconsin – Milwaukee	Hani Titi	\$106,935	Judie Ryan	Base Compaction Specification Feasibility Analysis	1/31/2013
WHRP – Geotech	0092-10-08	University of Wisconsin – Milwaukee	Habib Tabatabai	\$59,991	Robert Arndorfer	Investigation of Testing Methods to Determine Long Term Aggregate Durability of Var Types of Wis Aggregate Sources Phase II	4/1/2013
WHRP – Geotech	0092-10-09	University of Illinois	James Long	\$60,000	Jeff Horsfall	Comparison of LRFD and LFD Cast-In-Place Pile Design and Construction Methods	6/25/2013
WHRP – Rigid Pavement	0092-10-11	University of Wisconsin – Madison	Steven Cramer	\$179,999	James Parry	Laboratory Study of Concrete Properties to Support Implementation of the new AASHTO Mechanistic-Empirical Design Guide	10/15/2012
WHRP – Rigid Pavement	0092-11-06	Applied Pavement Technology, Incorporated	Thomas Van Dam	\$80,000	Barry Paye	Field Study of Air Content Stability in the Slip Form Paving Process	1/30/2013
WHRP – Rigid Pavement	0092-12-05	University of Wisconsin – Platteville	Samuel Owusu-Ababio	\$50,000	Barry Paye	Longitudinal Cracking in Widened Portland Cement Concrete Pavements	7/26/2013
WHRP – Structures	0092-09-07	Marquette University	Chris Foley	\$192,542	Travis McDaniel	Fatigue Risks in the Connection of Sign Support Structures Phase II and III	5/15/2013
WHRP – Structures	0092-11-08	Marquette University	Baolin Wan	\$77,000	Travis McDaniel	Rapid Repair and Strengthening of Bridge Substructures	4/15/2013

Active Research Projects

Program	Project ID	Performing Organization	Principal Investigator	Project Budget	WisDOT Project Manager	Project Title
Policy	0092-11-16	University of Wisconsin – Platteville	Samuel Owusu-Ababio	\$125,000	Laura Fenley	Evaluation of Impacts of Allowing Heavier Log Loads in Northern Wisconsin during Spring Thaw
Policy	0092-12-11	Virginia Tech University	William Schaudt/ Tammy Trimble	\$85,000	Alison Lebwahl	Establishing a Methodology to Evaluate Teen Driver Training Programs
Policy	0092-13-14	Christensen Associates	Philip Schoech	\$118,080	Mitchell Warren	Vehicle Registration Compliance in Wisconsin
Policy	0092-13-15	USDA Forest Products Laboratory	Stan Lebow	\$29,345	Matt Rauch	Wood Species and Wood Preservatives for use in WisDOT Signage Posts
WHRP – Flexible Pavement	0092-11-01	University of Wisconsin – Platteville	Robert Schmitt	\$120,000	Judie Ryan	Investigation and Development of a Non-Destructive System to Evaluate Wi Asphalt Pavement Compaction Efforts and Properties
WHRP – Flexible Pavement	0092-12-01	Advanced Asphalt Technologies, LLC	Donald Christensen	\$79,997	Judie Ryan	Refinement of Current WisDOT HMA Mixture App Guidelines Related to NMAS and Aggregate Characteristics
WHRP – Flexible Pavement	0092-12-02	Advanced Asphalt Technologies, LLC	Ramon Bonaquist	\$139,995	Judie Ryan	Dev of Specs for use of WHA Tech in Delivering HMA Products Inclu of Non-Conven Mixt Such as SMAs, High RAP and RAS Content
WHRP – Flexible Pavement	0092-13-01	AMEC Environment & Infrastructure, Inc.	Gonzalo Rada	\$205,000	Judie Ryan	Evaluation of Design Criteria and Field Performance of Rubblized Concrete Pavement Systems in WI – Phase 1 & 2
WHRP – Flexible Pavement	0092-13-02	University of Wisconsin – Madison	Hussain Bahia	\$70,000	Judie Ryan	Field Evaluation of Wisconsin Modified Binder Selection Guidelines
WHRP – Flexible Pavement	0092-14-06	Advanced Asphalt Technologies, LLC	Ramon Bonaquist	\$175,000	Judie Ryan	Critical Factors Affecting Asphalt Concrete Durability
WHRP – Geotech	0092-08-11	University of Wisconsin – Madison	Dante Fratta	\$103,914	Robert Arndorfer	Effective Depth of Soil Compaction in Relation to Applied Compactive Energy
WHRP – Geotech	0092-09-05	University of Wisconsin – Madison	Dante Fratta	\$109,893	Robert Arndorfer	Evaluation of the Foundation Movements of Transportation Structures
WHRP – Geotech	0092-11-03	University of Wisconsin – Madison	Dante Fratta	\$74,000	Jeff Horsfall	Evaluating the Methodology and Performance of Jetting and Flooding Granular Backfill Materials
WHRP – Geotech	0092-11-04	University of Wisconsin – Platteville	Mark Meyers	\$63,951	Jeff Horsfall	Analysis of Trends/Correlations of Historical WisDOT Soil Lab Test Results Through Dev of an Electronic Database

