



MnDOT RESEARCH SERVICES & LIBRARY

FY2014 AT-A-GLANCE

July 1, 2013, through June 30, 2014



Director's Message



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Welcome to the FY2014 *MnDOT Research Services & Library At-A-Glance*. This document serves as a quick-reference guide to our research program.

During the past year, we have focused our efforts in support of MnDOT’s “wildly important goal” of enhancing financial effectiveness. We have taken steps to better quantify the value of our research program, including launching a new initiative to calculate and communicate cost savings and other benefits.

We also hosted a research peer exchange at the MnROAD pavement testing facility, where participants from around the country shared their experiences implementing pooled fund research results, discussed new partnerships and looked ahead to MnROAD’s Phase III research plans.

Finally, we continued our focus on implementing research results. We enhanced our Automated Research Tracking System (ARTS) database to include built-in tracking of implementation opportunities, financial benefits, and marketing and technology transfer products. We also ramped up marketing and communication efforts, launching our Accelerator newsletter and Crossroads blog, and producing a variety of new YouTube videos. (See page 21.)

As always, we welcome your feedback. For more information about the projects and services described in this *At-A-Glance*, please feel free to contact me or any Research Services & Library staff member.

—Linda Taylor

FY2014 RESEARCH SERVICES & LIBRARY KEY STATISTICS

Total active contracts	257
Completed research reports	51
Technical Summaries	44
Transportation Research Syntheses	13
Research Services website visits	40,311
MnDOT-supported pooled funds	33
MnDOT-led pooled funds	7
Pooled funds led by other states	26

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FY2014 Research Highlights

Effect of Signing and Lane Markings on the Safety of a Two-Lane Roundabout

Traffic & Safety — While roundabouts have been shown to reduce intersection collisions, the public is often confused by traffic rules in roundabouts, particularly those with two lanes. The City of Rich-



field recently experimented with changes in roundabout signage and striping to reduce confusion, including replacing curved “fish-hook”-style turn arrows with standard turn arrows, lengthening the solid lane style that extends from the yield line, and lowering and enlarging signs to improve visibility. Immediately after the changes, turning violations, which are responsible for nearly half of roundabout collisions, decreased by 48 percent. Occurrences stayed near that level when the intersection was monitored again one year later. [Technical Summary 2014-04](#)

Culvert Repair Best Practices, Specifications and Special Provisions—Best Practices Guidelines

Bridges & Structures — Erosion, corrosion, freeze-thaw cycles and many other factors can lead to culvert deterioration, which can seriously damage roadways above. There are more than a dozen methods of repairing and rehabilitating culverts, each appropriate to address specific issues and with its own advantages and limitations. To help practitioners easily find information related to the culvert repair they need, researchers assembled a best practices guide for the most commonly used techniques, and also prepared special provisions and standard details for each of the featured techniques that engineers can adapt to the needs of a specific project. [Technical Summary 2014-01](#)

The Minnesota Bicycle and Pedestrian Counting Initiative: Methodologies for Non-Motorized Traffic Monitoring

Multimodal — It’s difficult to optimally design facilities for non-motorized traffic without accurate data about bicycle and pedestrian traffic. MnDOT helped launch the Minnesota Bicycle and Pedestrian Counting Initiative by developing protocols and other guidance and performing pilot field counts. The study also sought to assess automated counting technologies. While automated systems are useful for some purposes, they can’t accurately gather information about demographics or how many bicyclists wear helmets, so manual counts are still necessary. The analysis shows that the techniques currently used to extrapolate motorized traffic data from short-term manual counts should be adaptable to bicycle and pedestrian traffic data. [Technical Summary 2013-24](#)

PCC Surface Characteristics—Rehabilitation MnROAD Study

Materials & Construction — Tire-pavement noise is the most important factor in highway noise pollution, a problem that can be very expensive to mitigate with standard solutions, such as sound barriers alongside highways. Since 2006, MnDOT has led a pooled fund study to develop quieter concrete pavements by optimizing surface textures during construction to create friction and skid resistance. Researchers evaluated the surface characteristics—including noise, friction, ride quality and texture—of various diamond grind treatments created by cutting longitudinal grooves into the pavement surface using closely spaced, diamond-coated saw blades. Results show that the innovative diamond grind surfaces developed in this study can maintain their texture very well in the long run and provide good friction for vehicle tires while significantly lowering tire-pavement noise. [Technical Summary 2013-18](#)

How We Can Help You

MnDOT Research Services & Library is here to help you solve transportation problems. Here's how:

Literature Searches—Need to know the latest information on a given transportation topic? Let the MnDOT Library do a literature search and provide you with the materials you need.

Transportation Research Syntheses (TRS)—A TRS takes a literature search to the next step by reviewing and summarizing research results. A TRS can also be a state-of-practice survey of other state DOTs. (See page 22 for more information on our TRS program.)

AASHTO-RAC Surveys—If you have a quick question or two about what other states are doing on a particular topic, we can survey other DOTs using the AASHTO-RAC listserv.

Research Projects—If you have an idea for a new research project, we can help you develop a need statement, solicit

research proposals, acquire funding and manage your research project. (See pages 6-20 for a list of completed and active research projects.)

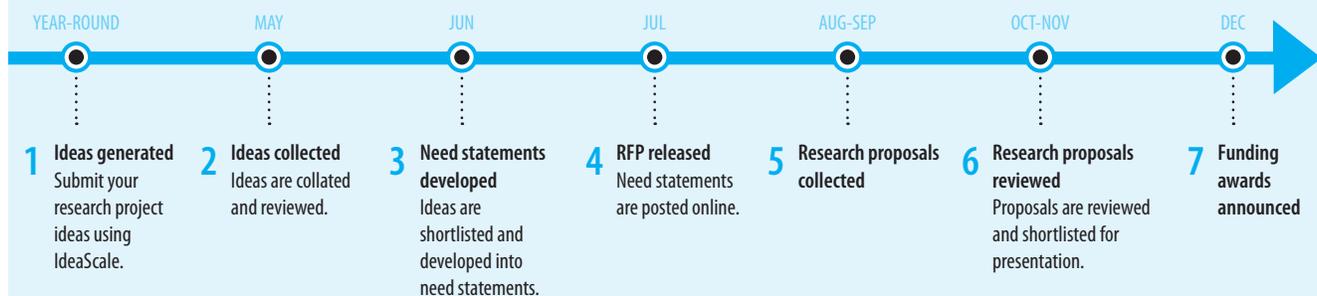
Implementation Projects—Our research implementation program provides seed funding to put research results and transportation innovations into practice in the field.

Pooled-Fund Research—If your research idea addresses an issue that affects multiple states, we can help establish a Transportation Pooled Fund project to leverage resources and collaborate with other state DOTs to solve a problem.

NCHRP Research—If you are trying to solve a problem of regional or national significance, we can help you develop a problem statement through the National Cooperative Highway Research Program (NCHRP).

Figure 1. Overview of MnDOT's Annual Research RFP Process

From idea to project



NOTE: Exact dates may change from year to year. Contact us or visit mndot.gov/research for details.



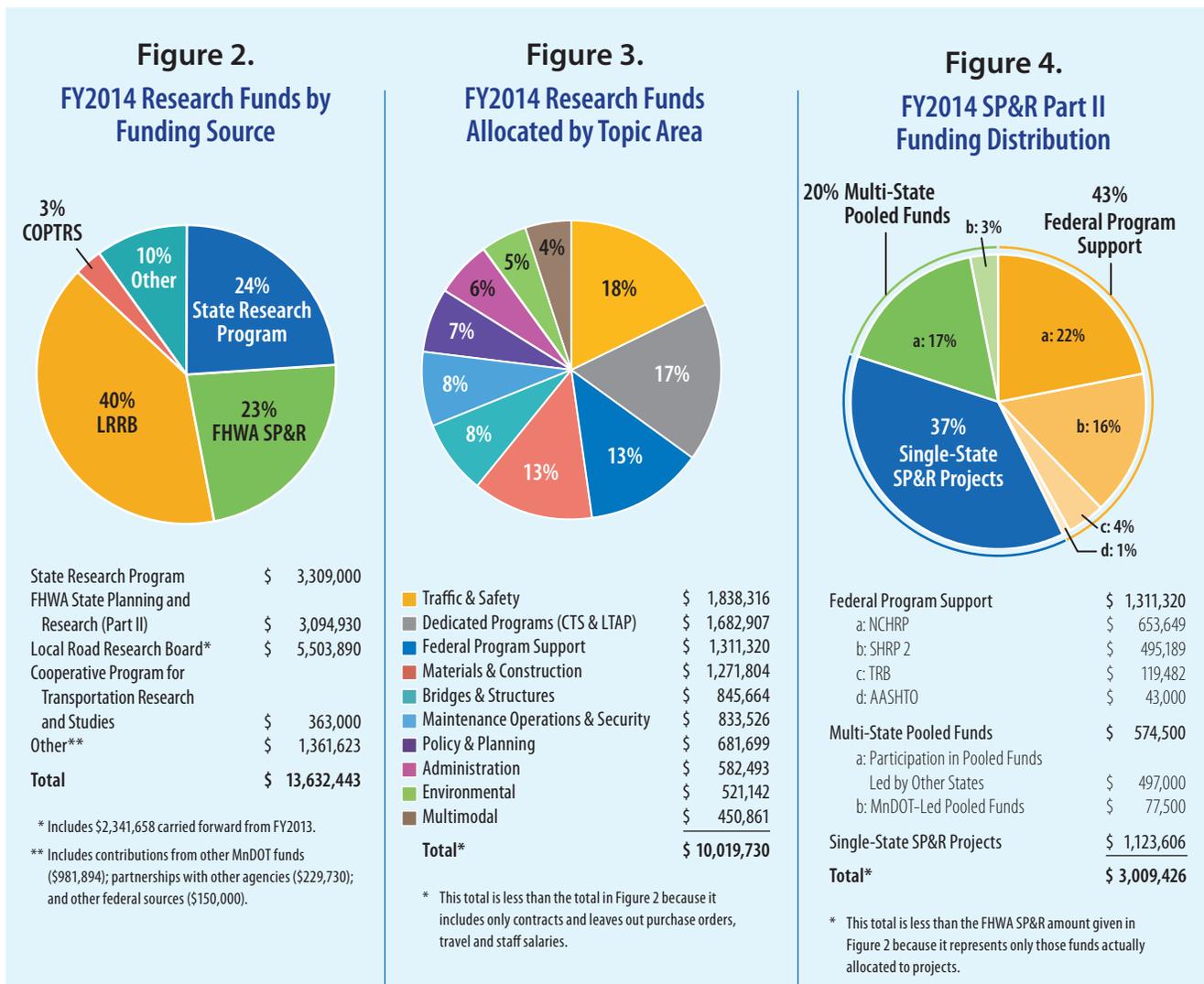
Participating on a Technical Advisory Panel (TAP) helps to ensure that research results meet your needs. Research Services will coach you through the process with documentation and resources like our [Technical Advisory Panels video series](#).

