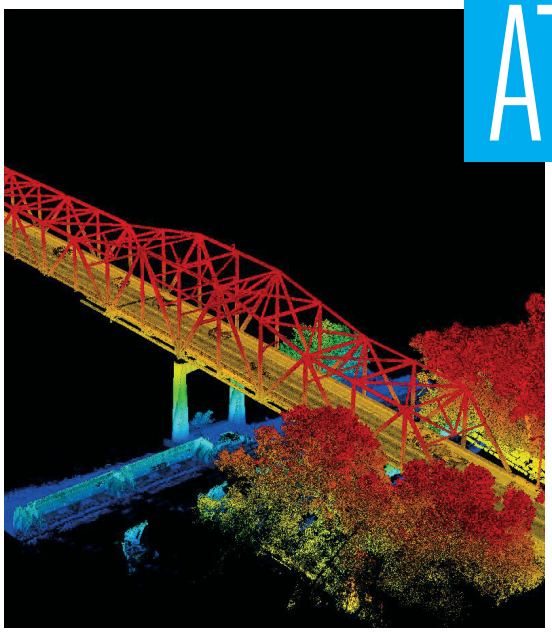
MnDOT RESEARCH SERVICES & LIBRARY

RESEARCH AT-A-GLANCE



SAVING LIVES AND MONEY

FY2015

JULY 1, 2014, THROUGH JUNE 30, 2015

Director's Message

Welcome to the FY2015 *MnDOT Research Services & Library At-A-Glance*. This document serves as a quick-reference guide to our research program.

The research products we've delivered over the past year are saving lives, time and money for Minnesotans. We recently developed a data analysis tool to better quantify how our research is paying off. With this tool we were able to demonstrate that the benefits of just three major research projects exceed the cost of the entire research program. One of these projects, a Minnesota-led pooled fund study, developed a testing method for thermal cracking resistance in asphalt pavements that is projected to save Minnesota road authorities $20.8 million over the next 10 years, while costing just $475,000 to develop. And by analyzing the service lives of traffic signs and incorporating the results into a handbook for managing sign inventories, another study could prevent a minimum of $62.5 million in unnecessary sign replacements across the state.

We also improved the process for soliciting research ideas using **IdeaScale** as a platform. The new solicitation process enables submitters of research ideas to describe more clearly the need for the research and its expected benefit. This information allows MnDOT and the Local Road Research Board to do a more effective job in reviewing and prioritizing these ideas. The new process also allows us to assist submitters with writing research needs statements, leading to better quality proposals and ultimately better research projects to advance our mission of saving lives, time and money.

MnDOT is also increasing its collaboration with other state DOTs. A partnership was formed this year between MnROAD, Minnesota's cold weather pavement test track, and the National Center for Asphalt Technology in Auburn, Alabama, the world's two largest full-scale pavement testing facilities. MnROAD has also launched a major pooled fund, the National Road Research Alliance, to direct its next phase of research. It is seeking participation and funding from states, academic institutions and industry throughout the country.

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
Director, MnDOT Research Services & Library
Linda.Taylor@state.mn.us

FY2015 Research Services & Library Key Statistics

Active contracts	244
New contracts	72
Completed research reports	61
Technical Summaries	61
Transportation Research Syntheses	9
MnDOT-supported pooled funds	44
MnDOT-led pooled funds	8
Research Services website visits	113,486
Library reference requests completed	1,221
Literature searches by library staff	705
Library items circulated or delivered	14,485

"Our investments in research are paying off."

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Making a Difference: Research Highlights

Each day, MnDOT is cost-effectively building a safer and more reliable transportation system thanks to research like the projects highlighted here.

AutoFlaggers Make Work Zones Safer

Automatic Flagger Assistance devices direct drivers through work zones and other problem areas while improving worker safety and reducing costs. AFADs are operated remotely, removing the worker from the flow of traffic and allowing a single worker to operate two AFADs. Labor savings are projected to cover AFAD purchase costs within two years. For details on this implementation, see **Technical Summary 2014-44**.

Rightsizing Concrete Pavement Design Saves Millions

Until recently, mechanistic-empirical pavement design software was only available for asphalt. Engineers can now use MnPAVE Rigid to design the right concrete pavement for the right conditions. Doing so reduced the thickness of concrete needed in three recent projects, saving $4.6 million while maintaining performance.
Technical Summary 2014-27

Inspection Devices Extend Life of Timber Bridges

Minnesota's more than 2,000 bridges with structural timber can be better preserved with new techniques for detecting deterioration, including the use of moisture meters, stress wave timers and microdrills (pictured here), which measure the wood's resistance to a small-diameter drill bit to identify decay, voids or termite damage.
Technical Summary 2015-01

New Guidelines Extend Life of Signs, Reduce Frequency of Sign Replacement

A new traffic sign costs $150 to $250 to install, and the average township has 180 signs. While local governments previously didn't have much guidance on how often to replace signs beyond the typical 12-year manufacturer's warranty, new research into how retroreflectivity (visibility to drivers at night) actually degrades has shown that signs can typically be left in place safely for 20 years, possibly for as long as 30. A test deck put in place at MnROAD will provide more precise and authoritative service life data over time.
Technical Summary 2014-20

Counties Use Software to Assess Impact and Charge Fees for Oversized Vehicles

Three Minnesota counties have begun using a new impact calculator to charge oversized vehicles for extra wear and tear on local roadways. The software calculates unanticipated strains caused by new facilities or freight routes, computing the portion of a pavement's design life consumed by loads and the extra bituminous material that would have been required to construct the pavement if it had been designed to support the additional traffic.
Technical Summary 2014-32

Technical Summaries Online

Find fact sheets on all of our completed research on the Projects page at **mndot.gov/research**.

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 (TRSs)—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 6 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 (American Association of State Highway and Transportation Officials-Research Advisory Committee) 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 page 9-23 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 a regional issue, we can help establish a Transportation Pooled Fund project to leverage resources and collaborate with other state DOTs to solve a problem.

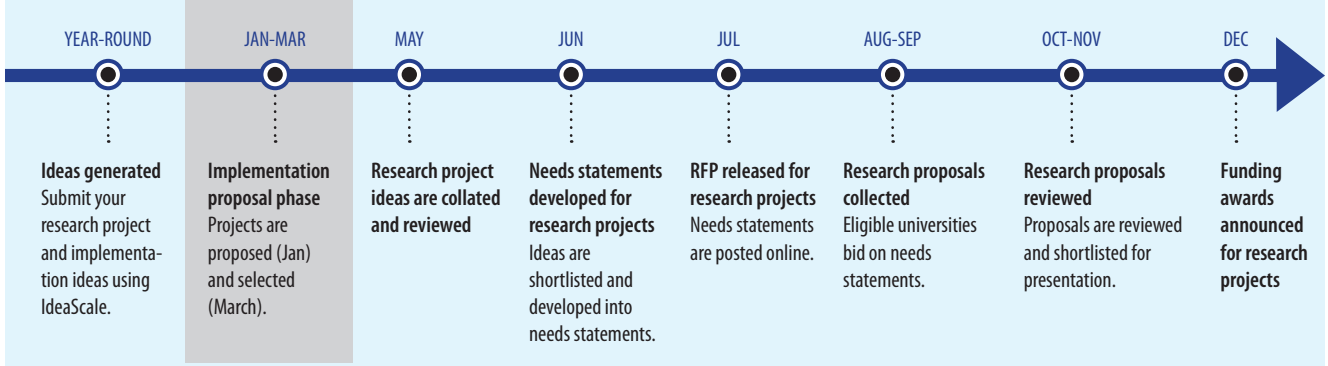
NCHRP Research—If you are trying to solve a problem of regional or national significance, we can help you develop a problem statement through the National Cooperative Highway Research Program (NCHRP).

MnDOT Library staff members can help you find the answer you're looking for. They track down hard-to-find information on transportation topics and also have access to hundreds of specialty journals.

Members of a Technical Advisory Panel look at MnROAD's sign life test deck with researcher Howard Preston (right). Participating on a 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.

Overview of MnDOT's Annual Research RFP Process

From idea to project



NOTES: Exact dates may change from year to year. Check **mndot.gov/research** for current schedule. Out-of-cycle funding requests can be made in some circumstances. Contact Research Services for criteria.

FY2015 Budget Summary

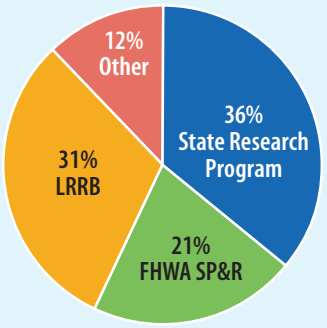
Research Services & Library guided the investment of $14,454,313 in needed research in FY2015.

