



RESEARCH

Mn/DOT Research Services Section At-A-Glance

This publication provides a guide to the Minnesota Department of Transportation's current research activities. It includes a graphical account of progress on all active research projects; a list of reports and research implementation products completed between October, 2006 and the end of December, 2007; a list of multi-state pooled funds that Mn/DOT participates in; and the following list of strategic topics for research, developed at our Strategic Visioning Seminar in June, 2007.

MN/DOT 2008 STRATEGIC DIRECTION FOR RESEARCH

1. Provide a multi-modal infrastructure

- Freight
- Truck size and weight
- Commerce direction vs. transportation industry needs
- Effect of de-icing chemicals on vehicles and electronic components: railroad crossings/freight

2. Organization transformation

- Impact of changing demographics/work force
- Change of customer expectations/needs: innovative contracting/quality assurance
- Growing needs and shrinking resources: cost-effective strategies to continue delivering program
- Mn/DOT organization structure options: regionalization, centralization

3. Innovative project delivery

- Change of culture: increased use of technology, quality, innovation across the organization
- Civil rights: e-bidding
- Remote sensing possibilities
- Accelerated construction: A + B contracting, lane rental, staged construction vs. road closure, rapid bridge or pavement construction methods, prefabricated construction
- Accelerated project development: speed up planning time, increase public input (aesthetics), define Mn/DOT role
- Synthesis of technological advances in data mining/information sharing

4. Traffic safety: low-cost options to zero deaths

- Small, local, low-cost measures
- Speed as a component of bare lane
- Bridge anti-icing systems as part of the design process
- Civil rights ADA Title II

5. Infrastructure preservation

- Improve management, lower lifecycle costs
- Cost-effective pavement preservation best practices
- Optimization of recycled materials
- Cumulative bridge overloading
- Preservation of modal infrastructure: transit systems, bike trails infrastructure, pavement, bridges, and roadside assets
- Cheap pavements that don't crack

6. Responding to customers and stakeholders

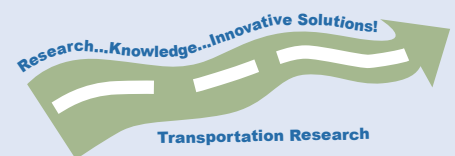
- Building public confidence: ensuring agency credibility
- Finance and revenue innovation: corridor agency, private funding, GCA California model, innovative funding sources (private sector, European bonds, etc.), "mileage-based" concept
- Impacts of higher gas prices: Decrease in miles traveled, need for new funding sources
- Transportation infrastructure and economic development
- Improved legislative transportation decision processes

7. Green roads

- Green roads: both construction and maintenance, environmental stewardship, implementing technologies to reduce global warming
- Water management and roadsides: preserve critical roadside/water management infrastructure
- Energy efficiency: best practices for low-cost roadway lighting, hybrid vehicles in the snow fighting fleet, self-supplied/solar energy for road/sign/in-pavement lighting
- Clean water practices: NPDES Phase II permit requirements, long-term maintenance and impacts of environmental Best Management Practices
- Environmental forecasting management systems

8. Congestion management

- Benefit/cost evaluation, low-cost fixes vs. major projects
- A + B contracting
- Design-build
- Demand management: Optimize current road system, congestion pricing
- Optimizing cost-effectiveness of shoulders



Completed Research Reports and Implementation Products, October 2006 through December 2007

Report Number	Project Title	Funding Source	Cost	Performing Organization	Investigator	Tech Liaison	Admin Liaison
2006-31	State Aid Concrete Pavement Rehabilitation Best Practices Manual 2006	LRRB	\$8,000	University of Minnesota	Jim Grothaus	Michael Sheehan	Clark Moe
2006-32	Review of North Carolina's Rural Intersection Crashes: Application of Methodology for Identifying Intersections for Intersection Decision Support	SP&R	\$420,628	University of Minnesota	Max Donath	Jim Klessig	Kirsten Seeber
2006-33	Review of Michigan's Rural Intersection Crashes: Application of Methodology for Identifying Intersections for Intersection Decision Support	SP&R	—	University of Minnesota	Max Donath	Jim Klessig	Kirsten Seeber
2006-34	Minnesota Seal Coat Handbook 2006	LRRB/RIC	\$18,848	SRF Consulting Group, Inc.	Michael Marti	Mark Maloney	Clark Moe
2006-35	Safety Impacts of Street Lighting At Isolated Rural Intersections - Part II	LRRB	\$51,180	Iowa State University	Shauna Hallmark	Roger Gustafson	Dan Warzala
2006-36	Beyond "Business as Usual:" Ensuring the Network We Want Is the Network We Get	SRP	\$88,000	University of Minnesota	David Levinson	Rabinder Bains	Clark Moe
2006-37	Application of Precast Decks and Other Elements to Bridge Structures	SRP	\$55,500	University of Minnesota	Cathy French	Keith Molnau	Jim Klessig
2006-38	Minnesota Value Pricing Outreach and Education	SRP	\$1,237,500	University of Minnesota	Lee Minnich	Kenneth Buckeye	Jim Klessig
2006-39A	Mileage-Based User Fee Demonstration Project: Pay-As-You-Drive Experimental Findings 2006	SRP	\$950,651	Cambridge Systematics, Inc.	Jeffrey Buxbaum	Kenneth Buckeye	Jim Klessig
2006-39B	Mileage-Based User Fee Demonstration Project: Market Assessment Survey Results 2006	SRP	—	Cambridge Systematics, Inc.	Jeffrey Buxbaum	Kenneth Buckeye	Jim Klessig
2006-39C	Mileage-Based User Fee Demonstration Project: Potential Public Policy Implications of Pay-As-You-Drive Leasing and Insurance Products	SRP	—	Cambridge Systematics, Inc.	Jeffrey Buxbaum	Kenneth Buckeye	Jim Klessig
2006-40	Load Rating of Composite Steel Curved I-Girder Bridges Through Load Testing with Heavy Trucks	SRP	\$219,823	University of Minnesota	Jerome Hajjar	Edward Lutgen	Cory Johnson
2006-41	Developing ITS to Serve Diverse Populations	ITS	\$714,650	University of Minnesota	Frank Douma	Adeel Lari, Ken Buckeye	Jim Klessig
2006-42	Stopping Behavior at Real-World Stop-Controlled Intersections With and Without In-Lane Rumble Strips	LRRB	\$149,659	University of Minnesota	Kathleen Harder	Brad Wentz	Dan Warzala
2006-43	Water Quality Performance of Dry Detention Ponds with Under-Drains	SRP	\$114,000	University of Minnesota	John Gulliver	Scott Morgan	Alan Rindels
2006-44	Capacity Expansion in the Twin Cities: The Roads-Transit Balance	SRP	\$50,100	University of Minnesota	Gary Davis	Linda Zemotel	Jim Klessig
2007-01	Use of Ground Penetrating Radar to Evaluate Minnesota Roads	LRRB	\$75,000	Mn/DOT Office of Materials	Marc Loken	John Stieben	Jim Klessig
2007-02	Reasons for Recent Large Increases in Commute Durations	SRP	\$50,000	University of Minnesota	Gary Barnes	Deanna Belden	Dan Warzala
2007-03	Safety Effects of Left-Turn Phasing Schemes at High-Speed Intersections	SRP	\$65,000	University of Minnesota	Gary Davis	Jerry Kotzenmacher	Dan Warzala
2007-04	The Safety of Pedestrian and Bicycle Travel in Minnesota: Inventory, Analysis and Prospectus	SRP	\$69,973	University of Minnesota	Kevin Krizek	Darryl Anderson	Shirlee Sherkow
2007-05	Resilient Modulus and Strength of Base Course With Recycled Bituminous Material	LRRB	\$94,000	University of Minnesota	Joseph Labuz	Shongtao Dai	Dan Warzala
2007-06	MnROAD Lessons Learned	SRP	\$57,500	University of Minnesota	Lev Khazanovich	Ben Worel	Clark Moe
2007-07	Increasing the Recycling of Manufactured Shingle Scrap in Minnesota: A Market Development Project	SRP	\$25,000	Dan Krivit and Associates	Dan Krivit	Roger Olson	Jim Klessig

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Completed Research Reports and Implementation Products, cont.