FY2014 Budget Summary

Research Services & Library managed more than \$13.6 million in research funds in FY2014. Figure 2 shows the sources of funds that were available for distribution. These include funding from the Minnesota state government; funding dedicated to transportation research by the federal government through the Federal Highway Administration (FHWA); funding from the Local Road Research Board (including funds carried over from FY2013), which represents Minnesota city and county engineers; and funds from other sources.

Figure 3 is a breakdown of funds actually allocated in FY2014 across research projects in various topic areas, federal programs, administration, and dedicated programs such as the University of Minnesota Center for Transportation Studies (CTS) and the Local Technical Assistance Program (LTAP).

Figure 4 shows how SP&R Part II funds were allocated to support various federal transportation research programs.



MnDOT FY2014 Research

THESE TABLES ARE ORGANIZED BY RESEARCH TOPIC AREA:

RESEARCH PROJECTS:

- Completed research reports and Transportation Research Syntheses that were released in fiscal year 2014: July 2013 to June 2014
- Research contracts with end dates during FY2014 that did not result in a final report
- Other research contracts active during FY2014, including some tasks or contracts that are part of larger programs that MnDOT tracks individually

POOLED FUND TABLES*:

- Multi-state transportation pooled fund studies led by MnDOT
- Other multi-state transportation pooled fund studies in which MnDOT participates, either through an FY2014 contribution or through past contributions that are still producing value for Minnesota

*Project titles are active hyperlinks in the online PDF version of this document.

NOTES: A mark in the "TS" column indicates that a Technical Summary for this project can be found at mndot.gov/research. Clicking on the "X" in the TS column will bring up the Technical Summary. Clicking on the name of a pooled fund will bring up its page at pooledfund.org. "Number of Participating States" for some pooled funds includes Canadian provinces and agencies such as FHWA.

Bridges & Structures

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2014-01	99620	MPR-0(002): Culvert Repair Best Practices, Specifications and Special Provisions—Best Practices Guidelines	CNA Consulting Engineers, Inc.	Bruce Wagener	Lisa Saylor	11/1/11	1/31/14	\$79,972	100%	X
2014-09	98640	MPR-0(005): Analysis of Bridge Deck Cracking Data. A Review of Mechanisms, Analysis of MnDOT Bridge Construction Data, and Recommendations for Treatment and Prevention	American Engineering Testing, Inc.	Dave Rettner	Ronald Mulvaney	5/25/11	1/31/14	\$45,499	100%	X
2014-15	89261 W0183	Acoustic Emission Monitoring of a Fracture Critical Bridge	University of Minnesota	Arturo Schultz	Moises Dimaculangan	9/24/10	3/31/14	\$71,950	100%	X
2014-16	96272	Load and Resistance Factor Design (LRFD) Pile Driving Project— Phase II Study	Minnesota State University, Mankato	Sam Paikowsky	Paul Rowekamp, Gary Person	8/18/10	4/30/14	\$160,000	100%	X
TRS1308	02888	TRS: Bridge Safety Inspection and NBIS Bridge Inspection Program Administration	HDR Engineering	Nick Sovell	Eric Evens	2/6/13	9/30/13	\$45,384	100%	
TRS1311	03758	TRS: Applications of Computational Fluid Dynamics for River Simulation: State of the Practice	Wenck Associates Inc.	Joel Toso	Solomon Woldeamlak	5/2/13	7/31/13	\$9,704	100%	
TRS1404	04454	TRS: Transportation Agency Practices Currently Employed for Bridge Maintenance Painting Operations: Findings from a National Survey	KTA-Tator, Inc.	William Corbett	Sarah Sondag	10/22/13	6/30/14	\$16,850	100%	
N/A	99136	MPR-1(004): Partially Grouted Riprap Implementation—Matrix Riprap Implementation	Ayres Associates	Paul Clopper	Nicole Bartelt	12/14/11	7/31/13	\$27,075	100%	
N/A	01558	MPR-1(009): Ultra-Thin Polymer Concrete Overlays for Bridge Decks—Installation	American Engineering Testing, Inc.	Dave Rettner	Clark Moe, Edward Lutgen	8/15/12	8/31/13	\$5,562	100%	
N/A	01557	MPR-1(009): Ultra-Thin Polymer Concrete Overlays for Bridges	Minnesota State University, Mankato	Farhad Reza	Edward Lutgen	7/27/12	7/31/16	\$9,930	100%	
2014-36	99008 W041	Anchorage of Shear Reinforcement in Prestressed Concrete Bridge Girders	University of Minnesota	Cathy French	Benjamin Jilk	6/29/12	11/30/14	\$175,000	95%	
N/A	02345	Vacuum Grouting of Post-Tensioned Bridges	Wiss, Janney, Elstner Associates, Inc.	Mark Chauvin	Dustin Thomas	4/19/13	1/31/15	\$134,807	95%	
2014-37	89261 W0261	MPR-0(004): Scour Monitoring Technology Implementation	University of Minnesota	Jeff Marr	Andrea Hendrickson	4/18/11	11/30/14	\$38,233	95%	X
N/A	99008 W02	INV 910: Partially Grouted Riprap Lab Flume Study (Matrix Riprap)	University of Minnesota	Jeff Marr	Nicole Bartelt	11/1/11	2/28/15	\$124,831	91%	

Bridges & Structures [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
N/A	99008 W062	INV 930: Development and Integration of Advanced Timber Bridge Inspection Techniques for NBIS	University of Minnesota—Duluth	Brian Brashaw	David Conkel	8/6/12	1/31/15	\$199,786	90%	
2014-34	95439	MPR-9(002): Concrete Bridge Deck Crack Sealant Evaluation and Implementation	Braun Intertec Corporation	Matthew Oman	Sarah Sondag	9/11/09	9/10/14	\$80,918	89%	X
N/A	99008 W0129	INV 938: Culvert Design, Installation and Maintenance Independent Online Distance Learning (ODL) Course	University of Minnesota	Jim Grothaus	Julie Skallman	8/12/13	10/31/14	\$55,000	81%	
2014-40	02782	Deterioration Rates of Minnesota Concrete Bridge Decks	Olson & Nesvold Engineers	Steven Olson	Dustin Thomas	1/14/13	12/31/14	\$95,000	79%	
N/A	99008 W049	MPR-2(006): Monitoring of Fracture-Critical Steel Bridges—Phase III	University of Minnesota	Arturo Schultz	Moises Dimaculangan	6/29/12	7/31/15	\$166,000	71%	
N/A	99008 W01	Investigation of Shear Distribution Factors in Prestressed Concrete Girder Bridges	University of Minnesota	Cathy French	Yihong Gao	9/27/11	3/31/15	\$320,000	60%	
2014-39	99008 W042	MPR-2(002): Modeling and Monitoring the Long-Term Behavior of Post-Tensioned Concrete Bridges	University of Minnesota	Cathy French	Benjamin Jilk	6/29/12	12/31/14	\$100,000	49%	
N/A	99004 W09	MPR-4(010) INV 945: Next Generation Bridge Management Tools and Inspection	Iowa State University	Basak Aldemir Bektas	Thomas Martin	6/14/13	6/30/15	\$72,072	39%	
N/A	99004 W05	INV 940: Development of Cost-Effective Timber Bridge Repair Techniques for Minnesota	Iowa State University	Brent Phares	David Conkel	12/14/12	9/30/15	\$299,582	32%	
N/A	99008 W096	MPR-4(007) INV 944: Minnesota Steel Culvert Pipe Service Life Map	University of Minnesota	Jeff Marr	Andrea Hendrickson	7/8/13	8/31/15	\$60,678	19%	

Bridges & Structures Pooled Fund Studies and AASHTO Projects

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2014 Commitment	Total MN Commitment
TPF-5(238)	Design and Fabrication Standards to Eliminate Fracture-Critical Concerns in Two Girder Bridge Systems	Todd Niemann	IN	2013	9	\$860,000	\$0	\$60,000
TPF-5(253)	Member-Level Redundancy in Built-Up Steel Members	Todd Niemann	IN	2013	7	\$600,000	\$0	\$75,000
TPF-5(254)	Bulb T Beam as Alternative ABC to Side-by-Side Box Beam	Duane Hill	MI	2014	5	\$415,500	\$15,000	\$60,000
TPF-5(264)	Passive Force Deflection Curves for Skewed Abutments	David Conkel	UT	2013	8	\$285,000	\$15,000	\$30,000
TPF-5(272)	Evaluation of Lateral Pile Resistance Near MSE Walls at a Dedicated Wall Site	Nickolas Haltvick	UT	2013	10	\$292,000	\$10,000	\$20,000
MPR-3(002)	AASHTO-LRFD Bridge Design Specification—Section 5 (Concrete Structures)	Nancy Daubenberger	N/A	2014	N/A	N/A	\$10,000	\$10,000