Figure 1 shows the federal, state and local sources of research funding available to address problems on Minnesota's transportation system. Funding from the Federal Highway Administration State Planning and Research Program (Part II) and Minnesota state government enables the development of new and better ways to move people and goods throughout the state. The LRRB also makes a significant investment in research aimed at assisting the state's city and county transportation engineers.

Figure 2 shows FY2015 research funds by topic area, funded with a combination of federal, state and local funds. Our biggest investments are aligned with MnDOT's core services. MnDOT also provides support to specialized programs, such as the University of Minnesota Center for Transportation Studies and the Local Technical Assistance Program.

Figure 3 shows how we directed the FHWA SP&R (Part II) portion of our total funding, in support of critical national transportation research and collaborations with other states.

Figure 1.
FY2015 Research Funds by Funding Source



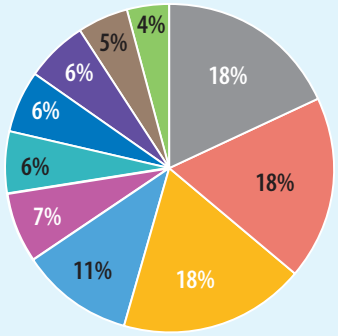
State Research Program[1]	$ 5,246,551
FHWA State Planning and Research (Part II)	$ 3,094,930
Local Road Research Board[2]	$ 4,432,026
Other[3]	$ 1,680,806
Total	**$ 14,454,313**

1 Includes $603,950 carried forward from FY2014.

2 Includes $1,159,700 carried forward from FY2014.

3 Includes contributions from other MnDOT funds, partnerships with other agencies and other federal sources.

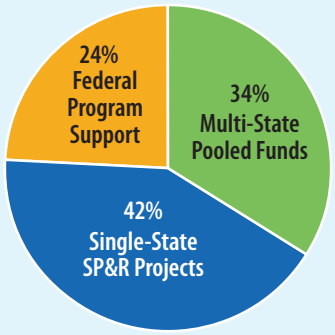
Figure 2.
FY2015 Research Funds Allocated by Topic Area



Dedicated Programs (CTS & LTAP)	$ 2,118,224
Materials & Construction	$ 2,090,547
Traffic & Safety	$ 2,069,226
Maintenance Operations	$ 1,220,846
Administration	$ 832,052
Bridges & Structures	$ 732,099
Federal Program Support	$ 717,394
Policy & Planning	$ 636,805
Multimodal	$ 609,551
Environmental	$ 437,240
Total[1]	**$ 11,463,984**

1 This total is less than the total in Figure 1 because it includes only contracts and excludes purchase orders, travel and most staff salaries.

Figure 3.
FY2015 SP&R (Part II) Funding Distribution



Multi-State Pooled Funds	**$ 1,060,500**
a: Participation in Pooled Funds Led by Other States	$ 1,020,500
b: MnDOT-Led Pooled Funds	$ 40,000
Single-State SP&R Projects	**$ 1,297,036**
Federal Program Support	**$ 737,394**
a: NCHRP	$ 587,093
b: TRB	$ 121,301
c: AASHTO	$ 29,000
Total	**$ 3,094,930**

Transportation Research Syntheses

Transportation Research Syntheses are quick-turnaround, small-budget research reports on problem areas identified by MnDOT or LRRB. TRSs summarize completed and in-progress research and report on the practices and innovations of other state DOTs. TRSs go beyond the scope of literature searches to include interviews and surveys, and the resources found are clearly organized and summarized—with contact names, Web links and sample documents and specifications.

TRS 1506: Work Zone Intrusion Reporting: A Survey of State Practices. MnDOT already has good data and reporting practices about crashes, especially those that happen in work zones, and has been looking to standardize practices regarding work zone "near misses." A survey of state DOTs revealed that collecting data about these work zone intrusions does not appear to be a common practice. The few states that do collect this data ask workers to use electronic or paper forms, although smart work zone technologies such as pan-tilt-zoom cameras are being considered in Oregon.

Other FY2015 Transportation Research Syntheses

TRS 1412 Strategic Plans for Transportation Research Programs: A Survey of State and National Practice

TRS 1413 New Approaches for Roundabout Lighting to Enhance Pedestrian Safety

TRS 1501 Monitoring Motor Vehicle Driver Fatigue

TRS 1502 Coordination Between State Transportation Agencies in Multi-State Metropolitan Planning Areas: A Survey of State Practice

TRS 1503 Benefits and Costs of Increasing Truck Load Limits: A Literature Review

TRS 1504 Summer Maintenance Operations Reporting: A Survey of State and National Practice

TRS 1505 Future Impact on Minnesota Transportation Revenue Collection of Commercial Fleet Conversion from Diesel Fuel to Natural Gas

How can a TRS help me?

- Investigate a problem without starting from scratch.
- Find out what other state DOTs are doing: designs, specifications, manuals and procedures.
- Review the latest and greatest on any issue that affects state DOTs.
- Receive a clear, concise report with all the relevant findings in one place.
- Save yourself a bunch of time.

To request a TRS

Contact Dan Warzala at 651-366-3786 or **Dan.Warzala@state.mn.us**.
Visit MnDOT's website to access the TRS Request Form.

Video Productions

Research Services and the LRRB fund videos to illustrate recent research advances, which promotes implementation and demonstrates the value of research to the public. To watch these recent videos and many more, visit the MnDOT Research Channel (**youtube.com/user/MnDOTResearch**) and the LRRB Channel (**youtube.com/user/lrrbmn**).

- MnDOT Tests Drones for Bridge Inspections (pictured at right)
- Fences That Save: Cost-Effective Snow Control Tools
- Applying LiDAR to County Transportation Systems
- AFADs: Automatic Flagger Assistance Devices
- Timber Bridge Inspection Demonstration Techniques
- Roundabout Myths
- Rumble Strips: Saving Lives in Minnesota
- Winter Chemicals for Local Agencies
- Sign Life Expectancy Research

MnDOT recently completed a study to examine the effectiveness of drone technology as it applies to bridge safety inspections. For more information, watch the video and read Technical Summary 2015-40.

Media Coverage

Exciting transportation research and innovations frequently elicit stories in Minnesota newspapers and on television, and it is also our job to inform the local media of the value that MnDOT research provides. This is just a sample of the stories inspired by the work we have done to help promote and implement new research.

The number of farmers planting standing corn rows, like the ones pictured in this screenshot of a KARE-TV broadcast, has doubled in part due to a new tool developed by MnDOT research.

- **MnDOT Using Drones to Assist in Bridge Inspections**—WCCO-TV
- **More Standing Corn to Help Winter Driving**—KARE-TV (pictured above)
- **Strange Chevy Turning Heads Near U of M Campus; So What is It?**—KSTP-TV
- **The Drive: Ramp Meters Keep Metro Traffic Flowing**—Star Tribune
- **U Professor's Bike App Gets Revisions** (Cyclopath)—Minnesota Daily
- **MnDOT Testing Quieter 'Rumble Strips'**—WCCO-TV
- **Minnesota DOT Creates Bridge Deck Deterioration Timelines to Predict Needed Repairs**—Better Roads
- **Bridge Maintenance: An Ear to the Deck**—Better Roads
- MnDOT Uses New Tool to Show Impact of Heavy Vehicles on Roads—KSTP-TV
- **What's the Best Road Deicer? $115,000 Minnesota Study Aims to Find Out**—Pioneer Press/Mankato Free Press
- MSU Study Looks at Best Ways to De-Ice Minn. Roads—KSTP-TV
- Report: State Could Save Millions by Removing Unnecessary Road Signs—KSTP-TV

MnDOT FY2015 Research

RESEARCH PROJECTS ARE ORGANIZED BY TOPIC AREAS IN TWO TABLES:

Completed and Ongoing Minnesota-Only Research Projects

- Completed research reports and Transportation Research Syntheses
- Research contracts with end dates during FY2015 that did not result in a final report
- Other research contracts active during FY2015, including some tasks or contracts that are part of larger programs that MnDOT tracks individually

Pooled Fund Research

- Multi-state transportation pooled fund studies led by MnDOT
- Other multi-state transportation pooled fund studies in which MnDOT participates, either through an FY2015 contribution or through past contributions that are still producing value for Minnesota

NOTE: A mark in the "TS" column indicates that a Technical Summary for this project can be found at mndot.gov/research.

