

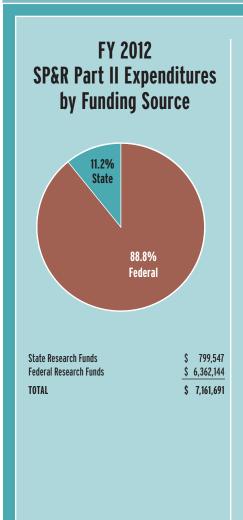
Research Administration

STATE PLANNING & RESEARCH PART II PROGRAM

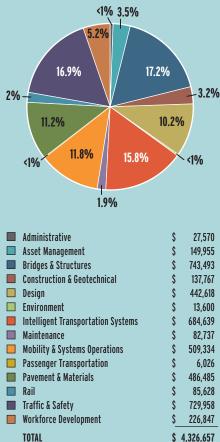
FY 2012 At-A-Glance

OCTOBER 1, 2011 - SEPTEMBER 30, 2012

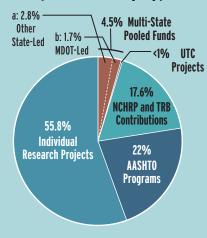
This publication presents a summary of Research and Library funding statistics and project progress for Fiscal Year (FY) 2012. The tables on pages 2 through 7 list all MDOT-funded research projects by focus area that were active or completed during 2012. These listings include both individual Michigan research projects and multi-state pooled fund projects. In addition, the tables on page 7 provide a snapshot of new projects funded for 2013 and 2014.



FY 2012 Research Project Expenditures by Focus Area



FY 2012 SP&R Part II Expenditures by Type



Individual Research Projects Multi-State Pooled Funds	\$ 3,997,733
a: Participation in Pooled Funds Led by Other States	\$ 203,500
b: Participation in MDOT-Led Pooled Fund Studies	\$ 119,398
UTC Projects	\$ 6,026
Research Project Expenditures	\$ 4,326,657
NCHRP and TRB Contributions	\$ 1,262,054
AASHTO Programs	\$ 1,572,980
TOTAL	\$ 7,161,691

MDOT 2012 Research

THESE TABLES ARE ORGANIZED BY FOCUS AREA:

RESEARCH PROJECTS:
Completed research reports that were released in Fiscal Year (FY) 2012: October 2011 to September 2012
Research contracts that were active during FY 2012
POOLED FUND PROJECTS:
Multi-state transportation pooled fund studies led by MDOT
Other multi-state transportation pooled fund studies in which MDOT participates, either through an FY 2012 contribution or through past contributions that are still producing value for Michigan

ABBREVIATIONS: FAM: Focus Area Manager RM: Research Manager

Completed project reports are available at www.michigan.gov/mdotresearch.

A mark in the "Spotlight" column indicates that a Research Spotlight for this project can be found at www.michigan.gov/mdotresearch.

"Number of Participating States" for some pooled funds includes Canadian provinces and agencies such as FHWA.

A complete FY 2012 annual report can be found at www.michigan.gov/mdotresearch.

Ass	Asset Management FAM: Bill Tansil, RM: Michael Townley												
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight			
RC-1576	A Framework for Statewide Roadway Asset Management: What is Done and Spent Now?	Dye Management	Dye	Kelley	2/1/11	4/27/12	\$249,925.00	100%	\$149,955.00				