Revised 1/30/2014

Active Research Projects

Program	Project ID	Performing Organization	Principal Investigator	Project Budget	WisDOT Project Manager	Project Title
WHRP – Geotech	0092-12-03	University of Wisconsin – Madison	James Schneider	\$41,998	Jeff Horsfall	Lateral Deflection Contribution to Settlement Estimates
WHRP – Geotech	0092-12-07	University of Wisconsin – Milwaukee	Hani Titi	\$94,989	Jeff Horsfall	Predicting Scour of Bedrock in Wisconsin
WHRP – Geotech	0092-12-08	University of Illinois	James Long	\$95,000	Jeff Horsfall	Static Pile Load Tests on Driven Piles into Intermediate-Geo Materials
WHRP – Geotech	0092-13-03	University of Wisconsin – Milwaukee	Qian Liao	\$74,998	Jeff Horsfall	Understanding and Complying with Storm Water Mitigation Guidelines from the EPA
WHRP – Geotech	0092-14-02	University of Missouri	Andrew Boeckmann	\$99,999	Jeff Horsfall	Performance of Pile Supported Sign Structures
WHRP – Geotech	0092-14-03	Iowa State University	Pavana Vennapusa	\$150,000	Jeff Horsfall	Permeability Performance and Lateral Load for Granular Backfill behind Abutments
WHRP – Rigid Pavement	0092-11-05	University of Wisconsin – Madison	Steven Cramer	\$252,000	Barry Paye	Laboratory Study of High Performance Curing Compounds for Concrete Pavement Phase I & II
WHRP – Rigid Pavement	0092-12-04	Michigan Tech University	Lawrence Sutter	\$144,958	Barry Paye	Laboratory Study for Comparison of Class C Versus Class F Fly Ash for Concrete Pavement
WHRP – Rigid Pavement	0092-13-04	University of Wisconsin – Milwaukee	Konstantin Sobolev	\$199,185	Barry Paye	Laboratory Study of Optimized Concrete Pavement Mixtures
WHRP – Rigid Pavement	0092-14-04	Iowa State University	Brent Phares	\$79,974	Barry Paye	Performance and Design of Bridge Approach Panels in Wisconsin
WHRP – Structures	0092-11-07	University of Wisconsin – Milwaukee	Al Ghorbanpoor	\$145,000	Bill Oliva	Aesthetic Coatings for Bridge Components
WHRP – Structures	0092-12-06	University of Wisconsin – Milwaukee	Habib Tabatabai	\$166,992	Travis McDaniel	Evaluation of Thin Polymer Deck Overlays and Deck Sealers
WHRP – Structures	0092-13-05	University of Wisconsin – Milwaukee	Al Ghorbanpoor	\$120,000	Bill Oliva	Aesthetic Coatings for Concrete Bridge Components
WHRP – Structures	0092-13-06	Michael Baker, Incorporated	Jose Aldayuz	\$74,986	Travis McDaniel	Development and Implementation of the Next Generation Bridge Management System for Wisconsin – Phase 1
WHRP – Structures	0092-14-01	Western Michigan University	Upul Attanayake	\$84,999	Bill Oliva	Reflective Cracking between Precast Prestressed Box Girders