Bridges & Structures

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
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	$84,227	X
2014-36	99008 WO41	Anchorage of Shear Reinforcement in Prestressed Concrete Bridge Girders	University of Minnesota	Cathy French	Benjamin Jilk	6/29/12	11/30/14	$175,000	X
2014-37	89261 WO261	MPR-0(004): Scour Monitoring Technology Implementation	University of Minnesota	Jeff Marr	Andrea Hendrickson	4/18/11	11/30/14	$38,233	X
2014-39	99008 WO42	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	X
2014-40	02782	Deterioration Rates of Minnesota Concrete Bridge Decks	Olson & Nesvold Engineers	Steven Olson	Dustin Thomas	1/14/13	1/31/15	$79,398	X
2015-01	99008 WO62	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	X
2015-15	99008 WO2	INV 910: Matrix (Partially Grouted) Riprap Lab Flume Study	University of Minnesota	Jeff Marr	Nicole Bartelt	11/1/11	4/30/15	$124,831	X
2015-31	99008 WO96	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	X
2015-36	99008 WO49	MPR-2(006): Protocols and Criteria for Acoustic Emission Monitoring of Fracture-Critical Steel Bridges	University of Minnesota	Arturo Schultz	Moises Dimaculangan	6/29/12	7/31/15	$166,000	X
2015-40	1000416	Unmanned Aerial Vehicle Bridge Inspection Demonstration Project	Collins Engineers Inc.	Barritt Lovelace	Jennifer Zink	4/20/15	9/30/15	$34,112	X
2015-45A	99004 WO5	INV 940: Development of Cost-Effective Timber Bridge Repair Techniques for Minnesota	Iowa State University	Brent Phares	David Conkel	12/14/12	11/30/15	$299,582	
2015-47	99004 WO9	MPR-4(010) INV 945: Next Generation Bridge Management Tools and Inspection	Iowa State University	Basak Aldemir Bektas	David Hedeen	6/14/13	12/31/15	$72,072	
2015-50	99008 WO102	MPR-4(014): Effect of Temperature on Prestressed Concrete Bridge Girder Strand Stress During Fabrication	University of Minnesota	Cathy French	David Dahlberg	6/14/15	12/31/15	$132,345	
N/A	99008 WO129	INV 938: Culvert Design, Installation and Maintenance Independent Online Distance Learning (ODL) Course	University of Minnesota	Jim Grothaus	Mitchell Rasmussen	8/12/13	3/31/15	$55,000	
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	

cont. ➡

Bridges & Structures [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
N/A	02345	Vacuum Grouting of Post-Tensioned Bridges	Wiss, Janney, Elstner Associates, Inc.	Mark Chauvin	Dustin Thomas	4/19/13	1/31/16	$134,807	
N/A	06401	Bridge Maintenance Painting Guidance, Training and Test Site	Short Elliott Hendrickson, Inc.	Jeff Johnson	Sarah Sondag	10/17/14	10/31/18	$87,387	
N/A	06458	Development of a Coating Condition Assessment Photographic Field Guide and Updating/Delivery of a Maintenance Painting Workshop Curriculum	KTA-Tator, Inc.	William Corbett	Sarah Sondag	8/22/14	7/31/15	$25,817	
N/A	06463	MPR-4(036): Fracture-Critical System Analysis for Steel Bridges	Collins Engineers Inc.	Barritt Lovelace	Jennifer Zink	9/3/14	7/31/16	$99,843	
N/A	99008 WO1	Investigation of Shear Distribution Factors in Prestressed Concrete Girder Bridges	University of Minnesota	Cathy French	Yihong Gao	9/27/11	2/28/16	$363,000	
N/A	99008 WO181	INV 976: Development and Integration of Advanced Timber Bridge Inspection Techniques for NBIS—Purchase Equipment and Train Users	University of Minnesota Duluth	Victor Krause	David Conkel, Peter Wilson	1/21/15	2/28/17	$42,794	

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 2015 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	$0	$60,000
TPF-5(264)	Passive Force Deflection Curves for Skewed Abutments	David Conkel	UT	2013	8	$400,000	$0	$30,000
TPF-5(272)	Evaluation of Lateral Pile Resistance Near MSE Walls at a Dedicated Wall Site	Nickolas Haltvick	UT	2013	10	$332,000	$0	$20,000
TPF-5(281)	Center for the Aging Infrastructure: Steel Bridge Research, Inspection, Training and Education Engineering Center—SBRITE	Todd Niemann	IN	2015	7	$1,488,237	$50,000	$100,000
TPF-5(283)	The Influence of Vehicular Live Loads on Bridge Performance	Yihong Gao	FHWA	2016	7	$1,140,000	$50,000	$200,000
TPF-5(308)	The Use of Bridge Management Software in the Network Analysis of Big Bridges	Jennifer Zink	MI	2015	7	$450,000	$35,000	$70,000
TPF-5(328)	Strain-Based Fatigue Crack Monitoring of Steel Bridges Using Wireless Elastomeric Skin Sensors	Nancy Daubenberger	KS	2017	5	$465,000	$25,000	$75,000
MPR-3(002)	AASHTO-LRFD Bridge Design Specification—Section 5 (Concrete Structures)	Nancy Daubenberger	N/A	2015	N/A	N/A	$10,000	$10,000

Environmental

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
2014-24	89261 WO250	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	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	X
2014-30	89261 WO207	INV 894: Assessing and Improving Pollution Prevention by Swales	University of Minnesota	John Gulliver	Barbara Loida	7/30/10	8/31/14	$314,000	X

cont. ➡

Environmental [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
2014-46	89261 WO211	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	X
2015-08	99008 WO45	Sediment Transport Through Recessed Culverts: Laboratory Experiments	University of Minnesota	Jessica Kozarek	Petronella DeWall	8/1/12	2/28/15	$105,640	X
2015-21	99008 WO94	Web-Based Preventative Blowing and Drifting Snow Control Calculator Decision Tool	University of Minnesota	Gary Wyatt	Daniel Gullickson	4/17/13	5/31/15	$65,925	X
2015-41	99008 WO54	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	X
2015-46	99008 WO120	MPR-4(001): Assessing the Use of Shrub Willows for Living Snow Fences in Minnesota	University of Minnesota	Diomy Zamora	Daniel Gullickson	5/9/13	12/31/15	$145,034	
N/A	89261 WO252	Wetland Mitigation in Abandoned Borrow Areas	University of Minnesota Duluth	Kurt Johnson	Sarma Straumanis	3/28/11	3/24/16	$142,023	
N/A	99008 WO97	MPR-4(008): Enhancement and Application of MnDOT Dry Swale Calculator	University of Minnesota	John Gulliver	Barbara Loida	9/11/13	5/31/16	$198,635	
N/A	99008 WO146	INV 965: Study of Deicing Salt Accumulation and Transport Through a Watershed	University of Minnesota	William Herb	Wayne Sandberg	5/16/14	12/31/17	$119,339	
N/A	99008 WO157	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	
N/A	99008 WO167	Use of Mussel Spat Rope for Fish Passage	University of Minnesota	Jessica Kozarek	Petronella DeWall	11/24/14	12/31/16	$164,816	
N/A	99008 WO190	INV 979: Slope Stabilization and Repair Solutions for Local Government Engineers	University of Minnesota Duluth	David Saftner	Blake Nelson	5/21/15	8/31/17	$78,124	
N/A	99008 WO195	INV 984: Expanding the Success of Salt-Tolerant Roadside Turfgrasses Through Innovation and Education	University of Minnesota	Sam Bauer	Dwayne Stenlund	4/8/15	6/30/19	$168,974	

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 2015 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