Environmental

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2014-08	89258 W02	Using the WetBlade to Control Invasive Species along Roadway Corridors	Michigan Technological University	Catherine Tarasoff	Kenneth Graeve	6/25/09	5/31/14	\$139,966	100%	X
2014-18	05172	MPR-4(020): Implementation of Floating Weir System for Surface Skimming of Temporary Stormwater Ponds	Wenck Associates Inc.	Joel Toso	Dwayne Stenlund	1/14/14	5/31/14	\$38,010	77%	X
2014-24	89261 W0250	Development and Evaluation of Effective Turbidity Monitoring Methods for Construction Projects	University of Minnesota	Bruce Wilson	Dwayne Stenlund	6/27/11	7/31/14	\$193,500	93%	X
2014-25	00734	Flocculation Treatment BMPs for Construction Water Discharges	Minnesota State University, Mankato	Stephen Druschel	Dwayne Stenlund	6/22/12	8/31/14	\$79,464	95%	X
2014-30	89261 W0207	INV 894: Assessing and Improving Pollution Prevention by Swales	University of Minnesota	John Gulliver	Barbara Loida	7/30/10	8/31/14	\$314,000	94%	X
N/A	89261 W0252	Wetland Mitigation in Abandoned Borrow Areas	University of Minnesota—Duluth	Kurt Johnson	Sarma Straumanis	3/28/11	3/24/16	\$142,023	78%	
N/A	99008 W094	Web-Based Preventive Blowing and Drifting Snow Control Calculator Decision Tool	University of Minnesota	Gary Wyatt	Daniel Gullickson	4/17/13	3/31/15	\$65,925	76%	
N/A	89261 W0211	INV 897: Developing Salt-Tolerant Sod Mixtures for Use as Roadside Turf in Minnesota	University of Minnesota	Eric Watkins	Dwayne Stenlund	6/8/10	2/28/15	\$176,516	75%	
N/A	99008 W045	Laboratory Study of Culvert Sedimentation for Fish Passage	University of Minnesota	Jessica Kozarek	Petronella DeWall	8/1/12	2/28/15	\$105,638	73%	
N/A	99008 W054	INV 932: Determination of Effective Impervious Area in Urban Watersheds	University of Minnesota	John Gulliver	Scott Anderson	6/29/12	7/31/15	\$150,000	48%	
N/A	99008 W0120	MPR-4(001): Assessing the Use of Willow Shrub Species on Living Snow Designs to Manage the Damaging Effects of Salt	University of Minnesota	Diomy Zamora	Daniel Gullickson	5/9/13	12/31/15	\$145,034	45%	
N/A	99008 W097	MPR-4(008): Enhancement and Application of MIDS Dry Swale Calculator	University of Minnesota	John Gulliver	Barbara Loida	9/11/13	5/31/16	\$178,869	8%	
N/A	99008 W0157	Culvert Length and Interior Lighting Impacts to Topeka Shiner Passage	University of Minnesota	Jessica Kozarek	Scott Morgan	4/3/14	8/31/16	\$154,854	0%	
N/A	99008 W0146	INV 965: Study of Deicing Salt Accumulation and Transport Through a Watershed	University of Minnesota	William Herb	Wayne Sandberg	5/16/14	2/28/17	\$119,339	0%	

Environmental Pooled Fund Study

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2014 Commitment	Total MN Commitment
TPF-5(139)	PCC Surface Characteristics: Tire-Pavement Noise Program	Bernard Izevbekhai	IA	2008	8	\$705,000	\$0	\$55,000

Maintenance Operations & Security

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2013-26	99008 W056	INV 934: Friction Measurement System for Polk County	University of Minnesota	Rajesh Rajamani	Rich Sanders	6/29/12	11/30/13	\$40,000	100%	X
TRS1306	03713	TRS: Pedestrian Snow Removal Best Practices and Lessons Learned	SRF Consulting Group, Inc.	Rena Kuehl	Trisha Stefanski	5/6/13	7/31/13	\$9,114	100%	
N/A	02133	TPF-5(218): Clear Roads Administration, Research Support and Information Services	CTC & Associates LLC	Kim Linsenmayer	Thomas Peters	9/19/12	7/31/13	\$89,413	100%	
N/A	99082	TPF-5(218): Cost-Benefit Analysis Tool Kit—Phase II	Montana State University, Western Transportation Institute	Jeralyn Brodowy	Thomas Peters	2/6/12	7/31/13	\$109,999	100%	
N/A	98247	TPF-5(218): Understanding the True Costs of Snow and Ice Control	PB America, Inc.	Patrick Hughes	Thomas Peters	8/25/11	1/31/14	\$150,775	100%	
N/A	99083	TPF-5(218): Determining the Toxicity of Deicing Materials	Barr Engineering Company	Keith Pilgrim	Thomas Peters	2/1/12	1/31/14	\$85,098	100%	
N/A	99556	I-35 Emergency Alternate Route Signage—District 6 Pilot Project	SRF Consulting Group, Inc.	Andy Mielke	Michael Schweyen	1/25/12	1/31/14	\$98,101	100%	
N/A	99084	TPF-5(218): Environmental Factors Causing Fatigue in Equipment Operators During Winter Operations	Virginia Polytechnic Institute and State University	Frank Fitzgerald	Thomas Peters	7/19/12	3/31/14	\$125,000	100%	
N/A	01531	TPF-5(218): Comparison of Material Distribution Systems for Winter Maintenance—Phase I	Thompson Engineering Company	Gregory Thompson	Thomas Peters	12/28/12	6/30/14	\$50,000	90%	
N/A	99392	TPF-5(218): Developing a Totally Automated Spreading System for Clear Roads	Thompson Engineering Company	Gregory Thompson	Thomas Peters	2/1/12	6/30/14	\$72,025	100%	
2014-43	02829	Salt Brine Blending to Optimize Deicing and Anti-Icing Performance and Cost-Effectiveness—Phase II	Minnesota State University, Mankato	Stephen Druschel	Thomas Peters	6/11/13	12/31/14	\$116,444	94%	
2014-33	94079	INV 886: Cost-Effective Pavement Preservation Solutions for the Real World	Minnesota State University, Mankato	W. James Wilde	Malaki Ruranika	9/8/09	9/7/14	\$94,984	80%	X
N/A	99008 W046	Estimation of Winter Snow Operation Performance Measures with Traffic Flow Data—Phase II	University of Minnesota—Duluth	Eil Kwon	Thomas Peters	11/7/12	5/31/15	\$88,700	72%	
N/A	95099	TPF-5(153) INV 863: Optimal Timing of Preventive Maintenance for Addressing Environmental Aging in HMA Pavements	Asphalt Institute	Mike Anderson	Thomas Wood	3/30/10	11/30/14	\$286,185	65%	
N/A	02337	TPF-5(218): Clear Roads Administration and Information Services	CTC & Associates LLC	Patrick Casey	Thomas Peters	7/8/13	8/31/15	\$224,900	61%	
N/A	02000	TPF-5(218): Establishing Effective Salt and Anti-Icing Application Rates	Blackburn and Associates	Robert Blackburn	Thomas Peters	4/3/13	5/31/15	\$150,000	37%	
N/A	04877	INV 959: TRS: Chloride-Free Snow and Ice Control Material	City of Burnsville	Ryan Peterson	Ryan Peterson	2/27/14	1/31/15	\$19,800	33%	
N/A	99008 W093	INV 952: Best Management Practices for Establishment of Salt-Tolerant Grasses on Roadsides	University of Minnesota	Eric Watkins	Dwayne Stenlund	5/30/13	9/30/17	\$193,677	32%	
N/A	LAB886	INV 886: Cost-Effective Pavement Preservation Solutions for the Real World	MnDOT Office of Materials and Road Research	Thomas Wood	Gregory Coughlin, Malaki Ruranika	9/10/09	6/30/15	\$15,000	27%	
N/A	99006 W05	TPF-5(218): Best Practices for the Prevention of Corrosion to Department of Transportation Equipment: A User's Manual	Montana State University, Western Transportation Institute	Xianming Shi	Thomas Peters	12/17/13	2/28/15	\$49,950	25%	
N/A	99004 W08	INV 950: Major Equipment Life-Cycle Cost Analysis	Iowa State University	Douglas Gransberg	John Scharffbillig	8/12/13	4/30/15	\$97,904	20%	
N/A	99006 W02	TPF-5(218): Understanding the Chemical and Mechanical Performance of Snow and Ice Control Agents on Porous Permeable Pavements	Montana State University, Western Transportation Institute	Michelle Akin	Thomas Peters	1/28/13	9/30/15	\$185,000	17%	
N/A	89261 W0191	Comparative Performance Study of Chip Seal and Bonded Wear Course Systems Applied to Bridge Decks and Approaches	University of Minnesota—Duluth	Eshan Dave	Thomas Peters	7/8/10	6/30/15	\$90,872	16%	
N/A	99006 W06	TPF-5(218): Understanding the Effectiveness of Non-Chloride Liquid Agricultural Byproducts and Solid Complex Chloride/Mineral Products Used in Snow and Ice Control Operations	Montana State University, Western Transportation Institute	Xianming Shi	Thomas Peters	12/17/13	11/15/15	\$188,718	6%	

Maintenance Operations & Security [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
N/A	99006 W07	TPF-5(218): Cost-Benefit of Various Winter Maintenance Strategies	Montana State University, Western Transportation Institute	Xianming Shi	Thomas Peters	12/17/13	1/31/15	\$121,730	0%	
N/A	99006 W03	TPF-5(218): Developing a Snow and Ice Control Environmental Best Management Practices Manual	Montana State University, Western Transportation Institute	Xianming Shi	Thomas Peters	12/17/13	2/28/15	\$180,107	0%	
N/A	99008 W0113	Comprehensive Field Evaluation of Asphalt Patching Techniques and Development of Best Practices Manual and Simple Decision Tree	University of Minnesota–Duluth	Eshan Dave	Susan Lodahl, Perry Collins	9/25/13	7/31/16	\$87,106	0%	
N/A	LAB974	INV 974: Bio-Fog Seal Field Evaluation	MnDOT Office of Materials and Road Research	Eddie Johnson	Bruce Hasbargen	5/6/14	6/30/18	\$20,000	0%	

Maintenance Operations & Security Pooled Fund Studies and AASHTO Projects

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2014 Commitment	Total MN Commitment
TPF-5(153)	Optimal Timing of Preventive Maintenance for Addressing Environmental Aging in HMA Pavements	Thomas Wood	MN	2011	8	\$420,000	\$0	\$60,000
TPF-5(218)	Clear Roads Winter Highway Operations	Tom Peters	MN	2014	28	\$3,130,000	\$25,000	\$125,000
SPR-3(042)	Aurora Program	Curtis Pape	IA	2013	20	\$4,272,500	\$0	\$425,000
TPF-5(054)	Development of Maintenance Decision Support System	Curtis Pape	SD	2012	20	\$5,245,903	\$0	\$250,000
TPF-5(225)	Validation and Implementation of Hot-Poured Crack Sealant	James McGraw	VA	2013	9	\$875,000	\$0	\$100,000
MPR-4(027)	AASHTO Technical Services Program—Maintenance	Steve Lund	N/A	2014	N/A	N/A	\$13,000	\$13,000