Brid	Bridges & Structures FAMs: Dave Juntunen, Matthew Chynoweth, RM: Michael Townley											
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight		
	Skewed Bridges	WSU	Fu	Jansson	7/12/07	9/30/10	\$214,975.71	96%	\$0.00			
RC-1557	Feasibility of Digital Imaging to Characterize Earth Materials	UM	Hryciw	Endres	10/1/10	9/30/11	\$129,707.10	100%	\$26,631.39	Х		
RC-1563	High Skew Link Slab Bridge System with Deck Sliding Over Backwall or Backwall Sliding Over Abutment	WMU	Aktan	Kahl	11/6/08	9/30/11	\$265,022.63	100%	\$39,753.39	Х		
RC-1564	Development and Validation of a Sensor-Based Health Monitoring Model for the Parkview Bridge Deck	WMU	Abudayyeh	Kahl	1/20/10	1/31/12	\$228,126.20	99%	\$48,988.95			
RC-1567	Investigate Causes and Develop Methods for Preventing Concrete from Bridge Decks or Falling Deck Concrete Hazards: Reasons, Detection and Mitigation	LTU	Grace	Kahl	10/1/09	3/31/12	\$279,278.78	100%	\$9,256.45			
	Implementation of Sustainable and Green Design and Construction Practices for Bridges	MSU	Korkmaz	Larkins	10/1/10	9/30/12	\$99,819.00	96%	\$51,420.14			
	Development and Validation of Models for Concrete Bridge Decks	MSU	Burgueno	Jansson	10/20/09	12/31/12	\$299,747.00	64%	\$65,467.67			
	Review and Revision of Overload Permit Classification	Michael Baker Jr. Inc.	Spangler	Wagner	10/1/10	2/28/13	\$209,405.64	70%	\$86,069.61			
	Evaluation of Prestressed Concrete Beams in Shear	WSU	Eamon	Kulkarni	10/1/11	9/30/13	\$277,774.10	28%	\$77,471.96			
	Improving Bridges with Prefabricated Precast Concrete Systems	WMU	Aktan	Juntunen	10/1/10	12/31/13	\$400,672.27	63%	\$204,035.30			

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Bridges & Structures Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Start Date	End Date	Current MI Commitment End Date
TPF-5(174)	Construction of Crack-Free Bridge Decks, Phase II	Stallard	KS DOT	12	\$15,000.00	\$45,000.00	\$70,000.00	10/1/08	9/30/13	2013
TPF-5(247)	Field Testing Hand-Held Thermographic Inspection Technologies, Phase II	Juntunen	MO DOT	10	\$0.00	\$0.00	\$60,000.00	10/1/12	9/30/13	2013
TPF-5(254)	Bulb-T Beam as Alternate ABC to Side-by-Side Box Beam	Juntunen	MI DOT	4	\$119,398.00	\$0.00	\$348,901.00	9/19/11	9/30/14	2014

Con	Construction & Geotechnical FAMs: Brenda O'Brien, Jason Gutting, Dick Endres, RM: André Clover										
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight	
	Construction Productivity Symposium	E.S.D.	LaPointe	Chaput	10/1/11	11/30/11	\$3,000.00	100%	\$3,000.00		
	Effect of Pile-Driving-Induced Vibrations on Nearby Structures and Other Assets	UM	Zakkos	Endres	10/1/11	6/30/13	\$229,370.76	43%	\$99,767.39		

Construction & Geotechnical Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Start Date	End Date	Current MI Commitment End Date
TPF-5(183)	Improving the Foundation Layers for Concrete Pavements	Grazioli	IA DOT	9	\$35,000.00	\$105,000.00	\$175,000.00	10/1/08	9/30/13	2013

Des	Design FAM: Brad Wieferich, RM: Michael Townley											
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight		
RC-1570	Evaluating the Appropriate Level of Service for Michigan Rest Areas and Welcome Centers Considering Safety and Economic Factors	WSU	Gates	Lynwood	5/2/11	4/30/12	\$183,181.00	100%	\$134,027.41	Х		
	Re-Examination of the 1994 and Subsequent Sewer and Culvert Installations of Various Pipe Types, Sizes and Depths	URS	Guter	Kline	5/25/11	12/31/12	\$502,000.00	95%	\$298,818.75			
	Roadside Corridor Planning	WSU	Gates	Lynwood	6/30/12	6/30/13	\$190,000.00	5%	\$9,772.03			

Env	Environment FAM: Kristin Schuster, RM: Michael Townley												
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight			
	Greenhouse Gas Inventory for the Michigan Department of Transportation	FTCH	Buckler	Annelin	9/16/11	12/31/13	\$68,000.00	20%	\$13,600.00				

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Intelligent Transportation Systems