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
2014-33	LAB886	INV 886: Cost-Effective Pavement Preservation Solutions for the Real World	MnDOT Office of Materials	Thomas Wood	Gregory Coughlin, Malaki Ruranika	9/10/09	6/30/15	$15,000	X
2014-43, 2014-43A	02829	Salt Brine Blending to Optimize Deicing and Anti-Icing Performance and Cost-Effectiveness—Phase II: Appendices	Minnesota State University, Mankato	Stephen Druschel	Thomas Peters	6/11/13	12/31/14	$1,126,444	X
2015-16	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	X
2015-44	99008 WO46	Estimation of Winter Snow Operation Performance Measures with Traffic Flow Data—Phase II	University of Minnesota Duluth	Eil Kwon	Thomas Peters	11/7/12	12/31/15	$110,400	X
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	$107,025	
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	

cont. ➡

Maintenance Operations [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
N/A	06375	TPF-5(218): Winter Severity Mapping Enhancement	Resource Data, Inc.	Eric Haugen	Thomas Peters	1/9/15	6/30/15	$4,768	
N/A	89261 WO191	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	$79,185	
N/A	99006 WO3	TPF-5(218): Developing a Snow and Ice Control Environmental Best Management Practices Manual	Montana State University, Western Transportation Institute	Laura Fay	Thomas Peters	12/17/13	5/31/15	$180,107	
N/A	99006 WO5	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	Laura Fay	Thomas Peters	12/17/13	7/31/15	$49,950	
N/A	99006 WO7	TPF-5(218): Cost-Benefit of Various Winter Maintenance Strategies	Montana State University, Western Transportation Institute	Laura Fay	Thomas Peters	12/17/13	9/30/15	$121,730	
N/A	06427	TPF-5(218): Synthesis on GPS/Automatic Vehicle Location (AVL) Equipment Used for Winter Maintenance	SRF Consulting Group, Inc.	George Stuempfig	Thomas Peters	11/25/14	1/31/16	$59,376	
N/A	06428	TPF-5(218): Quantifying the Impact That New Capital Projects Will Have on Roadway Snow and Ice Control (RSIC) Operations RFP	University of Vermont	James Sullivan	Thomas Peters	6/1/15	1/31/17	$145,622	
N/A	06740	TPF-5(218): Develop a Training Video and Manual for Best Practices and Techniques in Clearing Different Interchange Configurations and Other Geometric Layouts RFP	Southern Illinois University Edwardsville	Yan Qi	Thomas Peters	3/9/15	7/31/16	$100,000	
N/A	06742	TPF-5(218): Developing a Roadway Salt Best Management Practices Handbook	University of Iowa	Wilfrid Nixon	Thomas Peters	2/18/15	11/30/15	$62,500	
N/A	06849	Automatic Vehicle Location for Mowing	SRF Consulting Group, Inc.	Adrian Potter	Trisha Stefanski	10/17/14	7/31/16	$17,320	
N/A	06909	TPF-5(218): Clear Roads: Plug-and-Play Initiative—Phase II: Developing Recommendations Regarding Transmission Methods and Protocols for the Transmission of Data for Winter Operations	SRF Consulting Group, Inc.	Erik Minge	Thomas Peters	3/13/15	8/31/16	$81,690	
N/A	07093	INV 924: Winter Chemicals Video for Local Agencies	Bolton & Menk, Inc. Consulting Engineers & Surveyors	Bryan Nemeth	Gary Reihl	1/21/15	10/31/15	$17,856	
N/A	02337	TPF-5(218): Clear Roads Administration and Information Services	CTC & Associates LLC	Patrick Casey	Thomas Peters	7/8/13	8/31/16	$448,490	
N/A	98383 Task 11	Deicing and Anti-Icing Performance and Cost-Effectiveness	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	$38,486	
N/A	99006 WO2	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	11/30/15	$185,000	
N/A	99006 WO6	TPF-5(218): Understanding the Effectiveness of Non-Chloride Liquid Agricultural By-Products and Solid Complex Chloride/Mineral Products Used in Snow and Ice Control Operations	Montana State University, Western Transportation Institute	Laura Fay	Thomas Peters	12/17/13	11/30/15	$191,238	
N/A	99006 WO8	TPF-5(218): Use Of Equipment Lighting During Snowplow Operations	Montana State University, Western Transportation Institute	Laura Fay	Thomas Peters	11/26/14	11/30/15	$40,406	
N/A	99008 WO93	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	
N/A	99008 WO113	MPR-4(023): Comprehensive Field Evaluation of Asphalt Patching Techniques and Development of Best Practices Manual and Simple Decision Tree	University of Minnesota Duluth	Jay Dailey	Susan Lodahl, Perry Collins	9/25/13	7/31/16	$87,106	
N/A	99008 WO148	INV 974: Bio-Fog Seal Field Evaluation	University of Minnesota	Mihai Marasteanu	Eddie Johnson	7/25/14	8/31/16	$93,969	
N/A	99008 WO168	TPF-5(218): Training for Supervisors and Operators	University of Minnesota	Jim Grothaus	Thomas Peters	8/14/14	3/31/16	$99,857	

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Maintenance Operations [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
N/A	99008 WO191	INV 980: Pothole Prevention and Innovative Repair	University of Minnesota	Mihai Marasteanu	Todd Howard	4/20/15	8/31/17	$129,914	
N/A	LAB974	INV 974: : Bio-Fog Seal Field Evaluation	MnDOT Office of Materials	Eddie Johnson	Bruce Hasbargen	5/6/14	6/30/18	$20,000	

Maintenance Operations 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 2015 Commitment	Total MN Commitment
TPF-5(153)	Optimal Timing of Preventive Maintenance for Addressing Environmental Aging in HMA Pavements	Thomas Wood	MN	2015	6	$420,000	$75,000	$206,205
TPF-5(218)	Clear Roads	Thomas Peters	MN	2015	30	$3,965,000	$25,000	$150,000
TPF-5(054)	Development of Maintenance Decision Support System	Curtis Pape	SD	2016	20	$6,331,562	$25,000	$325,000
TPF-5(290)	Aurora Program	Curtis Pape	IA	2015	15	$1,175,000	$25,000	$50,000
MPR-4(039)	AASHTO Equipment Management Technical Services Program (EMTSP)	Steve Lund	N/A	2015	N/A	N/A	$3,000	$3,000
MPR-4(040)	AASHTO Snow and Ice Cooperative Program (SICOP)	Steve Lund	N/A	2015	N/A	N/A	$4,000	$4,000
MPR-4(041)	AASHTO Innovation Initiative (formerly TIG)	Steve Lund	N/A	2015	N/A	N/A	$6,000	$6,000

Materials & Construction

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
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	X
2014-27	99008 WO44	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	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	X
2014-31	99004 W01	Indefinite Delivery/Indefinite Quantity Contracting	Iowa State University	Douglas Gransberg	Kevin Kosobud	8/9/12	8/31/14	$87,390	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	X
2014-41	99008 WO48	Evaluation of Concrete and Mortars for Partial Depth Repairs	University of Minnesota Duluth	Eshan Dave	Ronald Mulvaney	8/9/12	10/31/14	$74,000	X
2014-45	95099	TPF-5(153), INV 863: Optimal Timing of Preventive Maintenance for Addressing Environmental Aging in Hot-Mix Asphalt Pavements	Asphalt Institute	Mike Anderson	Thomas Wood	3/30/10	11/30/14	$241,086	X
2015-04	99004 WO10	INV 942: Aggregate Road Surface Rejuvenation	Iowa State University	Charles Jahren	Bruce Hasbargen	1/30/13	3/31/15	$88,910	X
2015-06	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	X

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Materials & Construction [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
2015-14	99004 WO4	Carbonate Aggregate in Concrete	Iowa State University	Kejin Wang	Bernard Izevbekhai	8/9/12	5/31/15	$127,535	X
2015-20	LAB2012	MPR-2(012): DCT Low-Temperature Fracture Testing Pilot Project	MnDOT Office of Materials and Road Research	David Van Deusen	John Garrity	9/10/12	6/30/15	$11,000	X
2015-24	99008 WO40	Laboratory Performance Test for Asphalt Concrete	University of Minnesota Duluth	Eshan Dave	Luke Johanneck, Shongtao Dai	7/10/12	5/31/15	$66,816	X
2015-25	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	X
2015-28	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	6/30/15	$36,000	X
2015-30	99008 WO99	INV 946: Permeable Pavements in Cold Climates: State-of-the-Art and Cold Climate Case Studies	University of Minnesota	John Gulliver	Mark Maloney	6/12/13	8/31/15	$177,414	X
2015-42	98110	Cost-Effective Base Type and Thickness for Long-Life Concrete Pavements	Minnesota State University, Mankato	W. James Wilde	Terrence Beaudry	6/24/11	11/30/15	$199,000	X
2015-48	MPR-6(021)	Pavement Surface Characteristics Concrete New Construction (MnROAD Study)	MnDOT Office of Materials and Road Research	Bernard Izevbekhai	Benjamin Worel	12/19/08	1/31/16	$150,000	
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	
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	
N/A	03772	MPR-4(006): Implementation of Geosynthetics During Pavement Design and Construction	Itasca Consulting Group, Inc.	D. Lee Petersen	John Siekmeier	12/11/13	7/31/15	$54,019	
N/A	06774	INV 924: YouTube Video: Rumble Strips	Stonebrooke Engineering Inc.	Marc Briese	Sulmaan Khan	10/24/14	10/31/15	$16,890	
N/A	89260 WO2	Cost-Effective Base Type and Thickness for Long-Life Concrete Pavements	University of Illinois	Erol Tutumluer	Terrence Beaudry	6/20/11	5/31/15	$136,000	
N/A	89264 WO5	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	
N/A	98383 Task 7	Impacts of Heavy Loads—Effects of Implements of Husbandry (IOH)	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	$45,465	
N/A	99008 WO6	INV 869: TERRA Board Support, FY2012-2014	University of Minnesota	Stephanie Malinoff	Mark Maloney	10/18/11	11/30/14	$90,000	
N/A	99008 WO34	TPF-5(215): TERRA Membership Pooled Funds, FY2012-2014	University of Minnesota	Stephanie Malinoff	Christopher Kufner	1/12/12	9/30/14	$75,000	
N/A	99008 WO72	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	
N/A	99008 WO159	Verification of Pavement Structure and Deflection Effects on Vehicle Fuel Economy and GHG Emissions	University of Minnesota	Lev Khazanovich	Bernard Izevbekhai	3/13/14	10/31/14	$19,987	
N/A	99008 WO169	TPF-5(215), INV 869: FY2015 TERRA Pooled Fund Support—Transportation Engineering and Road Research Alliance	University of Minnesota–CTS	Stephanie Malinoff	Christopher Kufner	9/15/14	6/30/15	$50,000	
N/A	1000556	Statewide Assessment of Performance of Whitetopping in Minnesota	American Engineering Testing, Inc.	Dave Rettner	Thomas Burnham	5/6/15	2/28/16	$71,999	
N/A	LAB947	MPR-4(012), INV947: 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	7/31/15	$15,000	