Materials & Construction

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2013-15	LAB889	INV 889: Recycled Asphalt Pavement: Study of High-RAP Asphalt Mixtures on Minnesota County Roads	MnDOT Office of Materials and Road Research	Eddie Johnson	Gregory Johnson	2/22/10	8/31/13	\$30,000	100%	X
2013-20	03598	Use of Tire-Derived Products (TDP) in Roadway Construction	Braun Intertec Corporation	Matthew Oman	Blake Nelson	4/17/13	7/31/13	\$39,913	100%	X
2013-21	98109	Use of Recycled Brick in Aggregates	Minnesota State University, Mankato	Farhad Reza	Terrence Beaudry	5/26/11	8/31/13	\$77,811	100%	X
2013-28	99008 W09	Performance-Based Measurement of Optimum Moisture for Soil Compaction	University of Minnesota	John Nieber	John Siekmeier	10/4/11	11/30/13	\$65,289	100%	X
2013-29	99008 W026	MPR-1(003): Implementation of Pavement Evaluation Tools	University of Minnesota	Joseph Labuz	Shongtao Dai	11/1/11	11/30/13	\$78,000	100%	X
2014-06	LAB914	INV 914: Research Using Waste Shingles for Stabilization or Dust Control for Gravel Roads and Shoulders	MnDOT Office of Materials and Road Research	Thomas Wood	Tim Stahl	5/11/11	1/31/14	\$77,000	100%	X
2014-07	98283	INV 868, MPR-6(029): Hot Mix Asphalt Surface Characteristics Related to Ride, Texture, Friction, Noise and Durability	Purdue University	Rebecca McDaniel	Bernard Izevbekhai	8/11/11	4/30/14	\$50,000	100%	X

Materials & Construction [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2014-13	89261 W0190	INV 896: Quantifying Moisture Effects in DCP and LWD Tests Using Unsaturated Mechanics	University of Minnesota	Kimberly Hill	John Siekmeier	9/24/10	2/28/14	\$109,900	100%	X
2014-26	LAB929	INV929: Investigation and Assessment of Colored Concrete Pavement	MnDOT Office of Materials and Road Research	Thomas Burnham	Dallas Larson	4/24/12	7/30/14	\$37,435	100%	X
2014-27	99008 W044	MPR-2(009): Simplified Design Table for Minnesota Concrete Pavements	University of Minnesota	Lev Khazanovich	Luke Johanneck	6/29/12	8/31/14	\$89,989	100%	X
2014-28	LAB868	MPR-6(029), INV 868: Hot Mix Asphalt Surface Characteristics	MnDOT Office of Materials and Road Research	Bernard Izevbekhai	Gregory Johnson	9/18/07	8/28/14	\$205,723	100%	X
2014-31	99004 W01	Indefinite Delivery/Indefinite Quantity Contracting	Iowa State University	Douglas Gransberg	Kevin Kosobud	8/9/12	8/31/14	\$87,705	95%	X
2014-32	98108	INV 907: Assessing the Effects of Heavy Vehicles on Local Roadways	Minnesota State University, Mankato	W. James Wilde	Deb Heiser	2/22/11	8/31/14	\$54,000	100%	X
2014RIC14	94288	INV 645: Integrated Tools for Pavement Design and Management	Minnesota State University, Mankato	W. James Wilde	Rich Sanders	4/21/09	2/28/14	\$86,036	100%	X
2014RIC16	98319	INV 918: Implementation of TONN 2010	Minnesota State University, Mankato	W. James Wilde	Paul Stine	5/4/11	5/31/14	\$35,000	100%	X
TRS1407	04878	INV 961: TRS: Gravel Road Management Tools	SRF Consulting Group, Inc.	Michael Marti	Rich Sanders, Bruce Hasbargen	11/21/13	6/30/14	\$24,516	100%	
TRS1409	04833	INV 954: TRS: Pavement Preservation Resource Centers	SRF Consulting Group, Inc.	Michael Marti	John Powell	11/5/13	6/30/14	\$14,645	100%	
N/A	03739	MPR-4(002): GEMINI Geotechnical Mobile/Web Gateway	Minnesota State University, Mankato	Allan Hart	Derrick Dasenbrock	5/7/13	8/31/13	\$15,000	100%	
N/A	03434	INV 924: Rural Work Zone Safety YouTube Video	Stonebrooke Engineering Inc.	Tim Arvidson	Sulmaan Khan	3/22/13	11/30/13	\$12,740	100%	
N/A	00669	Alaska AUTC Funds, Alaska AKDOT Funds, INV 921: Frost Video Update and Enhancement	SRF Consulting Group, Inc.	Michael Marti	Benjamin Worel	6/14/12	12/31/13	\$63,271	100%	
N/A	97334	MPR-6(011): Intelligent Compaction	Transtec Group, Inc.	George Chang	Terrence Beaudry	9/13/10	12/31/13	\$412,329	100%	
N/A	01219	INV 929: Petrographic Analysis of Colored Concrete Pavement	American Engineering Testing, Inc.	Gerard Moulzolf	Dallas Larson	8/1/12	1/31/14	\$40,983	100%	
N/A	01759	MPR-2(013): Enhancements to Intelligent Construction Data Management (VEDA)	Transtec Group, Inc.	George Chang	Rebecca Embacher	9/25/12	1/31/14	\$74,972	100%	
N/A	02653	INV 941: Online Technician Certification/Recertification Training	Professional Engineering Services, Ltd.	Ann Johnson	John Micheau, Michael Hogan	12/28/12	1/31/14	\$12,433	100%	
N/A	INV 941	INV 941: Online Technician Certification/Recertification Training	MnDOT Multimedia Development Group	Eugene Olchefske	John Micheau, Michael Hogan	11/21/12	1/31/14	\$13,085	100%	
N/A	MPR-1(002)	MPR-1(002): Development of a Spatial-Time-Domain Acoustic Device for Rapid Concrete Evaluation	MnDOT Office of Materials and Road Research	Bernard Izevbekhai	Maureen Jensen	4/8/11	3/31/14	\$98,000	18%	
N/A	04822	INV 924: Video: "Why Aren't You Working on My Road?"	SRF Consulting Group, Inc.	Michael Marti	Julie Skallman	10/25/13	4/30/14	\$12,861	100%	
N/A	99008 W0128	INV 924: LRRB Gravel Roads Video	University of Minnesota—CTS	Arlene Mathison	Julie Skallman	8/12/13	5/31/14	\$11,528	100%	
N/A	05796	Bituminous Pavement Coring for Research Laboratory Testing	Braun Intertec Corporation	Matthew Oman	Shongtao Dai	5/13/14	6/30/14	\$14,060	0%	
N/A	89264 W05	Cost-Effective Means of Managing Pavements in Poor Condition	University of Wisconsin—Madison	Teresa Adams	Mark Watson	6/7/11	7/31/14	\$111,006	100%	
N/A	99008 W06	INV 869: TERRA Board Support—FY2012-2013	University of Minnesota	Stephanie Malinoff	Mark Maloney	10/18/11	11/30/14	\$90,000	92%	

Materials & Construction [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2014-41	99008 W048	Evaluation of Concrete and Mortars for Partial Depth Repair	University of Minnesota–Duluth	Eshan Dave	Ronald Mulvaney	8/9/12	10/31/14	\$74,000	77%	
N/A	89260 W02	Cost-Effective Base Type and Thickness for Long-Life Concrete Pavements	University of Illinois	Erol Tutumluer	Terrence Beaudry	6/20/11	12/31/14	\$136,000	73%	
N/A	99004 W010	INV 942: Aggregate Road Surface Rejuvenate	Iowa State University	Charles Jahren	Bruce Hasbargen	1/30/13	3/31/15	\$88,910	71%	
N/A	03444	MPR-2(013): Enhancements to Intelligent Construction Data Management (ICDM) System for Bituminous Surface Temperature Application	Transtec Group, Inc.	George Chang	Rebecca Embacher	6/27/13	7/31/14	\$165,754	70%	
N/A	99008 W034	TPF-5(215): TERRA Membership Pooled Funds, FY2012-2014	University of Minnesota	Stephanie Malinoff	Christopher Kufner	1/12/12	9/30/14	\$75,000	67%	
N/A	99004 W04	Carbonate Aggregate in Concrete	Iowa State University	Kejin Wang	Bernard Izevbekhai	8/9/12	5/31/15	\$127,535	58%	
N/A	99008 W051	MPR-2(004): Evaluate and Develop Innovative Pavement Repair and Patching: Taconite-Based Repair Options	University of Minnesota–Duluth	Lawrence Zanko	Susan Lodahl, Patrick Huston	8/9/12	11/30/14	\$40,000	58%	
N/A	99008 W090	INV 948: Flagger Operations: Investigating Their Effectiveness in Capturing Driver Attention	University of Minnesota	Kathleen Harder	Robert Vasek	5/16/13	10/31/15	\$270,351	56%	
N/A	99008 W0105	Concrete Strength Required to Open to Traffic	University of Minnesota	Lev Khazanovich	Bernard Izevbekhai	6/21/13	12/31/15	\$109,998	54%	
N/A	01583	MPR-2(014): Enhancements to the Sonic Test Rolling (STR) System	Ames Engineering, Inc.	Dustin Reid	Rebecca Embacher	10/11/12	12/31/14	\$40,000	48%	
N/A	LAB2012	MPR-2(012): DCT Low-Temperature Fracture Testing Pilot Project	MnDOT Office of Materials and Road Research	Luke Johanneck	John Garrity	9/10/12	12/31/14	\$11,000	45%	
N/A	LAB949	INV 949: Tack Coat Testing: Measuring Field Bond Strength	MnDOT Office of Materials and Road Research	Eddie Johnson	Thomas Wood	5/16/13	6/30/15	\$68,000	44%	
N/A	03772	MPR-4(006): Implementation of Geosynthetics During Pavement Design and Construction	Itasca Consulting Group, Inc.	David Potyondy	John Siekmeier	12/11/13	1/31/15	\$54,019	43%	
N/A	04439	MPR-4(002): GEMINI Geotechnical Mobile Application Gateway—Phase II	Minnesota State University, Mankato	Allan Hart	Derrick Dasenbrock	8/28/13	9/30/15	\$35,000	43%	
N/A	99004 W07	INV 939: Lightly Surfaced Roads; Stabilized Aggregate Applications	Iowa State University	Charles Jahren	Gerard Geib	11/15/12	3/31/15	\$40,000	43%	
N/A	99008 W072	MPR-2(012): Disk-Shaped Compact Tension Testing of Asphalt Concrete	University of Minnesota–Duluth	Eshan Dave	Luke Johanneck, Shongtao Dai	9/25/12	8/31/14	\$25,000	40%	
N/A	99008 W050	INV 935: Design Considerations for Embankment Protection During Road Overtopping Events	University of Minnesota	Jeff Marr	John Anderson	9/28/12	3/31/17	\$194,787	37%	
N/A	99008 W099	INV 946: Guidelines for Permeable Pavement Systems	University of Minnesota	John Gulliver	Mark Maloney	6/12/13	8/31/15	\$177,414	36%	
N/A	99008 W040	Laboratory Performance Test for Asphalt Concrete	University of Minnesota–Duluth	Eshan Dave	Luke Johanneck, Shongtao Dai	7/10/12	2/28/15	\$66,816	30%	
N/A	99008 W0159	Verification of Pavement Structure and Deflection Effects on Vehicle Fuel Economy and GHG Emissions	University of Minnesota	Lev Khazanovich	Maureen Jensen	3/13/14	10/31/14	\$19,987	30%	
N/A	MPR-6(021)	MPR-6(021): Evaluation of Skid Resistance of Turf Drag-Textured Concrete Pavements	MnDOT Office of Materials and Road Research	Bernard Izevbekhai	Benjamin Worel	12/19/08	1/31/16	\$150,000	27%	
N/A	98110	Cost-Effective Base Type and Thickness for Long-Life Concrete Pavements	Minnesota State University, Mankato	W. James Wilde	Terrence Beaudry	6/24/11	12/31/14	\$63,000	23%	