Report Number	Project Title	Funding Source	Cost	Performing Organization	Investigator	Tech Liaison	Admin Liaison
2007-08	Strength and Stability of Prestressed Concrete Through-Girder Pedestrian Bridges Subjected to Vehicular Impact	SRP	\$160,000	University of Minnesota	Arturo Schultz	Jihshya Lin	Nelson Cruz
2007-09	Implementation of an International Roughness Index for Mn/DOT Pavement Construction and Rehabilitation	SRP	\$24,416	Mankato State University	James Wilde	Bernard Izevbekhai	Clark Moe
2007-10	Field Validation of Intelligent Compaction Monitoring Technology for Unbound Materials	SRP	\$125,000	Iowa State University	David White	John Siekmeier	Clark Moe
2007-11	Pavement Design Using Unsaturated Soil Technology	SRP	\$195,500	University of Minnesota	Satish Gupta	Shongtao Dai	Dan Warzala
2007-12	Demonstration of Ash Utilization in Low Volume Roads	LRRB	\$212,995	University of Wisconsin - Madison	Tuncer Edil	John Siekmeier	Alan Rindels
2007-13	Employment of the Traffic Management Lab for the Evaluation and Improvement of Stratified Metering Algorithm - Phase III	SRP	\$75,000	University of Minnesota	Panos Michalopoulos	Todd Kramasz	Dan Warzala
2007-14	Determining Economic Strategies for Repair and Replacement of Low Slump Overlays of Bridge Decks	SRP	\$137,500	University of Minnesota	Arturo Schultz	Paul Kivisto	Ann McLellan
2007-15	Commuter Bicyclist Behavior and Facility Disruption	SRP	\$69,618	University of Minnesota	Kevin Krizek	Darryl Anderson	Ann McLellan
2007-16	A Synthesis of Research and Resources on Local Road and Bridge Funding for Local Public Works Officials	LRRB	\$22,104	Bonestroo, Rosene, Anderlink & Associates, inc.	Matthew Shands	Alan Rindels	Cory Johnson
2007-18	Performance of Ultra-Thin Bounded Wearing Course (UTBWC) Surface Treatment on US-169 Princeton, Minnesota	SRP	N/A	Mn/DOT Office of Materials	Malaki Rurankika, Jerry Geib	N/A	N/A
2007-19	Precast Concrete Pavement Panels on Minnesota Trunk Highway 62 - First Year Performance Report	SRP	N/A	Mn/DOT Office of Materials	Thomas Burnham	N/A	N/A
2007-20	North/West Passage ITS Integrated Corridor Strategic Plan	SP&R	\$161,734	Short Elliott Hendrickson, Inc.	Mark Dierling	Ginny Crowson	Jim Klessig
2007-21	Evaluating the Effectiveness of the Minnesota Speed Management Project	SRP	\$78,000	University of Minnesota	Kathleen Harder	John Bloomfield	Ann McLellan
2007-21A	Appendices to Evaluating the Effectiveness of the Minnesota Speed Management	SRP	—	University of Minnesota	Kathleen Harder	John Bloomfield	Ann McLellan
2007-22	Incorporation of Fatigue Detail Classification of Steel Bridges into the Minnesota Department of Transportation Database	SRP	\$55,000	University of Minnesota	Arturo Schultz	Jim Pierce	Alan Rindels
2007-23	Adaptation of the 2002 Guide for the Design of Minnesota Low-Volume Portland Cement Concrete Pavements	LRRB	\$89,900	University of Minnesota	Lev Khazanovich	Thomas Burnham	Alan Rindels
2007-24	Access to Destinations: Refining Methods for Calculating Non-Auto Travel Times	SRP	\$44,750	University of Minnesota	Kevin Krizek	Darryl Anderson	Sue Lodahl
2007-25	Stiffness of Aggregate Base Containing Recycled Asphalt Pavement	SRP	\$55,000	University of Minnesota	Joseph Labuz	Shongtao Dai	Dan Warzala
2007-26	Local Road Funding History in Minnesota	SRP	\$64,000	University of Minnesota	Thomas Stinson	Julie Skallman	Dan Warzala
2007-27	Review of Iowa's Rural Intersection Crashes: Application of Methodology for Identifying Intersections for Intersection Decision Support	SP&R	\$420,628	University of Minnesota	Max Donath	Ginny Crowson	Kirsten Seeber
2007-28	Review of Georgia's Rural Intersection Crashes: Application of Methodology for Identifying Intersections for Intersection Decision Support	SP&R	—	University of Minnesota	Max Donath	Ginny Crowson	Kirsten Seeber
2007-29	Evaluation of Minnesota's Operation NightCAP	SRP	\$86,130	University of Minnesota	Janet Creaser	Dave Engstrom	Debra Fick
2007-30	Intersection Decision Support Surveillance System: Design, Performance, and Initial Driver Behavior Quantization	ITS	\$2,151,847	University of Minnesota	Max Donath	Ray Starr	Sue Kahle
2007-31	A Simulator-based Evaluation of Smart Infrastructure Concepts for Intersection Decision Support at Rural Thru-STOP Intersections	ITS	—	University of Minnesota	Max Donath	Ray Starr	Sue Kahle
2007-32	Benefit-Cost Analysis for Intersection Decision Support	ITS	—	University of Minnesota	Max Donath	Ray Starr	Sue Kahle

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Completed Research Reports and Implementation Products, cont.