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Materials & Construction [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
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	
N/A	04439	MPR-4(002): GEMINI Geotechnical Mobile Application Gateway—Phase II	Minnesota State University, Mankato	Allan Hart	Derrick Dasenbrock	8/28/13	3/31/16	$35,000	
N/A	05309	MPR-4(028): Evaluation of Recycled Aggregates Test Section Performance	Minnesota State University, Mankato	Farhad Reza	Bernard Izevbekhai	8/1/14	7/31/16	$88,040	
N/A	06557	INV 975: Prevention of Stripping Under Chip Seals	American Engineering Testing, Inc.	Dave Rettner	Klayton Eckles, Tony Kutzke	9/9/14	1/31/16	$100,000	
N/A	06775	INV 924: YouTube Video: Roundabout Myths	Stonebrooke Engineering Inc.	Marc Briese	Sulmaan Khan	10/17/14	10/31/15	$19,875	
N/A	07427	INV 987: Optimizing Cold in Place Recycling (CIR) Applications Through Fracture Energy Performance Testing	Braun Intertec Corporation	Daniel Wegman	Lyndon Robjent	2/26/15	6/30/16	$65,790	
N/A	98383 Task 8	High-Rap Asphalt Mixtures on Minnesota County Roads RIC	SRF Consulting Group, Inc.	Michael Marti	Michael Flaagan	6/20/11	6/19/16	$30,343	
N/A	99004 WO11	INV 968: Modernizing Road Construction Plans and Documentation	Iowa State University	Yelda Turkan	Lyndon Robjent	6/5/14	10/31/16	$146,022	
N/A	99004 WO13	INV 970: Alternative Design Methods to Renew Lightly Traveled Roads	Iowa State University	Charles Jahren	Tim Stahl	6/23/14	4/30/16	$64,130	
N/A	99004 WO14	INV 971: Optimal RAP Content for Minnesota Gravel Roads	Iowa State University	Charles Jahren	Joel Ulring	6/23/14	10/31/16	$92,538	
N/A	99008 WO50	INV 935: Design Considerations for Embankment Protection During Road Overtopping Events	University of Minnesota	Jeff Marr	John Anderson	9/28/12	8/31/17	$194,794	
N/A	99008 WO51	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	11/30/15	$40,000	
N/A	99008 WO83	TPF-5(269): Development of an Improved Design Procedure for Unbonded Concrete Overlays	University of Minnesota	Lev Khazanovich	Thomas Burnham	6/17/13	5/31/17	$423,295	
N/A	99008 WO90	INV 948: Flagger Operations: Investigating Their Effectiveness in Capturing Driver Attention	University of Minnesota	Kathleen Harder	Robert Vasek	5/16/13	8/31/16	$270,351	
N/A	99008 WO100	MPR-4(011): Impact of Lower Asphalt Binder for Coarse HMA Mixes	University of Minnesota Duluth	Eshan Dave	Gerard Geib	6/26/13	1/31/16	$89,910	
N/A	99008 WO101	INV 947: Investigation of Performance Requirements of Full Depth Reclamation Stabilization	University of Minnesota	Jialiang Le	Shongtao Dai	6/14/13	1/31/16	$95,823	
N/A	99008 WO105	Concrete Strength Required to Open to Traffic	University of Minnesota	Lev Khazanovich	Bernard Izevbekhai	6/21/13	12/31/15	$109,998	
N/A	99008 WO147	INV 967: Full Depth Reclamation for Urban and Suburban Street Application	University of Minnesota	Mihai Marasteanu	Mark Maloney	6/6/14	8/31/16	$93,969	
N/A	99008 WO156	MPR-4(034): PCC Pavement Thickness Variation Versus Observed Pavement Distress	University of Minnesota	Lev Khazanovich	Thomas Burnham	7/29/14	10/31/16	$110,000	
N/A	99008 WO162	Disk-Shaped Compact Tension Specifications Development for Asphalt Pavement	University of Minnesota Duluth	Chelsea Hanson	Shongtao Dai	7/8/14	4/30/17	$186,982	
N/A	99008 WO165	Research on Composite Pile Behavior and Development of a Rock Strength Database	University of Minnesota	Joseph Labuz	Derrick Dasenbrock	10/30/14	6/30/18	$198,000	
N/A	99008 WO183	MnPAVE—Rigid 2.0	University of Minnesota	Lev Khazanovich	Timothy Andersen	6/3/15	8/31/17	$78,000	
N/A	99008 WO186	A Mechanistic Design Approach for Novel Graphene Nanoplatelet (GNP) Reinforced Asphalt Pavements for Low-Temperature Applications	University of Minnesota	Jialiang Le	Shongtao Dai	5/14/15	8/31/17	$125,963	
N/A	99008 WO189	Comparing Properties of Water-Absorbing/Filtering Media for Bioslope/Bioswale Design	University of Minnesota Duluth	Kurt Johnson	Dwayne Stenlund	4/22/15	8/31/17	$178,051	
N/A	99008 WO196	INV 985: Life-Cycle Cost Analysis Tool for Minnesota Pavements	University of Minnesota	Derek Tompkins	John Brunkhorst	5/21/15	8/31/17	$109,279	

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Materials & Construction [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
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	$55,000	
N/A	LAB986	INV 986: Performance Monitoring of Olmsted CR 117/104 and Aggregate Base Material Update	MnDOT Office of Materials and Road Research	Matthew Lebens	Kaye Bieniek	6/25/15	6/30/20	$44,000	
N/A	LAB987	INV 987: Optimizing Cold in Place Recycling (CIR) Applications Through Fracture Energy Performance Testing	MnDOT Office of Materials and Road Research	Shongtao Dai	Lyndon Robjent	2/25/15	4/30/16	$21,700	
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	

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 2015 Commitment	Total MN Commitment
TPF-5(134)	PCC Surface Characteristics—Rehabilitation (MnROAD Study)	Bernard Izevbekhai	MN	2010	3	$275,000	$0	$75,000
TPF-5(215)	TERRA Pooled Fund Support—Transportation Engineering and Road Research Alliance	Maureen Jensen	MN	2015	6	$257,500	$5,000	$83,750
SPR-3(074)	Pavement Research and Technology	Roger Olson	WA	2012	4	$355,000	$0	$325,000
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(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	$60,000
TPF-5(225)	Validation and Implementation of Hot-Poured Crack Sealant	James McGraw	VA	2012	9	$900,000	$0	$100,000
TPF-5(267)	Accelerated Performance Testing for the NCAT Pavement Test Track	Ben Worel	AL	2018	18	$26,519,706	$330,000	$990,000
TPF-5(297)	Improving Specifications to Resist Frost Damage in Modern Concrete Mixtures	Maria Masten	OK	2016	17	$695,000	$17,500	$52,500
TPF-5(313)	Technology Transfer Concrete Consortium	Maria Masten	IA	2019	31	$1,988,000	$12,000	$60,000
MPR-2(011)	AASHTO Transportation System Preservation Technical Services Program (TSP-2)—Materials and Road Research	Nancy Daubenberger	N/A	2015	N/A	N/A	$20,000	$20,000