Revised 1/30/2014

Pooled Fund Research Projects

Project Number	Title	Funding Amount Recommendation	Current or Recommended Technical Representative	Lead Agency
LRFD	LRFD Specification Maintenance Technical Service Program	\$10,000.00	Scot Becker	AASHTO
NTPEP	National Transportation Product Evaluation Program	\$12,000.00	Peter Kemp	AASHTO
SPR-2(207)/ TPF-5(052)	Transportation Management Center Pooled Fund Study	\$50,000.00	Paul Keltner	FHWA
SPR-3(042)	Aurora Program	\$25,000.00	Mike Adams	Iowa
TPF-5(021)	Base Funding for the North Central Superpave Center	\$25,000.00	Tom Brokaw	Indiana
TPF-5(063)	Improving the Quality of Pavement Profiler Measurement	\$15,000.00	Bill Duckert	FHWA
TPF-5(065)	Traffic Control Device (TCD) Consortium	\$20,000.00	Tom Notbohm	FHWA
TPF-5(081)/ SPR-3(075)	Smart Work Zone Deployment Initiative	\$40,000.00	Tom Notbohm	Iowa
TPF-5(099)	Evaluation of Low Cost Safety Improvements	\$5,000.00	John Bridwell	FHWA
TPF-5(129)	Recycled Unbound Pavement Materials (MnROAD Study)	\$15,000.00	Tom Brokaw	Minnesota
TPF-5(153)	Optimal Timing of Preventive Maintenance for Addressing Environmental Aging in HMA Pavements (MnROAD Study)	\$15,000.00	Tom Brokaw	Minnesota
TPF-5(159)	Technology Transfer Concrete Consortium	\$5,000.00	Jim Parry	Iowa
TPF-5(164)	Fish Passage in Large Culverts with Low Flows	\$15,000.00	Rodney Taylor	FHWA
TPF-5(169)	Investigation of Curved Girder Bridges with Integral Abutments	\$7,500.00	Dave Kiekbusch	Iowa
TPF-5(183)	Improving the Foundation Layers for Concrete Pavements	\$35,000.00	Jeff Horsfall	Iowa
TPF-5(189)	Enhancement of Welded Steel Bridge Girders Susceptible to Distortion-Induced Fatigue	\$15,000.00	Craig Wehrle	Kansas
TPF-5(193)	Midwest States Pooled Fund Crash Test Program	\$66,000.00	Erik Emerson	Nebraska
TPF-5(206)	Research Program to Support the Research, Development, and Deployment of System Operations Applications of Vehicle Infrastructure Integration	\$50,000.00	John Corbin	Virginia
TPF-5(210)	In-situ Scour Testing Device	\$15,000.00	Najoua Ksontini	FHWA
TPF-5(213)	Performance of Recycled Asphalt Shingles in Hot Mix Asphalt	\$42,500.00	Judie Ryan	Missouri
TPF-5(215)	Transportation Engineering and Road Research Alliance	\$10,000.00	Steve Krebs Rory Rhinesmith	Minnesota