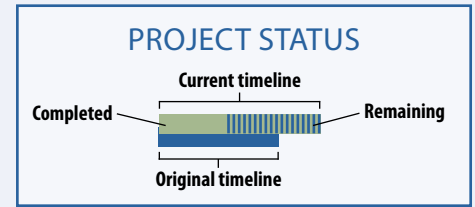
Report Number	Project Title	Funding Source	Cost	Performing Organization	Investigator	Tech Liaison	Admin Liaison
2007-33	Intersection Decision Support: An Overview	ITS	—	University of Minnesota	Max Donath	Ray Starr	Sue Kahle
2007-34	Implementation of Ground Penetrating Radar	SRP	\$27,000	University of Minnesota	Joseph Labuz	Shongtao Dai	Clark Moe
2007-35	Access to Destinations: Travel Time Estimation on Arterials	SRP	\$60,000	University of Minnesota	Gary Davis	Gene Hicks	Sue Lodahl
2007-36	Cone Penetration Testing in Pavement Design	LRRB	\$55,000	University of Minnesota	Joseph Labuz	Dave Shanahan, Jeff Gebhard	Dan Warzala
2007-37	Automated Winter Road Maintenance Using Road Surface Condition Measurements	SRP	\$140,000	University of Minnesota	Rajesh Rajamani	Linda Taylor, Farideh Amiri	Dan Warzala
2007-38	Biological Control of Canada Thistle in Wetland Prairie Restoration	SRP	\$110,000	University of Minnesota	Donald Wyse	Paul Walvatne	Shirlee Sherkow
2007-39	Populating Minnesota's Transportation Research Site Database	LRRB	\$8,000	David Johnson	Timothy Clyne	Lou Tasa	Alan Rindels
2007-40	Freeway Network Traffic Detection and Monitoring Incidents	ITS	\$49,000	University of Minnesota	Nikos Papanikolopoulos	Jerry Kotzenmacher	Nelson Cruz
2007-41	Rural and Urban Safety Cultures: Human-Centered Interventions Toward Zero Deaths in Rural Minnesota	LRRB	\$152,552	University of Minnesota	Nicholas Ward	Mike Wagner	Shirlee Sherkow
2007-42	Management Practices for Weed Control in Roadway Rights-of-Way	SRP	\$144,809	University of Minnesota	Donald Wyse	Tina Markeson	Shirlee Sherkow
2007-43	Investigation of Low Temperature Cracking in Asphalt Pavements	SP&R	\$665,000	University of Minnesota	Mihai Marasteanu	Ben Worel	Kirsten Seeber
2007-44	Using Archived ITS Data to Improve Transit Performance and Management	SRP	\$30,800	University of Minnesota	David Levinson	Sarah Lenz	Nelson Cruz
2007-45	Development of a PC-Based Eight-Channel WIM System	SRP	\$86,386	University of Minnesota - Duluth	Taek Kwon	Matthew Oman	Alan Rindels
2007-46	Performance Assessment of Underground Stormwater Treatment Devices	LRRB	\$131,100	University of Minnesota	John Gulliver	Sue McDermott	Alan Rindels
2007-47	Shear Capacity of Prestressed Concrete Beams	SRP	\$124,550	University of Minnesota	Carol Shield	Gao Yihong	Nelson Cruz
2007-48	Driving Performance During 511 Information Retrieval: Cell Phone 2	ITS	\$90,989	University of Minnesota	Nicholas Ward	Todd Kramasz	Nelson Cruz
2007-49	Development of a Computer program for Selecting Peak Dynamic Sensor Responses from Pavement Testing	SRP	\$48,345	Mn/DOT Office of Materials	Thomas Burnham	Seshan Srirangarajan	Nelson Cruz
2007-50	Mileage-Based User Fee Public Opinion Study: Summary Report Phase I (Qualitative)	SRP	—	The Dieringer Research Group, Inc.	Robert Fichtner	Kenneth Buckeye	N/A
2007-51	Employment of the Traffic Management Lab for the Evaluation and Improvement of Stratified Metering Algorithm - Phase IV	SRP	\$55,368	University of Minnesota	Panos Michalopoulos	Brian Kary	Dan Warzala
DVD TE176	How About a Roundabout? The Minnesota Experience - DVD/Brochure Program	LRRB/RIC	\$75,000	SRF Consulting Group, Inc.	Michael Marti	Don Theisen	Clark Moe
N/A	Training Module for Designing and Constructing with Geosynthetics Program	LRRB/RIC	\$23,923	SRF Consulting Group, Inc./Braun	Michael Marti	Lou Tasa	Clark Moe
TRS0701	Transportation Research Synthesis - Transverse Rumble Strips	LRRB	\$2,500	Darlene Gorrill	Darlene Gorrill	Alan Rindels	Sandy McCully

ABOUT THE MN/DOT RESEARCH SERVICES SECTION

Mn/DOT's Research Services Section (RSS) manages the department's research program. RSS staff identify research needs and coordinate research projects for Mn/DOT and the Local Road Research Board, and coordinate Mn/DOT's involvement in state and national cooperative research programs such as the National Cooperative Highway Research Program and the Transportation Pooled Fund program. Mn/DOT conducts research across a broad range of topics, including materials, construction, operations, maintenance, ITS, freight and the environment. The department contracts with Minnesota and out-of-state universities and consultants to carry out this research.

Go to www.research.dot.state.mn.us to download research reports and products.

Active Research Projects in 2007



Project #	Funding Source	Performing Organization	Investigator	Total Cost	Amount Paid	Tech Liaison	Admin Liaison	Project Title	2004	2005	2006	2007	2008	2009	2010	2010			
2001-019P	LRRB	Mn/DOT - Office of Materials and Road Research	Timothy Clyne	\$36,800	\$16,000	Lou Tasa	Clark Moe	INV 768: Geosynthetics in Roadway Design									60%		
2003-039R	SRP	University of Minnesota	Carol Shield	\$264,000	\$58,000	Erik Wolhowe	Dan Warzala	Self Compacting Concrete (SCC) for Prestressed Bridge Girders									57%		
2003-068P	LRRB	Mn/DOT - Office of Materials and Road Research	Shongtao Dai	\$51,000	\$17,850	Brad Wentz	Dan Warzala	INV 808: Pavement Rehabilitation Selection									43%		
2003-069P	LRRB	Mn/DOT - Office of Materials and Road Research	Timothy Clyne	\$20,000	\$8,000	Lou Tasa	Alan Rindels	INV 809-1: Research Tracking for Local Roads									83%		
2003-075R	SRP/LRRB	University of Minnesota	Lev Khazanovich	\$292,385	\$169,385	Maureen Jensen	Dan Warzala	INV 815: Calibration of the 2002 AASHTO Pavement Design Guide for MN PCC/HMA Pavements									55%		
2004-007R	SRP/LRRB	University of Minnesota	Mihai Marasteanu	\$206,000	\$20,600	Thomas Wood	Dan Warzala	INV 817-1: Determination of Optimum Time for Application of Surface Treatments to Asphalt Concrete Products									14%		
2004-012R	SRP	University of Minnesota	Peter Graham	\$103,375	\$23,181	Kenneth Graeve	Dan Warzala	Improved Methodologies for the Inoculation of Prairie Legumes in Roadside/Revegetation Settings									40%		
2004-015R	SRP	University of Minnesota	Jonathan Chaplin	\$178,524	\$72,880	Dwayne Stenlund	Cory Johnson	Compaction Remediation for Construction Sites									78%		
2004-022R	SRP	University of Minnesota	Bojan Guzina	\$96,000	\$30,720	Shongtao Dai	Dan Warzala	Pavement Evaluation Using Ground Penetrating Radar									25%		
2004-027R	ITS	University of Minnesota	Gary Davis	\$55,000	\$0	Dave Engstrom	Dan Warzala	Cross-Median Crashes: Identification and Countermeasures									45%		
2004-028R	SRP	University of Minnesota	Panos Michalopoulos	\$65,139	\$55,368	Brian Kary	Dan Warzala	Employment of Traffic Management Laboratory for the Evaluation & Improvement of Stratified Metering Algorithm: Phase IV									50%		
2004-037R	LRRB	University of Minnesota	Joseph Labuz	\$51,000	\$7,650	Brad Wentz	Dan Warzala	INV 808: Pavement Rehabilitation Selection									43%		
2004-050P	LRRB	Mn/DOT - Office of Materials and Road Research	Shongtao Dai	\$21,000	\$19,000	Dan Sauve	Clark Moe	INV 645: 2005/2006 Task 8 Ground Penetrating Radar Capability Brochure/Demo									71%		
2005-002P	LRRB	Mn/DOT - Office of Materials and Road Research	Thomas Wood	\$72,802	\$12,240	Tom Struve	Shirlee Sherkow	INV 822: Crack Sealing and Filling Performance									20%		
2005-003R	LRRB	University of Minnesota	Gary Johnson	\$30,450	\$4,262	Daniel Gullickson	Debra Fick	INV 823: The Road to A Thoughtful Street Tree Master Plan									29%		
2005-004R	LRRB	University of Minnesota	Andrew Drescher	\$110,000	\$45,100	Tim Andersen	Clark Moe	INV 824: Dev. of Improved Proof Rolling Methods for Roadway Embankment Construction									63%		
2005-005P	LRRB	Mn/DOT - Office of Materials and Road Research	Shongtao Dai	\$40,000	\$8,000	Michael Sheehan	Alan Rindels	INV 825: Perf. Monitoring of Olmsted CR 117/104 and Aggregate Base Material Update									29%		
2005-006P	LRRB	Mn/DOT - Office of Materials and Road Research	Eddie Johnson	\$30,789	\$5,770	John Brunkhorst	Clark Moe	INV 826: Appropriate Use of RAP									20%		
2005-007P	LRRB	Mn/DOT - Office of Materials and Road Research	Eddie Johnson	\$25,126	\$7,505	Gary Bruggeman	Dan Warzala	INV 827: Investigation of Winter Pavement Tenting									67%		