Multimodal

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
2013RIC02	98383	Complete Streets Implementation Resource Guide for Minnesota Local Agencies	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	$50,991	X
2014-42	99008 WO38	Rural and Small Urban Multimodal Alternatives for Minnesota	University of Minnesota	Carol Becker	Kathryn Caskey	9/11/12	11/30/14	$30,000	X
2015-09	99008 WO14	Evaluating Performance of Twin Cities Transitways and Their Interaction with Traffic on Neighboring Major Roads	University of Minnesota	John Hourdos	Jim Henricksen	9/27/11	3/31/15	$100,000	X

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Multimodal [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
2015-17	99542	MPR-1(007): Commercial Weight Enforcement Innovation	SRF Consulting Group, Inc.	Scott Petersen	Benjamin Timerson	9/22/11	4/30/15	$96,613	X
2015-23	99008 WO95	Travel Behavior Over Time	University of Minnesota	David Levinson	Jason Junge, Deanna Belden, Jonathan Ehrlich	4/16/13	11/30/15	$261,635	X
2015-29	99008 WO35	MPR-1(012): Statewide Cycloplan: Bicycle Planning Tool and Participatory GIS	University of Minnesota	Loren Terveen	Jasna Hadzic	2/6/12	6/30/15	$162,500	X
2015-33	04301	MPR-2(016): Bicycle and Pedestrian Data Collection Manual—Draft	SRF Consulting Group, Inc.	Erik Minge	Lisa Austin	7/19/13	7/31/15	$50,067	X
2015-34	99008 WO111	MPR-2(016): The Minnesota Bicycle and Pedestrian Counting Initiative: Implementation Study	University of Minnesota	Greg Lindsey	Lisa Austin	4/10/13	8/31/15	$60,000	X
2015-49	99008 WO88	Exploring Strategies for Promoting Modal Shifts to Transitways	University of Minnesota	Jason Cao	Lynne Bly	5/23/13	12/31/15	$112,066	
N/A	99008 WO103	MPR-2(015): Complete Streets Planning and Design Guidance Document	University of Minnesota	Jim Grothaus	Scott Bradley	1/14/13	10/31/15	$220,000	
N/A	99008 WO144	INV 964: Traffic Impacts of Bicycle Facilities	HHH Institute of Public Affairs	Greg Lindsey	James Rosenow	7/3/14	8/31/16	$138,914	
N/A	99008 WO149	Assessing the Economic Impact and Health Benefits of Bicycling in Minnesota	University of Minnesota	Xinyi Qian	Sara Dunlap	7/24/14	2/28/17	$132,285	
N/A	99008 WO177	MPR-4(038): Institutionalizing the Use of State and Local Pedestrian and Bicycle Traffic Counts in Transportation Planning, Performance Measurement and Investment Guidance	University of Minnesota	Greg Lindsey	Lisa Austin	12/15/14	8/31/16	$120,000	
N/A	99008 WO187	Exploring Walking Tolerance of Transitway Users	University of Minnesota	Jason Cao	Lynne Bly	4/8/15	2/28/17	$93,124	

Multimodal Pooled Fund Studies

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2015 Commitment	Total MN Commitment
TPF-5(156)	Mississippi Valley Freight Coalition	David Christianson	WI	2013	10	$1,475,000	$0	$175,000
TPF-5(293)	Mid-America Freight Coalition—Phase II	John Tompkins	WI	2015	10	$550,000	$25,000	$50,000

Policy & Planning

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
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	X
2015-02	99008 WO104	Transportation Planning to Support Economic Development: An Exploratory Study of Competitive Industry Clusters and Transportation in Minnesota	University of Minnesota	Lee Munnich	Jason Junge	4/22/13	2/28/15	$148,033	X
2015-10	99004 WO3	Risk-Based Engineers Estimate	Iowa State University	Jennifer Shane	Mary Lacho	1/11/13	3/31/15	$147,797	X
2015-12	99008 WO92	INV 951: Transportation Investment and Economic Development in Minnesota Counties	University of Minnesota	Zhirong Jerry Zhao	Ted Schoenecker	8/5/13	4/30/15	$93,468	X

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Policy & Planning [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
2015-18	99008 WO133	MPR-4(005): Implementation of Traffic Data Quality Verification for Weigh-in-Motion Sites	University of Minnesota	Chen-Fu Liao	Benjamin Timerson	10/9/13	9/30/15	$95,000	X
N/A	99004 WO12	INV 969: Barriers to Right-of-Way Acquisition and Recommendations for Change	Iowa State University	H. David Jeong	Patrick Lambert	6/23/14	2/28/16	$133,895	
N/A	99006 WO9	Refining Return on Investment Methodology/Tools for MnPASS	Montana State University, Western Transportation Institute	Na Cui	Bradley Larsen, John Wilson	4/8/15	1/31/17	$147,675	
N/A	99006 WO10	Mobility Mindset of Millennials in Small Urban and Rural Areas	Montana State University, Western Transportation Institute	Natalie Villwock-Witte	Karla Rains	3/26/15	11/30/16	$20,000	
N/A	99008 WO143	INV 963: Stakeholder Attitudes, Knowledge and Engagement in Local Road Systems Planning Decision-Making	University of Minnesota	Guillermo Narvaez	Bruce Hasbargen	7/15/14	9/15/16	$139,793	
N/A	99008 WO182	Weigh-in-Motion Sensor and Controller Operation and Performance Comparison	University of Minnesota	Diwakar Gupta	Benjamin Timerson	4/13/15	2/28/18	$80,000	
N/A	99008 WO192	INV 982: The Transportation Futures Project: Planning for Technology Change	University of Minnesota	David Levinson	Kenneth Buckeye	4/20/15	2/28/16	$100,000	
N/A	99008 WO202	Enhanced Capabilities of BullReporter and BullConverter	University of Minnesota Duluth	Taek Kwon	Benjamin Timerson	5/14/15	2/28/18	$42,351	
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	1/31/16	$698,876	

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 2015 Commitment	Total MN Commitment
TPF-5(289)	Mileage Based User Fee (MBUF)	Cory Johnson	MN	2016	3	$145,000	$20,000	$40,000
TPF-5(315)	National Accessibility Evaluation	Deanna Belden	MN	2019	10	$1,252,500	$40,000	$160,000
TPF-5(198)	Urban Mobility Study	Paul Czech	TX	2014	12	$1,780,000	$30,000	$355,000
TPF-5(292)	Assessing Roadway Traffic Count Duration and Frequency Impacts on AADT Estimations	Gene Hicks	FHWA	2015	8	$308,000	$6,000	$12,000
TPF-5(303)	2015 Performance Measures Technical Transfer Conference and Asset Management Peer Exchange	Deanna Belden	IA	2015	25	$324,000	$12,000	$12,000
TPF-5(314)	Statewide Geospatial Transportation Development of the All Road Network of Linear Referenced Data (ARNOLD)	Peter Morey	FHWA	2016	10	$2,000,000	$50,000	$100,000