Materials & Construction [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
N/A	99008 W0101	INV 947: Investigation of Performance Requirements of Full Depth Reclamation Stabilization	University of Minnesota	Jialiang Le	Shongtao Dai	6/14/13	9/30/15	\$110,823	14%	
N/A	INV 885	INV 885: Research Test Section Tracking—Phase II	MnDOT Office of Materials and Road Research	Melissa Cole	Luane Tasa	12/21/09	12/31/17	\$70,000	14%	
N/A	99008 W0100	Impact of Lower Asphalt Binder for Coarse HMA Mixes	University of Minnesota—Duluth	Eshan Dave	Gerard Geib	6/26/13	9/30/15	\$89,910	13%	
N/A	MPR-6(031)	MPR-6(031): Concrete Pavement Optimization: Determining the Lower Threshold of Slab Thickness for High-Volume Roadways	MnDOT Office of Materials and Road Research	Thomas Burnham	Bernard Izevbekhai	1/3/08	7/31/14	\$126,100	0%	
N/A	LAB899	INV 899, INV 825: Performance Monitoring of Olmsted CR 117/104 and Aggregate Base Material Update	MnDOT Office of Materials and Road Research	Matthew Lebens	Michael Sheehan	6/8/10	2/28/15	\$36,000	0%	
N/A	LAB947	MPR-4(012), INV 947: Investigation of Optimal Mix Design of Full Depth Reclamation Stabilization with Cement and Emulsion	MnDOT Office of Materials and Road Research	Shongtao Dai	Gerard Geib	4/17/13	2/28/15	\$15,000	0%	
N/A	99004 W013	INV 970: Alternate Design Methods to Renew Lightly Traveled Paved Roads	Iowa State University	Charles Jahren	Tim Stahl	6/23/14	8/31/15	\$64,131	0%	
N/A	99004 W011	INV 968: Modernizing Road Construction Plans and Documentation	Iowa State University	Yelda Turkan	Lyndon Robjent	6/5/14	12/31/15	\$146,022	0%	
N/A	LAB4006	MPR-4(006): Implementation of Geogrids During Pavement Design and Construction	MnDOT Office of Materials and Road Research	John Siekmeier	Blake Nelson, Bruce Tanquist	1/6/14	12/31/15	\$50,000	0%	
N/A	99008 W083	TPF-5(269): Development of an Improved Design Procedure for Unbonded Concrete Overlays	University of Minnesota	Lev Khazanovich	Thomas Burnham	6/17/13	5/31/16	\$407,987	0%	
N/A	99008 W0147	INV 967: Full Depth Reclamation (FDR) for Urban and Suburban Street Application	University of Minnesota	Mihai Marasteanu	Mark Maloney	6/6/14	8/31/16	\$93,969	0%	
N/A	99004 W014	INV 971: Optimal RAP Content for Minnesota Gravel Roads	Iowa State University	Charles Jahren	Joel Ulring	6/23/14	10/31/16	\$92,538	0%	

Materials & Construction Pooled Fund Studies and AASHTO Projects

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2014 Commitment	Total MN Commitment
TPF-5(134)	PCC Surface Characteristics—Rehabilitation (MnROAD Study)	Bernard Izevbekhai	MN	2010	4	\$275,000	\$0	\$105,000
TPF-5(215)	TERRA Pooled Fund Support—Transportation Engineering and Road Research Alliance	Maureen Jensen	MN	2014	8	\$240,500	\$7,500	\$42,500
SPR-3(074)	Pavement Research and Technology	Roger Olson	WA	2012	4	\$355,000	\$0	\$325,000
TPF-5(039)	Falling Weight Deflectometer (FWD) Calibration Center and Operational Improvements	David Bullock	FHWA	2013	18	\$1,003,825	\$0	\$55,000
TPF-5(159)	Technology Transfer Concrete Consortium	Maria Masten	IA	2014	28	\$924,000	\$7,000	\$51,000
TPF-5(197)	The Impact of Wide-Base Tires on Pavement Damage: A National Study	Shongtao Dai	FHWA	2012	7	\$1,190,456	\$0	\$100,000
TPF-5(209)	Support of the Transportation Curriculum Coordination Council (TCCC)	Michael Leegard	FHWA	2014	19	\$1,055,000	\$20,000	\$95,000
TPF-5(224)	Investigation of Jointed Plain Concrete Pavement Deterioration at Joints and the Potential Contribution of Deicing Chemicals	Bernard Izevbekhai	IA	2013	9	\$540,308	\$0	\$45,000
MPR-2(011)	AASHTO Transportation System Preservation Technical Services Program (TSP-2)—Materials and Road Research	Nancy Daubenberger	N/A	2014	N/A	N/A	\$20,000	\$20,000

Multimodal

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2013-19	89261 W0193	Bike, Bus and Beyond: Extending Cyclopath to Enable Multimodal Routing	University of Minnesota	Loren Terveen	Greta Alquist	7/6/10	7/31/13	\$60,627	100%	X
2013-23	89264 W04	INV 911: Best Practices Synthesis and Guidance in At-Grade Trail Crossing Treatments	University of Wisconsin–Madison	David Noyce	Lisa Austin	6/14/11	10/31/13	\$96,866	100%	X
2013-24	99008 W08	The Minnesota Bicycle and Pedestrian Counting Initiative: Methodologies for Non-Motorized Traffic Monitoring	University of Minnesota	Greg Lindsey	Lisa Austin	10/10/11	11/30/13	\$99,948	100%	X
2013-30	99008 W011	INV 909: Complete Streets: From Policy to Project	University of Minnesota	Carissa Schively Slotterback	Scott Bradley	10/4/11	1/31/14	\$99,021	100%	X
2013-31	89264 W07	INV 915: Implications of Modifying State Aid Standards: Urban Construction or Reconstruction to Accommodate Various Roadway Users	University of Wisconsin–Madison	David Noyce	Paul Stine	6/28/11	12/31/13	\$117,700	100%	X
2014-14	99008 W047	MPR-2(007): Using Truck GPS Data for Freight Performance Analysis in the Twin Cities Metro Area	University of Minnesota	Chen-Fu Liao	John Tompkins	9/28/12	3/31/14	\$111,500	100%	X
2013RIC02	98383 Task 2	INV 645: Complete Streets Implementation Resource Guide for Minnesota Local Agencies	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	\$51,809	100%	X
TRS1309	99008 W0116	TRS: Quantifying the Economic Impact of Bicycling: A Literature Review with Implications for Minnesota	University of Minnesota	Neil Linscheid	Fay Simer	4/29/13	8/31/13	\$9,982	100%	
N/A	99008 W059	INV645: 2012 Truck Weight Enforcement Training Program	University of Minnesota	Jim Grothaus	Richard Kjonaas	4/12/12	8/31/13	\$30,000	100%	
2014-42	99008 W038	Multimodalism for Small Cities	University of Minnesota	Carol Becker	Kathryn Caskey	9/11/12	11/30/14	\$30,000	90%	
N/A	99008 W0103	MPR-2(015): Complete Streets Planning and Design Guidance Document	University of Minnesota	Jim Grothaus	Scott Bradley	1/14/13	6/30/15	\$200,000	62%	
N/A	99008 W014	Evaluating Twin Cities Transitways' Performance and Their Interaction with Traffic and Neighboring Major Roadways	University of Minnesota	John Hourdos	Jim Henricksen	9/27/11	3/31/15	\$100,000	60%	
N/A	99542	MPR-1(007): Commercial Freight Weight Enforcement Innovation	SRF Consulting Group, Inc.	Brian Scott	Benjamin Timerson	9/22/11	10/15/14	\$96,613	59%	
N/A	99008 W035	MPR-1(012): Statewide Cycloplan: Bicycle Planning Tool and Participatory GIS	University of Minnesota	Loren Terveen	Jasna Hadzic	2/6/12	12/31/14	\$162,500	57%	
N/A	99008 W088	Exploring Strategies for Promoting Modal Shifts to Transitways	University of Minnesota	Jason Cao	Lynne Bly	5/23/13	6/30/15	\$112,066	27%	
N/A	99008 W095	Travel Behavior Over Time	University of Minnesota	David Levinson	Deanna Belden	4/16/13	3/31/15	\$261,635	19%	

Multimodal Pooled Fund Study

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2014 Commitment	Total MN Commitment
TPF-5(156)	Mid America Freight Coalition Pooled Fund	David Christianson	WI	2013	10	\$1,475,000	\$0	\$175,000