FAM: Matt Smith, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight
	Usage and Impact of the Vehicle Infrastructure Integration (VII) Program	Mixon Hill	Mixon	Cook	2/15/07	8/31/11	\$3,500,000.00	100%	\$1,988.46	
RC-1573	Slippery Road Detection and Evaluation	UM	Robinson	Cook	10/20/09	6/30/12	\$242,836.00	100%	\$60,709.00	
	Infrastructure Monitoring Data Management	Alfred Benesch	Darwish	Cook	10/1/09	8/15/13	\$215,422.36	40%	\$53,855.59	
	Advanced Applications of IntelliDrive Data Use Analysis and Processing 2 (DUAP2)	Mixon Hill	Mixon	Cook	8/9/11	6/30/14	\$3,884,739.00	17%	\$568,085.74	

Intelligent Transportation Systems Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Total Commitments (All Agencies)	Start Date	End Date	Current MI Commitment End Date
TPF-5(231)	ITS Pooled Fund Program (ENTERPRISE)	Nederveld	MI DOT	14	\$0.00	\$70,000.00	\$175,000.00	10/1/09	9/30/14	2014	2014

Maintenance FAM: Mark Geib, RM: André Clover Contractor Title Investigator Project Manager Start Date **End Date Total Budget** RC-1588 MDOT Vehicle Infrastructure Integration Data Analysis Documentation and Research Support Program Sweatman Cook 8/30/06 6/1/12 \$800.000.00 100% \$0.00 \$32,737,00 Monitoring Highway Assets with Remote Technology Dye Management Zilay Croze 7/31/12 1/30/14 \$489,998,64

Maintenance Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Start Date	End Date	Current MI Commitment End Date
TPF-5(054)	Development of Maintenance Decision Support System	Cook	SD DOT	19	\$25,000.00	\$0.00	\$110,000.00	6/1/12	9/30/13	2013
TPF-5(218)	Clear Roads Winter Highway Operations Pooled Fund (Continued from TPF-5(092))	Droste	MN DOT	26	\$25,000.00	\$0.00	\$50,000.00	10/1/11	9/30/13	2013

Mobility & Systems Operations FAM: Steve Cook, RM: André Clover Report Number FY 12 Expenditures Contractor Investigator Project Manager **Start Date End Date Total Budget Spotlight** RC-1554 Developing a Congestion Mitigation Toolbox Texas A&M Crawford Firman 10/1/10 9/30/11 \$154.580.09 100% \$0.00 Best Practices for Emergency Rerouting \$175,603.31 RC-1581 Kimley Horn Dunzo Kremer 10/1/11 9/30/12 \$178,082.00 99% **Cambridge Systematics** 10/1/11 9/30/12 \$185,254.98 \$171,149.96 RC-1583 Implementation of Quick Clearance in Michigan Krechmer Kremer 92% \$172,901.00 Transportation Reliability and Trip Satisfaction WSU Gates Firman 10/1/11 12/31/12 94% \$162,580.88

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Passenger University Transportation Centers FAMs: Cathy Hudson, Michael Frezell, Therese Cody, Rob Pearson, RM: Mark Polsdofer

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Start Date	End Date	Current MI Commitment End Date
116226	A Study of Factors That Inhibit and Enable Effective Development of Sustainable Regional Transit Systems in Southeastern Michigan	Edgar	UDM	N/A	\$4,340.00	\$4,340.00	\$100,000.00	7/1/12	9/30/13	2013
116233	A Study on the Remanufacturing, Repurposing and Recycling of Lithium-Ion Batteries in Public Transit Vehicles	Fandialan	GVSU	N/A	\$1,686.00	\$1,686.00	\$50,000.05	9/19/12	9/30/13	2013