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Traffic & Safety

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
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	X
2014-20	02889	INV 943: Traffic Sign Life Expectancy	CH2M Hill	Howard Preston	Tim Plath	2/7/13	7/31/14	$37,722	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	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	X
2014RIC20	05171	INV 645: Minnesota Best Practices for Traffic Sign Maintenance/Management Handbook—Updated	CH2M Hill	Howard Preston	Mark Vizecky	1/9/14	10/31/14	$49,891	X
2014RIC51A, 2014RIC51B	98383	Traffic Data Collection Processes Study	SRF Consulting Group, Inc.	Michael Marti	Darin Mielke, Jeff Hulsether	6/20/11	6/19/16	$174,785	X
2015-03	03683	INV 955: Portable Weigh-in-Motion System Evaluation	SRF Consulting Group, Inc.	Erik Minge	Benjamin Timerson	4/25/13	1/31/15	$80,565	X
2015-05	99008 W039	MPR-2(001) INV 931: Lighting Levels for Isolated Intersections: Leading to Safety Improvements	University of Minnesota	Christopher Edwards	Susan Zarling	7/31/12	2/28/15	$94,170	X
2015-07	04797	INV 958: Rumble Strip Noise Evaluation	Wenck Associates Inc.	Edward Terhaar	Mark Vizecky	12/23/13	1/31/15	$65,998	X
2015-11	99008 W0115	INV 953: Development of a Sensor Platform for Roadway Mapping: Part B—Mapping the Road Fog Lines	University of Minnesota	Max Donath	Richard West	7/8/13	5/31/15	$86,489	X
2015-13	99006 W01	MPR-2(008): Measuring Minnesota's Traffic Safety Culture	Montana State University, Western Transportation Institute	Nicholas Ward	Katie Fleming	6/22/12	6/30/15	$235,217	X
2015-22	99008 W043	MPR-2(003): MnPASS Modeling and Pricing Algorithm Enhancement	University of Minnesota	John Hourdos	Brian Kary	6/29/12	8/31/15	$150,000	X
2015-26	99008 W03	Development of Active Traffic Management Strategies for Minnesota Freeway Corridors	University of Minnesota Duluth	Eil Kwon	Brian Kary	9/23/11	7/31/15	$98,700	X
2015-27	99008 W063	INV 937: Development of Guidelines for Permitted Left-Turn Phasing Using Flashing Yellow Arrows	University of Minnesota	Gary Davis	Susan Zarling	8/9/12	8/31/15	$102,000	X
2015-32	99008 W089	Develop Annual Arterial Congestion Report	University of Minnesota	Henry Liu	Steven Misgen	8/14/13	8/31/15	$100,000	X
2015-35	99008 W0110	INV 928: Human Factors of Vehicle-Based Lane Departure Warning Systems	University of Minnesota	Alice Ton	Victor Lund	4/16/13	8/31/15	$100,000	X
2015-37	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	8/31/15	$144,000	X
2015-43	1000115	I-94 and I-35 Alternate Route Signing Final Report: District 3 St. Cloud, District 6 Rochester	SRF Consulting Group, Inc.	Adrian Potter	John Griffith	3/6/15	6/30/15	$95,060	X
2015RIC04	98383	Younger Drivers Toolkit for Local Agencies	SRF Consulting Group, Inc.	Michael Marti	Mitchell Rasmussen	6/20/11	6/19/16	$75,323	
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	
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	
N/A	06484	TPF-5(190): North/West Passage Program Management	Athey Creek Consultants, LLC	Dean Deeter	Cory Johnson	8/11/14	8/31/15	$99,968	

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Traffic & Safety [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
N/A	07458	Safety Rest Area Advance Signing Enhancements—Phase II: Design	Isthmus Engineering Inc.	Amber Nord	Robert Williams	1/27/15	10/31/15	$5,257	
N/A	99008 WO126	INV645: HCM Unsignalized Crosswalk LOS Training	University of Minnesota	Jim Grothaus	Tony Winiecki	6/21/13	7/31/14	$20,000	
N/A	99008 WO180	FY2015 MnDOT/Roadway Safety Institute Partnership	University of Minnesota–CTS	Max Donath	None	1/12/15	6/30/15	$135,000	
N/A	1000021	TPF-5(190): North/West Passage Regional Operations Forum	University of Maryland	Kathleen Frankle	Cory Johnson	4/27/15	7/31/15	$48,594	
2014-44	03715	Implementation of Automatic Flagger Assistance Devices for MnDOT Flagger Operations	Wenck Associates Inc.	Edward Terhaar	Thomas Dumont	5/17/13	1/31/16	$84,753	X
N/A	00755	MPR-1(015): Implementation of LED Roadway Lighting	Short Elliott Hendrickson, Inc.	Ken Taillon	Susan Zarling	5/2/13	10/31/15	$36,033	
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	
N/A	89256 WO10	Rumble Stripe: Evaluation of Retroreflectivity and Installation Practices	University of Iowa	Neal Hawkins	Kenneth Johnson	5/26/11	11/30/15	$65,000	
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	$161,601	
N/A	98383 Task 9	Temporary Traffic Control for Low-Volume Roads	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	$47,792	
N/A	98383 Task 10	Implementation of ITS Technology for Local Agencies	SRF Consulting Group, Inc.	Michael Marti	Mitchell Rasmussen	6/20/11	6/19/16	$65,144	
N/A	98383 Task 13	Guidelines for Flashing Yellow Arrows for Protected/Permissive Use	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	$9,888	
N/A	99004 WO2	Evaluation of Pavement Markings on Challenging Surfaces	Iowa State University	Neal Hawkins	Michelle Moser	6/13/12	10/31/15	$130,373	
N/A	99004 WO15	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	
N/A	99004 WO16	Evaluation of Intersection Conflict Warning Systems	Iowa State University	Shauna Hallmark	Cory Johnson	6/30/14	5/31/17	$196,862	
N/A	99008 WO32	MPR-1(010): Vehicle-Mounted Robotic Roadway Message and Symbol Painter—2009-2011 Efforts	University of Minnesota Duluth	Ryan Rosandich	Jeremy Gjovik	12/8/11	11/30/15	$95,000	
N/A	99008 WO87	Development of a Guideline for Work Zone Diversion Rate and Capacity Reduction	University of Minnesota Duluth	Eil Kwon	Tiffany Dagon	5/23/13	3/31/16	$107,000	
N/A	99008 WO91	MPR-4(022): Sensing for HOV/HOT Lanes Enforcement	University of Minnesota	Nikos Papanikolopoulos	Brian Kary	3/11/14	8/31/16	$97,200	
N/A	99008 WO98	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	
N/A	99008 WO112	Optimizing Automatic Traffic Recorders Network in Minnesota	University of Minnesota	Diwakar Gupta	Mark Flinner	4/10/13	5/31/16	$154,724	
N/A	99008 WO117	INV 955: Enhanced Capabilities for the Portable Weigh-in-Motion Systems	University of Minnesota Duluth	Taek Kwon	Benjamin Timerson	4/22/13	5/31/16	$75,667	
N/A	99008 WO124	MPR-4(003): Implementation of a Low-Cost Weigh-in-Motion System	University of Minnesota Duluth	Taek Kwon	Benjamin Timerson	6/14/13	5/31/16	$35,309	
N/A	99008 WO142	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	
N/A	99008 WO145	INV 973: Examination of Driver Performance and Distraction with In-Vehicle Signing	University of Minnesota	Nichole Morris	Victor Lund	9/19/14	7/31/16	$29,365	
N/A	99008 WO150	MPR-4(029): DSRC-Based Warning System for Workers Safety	University of Minnesota Duluth	Imram Hayee	Susan Lorentz	3/28/14	8/31/16	$129,431	
N/A	99008 WO151	MPR-4(030): Safety Study of I-35W Improvements Done Under UPA Project	University of Minnesota	Gary Davis	Brian Kary	6/5/14	4/30/17	$105,000	
N/A	99008 WO152	Examining the Impact of Automated Speed Enforcement in Work Zones on Driver Attention	University of Minnesota	Nichole Morris	Kenneth Johnson	6/6/14	1/31/16	$218,660	

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Traffic & Safety [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
N/A	99008 WO153	MPR-4(032): Framework and Guidelines for the Development of a Twin Cities Meso-DTA Model	University of Minnesota	John Hourdos	Jim Henricksen	7/14/14	5/31/16	$110,318	
N/A	99008 WO154	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	
N/A	99008 WO155	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	
N/A	99008 WO185	Effectiveness of Using Bluetooth Low-Energy Technology to Trigger In-Vehicle Messages at Work Zones	University of Minnesota	Chen-Fu Liao	Kenneth Johnson	4/24/15	2/28/17	$99,650	
N/A	99008 WO188	Development of Travel Time Reliability Measurement System	University of Minnesota Duluth	Eil Kwon	Jesse Larson	5/28/15	5/31/17	$176,000	
N/A	99008 WO197	INV 977: Innovative Technology Workshop on 3D LIDAR	University of Minnesota	Brian Davis	Kaye Bieniek	1/13/15	8/31/16	$92,140	
N/A	1000477	Highway Rail Grade Crossing Project Selection	CH2M Hill	Howard Preston	Maureen Jensen	4/22/15	11/30/15	$99,224	
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	

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 2015 Commitment	Total MN Commitment
TPF-5(190)	North/West Passage—Phase III	Cory Johnson	MN	2017	8	$925,000	$25,000	$175,000
TPF-5(262)	Evaluation of Guide Sign Fonts	Cory Johnson	MN	2012	6	$195,000	$0	$30,000
TPF-5(319)	Transportation Management Center Pooled Fund Study	Brian Kary	FHWA	2017	33	$470,000	$25,000	$75,000
TPF-5(029)	High Occupancy Vehicle (HOV)/Managed Use Lane (MUL)	Brian Kary	FHWA	2016	12	$2,220,000	$25,000	$225,000
TPF-5(065)	Traffic Control Devices (TCD) Consortium	Janelle Anderson	FHWA	2015	23	$2,955,000	$15,000	$75,000
TPF-5(114)	Roadside Safety Research Program	Michael Elle	WA	2014	11	$2,516,000	$50,000	$550,000
TPF-5(193)	Midwest States Pooled Fund Crash Test Program	Michael Elle	NE	2015	17	$5,733,353	$66,000	$455,500
TPF-5(231)	ITS Pooled Fund Program (ENTERPRISE)	Cory Johnson	MI	2015	12	$1,970,000	$30,000	$150,000
TPF-5(258)	Traffic Signal Systems Operations and Management	Steven Misgen	IN	2014	11	$575,000	$0	$75,000
TPF-5(319)	Transportation Management Center Pooled Fund Study	Brian Kary	FHWA	2015	19	$470,000	$25,000	$25,000
TPF-5(329)	First International Roadside Safety Conference and Peer Exchange	Mike Elle	NE	2015	6	$35,000	$5,000	$5,000