Project #	Funding Source	Performing Organization	Investigator	Total Cost	Amount Paid	Tech Liaison	Admin Liaison	Project Title	2004	2005	2006	2007	2008	2009	2010	2010
2005-008P	LRRB	Mn/DOT - Office of Materials and Road Research	Bruce Chadbourn	\$56,000	\$26,000	Jerry Geib	Dan Warzala	INV 828: Local Road Material Properties and Calibration of MnPAVE					33%			
2005-010R	LRRB	University of Minnesota	John Nieber	\$186,735	\$1,204	Stephen Schnieder	Nelson Cruz	INV 830: Evaluating Roadway Subsurface Drainage Practices					13%			
2005-011P	LRRB	Mn/DOT - Office of Environmental Services	Robert Edstrom	\$100,000	\$57,871	Ronald Mortensen	Dan Warzala	INV 773-3: Shredded Tires Used for Road Bases; Part 2, Environmental Services Analysis of samples					50%			
2005-014R	SRP	University of Minnesota	Cathy French	\$190,477	\$128,360	Keith Molnau	Alan Rindels	Monitoring and Analysis of a Full Depth Precast Concrete Bridge Deck System					50%			
2005-015R	SRP	North Dakota State University	Magdy Abdelrahman	\$88,244	\$35,000	Jay Hietpas	Nelson Cruz	Best Value Based on Performance					57%			
2005-016R	SRP	University of Minnesota	Roger Becker	\$88,000	\$12,000	Donald Wyse, Tina Markeson	Dan Warzala	Canada Thistle Seed Movement					58%			
2005-017R	SRP	Mankato State University	Brock McMillan	\$99,132	\$48,445	Kenneth Graeve	Dan Warzala	Wildlife Value of Reed Canary Grass Infested Wetlands in MN					75%			
2005-018R	SRP	North Dakota State University	Amiy Varma	\$69,000	\$48,800	Robert Gale	Nelson Cruz	Development of Measurement Sources for Freight Performance Indicators					86%			
2005-020R	SRP/LRRB	North Dakota State University	Amiy Varma	\$71,000	\$52,100	Brian Gage	Nelson Cruz	INV 832: Volume Warrants for Right Turn Lanes					57%			
2005-022R	SRP/LRRB	North Dakota State University	Magdy Abdelrahman	\$101,621	\$38,757	Milton Alm, Tim Andersen	Nelson Cruz	INV 831: Investigation of Stripping in MN Class7 (RAP) and Full Depth Reclamation Base Material					38%			
2005-025R	SRP	University of Minnesota	Diwakar Gupta	\$55,000	\$35,750	Sarah Lenz	Alan Rindels	Improving Capacity Planning for Demand-Responsive Para transit Services					80%			
2005-028C	OIM/LRRB	Castle Rock Consultants, Inc.	James Davies	\$78,770	\$53,644	Sue Lodahl	Nelson Cruz	LRRB-RSS Web Site Hosting and maintenance 2006 - 2007					75%			
2005-029R	SRP/LRRB	University of Minnesota	Jonathan Chaplin	\$146,000	\$98,000	DeWayne Jones	Sue Lodahl	Development of a Trash Harvester for MNDot Phase 2					71%			
2005-031R	SRP/LRRB	University of Minnesota	Bruce Wilson	\$89,000	\$30,000	Brett Troyer	Dan Warzala	INV 833: Design Tool for Controlling Runoff and Sediment from Highway Construction					29%			
2005-034C	LRRB	SRF Consulting Group, Inc.	Michael Marti	\$46,035	\$31,804	Marcus Hall	Sandy McCully	INV 999: LRRB Outreach/Communication Activities					63%			
2005-038R	LRRB	Mankato State University	James Wilde	\$60,080	\$44,919	Alan Forsberg	Debra Fick	INV 836: Design Procedures for Bituminous Stabilized Road Surfaces for Low Volume Roads					63%			
2005-042P	LRRB	Mn/DOT - Office of Materials and Road Research	Thomas Wood	\$20,000	\$6,000	Thomas Wood	Dan Warzala	INV 817-2: Determination of Optimum Time for the Application of Surface Treatments to Asphalt Concrete Products					29%			
2005-060R	SRP/Traffic	University of Minnesota	Kathleen Harder	\$88,000	\$15,500	Todd Kramasz	Cory Johnson	The Effectiveness & Safety of Traffic and Non-Traffic Related Msgs Presented on Changeable Msg Signs (8805-113)					25%			
2006-002R	LRRB	Iowa State University	Shauna Hallmark	\$39,444	\$8,443	Paul Stine	Clark Moe	INV 839: Warrants for Roundabouts					29%			
2006-003P	LRRB	Mn/DOT - Office of Materials and Road Research	Shongtao Dai	\$56,200	\$8,000	Brian Noetzelman	Dan Warzala	INV 840-1: Performance of PG 52-34 Oil on Local Roads					13%			
2006-004P	LRRB	Mn/DOT - Office of Materials and Road Research	Thomas Wood	\$43,257	\$12,625	Dennis Luebbe	Dan Warzala	INV 841: Long-term Maintenance Effects on Hot Mix Asphalt Pavements Caused by Center Line, Edge Line, Shoulders, and Stop Bar Rumble Strips					33%			
2006-005P	LRRB	Mn/DOT - Office of Materials and Road Research	Eddie Johnson	\$75,000	\$19,889	John P McDonald	Alan Rindels	INV 842: Best Practices for Dust Control on Aggregate Surfaced Roads					50%			