Pavement & Materials

FAMs: Brenda O'Brien, Curtis Bleech, John Staton, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight
RC-1556	Laboratory Evaluation of Warm Mix Asphalt	MTU	You	Barak	11/3/08	9/30/11	\$190,001.08	100%	\$0.00	
	Improved Performance of JPCP Overlays	UM	Hansen	Krom	10/20/09	5/15/12	\$333,956.31	86%	\$9,738.00	
	Cost-Effectiveness of the MDOT Preventive Maintenance Program	Applied Pavement Technologies	Peshkin	Chelotti	10/1/10	11/30/12	\$179,988.00	85%	\$94,326.43	
	Alternative Materials for Sustainable Transportation	MTU	You	Maack	11/13/09	12/31/12	\$299,960.16	90%	\$131,156.81	
	Evaluating the Financial Cost and Impact on Long-Term Pavement Performance of Expediting Michigan's Road Construction Work	MSU	El-Gafy	Grazioli	10/1/11	4/30/13	\$66,756.87	45%	\$30,099.79	
	Preparation of Implementation of the Mechanistic-Empirical Pavement Design Guide in Michigan	MSU	Buch	Eacker	10/1/11	6/30/14	\$399,999.85	36%	\$142,663.50	

Pavement & Materials Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Start Date	End Date	Current MI Commitment End Date
TPF-5(159)	Technology Transfer Concrete Consortium (TTCC)	Staton	IA DOT	24	\$7,000.00	\$28,000.00	\$35,000.00	10/1/08	9/30/12	2012
TPF-5(185)	Concrete Pavement Road Map Operations Support	Staton	FHWA	5	\$25,000.00	\$75,000.00	\$100,000.00	10/1/08	9/30/12	2012
TPF-5(215)	Transportation Engineering and Road Research Alliance (TERRA)	Clover	MN DOT	6	\$6,500.00	\$10,000.00	\$25,000.00	10/1/09	9/30/14	2014
TPF-5(224)	Investigation of Jointed Plain Concrete Pavement Deterioration at Joints and the Potential Contribution of Deicing Chemicals	Staton	IA DOT	9	\$15,000.00	\$30,000.00	\$60,000.00	10/1/09	9/30/13	2013
TPF-5(225)	Validation and Implementation of Hot-Poured Crack Sealant	Bennett	VA DOT	9	\$0.00	\$100,000.00	\$100,000.00	10/1/09	9/30/13	2013
TPF-5(242)	Traffic and Data Preparation for AASHTO MEPDG Analysis and Design	Eacker	LA DOT	8	\$25,000.00	\$0.00	\$50,000.00	6/1/12	9/30/13	2013
TPF-5(269)	Development of an Improved Design Procedure for Unbonded Concrete Overlays	Krom	MN DOT	7	\$0.00	\$0.00	\$60,000.00	4/13/12	9/30/14	2014

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FAM: Kris Foondle, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight
	Timing Issues for Traffic Signals Interconnected with Highway-Railroad Grade Crossings	WSU	Datta	Foondle	8/1/11	3/1/13	\$89,758.00	100%	\$85,628.09	

Rail University Transportation Center

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Start Date	End Date	Current MI Commitment End Date
116234	National University Rail Center	D'Lamater	MTU	N/A	\$0.00	\$0.00	\$99,470.00	10/8/12	9/30/13	2013

Traf	Traffic & Safety FAM: Mark Bott, RM: Michael Townley											
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight		
RC-1555	Safety Analysis of 4-Lane to 3-Lane Conversions (Road Diets) in Michigan	MSU	Lyles	Leix	10/1/10	9/30/11	\$149,281.00	92%	\$65,177.09			
RC-1561	Improving Driver Safety with Behavioral Countermeasures	СМИ	Backs	Lariviere	10/27/09	9/30/11	\$149,923.67	93%	\$0.00	Х		
RC-1565	Evaluating Performance and Making Best Use of Passing Relief Lanes	Opus International	Bagdade	Kanitz	10/1/10	12/31/11	\$159,887.20	98%	\$64,622.74	Х		
RC-1566	Evaluating the Performance and Effectiveness of Roundabouts	Opus International	Bagdade	Kanitz	10/1/10	12/31/11	\$149,576.66	97%	\$29,706.35	χ		
RC-1572	Sharing the Road: Optimizing Pedestrian and Bicycle Safety and Vehicle Mobility	TY Lin	LaPlante	Thompson	10/1/10	4/30/12	\$199,751.95	94%	\$110,956.80	Х		
RC-1575	Impact of Non-Freeway Rumble Strips, Phase I	WSU	Datta	Morena	6/1/10	6/30/12	\$262,829.81	100%	\$99,610.12	Х		
	Transportation Patterns of Older Drivers in Rural Michigan	UM	Eby	Lariviere	10/1/11	12/31/12	\$227,897.93	95%	\$216,774.56			
	Evaluating Pedestrian Safety Improvements	WMU	VanHouten	Thompson	10/1/10	12/31/12	\$199,998.86	77%	\$83,369.91			
	Study of High-Tension Cable Barrier on Michigan Roadways	WSU	Savolainen	Torres	10/1/11	9/30/14	\$223,895.17	27%	\$59,740.08			