Policy & Planning

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2013-27	99008 WO13	INV 912: Improved Approach to Enforcement of Road Weight Restrictions	University of Minnesota	Rajesh Rajamani	Benjamin Timerson	9/21/11	11/30/13	\$65,000	100%	X
2014-03	99008 WO52	MPR-2(005): Value Increase and Value Capture: The Case of TH-610 in Maple Grove, Minnesota	University of Minnesota	Zhirong Jerry Zhao	Matthew Shands	6/29/12	3/31/14	\$81,000	100%	X
2014-17	99008 WO55	INV 933: Building Local Agency Capacity for Public Engagement in Local Road Systems Planning and Decision Making	University of Minnesota	Kathryn Quick	Bruce Hasbargen	7/27/12	7/31/14	\$140,060	100%	X
TRS1307	03714	TRS: Cost-Sharing Policies of State Transportation Agencies	Athey Creek Consultants, LLC	Linda Preisen	Mark Gieseke	4/29/13	7/31/13	\$10,459	100%	
TRS1410	05667	TRS: State of Practice for Defining, Demonstrating and Documenting Transportation Efficiencies	Athey Creek Consultants, LLC	Dean Deeter	Jean Wallace	3/25/14	6/30/14	\$15,380	100%	
N/A	02242	MPR-2(016): Implementing Bicycle and Pedestrian Traffic Counts and Data Collection	SRF Consulting Group, Inc.	Erik Minge	Lisa Austin	1/8/13	7/31/13	\$5,088	100%	
N/A	05572	State DOT Practices for Tracking Program Funds	Athey Creek Consultants, LLC	Linda Preisen	Jennifer Morris	3/6/14	6/30/14	\$15,465	88%	
N/A	99008 WO104	Transportation Planning to Support Economic Development in Minnesota	University of Minnesota	Lee Munnich	Jason Junge	4/22/13	2/28/15	\$148,033	78%	
N/A	99004 WO3	Risk-Based Engineers Estimate	Iowa State University	Jennifer Shane	Mary Lacho	1/11/13	3/31/15	\$147,797	60%	
N/A	99008 WO133	MPR-4(005): Implementation of Traffic Data Quality Verification for WIM Sites	University of Minnesota	Chen-Fu Liao	Benjamin Timerson	10/9/13	3/31/15	\$95,000	48%	
N/A	99008 WO92	INV 951: Transportation Investment and Economic Development in Minnesota	University of Minnesota	Zhirong Jerry Zhao	Julie Skallman	8/5/13	4/30/15	\$93,468	48%	
N/A	99373	INV 922: System Preservation Guide: A Planning Process for Local Government Management of Transportation Networks	SRF Consulting Group, Inc.	Brian Shorten	Susan Miller	1/19/12	11/30/14	\$698,876	40%	
N/A	04301	MPR-2(016): Implementing Bicycle and Pedestrian Traffic Counts and Data Collection	SRF Consulting Group, Inc.	Erik Minge	Lisa Austin	7/19/13	7/31/15	\$51,169	39%	
N/A	99008 WO111	MPR-2(016): Implementing Bicycle and Pedestrian Traffic Counts and Data Collection	University of Minnesota	Greg Lindsey	Jasna Hadzic	4/10/13	8/31/15	\$60,000	25%	
N/A	99004 WO12	INV 969: Barriers to Right of Way Acquisition and Recommendations for Change	Iowa State University	H. David Jeong	Wayne Sandberg	6/23/14	2/28/16	\$133,895	0%	

Policy & Planning Pooled Fund Studies and AASHTO Projects

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2014 Commitment	Total MN Commitment
TPF-5(289)	Mileage Based User Fee (MBUF)	Cory Johnson	MN	2016	3	\$140,000	\$20,000	\$80,000
TPF-5(004)	Long-Term Pavement Performance (LTPP) Specific Pavements Study Traffic Data Collection	Matthew Oman	FHWA	2009	27	\$3,626,361	\$0	\$175,000
TPF-5(198)	Urban Mobility Study	Paul Czech	TX	2014	11	\$1,335,000	\$30,000	\$325,000

Traffic & Safety

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
2013-17	89261 W0202	Improving Traffic Signal Operations for Integrated Corridor Management	University of Minnesota	Henry Liu	Steven Misgen	2/2/11	9/30/13	\$163,000	100%	X
2013-25	99004 W06	Toolbox of Countermeasures for Rural Two-Lane Curves	Iowa State University	Shauna Hallmark	Bradley Estochen	1/28/13	11/30/13	\$8,000	100%	
2014-02	89261 W0195	INV 898: Estimating the Crash Reduction and Vehicle Dynamics Effects of Flashing LED Stop Signs	University of Minnesota	Gary Davis	Bradley Estochen	6/28/10	2/28/14	\$74,667	100%	X
2014-04	89261 W0271	INV 917: Effect of Signing and Lane Markings on the Safety of a Two-Lane Roundabout	University of Minnesota	John Hourdos	Kristin Asher	6/30/11	4/30/14	\$105,000	100%	X
2014-05	89261 W0203	Expanding and Streamlining of RTMC Freeway Network Performance Reporting Methodologies and Tools	University of Minnesota	John Hourdos	Jesse Larson	10/28/10	1/31/14	\$89,000	100%	X
2014-10	99008 W025	INV 925: Advanced LED Warning System for Rural Intersections—Phase 2 (ALERT-2)	University of Minnesota—Duluth	Taek Kwon	Victor Lund	12/14/11	6/30/14	\$106,192	100%	X
2014-11	99007 W01	TPF-5(262): Evaluation of Guide Sign Fonts	Texas Transportation Institute	Bari Kotwal	Cory Johnson	9/28/12	3/31/14	\$178,504	100%	X
2014-12	99008 W066	MPR-2(018): Development of a Navigation System Using Smartphone and Bluetooth Technologies to Help the Visually Impaired Navigate Work Zones Safely	University of Minnesota	Chen-Fu Liao	Kenneth Johnson	8/9/12	3/31/14	\$89,500	100%	X
2014-19	99008 W065	MPR-2(017): Investigation of the Impact the I-94 ATM System has on the Safety of the I-94 Commons High Crash Area	University of Minnesota	John Hourdos	Brian Kary	8/9/12	8/31/14	\$140,000	100%	X
2014-20	02889	INV 943: Traffic Sign Life Expectancy	CH2M Hill	Howard Preston	Tim Plath	2/7/13	7/31/14	\$37,722	100%	X
2014-21	03619	INV645: Uncontrolled Pedestrian Crossing Evaluation Incorporating Highway Capacity Manual Unsignalized Pedestrian Crossing Analysis Methodology	Bolton & Menk, Inc. Consulting Engineers & Surveyors	Bryan Nemeth	Mitchell Bartelt	4/26/13	7/31/14	\$44,666	100%	X
2014-23	89261 W0247	Evaluation of the Effect of MnPASS Lane Design on Mobility and Safety	University of Minnesota	John Hourdos	Brian Kary	5/31/11	6/30/14	\$169,000	100%	X
2014-38	99008 W067	MPR-2(019): Automatic Generation of Traffic Signal Timing Plan	University of Minnesota	Henry Liu	Steven Misgen	11/15/12	9/30/14	\$105,000	100%	
2014RIC51A, 2014RIC51B	98383 Task 5.1	INV 645: Traffic Data Collection Improvements	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	\$480,009	100%	X
TRS1406	04821	INV 960: TRS: Right and Left Turn Lane Warrants	CH2M Hill	Howard Preston	Randy Newton	10/25/13	4/30/14	\$29,776	100%	
N/A	00976	TPF-5(190): North/West Passage—Phase III	University of Wisconsin—Madison	Teresa Adams	Cory Johnson	5/29/12	7/31/13	\$25,000	100%	
N/A	01203	Safety Rest Area Advance Signing Enhancements	Jacobs Engineering Group, Inc.	Thomas Parker	Robert Williams	8/15/12	7/31/13	\$82,684	100%	
N/A	03369	Construction Traffic Diversion Data Collection and Traffic Monitoring	Bolton & Menk, Inc. Consulting Engineers & Surveyors	Bryan Nemeth	Tiffany Dagon	3/22/13	7/31/13	\$49,935	100%	
N/A	99072	INV 917: Two-Lane Roundabout Field Research Regarding Signing and Striping	City of Richfield	Kristin Asher	None	9/8/11	8/30/13	\$5,000	100%	
N/A	01576	TPF-5(190): North/West Passage Program Support Services and Technical Writing	Athey Creek Consultants, LLC	Dean Deeter	Cory Johnson	7/26/12	8/31/13	\$99,294	100%	
N/A	93139P	TPF-5(190): North/West Passage	Wyoming DOT	Vince Garcia	None	12/22/08	12/22/13	\$0	0%	
N/A	04646	INV 924: How to Navigate a 2x2 Roundabout YouTube Video	Bolton & Menk, Inc. Consulting Engineers & Surveyors	David Breiter	Julie Skallman	10/1/13	1/31/14	\$6,528	100%	
N/A	04592	INV 924: Bike Lane Safety Video	Stonebrooke Engineering Inc.	Marc Briese	Julie Skallman	9/18/13	4/30/14	\$12,114	100%	
N/A	99008 W0126	INV645: HCM Unsignalized Crosswalk LOS Training	University of Minnesota	Jim Grothaus	Tony Winiecki	6/21/13	7/31/14	\$20,000	100%	