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2006-006R	LRRB	Mankato State University	James Wilde	\$31,040	\$4,497	John Brunkhorst	Clark Moe	INV 843-1: Predicting the Occurrence of Bumps in Overlays								17%
2006-007R	LRRB	Mankato State University	James Wilde	\$54,094	\$17,679	Tim Stahl	Clark Moe	INV 844: Update of Vehicle Classification for County Road Pavement Design								20%
2006-009R	LRRB	University of Minnesota	Satish Gupta	\$135,000	\$6,750	Nancy Whiting	Nelson Cruz	INV 846: Hydraulic, Mechanical, and Leaching Characteristics of Recycled Materials								13%
2006-010R	LRRB	University of Minnesota	Paul Bloom	\$170,055	\$0	Fred Salsbury	Clark Moe	INV 847: Use of Fly Ash for Reconstruction of Bituminous Road								19%
2006-011R	LRRB	University of Minnesota	Thomas Smith	\$118,908	\$0	Deb Bloom	Dan Warzala	INV 848: Warning Efficacy of Active Passive Warnings for Unsignalized Intersection and Mid-Block Pedestrian Cross-Walks								40%
2006-012R	LRRB	University of Minnesota	Stefan Heinz	\$108,355	\$18,671	Wayne Sandberg	Debra Fick	INV 849: Study of Environmental Effects of De-icing Salt on Water Quality in Minnesota								14%
2006-013R	LRRB	University of Minnesota	Kimberly Hill	\$105,000	\$52,500	Lee Amundson	Nelson Cruz	INV 850: Mechanistic Modeling of Dynamic Cone Penetrometer Test								33%
2006-014R	LRRB	University of Minnesota	Lev Khazan-ovich	\$126,042	\$16,008	Jerry Geib	Clark Moe	INV 851: Allowable Axle Loads on Pavements								14%
2006-015R	LRRB	University of Minnesota - Duluth	Brian Brashaw	\$52,980	\$7,947	Chris Morris	Debra Fick	INV 853: Development of Flexural Vibration Inspection Equipmt, Techniques to Assess Structural Health of Rural Bridge Sys II								60%
2006-016C	LRRB	University of Minnesota	John Nieber	\$71,638	\$14,202	Dan Sauve	Alan Rindels	INV 852: Subsurface Drainage Manual for Pavements in Minnesota								56%
2006-020C	LRRB	University of Minnesota	Jim Grothaus	\$70,000	\$42,500	Marcus Hall	Clark Moe	INV 998: 2006 Operational Research Program for Local Transportation Groups. OPERA								56%
2006-021R	SRP	University of Minnesota	Panos Michalopoulos	\$35,000	\$14,000	Robert Byers, Brian Isaacson	Sue Lodahl	Access to Destinations: Twin Cities Metro-Wide Traffic Micro-Simulation: Feasibility Investigation								13%
2006-027R	SRP	University of Minnesota - Duluth	Kurt Johnson	\$109,562	\$38,346	Sarma Straumanis	Debra Fick	Wetland Mitigation in Abandoned Gravel Pits								56%
2006-029R	SRP/LRRB	University of Minnesota	Arturo Schultz	\$75,000	\$0	Gary D Peterson	Nelson Cruz	INV 858: Crack and Concrete Deck Sealant Performance								20%
2006-030R	SRP	University of Minnesota	Cathy French	\$114,390	\$0	Lowell Johnson	Shirlee Sherkow	Discrepancies in Shear Strength of Prestressed Beams with Different Specifications								20%
2006-031R	SRP	University of Wisconsin - Madison	Jose Pincheria	\$59,288	\$52,942	Paul Rowekamp	Debra Fick	Corrosion Protection Performance of Epoxy-Coated Reinforcing Bars								57%
2006-032R	SRP	Mankato State University	Brock McMillan	\$79,937	\$13,247	Jason Alcott	Debra Fick	The Utility of Wildlife Crossings in MN								22%
2006-033C	SRP	University of Minnesota	Stacey Stark	\$54,046	\$44,858	Elizabeth Hobbs	Nelson Cruz	Methodology to Incorporate Historic / Prehistoric Surface Hydrology layer in MN/Model Using Existing GIS Data								50%
2006-034C	SRP	University of Minnesota	Lari Adeel	\$50,000	\$0	Rabinder Bains	Dan Warzala	Growth of Property Values Near Major Transportation Corridors								0%
2006-036R	SRP	St. Cloud State University	Timothy Vogt	\$25,502	\$3,440	Farideh Amiri	Sue Lodahl	LED Lighting for Snow Plows and Related Maintenance and Construction Vehicles								33%
2006-037C	SRP/LRRB	North Dakota State University	Magdy Abdelrahman	\$92,624	\$10,950	Gary Bruggeman	Dan Warzala	INV 855: A Property-Based Specification for Coarse Aggregate in Pavement Applications								14%
2006-039R	SRP/LRRB	University of Minnesota	Mihai Marasteanu	\$77,905	\$0	John Garrity	Dan Warzala	INV 856: Investigation of In-Place Asphalt Film Thickness and Performance of Minnesota Hot Mix Asphalt Mixtures								17%

Project #	Funding Source	Performing Organization	Investigator	Total Cost	Amount Paid	Tech Liaison	Admin Liaison	Project Title	2004	2005	2006	2007	2008	2009	2010	2010
2006-040R	SRP/LRRB	University of Minnesota	Lev Khazanovich	\$79,493	\$7,949	Ben Worel	Cory Johnson	INV 857: A Report & Analysis of Effects of Seasonal & Climatic Changes on Ride Quality Observed in MnROAD Low & Volume RD				20%				
2006-042R	SRP/LRRB	University of Minnesota	Craig Shankwitz	\$45,400	\$0	Glen Ellis	Shirlee Sherkow	INV 845: Analysis of Highway Design and Geometric Effects on Crashes - Part II					0%			
2006-043R	SRP	St. Cloud State University	Kenneth Miller	\$27,568	\$0	Dave Engstrom	Dan Warzala	Evaluation of the Effects of Centerline Rumble Strips on Non-Conventional Vehicles				75%				
2006-044R	SRP	University of Minnesota	Henry Liu	\$70,000	\$0	Sue Zarling	Shirlee Sherkow	Development of a Platoon-Priority Control Strategy with/out Advance Warning Flasher for Isolated High-Speed Intersection					25%			
2006-045R	SRP	University of Minnesota	Frank Douma	\$50,000	\$0	Darryl Anderson	Dan Warzala	Impact of Bicycle Facilities on Commute Mode Share				12%				
2006-047R	SRP	University of Minnesota - Duluth	Taek Kwon	\$91,388	\$0	Matthew Oman	Nelson Cruz	Development of Data Warehouse and Application for Continuous Vehicle Class and weigh-in-Motion (WIM) Data					0%			
2006-048C	SRP	North Dakota State University	Amiy Varma	\$75,000	\$12,112	Gene Hicks	Nelson Cruz	Feasibility of Statewide Travel Demand Model				21%				
2006-049R	SRP	University of Minnesota	Kevin Krizek	\$55,508	\$24,979	Darryl Anderson	Sue Lodahl	Access to Destinations: How Close is Close Enough? Estimate Accurate Distance Decay Functions for Different Purposed & Multiple Models				43%				
2006-050R	SRP	University of Minnesota	David Levinson	\$49,584	\$32,230	Rabinder Bains	Sue Lodahl	Access to Destinations: Monitoring Land Use Activity Changes in Twin Cities Metropolitan Region				57%				
2006-051R	SRP	University of Minnesota	Kevin Krizek	\$38,003	\$34,203	Rabinder Bains, Robb Luckow	Sue Lodahl	Access to Destinations: Parcel Level Land Data Acquisition & Analysis for Measuring NonAuto Accessibility				67%				
2006-052C	SRP/LLRB	University of Minnesota	Gina Baas	\$106,823	\$89,020	Sue Lodahl	Sandy McCully	RSS Research Report Management				83%				
2006-054R	SRP	University of Minnesota	Robert Johns	\$64,700	\$4,000	Chuck Siggerud	Sue Lodahl	History Of Minnesota Highways				50%				
2006-060R	LRRB	University of Minnesota	Henry Liu	\$70,000	\$28,000	Eric Drager	Shirlee Sherkow	INV 862: Real Time Arterial Performance				43%				
2006-069C	FHWA	University of Minnesota	Robert Johns	\$50,000	\$32,450	Thomas Sorel	Sue Lodahl	Collaborative Research Approach for Managing Conflict and Consensus Building Pilot Project				57%				
2006-072R	SRP	University of Minnesota	Henry Liu	\$43,966	\$0	Sue Sheehan	Ann McLellan	Evaluation of Cell Phone Traffic Data				83%				
2006-076C	SRP	Campbell Scientific	Jim Bilskie	\$35,000	\$0	John Siekmeier	Bruce Holdhusen	IMP2006 #1: Portable Field Moisture Technology				17%				
2006-077C	SRP	Bonestroo, Rosne, Anderlik & Assoc., Inc.	Matthew Shands	\$29,979	\$24,436	Mary Jackson	Alan Rindels	IMP2006 #2: Promoting the Bicycle and Pedestrian Toolbox				1%				
2006-078C	SRP	American Engineering Testing, Inc.	Dave Rettner	\$35,000	\$0	Nancy Whiting	Bruce Holdhusen	IMP2006 #4: Implementation of the Hydraulic Fracture Test Specification for Coarse Aggregate				10%				
2006-079C	SRP/LLRB	Mankato State University	John Krenz	\$52,500	\$2,500	Paul Walvatne	Debra Fick	IMP2006 #6: Best Practices: Managing and Enhancing Roadside Vegetation for Desirable Wildlife				29%				
2006-080C	SP&R	Pro-West & Associates, Inc.	Annette Theroux	\$134,567	\$15,427	Mark Maloney, Rick Morey	Clark Moe	MPR-6(013) Cadastral And Right of Way Data Exchange - Pilot Project				50%				
2006-093R	LRRB	University of Minnesota	Jim Grothaus	\$440,500	\$146,833	Julie Skallman	Clark Moe	INV 668: CY07 Program LTAP Program FED PROJ 8807(157)				33%				