Pooled Fund Research Projects

Project Number	Title	Funding Amount Recommendation	Current or Recommended Technical Representative	Lead Agency
TPF-5(218)	Clear Roads (Test and Evaluation of Materials, Equipment and Methods for Winter Highway Maintenance)	\$25,000.00	Mike Sproul	Minnesota
TPF-5(219)	Structural Health Monitoring System	\$30,000.00	Scot Becker	Iowa
TPF-5(225)	Validation and Implementation of Hot-Poured Crack Sealant	\$25,000.00	Paulette Hanna	Virginia
TPF-5(227)	Continued Advancements in Load and Resistance Factor Design (LRFD) for Foundations, Substructures and Other Geotechnical Features	\$20,000.00	Jeff Horsfall	FHWA
TPF-5(232)	Study of the Impacts of Implements of Husbandry on Bridges	\$15,000.00	Travis McDaniel	Iowa
TPF-5(233)	Technology Transfer Intelligent Compaction Consortium (TTICC)	\$9,000.00	Judie Ryan	Iowa
TPF-5(237)	Transportation Library Connectivity And Development	\$15,000.00	John Cherney	Missouri
TPF-5(238)	Design and Fabrication Standards to Eliminate Fracture Critical Concerns in Two Girder Bridge Systems	\$20,000.00	Joshua Dietsche	Indiana
TPF-5(242)	Traffic and Data Preparation for AASHTO MEPDG Analysis and Design	\$16,667.00	Laura Fenley	Louisiana
TPF-5(243)	Motorcycle Crash Causation Study	\$15,000.00	Greg Patzer	FHWA
TPF-5(247)	Field Testing Hand-held Thermographic Inspection Technologies Phase II	\$30,000.00	Travis McDaniel	Missouri
TPF-5(250)	Executive Workshops on Strategies and Best Practices for State Departments of Transportation to Support Commercialization of Electric Vehicles (EV) and Infrastructure	\$20,000.00	Linda Lewis	Washington
TPF-5(253)	Member-level Redundancy in Built-up Steel Members	\$25,000.00	Joshua Dietsche	Indiana
TPF-5(254)	Bulb_T Beam As Alternate ABC to Side-By-Side Box- Beam	\$20,000.00	Dave Kiekbush	Michigan
TPF-5(255)	Highway Safety Manual Implementation	\$10,000.00	Rebecca Szymkowski Angela Adams	FHWA
TPF-5(256)	HY-12 Storm Drain Hydraulic Analysis Program – Phase Two of Development Efforts	\$10,000.00	Rodney Taylor	FHWA
TPF-5(259)	Imaging Tools for Evaluation of Gusset Plate Connections in Steel Truss Bridges	\$25,000.00	Joshua Dietsche	Oregon
TPF-5(268)	Regional Sustainable Pavement Consortium	\$25,000.00	Jed Peters	Virginia
TPF-5(270)	Recycled Materials Resource Center	\$25,000.00	Steve Krebs	Wisconsin
TPF-5(274)	MidWest Freight Pooled Fund	\$300,000.00	Daniel Yeh	Wisconsin

Library and Technology Transfer

Technology Transfer

The Research & Library Unit provides information services for WisDOT staff and supports implementation of research results. Here are some highlights of the services provided in FFY 2013.

Peer Exchange

In September 2013, the WisDOT Materials Management Section, with funding and organizational support provided by the WisDOT Research Program, hosted a peer exchange for the American Association of State Highway and Transportation Officials (AASHTO) Region 3 member states to examine issues relating to implementation of the Mechanistic-Empirical Pavement Design Guide (MEPDG) process. Ten states were represented at the peer exchange.

Transportation Synthesis Reports

TSRs are annotated reports that allow WisDOT technical staff and managers to learn from the experiences of other state DOTs. Sixteen TSRs were completed in FFY 2013.

WisDOT Library

The library staff handled 1,638 customer inquiries and completed 27 literature searches. The library also circulated over 4,300 items (books, reports, periodicals and articles) and added 1,086 records to the library database.

New WisDOT Library Online Catalog

The Wisconsin Department of Transportation Library recently launched a new online catalog, an integrated searching environment hosted by library software company, EOS International. The new online catalog creates a user-friendly searching experience for customers seeking information and materials contained in the



WisDOT Library. The functionality of creating individual user accounts, ability to reserve library items, and saving search sessions add to some of the value-added features of the new system. Many of the library's database records contain links to full-text documents. Since implementation of the system, early trends point to an increase in customer use of the library collections.

Truax Materials Lab Collection

The WisDOT Library is in the process of merging some of the large technical resource collection at WisDOT's Truax Materials Lab into the main library at Hill Farms. The Truax Collection has many unique research reports relating to pavement materials, design and testing, structures, and other related transportation information. Merging these unique materials into the main collection will result in access to many of these items for the first time using the library's new online catalog. The WisDOT Library is only merging selected unique items; many of the items in the Truax Collection will remain at that location.



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Common Acronyms

- AASHTO** American Association of State Highway and Transportation Officials
- DOT** Department of Transportation
- FFY** Federal Fiscal Year
- FHWA** Federal Highway Administration
- MAPSS** Mobility, Accountability, Preservation, Safety and Service
- NCHRP** National Cooperative Highway Research Program
- R&L Unit** Research & Library Unit
- SHRP2** Strategic Highway Research Program 2
- SPR** State Planning and Research Program
- TPF** Transportation Pooled Fund
- TRB** Transportation Research Board
- UTC** University Transportation Center
- UW** University of Wisconsin
- WHRP** Wisconsin Highway Research Program
- WisDOT** Wisconsin Department of Transportation