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Administrative

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
N/A	00147	MPR-6(019): Technology Transfer Material Development Marketing Plan	Strategic Toolbox, LLC	Janese Evans	Nicholas Busse	3/27/12	1/31/15	$203,075	
N/A	04014	MPR-3(001): RS Transportation Research Synthesis	CTC & Associates LLC	Patrick Casey	Linda Taylor	7/1/13	6/30/15	$60,469	
N/A	04015	MPR-3(001): Technology Transfer Material Development RS Outreach	CTC & Associates LLC	Patrick Casey	Nicholas Busse	6/12/13	7/31/14	$99,880	
N/A	04509	INV 916: FY2014-2015 LRRB Transportation Research Syntheses	CTC & Associates LLC	Patrick Casey	Linda Taylor	9/4/13	6/30/15	$24,969	
N/A	04510	INV 916: FY2014 LRRB Technology Transfer Material Development	CTC & Associates LLC	Patrick Casey	Nicholas Busse	9/4/13	6/30/15	$74,967	
N/A	05472	MnDOT Library Historical Materials	Lydia Lucas	Lydia Lucas	None	3/11/14	12/31/14	$4,935	
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	
N/A	05889	MPR-4(026): MnDOT 2014 Peer Exchange Services	CTC & Associates LLC	Patrick Casey	Benjamin Worel	4/28/14	9/30/14	$8,160	
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	$48,985	
N/A	06038	MPR-3(001): FY2015 RS&L Technical Transfer Material Development: Technical Summaries and Project Evaluation Forms	CTC & Associates LLC	Patrick Casey	Linda Taylor	6/26/14	6/30/15	$91,200	
N/A	94376	MPR-6(003): Business Assessment of RSS Processes and Tools	Trissential	Steve Beise	Hafiz Munir	11/4/09	11/3/14	$172,080	
N/A	98383	Research Implementation Committee FY2012-2016 Implementation of Research Findings	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	$28,792	
N/A	98383	Scoping Project	SRF Consulting Group, Inc.	Michael Marti	Rich Sanders	6/20/11	6/19/16	$5,332	
N/A	99008 WO127	INV 999: FY2014 RSS Report Publication Services	University of Minnesota	Arlene Mathison	Nicholas Busse	6/21/13	8/31/14	$38,324	
N/A	99008 WO158	INV 936: FY2014 and FY2015 LRRB Focus Groups	University of Minnesota–CTS	Jim Grothaus	Lyndon Robjent	2/14/14	8/31/15	$16,996	
N/A	99008 WO163	Roadway Safety Institute Partnership	University of Minnesota	Max Donath	Deborah Sinclair	6/17/14	9/15/14	$9,678	
N/A	99008 WO166	INV 999: FY2015 RSS Report Publication Services	University of Minnesota–CTS	Arlene Mathison	Shannon Fiecke	9/9/14	11/30/15	$45,831	
N/A	1000492	Library Photo Indexing System Workflow Audit	Central Coast Solutions	Ed Klemz	None	4/22/15	6/30/15	$4,800	
2014RIC51A, 2014RIC51B	98383	INV 645: Traffic Data Collection Improvements	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	$969,412	
N/A	04617	INV 927: LRRB Outreach Website	HNTB Corporation	John Przybylski	Shannon Fiecke	11/1/13	8/31/16	$64,355	
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	12/31/15	$96,316	
N/A	06163	MPR-3(001): FY2015 Technical Transfer Material Development: RS&L At-A-Glance, Accelerator Newsletter, Other T2 Materials	CTC & Associates LLC	Patrick Casey	Shannon Fiecke	6/17/14	3/31/16	$77,336	
N/A	07025	INV 916: FY2015 LRRB Technical Transfer Materials Development	CTC & Associates LLC	Patrick Casey	Shannon Fiecke	11/10/14	10/31/15	$99,900	

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Administrative [cont.]

Report Number	Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost	TS
N/A	89261 WO263	Librarian Services 2011-2016	University of Minnesota–CTS	Arlene Mathison	Sheila Hatchell	3/21/11	3/20/16	$211,541	
N/A	90393	MPR-1(017): ARTS Technical Support and Maintenance Services	Tech-Pro, Inc.	Ryan Anderson	Hafiz Munir	5/4/15	5/3/16	$33,950	
N/A	98383	LRRB Outreach and Marketing (2014-2016)	SRF Consulting Group, Inc.	Michael Marti	Jeff Hulsether	6/20/11	6/19/16	$55,450	
N/A	99008 WO173	INV 998: FY2015 Operational Research Program for Local Transportation Groups (OPERA)	University of Minnesota–CTS	Jim Grothaus	Mitchell Rasmussen	11/14/14	9/30/15	$90,000	
N/A	1000008	MnDOT Library Historical Materials	Lydia Lucas	Lydia Lucas	Sheila Hatchell	3/13/15	1/31/16	$4,900	
N/A	1000611	MPR-3(001): Technical Summaries and Project Evaluation Forms	CTC & Associates LLC	Patrick Casey	Shannon Fiecke	5/13/15	8/31/16	$97,185	

Administrative Pooled Fund Study

Study Number	Title	Technical Liaison	Lead State or Agency	Current MN Commitment End Date	Number of Participating Agencies	Total Cost	MN 2015 Commitment	Total MN Commitment
TPF-5(237)	Transportation Library Connectivity and Development	None	MO	2015	26	$1,325,878	$20,000	$100,000

Dedicated Programs

Contract Number	Title	Contractor	Investigator	Technical Liaison	Start Date	End Date	Total Cost
99008 WO119	FY2014-2015 CTS Operations	University of Minnesota	Laurie McGinnis	Linda Taylor	6/27/13	6/30/15	$3,230,400
99008 WO123	0001(213): FY2014 Local Technical Assistance Program (LTAP)	University of Minnesota–CTS	Jim Grothaus	Julie Skallman	6/21/13	8/31/14	$450,500
99008 WO161	0001(214), INV 668: FY2015 Local Technical Assistance Program (LTAP)	University of Minnesota–CTS	Jim Grothaus	Mitchell Rasmussen	7/11/14	8/31/15	$450,500

Federal Program Support

Study Number	Title	MN 2015 Commitment
TPF-5(415)	National Cooperative Highway Research Program (NCHRP)	$567,093
TPF-5(321)	Transportation Research Board (TRB)	$121,301

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Contact information available at mndot.gov/research.

Transportation Research Innovation Group (TRIG)

TRIG is the governing board for the State Research Program and meets quarterly to recommend research investments.

Voting Members—Specialty Offices & Districts

Lynn Clarkowski
Environmental Stewardship

Glenn Engstrom
Materials & Road Research

Beverly Farraher
Bridges & Structures

Mark Gieseke
Transportation System Management

Steven Lund
Maintenance

Mark Nelson
Statewide Multimodal Planning

Susan Porter
Traffic, Safety & Technology

Michael Schadauer
Transit

Thomas Styrbicki
Project Management & Technical Support

Linda Taylor
Research Services & Library

Daniel Anderson
District 3

Steve Misgen
Metro District

Jeffrey Vlaminck
District 6

Greg Ous
District 7

Nonvoting Members

James Close
Technology Investment Management

Kris Riesenberg
FHWA

Pooled Fund Research

The Clear Roads research program, administered by MnDOT, brings together transportation professionals and researchers from around the country to drive innovation in the field of winter maintenance. One of the latest products from this 32-member pooled fund is a user's manual on corrosion prevention. Learn more at **clearroads.org**.

MnDOT was recently awarded a $25 million shared Transportation Investment Generating Economic Recovery (TIGER) grant to establish a Regional Truck Parking Information and Management System. The seven-state grant builds on the success of a notification system that MnDOT piloted along Interstate 94 to relay parking availability to commercial truck drivers. Find past research about Minnesota commercial truck parking at mndot.gov/research.

Research Results at Your Fingertips

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