Project #	Funding Source	Performing Organization	Investigator	Total Cost	Amount Paid	Tech Liaison	Admin Liaison	Project Title	2004	2005	2006	2007	2008	2009	2010	2010
2006-096P	LRRB	Mn/DOT - Office of Materials and Road Research	John Siekmeier	\$105,000	\$0	Larry Berkland	Shirlee Sherkow	INV 860: Compaction Specifications for Unbound Materials					33%			
2006-107C	LRRB	SRF Consulting Group, Inc.	Michael Marti	\$275,000	\$25,862	Mark Maloney	Clark Moe	INV 645: RIC Implementation of Research Findings (2007-2008) - Main Consultant					29%			
2006-108R	SRP	University of Minnesota	Michael Manser	\$119,000	\$25,000	Gordy Pehrson	Shirlee Sherkow	Generational Perspectives on Teen and Older Drivers on Traffic Safety in Rural and Urban Communities					40%			
2006-109C	SRP	CTC & Associates LLC	Patrick Casey	\$23,520	\$11,560	Sandy McCully	Sandy McCully	Minnesota TRB Guide and RSS Calendar for 2007 & 2008					90%			
2006-110C	SRP	The Improve Group	Leah Goldstein Moses	\$44,843	\$37,466	Dan Warzala	Dan Warzala	Transportation Research Manual: Scope of Services					85%			
2006-111R	SRP	University of Minnesota	Gary Davis	\$150,000	\$0	Gene Hicks	Sue Lodahl	Access to Destinations: Arterial Data Acquisition and Network-Wide Travel Time Estimation (Phase II)					0%			
2006-112C	LRRB	University of Minnesota	Jim Grothaus	\$70,000	\$0	Marcus Hall	Clark Moe	INV 998: (CY 2007) Operational Research Program					30%			
2006-114C	SRP	University of Minnesota - Duluth	Eil Kwon	\$58,500	\$0	Cory Johnson	Clark Moe	Research Management System Phase I - Develop Conceptual Design					17%			
2006-115C	SRP	Mickey Ruiz	Mickey Ruiz	\$66,750	\$39,379	N/A	Clark Moe	Close Out Evaluation					60%			
2006-116C	SRP	David Johnson	Dave Johnson	\$80,000	\$26,923	Sue Lodahl	Sue Lodahl	Strategic Program Development - Phase I					50%			
2006-128C	SP&R	CTC & Associates LLC	Patrick Casey	\$25,199	\$24,004	Sue Lodahl	Carole Wiese	MPR-6(002) Financial Peer Exchange					86%			
2007-001R	LRRB	University of Minnesota	John Nieber	\$50,663	\$0	Alan Forsberg, Susan Miller	Alan Rindels	INV 870: Cost Analysis of Alternative Culvert Installation Practices in MN					0%			
2007-002R	SRP/LRRB	University of Minnesota	Diwakar Gupta	\$94,876	\$0	Jay Hietpas, Tom Ravn	Alan Rindels	INV 871: Statistical Methods for Materials Testing					10%			
2007-004P	LRRB	Mn/DOT - Office of Materials and Road Research	Roger Olson	\$20,000	\$0	Mark Maloney	Sandy McCully	INV 873: Use of Foamed Asphalt Base Reclamation on Local Roads					20%			
2007-005R	SRP/LRRB	University of Minnesota	Omid Mohseni	\$111,000	\$0	Sue McDermott	Alan Rindels	INV 874: Assessment of the Underground Stormwater Management Devices Under High Flow Conditions					50%			
2007-006R	LRRB	University of Minnesota	John Gulliver	\$55,000	\$0	Rhonda Rae	Shirlee Sherkow	INV 875: Estimating the Size Distribution of Suspended Sediments in Minnesota Stormwater- Phase I The Methodology					0%			
2007-009P	LRRB	Mn/DOT - Office of Materials and Road Research	Matthew Lebens	\$82,400	\$0	Larry Matsumoto	Bruce Holdhusen	INV 878: Porous Asphalt Pavement Performance in Cold Regions. Match for MPR-6(024) Permeable Pavement Performance					0%			
2007-018C	SRP	Darlene Gorrill	Darlene Gorrill	\$17,912	\$5,400	Sue Lodahl	Sandy McCully	INV 881: LRRB Annual Program/Technical Research Synthesis Reports					50%			
2007-022P	LRRB	Mn/DOT - Office of Materials and Road Research	Bernard Izevbekhai	\$50,000	\$0	Mark Maloney	Bruce Holdhusen	INV 879: Pervious Concrete Pavement in Mn/ROAD Low Volume Road					0%			
2007-023R	SRP	University of Minnesota	Robert Johns	\$184,000	\$0	Darryl Anderson, Robb Luckow	Sue Lodahl	Access to Destinations: Application of Accessibility Measures for Non-Auto Travel Modes					0%			
2007-024C	LRRB	David Johnson	Dave Johnson	\$40,000	\$39,423	Lou Tasa	Alan Rindels	INV 809-2: Research Tracking for Local Roads					100%			
2007-029R	SRP	University of Minnesota	David Levinson	\$72,636	\$0	Rabinder Bains, Ron Lambert	Alan Rindels	Economic Impact of Upgrading Roads					0%			