Traffic & Safety [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
N/A	04288	TPF-5(190): North/West Passage Program Support and Technical Writing Services	Athey Creek Consultants, LLC	Dean Deeter	Cory Johnson	8/12/13	8/31/14	\$99,837	100%	
N/A	99008 W043	MPR-2(003): MnPass Modeling and Pricing Algorithm Enhancement	University of Minnesota	John Hourdos	Brian Kary	6/29/12	1/31/15	\$150,000	89%	
N/A	99008 W03	Development of Active Traffic Management Strategies for Minnesota Freeway Corridors with Enhanced Variable Speed Limit Control System	University of Minnesota—Duluth	Eil Kwon	Brian Kary	9/23/11	3/31/15	\$98,700	88%	
N/A	03683	Deployment of Portable WIM Systems at ATR Sites for Data Collection and Comparative Study	SRF Consulting Group, Inc.	Erik Minge	Benjamin Timerson	4/25/13	1/31/15	\$80,565	75%	
N/A	99006 W01	MPR-2(008): Measuring Minnesota's Traffic Safety Culture	Montana State University, Western Transportation Institute	Nicholas Ward	Katie Fleming	6/22/12	11/28/14	\$235,217	75%	
N/A	99008 W063	INV 937: Development of Guidelines for Flashing Yellow Arrows for Protected/Permissive Use	University of Minnesota	Gary Davis	Susan Zaring	8/9/12	3/31/15	\$102,000	75%	
N/A	04797	INV 958: Rumble Strip Noise Evaluation	Wenck Associates Inc.	Edward Terhaar	Mark Vizecky	12/23/13	1/31/15	\$63,398	73%	
N/A	LAB943	INV 943: Traffic Sign Life Expectancy	MnDOT Office of Materials and Road Research	Matthew Lebens	Tim Plath	2/11/13	11/30/16	\$37,935	72%	
N/A	98383 Task 5.2	Online Sign Management and Maintenance	SRF Consulting Group, Inc.	Michael Marti	Rich Sanders	6/20/11	6/19/16	\$166,951	60%	
N/A	98383 Task 4	Road Safety—Toward Zero Deaths (TZD)	SRF Consulting Group, Inc.	Michael Marti	Mitch Rassmussen	6/20/11	6/19/16	\$60,444	58%	
N/A	99008 W039	MPR-2(001) INV 931: Lighting Levels for Isolated Intersections Leading to Safety Improvements	University of Minnesota	Christopher Edwards	Susan Zaring	7/31/12	2/28/15	\$94,170	58%	
N/A	99008 W0110	INV 928: Human Factors of Vehicle-Based Lane Departure Warning Systems	University of Minnesota	Christopher Edwards	Victor Lund	4/16/13	8/31/15	\$100,000	55%	
N/A	99008 W057	MPR-1(016): Field Implementation, Testing and Refinement of Density-Based Coordinated Ramp Control Strategy	University of Minnesota	John Hourdos	Brian Kary	5/3/12	5/31/15	\$144,000	54%	
N/A	99008 W0124	MPR-4(003): Implementation of a Low-Cost Weigh-In-Motion System	University of Minnesota—Duluth	Taek Kwon	Benjamin Timerson	6/14/13	10/31/15	\$35,309	54%	
N/A	99008 W0115	INV 953: Development of a Digital Highway Framework to Facilitate Crash Avoidance: Serving County Roads	University of Minnesota	Max Donath	Richard West	7/8/13	12/31/14	\$86,489	51%	
N/A	99008 W089	Develop Annual Arterial Congestion Report	University of Minnesota	Henry Liu	Steven Misgen	8/14/13	8/31/15	\$100,000	50%	
N/A	00977	TPF-5(190): North/West Passage—Phase III	North Dakota State University	Mohammad Smadi	Cory Johnson	5/29/12	4/30/16	\$14,836	48%	
N/A	99004 W02	Evaluation of Pavement Markings on Challenging Surfaces	Iowa State University	Neal Hawkins	Michelle Moser	6/13/12	10/31/15	\$130,373	44%	
N/A	99008 W0152	Examining the Impact of ASE in Work Zones on Driver Attention	University of Minnesota	Nichole Morris	Kenneth Johnson	6/6/14	1/31/16	\$218,660	41%	
N/A	03715	Implementation of Automatic Flagger Assistance Devices for MnDOT's Flagger Operations	Wenck Associates Inc.	Edward Terhaar	Thomas Dumont	5/17/13	1/31/15	\$84,753	38%	
N/A	99008 W0117	INV 955: Enhanced Capabilities for Portable WIM Systems	University of Minnesota—Duluth	Taek Kwon	Benjamin Timerson	4/22/13	11/30/15	\$75,667	38%	
N/A	05171	INV 645: Minnesota's Best Practices for Traffic Sign Maintenance/Management Handbook Update	CH2M Hill	Howard Preston	Mark Vizecky	1/9/14	10/31/14	\$49,891	37%	

Traffic & Safety [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
N/A	99008 W032	MPR-1(010): Vehicle-Mounted Robotic Roadway Message and Symbol Painter—2009-2011 Efforts	University of Minnesota—Duluth	Ryan Rosandich	Randy Reznicek	12/8/11	1/31/15	\$95,000	29%	
N/A	99008 W0112	Optimizing Automatic Traffic Recorders (ATR) Network in Minnesota	University of Minnesota	Diwakar Gupta	Mark Flinger	4/10/13	5/31/16	\$154,724	27%	
N/A	00755	MPR-1(015): Implementation of LED Roadway Lighting	Short Elliott Hendrickson, Inc. (SEH)	Ken Taillon	Susan Zaring	5/2/13	6/30/15	\$32,872	25%	
N/A	89256 W010	Rumble Stripe: Evaluation of Retroreflectivity and Installation Practices	University of Iowa	Neal Hawkins	Kenneth Johnson	5/26/11	2/28/15	\$65,000	23%	
N/A	05222	TPF-5(190): North/West Passage Corridor Freight Support	Olsson Associates	Mark Berndt	Cory Johnson	3/24/14	7/31/15	\$54,867	15%	
N/A	99008 W098	MPR-4(009): Evaluation of the Effectiveness of ATM Messages Used During Incidents	University of Minnesota	John Hourdos	Brian Kary	9/12/13	2/28/16	\$147,280	7%	
N/A	99008 W091	MPR-4(022): Sensing for HOV/HOT Lanes Enforcement	University of Minnesota	Nikos Papanikolopoulos	Brian Kary	3/11/14	8/31/15	\$97,200	0%	
N/A	99008 W087	Development of a Guideline for Work Zone Diversion Rate and Capacity Reduction	University of Minnesota—Duluth	Eil Kwon	Tiffany Dagon	5/23/13	9/30/15	\$107,000	0%	
N/A	99004 W015	INV 972: Minnesota Local Agency Pavement Marking: Mining Existing Data	Iowa State University	Omar Smadi	Kate Miner	5/27/14	6/30/16	\$65,000	0%	
N/A	99008 W0150	DSRC-Based Warning System for Workers Safety	University of Minnesota—Duluth	Imram Hayee	Susan Lorentz	3/28/14	8/31/16	\$129,431	0%	
N/A	99008 W0151	MPR-4(030): Safety Study of I-35W Improvements Done Under UPA Project	University of Minnesota	Gary Davis	Brian Kary	6/5/14	10/31/16	\$105,000	0%	
N/A	99008 W0155	Estimation of Traffic Conflicts at Signalized Intersections Using High-Resolution Traffic Signal Data	University of Minnesota	Gary Davis	Steven Misgen	5/27/14	10/31/16	\$150,000	0%	
N/A	99004 W016	Evaluation of Intersection Conflict Warning Systems	Iowa State University	Shauna Hallmark	Cory Johnson	6/30/14	12/31/16	\$196,862	0%	
N/A	99008 W0142	INV 962: Evaluation of Safety and Mobility of Two-Lane Roundabouts	University of Minnesota	John Hourdos	Joe Gustafson	5/16/14	12/31/16	\$124,920	0%	
N/A	99008 W0154	Development of a Queue Warning System Utilizing ATM Infrastructure: System Development and Field Testing	University of Minnesota	John Hourdos	Brian Kary	5/27/14	1/31/17	\$300,000	0%	

Traffic & Safety Pooled Fund Studies and AASHTO Projects

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2014 Commitment	Total MN Commitment
TPF-5(190)	North/West Passage—Phase III	Cory Johnson	MN	2017	8	\$775,000	\$25,000	\$175,000
TPF-5(262)	Evaluation of Guide Sign Fonts	Cory Johnson	MN	2012	6	\$195,000	\$0	\$30,000
SPR-2(207)	Transportation Management Center Pooled Fund Study	Brian Kary	FHWA	2012	32	\$6,457,267	\$0	\$450,000
TPF-5(029)	High Occupancy Vehicle (HOV)/Managed Use Lane (MUL)	Brian Kary	FHWA	2013	12	\$2,070,000	\$0	\$225,000
TPF-5(065)	Traffic Control Devices (TCD) Consortium	Janelle Anderson	FHWA	2015	23	\$2,890,000	\$15,000	\$15,000
TPF-5(114)	Roadside Safety Research Program	Michael Elle	WA	2014	10	\$2,176,000	\$50,000	\$600,000
TPF-5(193)	Midwest States Pooled Fund Crash Test Program	Michael Elle	NE	2014	17	\$4,614,653	\$66,000	\$455,500
TPF-5(231)	ITS Pooled Fund Program (ENTERPRISE)	Jon Jackels	MI	2013	12	\$1,675,000	\$0	\$120,000
TPF-5(258)	Traffic Signal Systems Operations and Management	Steven Misgen	IN	2014	11	\$575,000	\$25,000	\$75,000

Administrative

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
N/A	01684	MPR-6(019): Technology Transfer Material Development—FY2013	CTC & Associates LLC	Patrick Casey	Nick Busse	8/8/12	7/31/13	\$99,987	100%	
N/A	03569	Orientation Guide for TRIG Members and Best Practice Guide for Assessing the Value of Research	Athey Creek Consultants, LLC	Linda Preisen	Linda Taylor	4/11/13	7/31/13	\$31,557	100%	
N/A	99008 W060	INV 936: LRRB Focus Groups	University of Minnesota	Jim Grothaus	Richard West	3/30/12	7/31/13	\$17,000	100%	
N/A	99008 W069	INV 999: RSS Report Publication Services—FY2013	University of Minnesota	Arlene Mathison	Nick Busse	7/27/12	8/31/13	\$30,088	100%	
N/A	98725	INV 916: LRRB Technical Transfer Materials Development	CTC & Associates LLC	Patrick Casey	Julie Skallman	5/20/11	9/30/13	\$99,892	100%	
N/A	99008 W019	INV 998: Operational Research Program for Local Transportation Groups (OPERA)—FY2012	University of Minnesota	Jim Grothaus	Julie Skallman	9/23/11	11/30/13	\$90,000	100%	
N/A	00340	INV 927: LRRB Outreach Website	HNTB Corporation	Timm Claudon	Nick Busse	2/2/12	1/31/14	\$95,764	100%	
N/A	01351	MPR-6(019): Technology Transfer Material Development FY2012-2013 Annual Reporting	CTC & Associates LLC	Patrick Casey	Nick Busse	6/13/12	1/31/14	\$88,343	100%	
N/A	03014	Return on Investment Study for MnDOT Library	Law Library Consultants, Inc.	Kathleen Bedor	Sheila Hatchell	2/1/13	1/31/14	\$42,853	100%	
N/A	03541	MnDOT Library Process Improvement	Diane Foote Design Associates	Diane Foote	Sheila Hatchell	4/12/13	1/31/14	\$3,765	100%	
N/A	94156	MPR-6(005): Next Generation of ARTS Tech Support and Maintenance Services	ArchWing Innovations, LLC	Ryan Anderson	Hafiz Munir	5/13/09	5/12/14	\$176,300	100%	
N/A	99008 W064	INV 998: Operational Research Program for Local Transportation Groups (OPERA)—FY2013-2014	University of Minnesota-CTS	Jim Grothaus	Julie Skallman	7/3/12	6/30/14	\$135,000	100%	
N/A	94376	MPR-6(003): Business Assessment of RSS Processes and Tools	Trissential	Steve Beise	Hafiz Munir	11/4/09	6/30/14	\$172,080	95%	
N/A	05472	MnDOT Library Historical Materials	Lydia Lucas	Lydia Lucas	None	3/11/14	6/30/14	\$4,935	28%	
N/A	05889	MPR-4(026): MnDOT 2014 Peer Exchange Services	CTC & Associates LLC	Patrick Casey	Benjamin Worel	4/28/14	9/30/14	\$8,174	100%	
N/A	04015	MPR-3(001): Technology Transfer Material Development RS Outreach	CTC & Associates LLC	Patrick Casey	Nick Busse	6/12/13	7/31/14	\$99,880	100%	
N/A	98383 Task 6	LRRB Outreach/Marketing	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	\$70,038	100%	
N/A	98383 Task 5	Scoping Project	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	\$2,878	100%	
N/A	00147	MPR-6(019): Technology Transfer Material Development Marketing Plan	Strategic Toolbox, LLC	Janese Evans	Nick Busse	3/27/12	1/31/15	\$203,075	92%	
N/A	04510	INV 916: FY2014 LRRB Technology Transfer Material Development	CTC & Associates LLC	Patrick Casey	Nick Busse	9/4/13	6/30/15	\$74,994	87%	
N/A	99008 W0127	INV 999: RSS Report Publication Services—FY2014	University of Minnesota	Arlene Mathison	Nick Busse	6/21/13	8/31/14	\$38,324	77%	
N/A	89261 W0263	Librarian Services 2011-2016	University of Minnesota	Arlene Mathison	Sheila Hatchell	3/21/11	3/20/16	\$205,041	61%	
N/A	04014	MPR-3(001): Technology Transfer Material Development Research Services Transportation Syntheses	CTC & Associates LLC	Patrick Casey	Nick Busse	7/1/13	6/30/15	\$71,994	48%	
N/A	99008 W0158	INV 936: FY2014-2015 LRRB Focus Groups	University of Minnesota-CTS	Jim Grothaus	Kaye Bieniek	2/14/14	8/31/15	\$15,000	35%	
N/A	06038	MPR-3(001): FY2015 RS&L Technical Transfer Material Development: Technical Summaries and Project Evaluation Forms	CTC & Associates LLC	Patrick Casey	Nick Busse	6/26/14	6/30/15	\$91,200	19%	
N/A	04617	INV 927: LRRB Outreach Website	HNTB Corporation	Jeff Olson	Nick Busse, Lowell Schafer	11/1/13	8/31/16	\$57,945	18%	