Project #	Funding Source	Performing Organization	Investigator	Total Cost	Amount Paid	Tech Liaison	Admin Liaison	Project Title	2004	2005	2006	2007	2008	2009	2010	2010
2007-030R	SRP	Mankato State University	Aaron Budge	\$153,900	\$0	Gary Person	Nelson Cruz	Development of a Resistance Factor for Mn/DOT's Pile Driving formula and Study of Pile Setup Evaluation Methods					17%			
2007-031R	SRP	Iowa State University	Neal Hawkins	\$56,802	\$10,500	Jon Jackels	Alan Rindels	Developing and Implementing Enhanced Pavement Marking Management Tools for Mn/DOT					40%			
2007-033R	SRP	University of Minnesota	David Levinson	\$51,832	\$0	Gene Hicks	Shirlee Sherkow	Post-Construction Evaluation of Forecast Accuracy					0%			
2007-034R	SRP	University of Minnesota	John Nieber	\$158,872	\$0	Kenneth Graeve	Shirlee Sherkow	Wetlands: Role of Buffers in Upland Infiltration, Nutrient Absorption, and Wildlife Habitat					0%			
2007-035R	SRP	University of Minnesota	Nikos Papanikolopoulos	\$76,000	\$0	Darryl Anderson	Alan Rindels	Analysis of Practical Methods for Counting Bicycling and Pedestrian Use of a Transportation Facility					0%			
2007-041R	LRRB	St. Louis County	Diwakar Gupta	\$45,000	\$0	Marcus Hall	Alan Rindels	INV 880: Snow Plow Optimization					1%			
2007-042C	LRRB	Bonestroo, Rosne, Anderlik & Assoc., Inc.	Matthew Shands	\$19,400	\$0	Tom Behm, Petra DeWall	Clark Moe	INV 645: Development of Scalable Technology to Enhance Transfer of Bridge Information - RIC 2007/2008					95%			
2007-043C	SRP/LRRB	Iowa State University	Reginald Souleyrette	\$19,980	\$0	Mark Vizecky	Clark Moe	INV 645: Minnesota Mapping Analysis Tool (MnMAT) Enhancements - RIC 2007/2008					83%			
2007-047C	SRP/SP&R	CTC & Associates LLC	Patrick Casey	\$50,777	\$38,666	Cory Johnson	Debra Fick	MPR-6(018) State Planning and Research Pooled Fund Management					100%			
2007-049R	SRP/SP&R	University of Minnesota	Jim Grothaus	\$140,000	\$0	Scott Bradley	Clark Moe	MPR 6(007) Hear Every Voice (HEV) Implementation & Training					25%			
2007-052C	SRP/SP&R	University of Minnesota	Joseph Labuz	\$60,000	\$12,000	Rebecca Embacher	Clark Moe	MPR-6(011) Intelligent Compaction Implementation: Research Assessment					20%			
2007-054R	SRP/SP&R	Iowa State University	David White	\$425,000	\$75,000	John Siekmeier	Clark Moe	MPR-6(011): Implementation of Intelligent Compaction Performance Based Specifications in Minnesota - Iowa State					27%			
2007-063C	SRP/SP&R	University of Minnesota	John Hourdos	\$109,890	\$0	Chris Roy, Colleen Von-Wagner	Bruce Holdhusen	MPR-6(009) TH36 Full Closure Impacts - Highways for Life corridor. To Close or Not to Close					14%			
2007-064C	SRP/SP&R	Professional Engineering Services, Ltd.	Ann Johnson	\$99,981	\$43,598	Tim Andersen	Clark Moe	MPR-6(011) Intelligent Compaction Implementation: Training and Field Support					75%			
2007-065C	SRP/SP&R	CNA Consulting Engineers, Inc.	Charles Nelson	\$99,953	\$17,188	Tim Anderson, Rebecca Embacher	Clark Moe	MPR-6(011) Intelligent Compaction Implementation: IC Data Management					28%			
2007-066C	LRRB	Athey Creek Consultants, LLC	Dean Deeter	\$8,400	\$3,588	Sue Lodahl	Nelson Cruz	INV 884: Redesign of Local Road Research Board (LRRB) Website					0%			
2007-070C	SRP/LRRB	CH2M Hill	Howard Preston	\$99,594	\$4,934	Glen Ellis	Shirlee Sherkow	INV 845: Analysis of Highway Design and Geometric Effects on Crashes - Part I					0%			
2007-075C	SRP/SP&R	CTC & Associates LLC	Patrick Casey	\$99,250	\$11,223	Cory Johnson	Sandy McCully	MPR-6(019) Technology Transfer Material Development					5%			
2007-082C	SRP/SP&R	Mankato State University	James Wilde	\$43,000	\$0	Curt Turgeon	Bruce Holdhusen	MPR-6(035) Contractor Certification Program for the Mn/DOT International Roughness Index (IRI) Specification					0%			
2007-083C	SRP	University of Minnesota	John Nieber	\$20,270	\$0	Paul Walvatne	Shirlee Sherkow	IMP2006: Implementation of a Survey Method for Noxious Weeds					17%			
2007-092C	SRP/LRRB	MIS Sciences Corp	Jeff Willis	\$18,950	\$0	N/A	Nelson Cruz	Research Services and Local Road Research Board Web Site Hosting and Maintenance 2008 - 2009					0%			

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Minnesota Department of Transportation Research Services Section MS 330, First Floor 395 John Ireland Blvd. St. Paul, MN 55155-1899 (651) 366-3780 www.research.dot.state.mn.us