Administrative [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
N/A	05868	Return on Investment Study for MnDOT Library	Law Library Consultants, Inc.	Kathleen Bedor	Sheila Hatchell	6/26/14	11/30/14	\$15,000	18%	
N/A	06163	MPR-3(001): FY2015 Technical Transfer Material Development: RS&L At-A-Glance, Accelerator Newsletter, Other Materials	CTC & Associates LLC	Patrick Casey	Nick Busse	6/17/14	6/30/15	\$59,318	15%	
N/A	05992	MPR-1(017): ARTS Technical Support and Maintenance Services	Tech-Pro, Inc.	Ryan Anderson	Hafiz Munir	5/29/14	5/1/15	\$74,981	5%	
N/A	99008 W0163	Roadway Safety Institute Partnership	University of Minnesota	Max Donath	Debbie Sinclair	6/17/14	9/15/14	\$9,678	0%	
N/A	05794	MPR-6(003): Development of a Process for Quantifying the Benefits of Research	CH2M Hill	Howard Preston	Hafiz Munir	4/24/14	4/30/15	\$96,316	0%	
N/A	04509	INV 916: FY2014-2015 LRRB Transportation Research Syntheses	CTC & Associates LLC	Patrick Casey	Nick Busse	9/4/13	6/30/15	\$24,939	0%	

Administrative Pooled Fund Studies and AASHTO Projects

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2014 Commitment	Total MN Commitment
TPF-5(237)	Transportation Library Connectivity and Development	Sheila Hatchell	MO	2015	26	\$1,270,878	\$20,000	\$100,000

Dedicated Programs

Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	% Paid	TS
99008 W061	INV668: Local Technical Assistance Program (LTAP)—FY2013 Coverage Period: 10/1/2012-9/30/2013	University of Minnesota	Jim Grothaus	Julie Skallman	8/1/12	11/30/13	\$440,500	100%	
99008 W0123	0001(213): Local Technical Assistance Program (LTAP)—FY2014	University of Minnesota—CTS	Jim Grothaus	Julie Skallman	6/21/13	8/31/14	\$450,500	75%	
99008 W0119	FY2014-2015 CTS Operations	University of Minnesota	Laurie McGinnis	Linda Taylor	6/27/13	6/30/15	\$3,230,400	38%	

Federal Program Support

Study Number	Title	MN 2014 Commitment
TPF-5(298)	National Cooperative Highway Research Program (NCHRP)	\$653,649
TPF-5(414)	Transportation Research Board (TRB)	\$119,482
SHR-2(014)	Strategic Highway Research Program (SHRP 2) HRTM-1	\$495,189

New Videos

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MnDOT Research Channel

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Bridges & Structures—

- Timber Bridge Inspection: Stress Wave Timer and Resistance Microdrilling Demonstrations
- Larpenteur Avenue Bridge Slide: Interview with David Herzog
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- MnROAD Truck Driver
- Rumble Strips: Noise Difference from Traditional vs. Sinusoidal Designs
- DCT Test Sample Preparation

Maintenance Operations & Security—

- Sign Life Expectancy Research Project
- Deicing Study: Putting the Products to the Test
- Vehicle-Mounted Robotic Message Painter Prototype
- Microwave Asphalt Repair Demonstration

Multimodal—

- Truck Parking Availability Demonstration Project
- Pedestrian and Bicycle Crash Types and Countermeasures Webinar

Traffic & Safety—

- ALERT System Demonstration

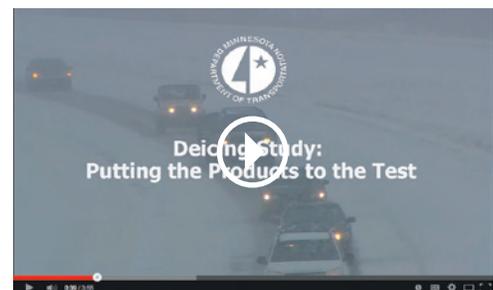
Miscellaneous—

- MnDOT Library Director Sheila Hatchell Discusses Library ROI Study
- What is the LRRB?

Local Road Research Board Channel (New!)

The LRRB now has its own channel on YouTube. Check out these new videos at www.youtube.com/user/lrrbmn.

- “Why Aren’t They Working on My Road?”
- Minnesota Bike Lanes: Learning to Share
- Construction Zone Safety: Our Responsibility
- Road Closed Signs: Beware and Be Aware
- Navigating a Multi-Lane Roundabout
- Answers to Common Questions About Gravel Roads



Transportation Research Syntheses

Transportation Research Syntheses are short-turnaround research reports that address a specific research topic. They include summaries of completed and in-progress research, or reports about the state of the practice among departments of transportation (DOTs). Transportation Research Syntheses go beyond the scope of literature searches; they can include interviews or surveys, and the resources found are clearly organized and summarized—with contact names, Web links and other specifications.



MnDOT is committed to enabling efficient transportation and has implemented innovations such as tow plows (pictured) to save taxpayer costs. But how in general should we define “efficiency”? With [TRS1410, State of Practice for Defining, Demonstrating and Documenting Transportation Efficiencies](#), we surveyed and interviewed other departments of transportation about how they track cost savings, define efficiencies and measure success.

Transportation Research Syntheses Completed in FY2014

- TRS1310 Investigation of Performance Requirements of Full Depth Reclamation Stabilization
- TRS1311 Applications of Computational Fluid Dynamics for River Simulation: State of the Practice
- TRS1313 STIP and TIP Amendment Procedures: A Review of State and MPO Practices
- TRS1401 Airspace Protection and Land Use Zoning: A Nationwide Review of State Statutes
- TRS1402 Best Practices in Pavement Design for Design-Build Projects
- TRS1403 Joma Snowplow Blade Life Span: A Survey of State Experience
- TRS1404 Transportation Agency Practices Currently Employed for Bridge Maintenance Painting Operations: Findings from a National Survey
- TRS1405 Writing Literature Reviews for Transportation Research Projects
- TRS1406 Right and Left Turn Lane Warrants
- TRS1407 Gravel Road Management Tools
- TRS1408 Software Programs and Processes for Tracking Capital Program Funds

- TRS1409 Pavement Preservation Resource Centers
- TRS1410 State of Practice for Defining, Demonstrating and Documenting Transportation Efficiencies

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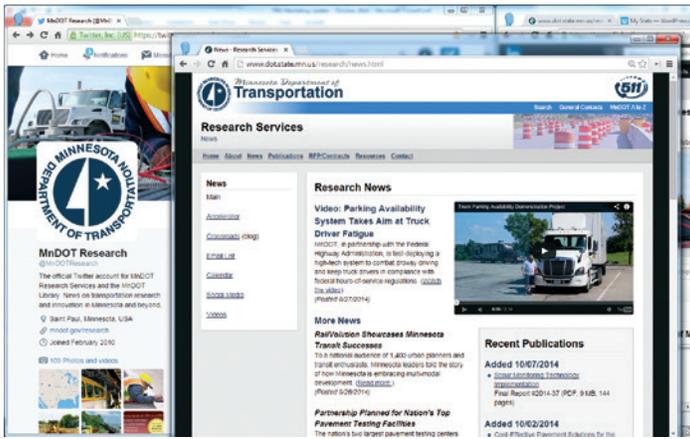
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Research Services & Library Staff



Linda Taylor, P.E.
 Director of Research
 Services & Library
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 651-366-3765





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TRANSPORTATION RESEARCH INNOVATION GROUP (TRIG) DIVISION REPRESENTATIVES

MnDOT's TRIG is the governing board for the State Research Program. TRIG is composed of representatives from each MnDOT office and district, and meets quarterly to recommend research investments.

Name	Represents
Specialty Offices	
Lynn Clarkowski	Environmental Stewardship
Nancy Daubenberger	Bridges & Structures
Glenn Engstrom	Materials & Road Research
Mark Gieseke	Transportation System Management
Chris Roy	Project Management and Technical Support
Susan Groth	Traffic, Safety & Technology
Steven Lund	Maintenance
Mark Nelson	Statewide Multimodal Planning
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Office of Transportation System Management
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