Active Multi-State Pooled Funds in 2007

Study Number	Title	Total Project Cost	MN 2007 Commitment	Lead State or Agency	Mn/DOT Contact	Start Date	Projected End Date
TPF-5(004)	Long Term Pavement Performance (LTPP) Specific Pavements Study (SPS) Traffic Data Collection	\$14,676,285	\$105,000	FHWA	George Ceyress	2003	2009
TPF-5(029)	High Occupancy Vehicle	\$128,859	\$100,000	FHWA	Nick Thompson	2002	2010
TPF-5(035)	Pacific Northwest Snowfighters	\$250,000	\$10,000	WA	Gabe Guevara	2007	2010
TPF-5(036)	Transportation Asset Management Research Program	\$130,000	\$5,000	WI	Curtis Gobeli	2002	2008
TPF-5(039)	Falling Weight Deflectometer (FWD)	\$815,000	\$25,000	FHWA	David Bullock	2004	2009
TPF-5(046)	Transportation Curriculum Coordination Council Training Management and Development	\$950,000	\$0	FHWA	Catherine Betts	2002	2007/ renewing
TPF-5(051)	Construction of Crack-Free Concrete Bridge Decks	\$950,000	\$15,000	KS	Erik Wolhowe	2002	2008
TPF-5(060)	Safety Analyst	\$50,000	\$0	FHWA	Debra Fick	2001	2008
TPF-5(066)	Material & Construction Optimization	\$865,000	\$15,000	IA	Bernard Izevbekhai	2003	2008
TPF-5(068)	Long-Term Maintenance of Load and Resistance Factor Design Specifications	\$980,000	\$0	IA	Dave Dahlberg	2001	2010
TPF-5(069)	TRB Core Program Services for a Highway Research, Development, and Technology Program	N/A	\$127,705	FHWA	Sue Lodahl	Ongoing	Ongoing
TPF-5(070)	International Conference on Accelerated Pavement Testing	\$130,000	\$0	MN	Ben Worel	2007	2009
TPF-5(086)	Reducing Crashes at Rural Intersections: Toward a Multi-State Consensus on Rural Intersection Decision Support	\$4,985,000	\$0	MN	Ginny Crowson	2004	2008
TPF-5(090)	Pavement Tools Consortium	\$910,000	\$20,000	WA	Roger Olson	2000	2008
TPF-5(092)	Clear Roads (Test & Evaluation of Materials, Equipment & Methods for Winter Maintenance)	\$905,000	\$25,000	WI	Linda Taylor	2004	Ongoing
TPF-5(093)	North/West Passage (Phase II)	\$425,000	\$50,000	MN	Ginny Crowson	2004	2008
TPF-5(099)	Evaluation of Low Cost Safety Improvements	\$2,850,000	\$65,000	FHWA	Dave Engstrom	2005	2011
TPF-5(105)	Transportation Connectivity Pooled Fund	\$195,000	\$40,000	WI	Sheila Hatchell	2005	2009
TPF-5(106)	Guidelines for Designing Bridge Piers and Abutments for Vehicle Collisions	\$430,000	\$0	TX	Dave Dahlberg	2007	2009
TPF-5(107)	Refinement and Field Validation of Mix Design Criteria for 4.75mm Superpave Mixes	\$195,000	\$0	AL	John Garrity	2005	2008
TPF-5(109)	TRB Core Program Services for FY'07	\$4,966,755	\$124,590	FHWA	Sue Lodahl	Ongoing	Ongoing
TPF-5(111)	Development of Standards for Geotechnical Management Systems	\$695,000	\$0	OH	Gary Person	2005	2008
TPF-5(112)	Midwest States Pooled Fund Pavement Preservation Partnership	\$195,000	\$0	MI	Jerry Geib	2003	2008
TPF-5(114)	Roadside Safety Research Program	\$550,000	\$50,000	WA	Mohammad Dehdashti	2005	2009
TPF-5(116)	Investigation of the Fatigue Life of Steel Base Plate to Pole Connections for Traffic Structures	\$424,000	\$12,000	TX	Thomas Merritt	2005	2009
TPF-5(118)	Upper Midwest Freight Corridor Study, Phase II	\$140,000	\$0	OH	Cecil Selness	2005	2007
TPF-5(119)	(Frozen Four) North Central Pavement Research Partnership	\$30,000	\$0	WI	Maureen Jensen	2006	2008
TPF-5(120)	Deer Vehicle Crash Information and Research (DVCIR) Center Pooled Fund	\$260,000	\$0	FHWA	Robert Weinholzer	2007	2009
TPF-5(126)	Geocomposite Capillary Barrier Drain (GCBD) for Limiting Moisture Changes in Pavements: Product Application	\$255,000	\$0	MN	Debra Fick	2006	2008
TPF-5(127)	Consortium of Accelerated Pavement Testing (CAPT) and Technical Exchange Partnership	\$225,000	\$25,000	FHWA	Maureen Jensen	2007	2009
TPF-5(128)	Accelerated Implementation of Intelligent Compaction Technology for Embankment Subgrade Soils, Aggregate Base and Asphalt Pavement Material	\$260,000	\$25,000	FHWA	Glenn Engstrom	2007	2010

Active Multi-State Pooled Funds in 2007, cont.

Study Number	Title	Total Project Cost	MN 2007 Commitment	Lead State or Agency	Mn/DOT Contact	Start Date	Projected End Date
TPF-5(129)	Recycled Unbound Pavement Materials (MnROAD Study)	\$882,352	\$375,000	MN	Ben Worel	2007	2010
TPF-5(132)	Investigation of Low Temperature Cracking in Asphalt Pavements - Phase II	\$753,947	\$433,947	MN	Ben Worel	2007	2011
TPF-5(134)	PCC Surface Characteristics - Rehabilitation (MnROAD Study)	\$275,000	\$60,000	MN	Bernard Izevbekhai	2007	2012
TPF-5(135)	Tire Pavement Noise Research Consortium	\$150,000	\$10,000	WA	Bernard Izevbekhai	2006	2011
TPF-5(139)	PCC surface Characteristics: Tire-Pavement Noise Program Part 3	\$690,000	\$331,794	IA	Bernard Izevbekhai	2007	2010
TPF-5(144)	Use of Video Feedback in Urban Teen Drivers	\$160,000	\$40,000	IA	Ray Starr	2007	2008
TPF-5(148)	Effects of Implements of Husbandry "Farm Equipment"	\$1,023,464	\$667,258	MN	Shongtao Dai	2007	2010
TPF-5(149)	Design and Construction Guidelines for Thermally Insulated Concrete Pavements (MnROAD Study)	\$651,800	\$296,800	MN	Tim Clyne	2007	2011
TPF-5(153)	Optimal Timing of Preventive Maintenance for Addressing Environmental Aging in HMA Pavements	\$487,771	\$105,571	MN	Thomas Wood	2007	2012
TPF-5(154)	Census Transportation Planning Package (CTPP)	\$1,428,704	\$102,645	FHWA	Jonette Kreideweis	2007	2012
TPF-5(156)	Mississippi Valley Freight Coalition Pooled Fund Study	\$425,000	\$25,000	WI	Bill Gardner	2007	2009
TPF-5(159)	Technology Transfer Concrete Consortium	\$299,000	\$5,000	IA	Doug Schwartz	2007	2012
TPF-5(165)	Development of Design Guide for Thin and Ultrathin Concrete Overlays of Existing Asphalt Pavements	\$1,577,973	\$1,477,973	MN	Tom Burnham	2007	2011
TPF-5(171)	Non-Intrusive Traffic Detection Systems III	\$135,000	\$15,000	MN	Jerry Kotzenmacher	2007	2009
TPF-5(407)	National Cooperative Research Program (NCHRP) FY 2007	N/A	\$581,666	MN	Sue Lodahl	N/A	Ongoing
SPR-2(207)	Transportation Management Center Pooled Fund Study	\$3,166,665	\$0	FHWA	Nick Thompson	2000	2010
SPR-3(017)	Midwest States Pooled Fund Crash Test Program	\$7,384,934	\$56,700	NE	Michael Elle	1991	Ongoing
SPR-3(020)	IVHS Study (ENTERPRISE)	\$1,170,000	\$25,000	IA	Ray Starr	1995	Ongoing
SPR-3(042)	Aurora Program	\$2,572,500	\$25,000	IA	Curt Pape	2003	Ongoing
SPR-3(049)	Urban Mobility Study	Over \$1,500,000	\$25,000	TX	Paul Czech	1997	Ongoing
SPR-3(072)	Strength and Deformation Analysis of MSE Walls at Working Loads	\$690,000	\$0	WA	Debra Fick	1999	2008
SPR-3(074)	Pavement Research and Technology	\$625,000	\$15,000	WA	Roger Olson	2002	2008
SPR-3(098)	Pavement Reconstruction Scheduling Software	\$614,399	\$0	WA	Debra Fick	2000	2008



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