Wor	Workforce Development FAM: TBD, RM: André Clover									
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight
RC-1571	Identification of Causes and Solution Strategies for Deck Cracking in Jointless Bridges	MSU	Burgueno	Burns	10/20/09	5/31/12	\$169,968.00	100%	\$71,560.44	
	Examining the Disadvantaged Business Enterprise (DBE) Program	UM	Davis	Collins	10/1/11	11/30/12	\$193,035.02	80%	\$155,286.85	

Adm	ninistrative									
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 12 Expenditures	Spotlight
	2012 Research Summit: Facility Cost	MDOT	N/A	Briseno	10/1/11	9/30/12	\$3,810.00	67%	\$2,570.00	

Administrative Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Start Date	End Date	Current MI Commitment End Date
TPF-5(209)	Support of the Transportation Curriculum Coordination Council (TCCC)	O'Brien	FHWA	17	\$20,000.00	\$40,000.00	\$100,000.00	10/1/09	9/30/14	2014
TPF-5(237)	Transportation Library Connectivity	Briseno	MO DOT	28	\$5,000.00	\$20,000.00	\$25,000.00	10/1/08	9/30/12	2012

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National Initiatives

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2012 Commitment	Expenditures Prior to 2012	Total MI Commitment	Start Date	End Date	Current MI Commitment End Date
TPF-5(261)	TRB Core Program Activities FFY 2012 (TRB FY 13)	Clover	FHWA	U.S.	\$196,116.00	\$0.00	\$206,710.00	10/1/11	9/30/12	2012
TPF-5(412)	NCHRP for FY 2012	Clover	FHWA	U.S.	\$1,065,938.00	N/A	\$1,065,938.00	10/1/11	9/30/12	2012
115024	AASHTO's Environmental Technical Assistance Program (ETAP)	Barondess	AASHT0	U.S.	\$8,000.00	\$8,000.00	\$16,000.00	10/1/11	9/30/12	2012
115193	AASHTO Technical Service Program (TIG SICOP TSP2 NTPEP EMTSP APEL SAFETY DAMS LRFDSM)	Clover	AASHT0	U.S.	\$87,000.00	N/A	\$87,000.00	10/1/11	9/30/12	2012
115195	Trns*port Construction/Materials Project	Fox	AASHT0	U.S.	\$1,477,980.00	N/A	\$1,500,000.00	10/1/11	9/30/12	2012

2012 Statistics

Research Services (FY 2012)

- 6 Amendments
- 17 Closed projects
- 14 New projects
- 46 Individual research projects
- 24 Pooled fund studies and other national research initiatives

Library Services (October 2011 - September 2012)

Total circulation: 18,428 (MDOT and C&T Library)
New materials: 641 (MDOT and C&T Library)
Reference services: 623 (MDOT Library only)
Interlibrary loans: 87 (MDOT Library only)
Visitors: 351 (MDOT Library only)

Recognition

MDOT's research project Recommendations for Meeting the Transportation Needs of Michigan's Aging Population was selected as one of the top 16 projects in the nation by the American Association of State Highway and Transportation Officials Research Advisory Committee.

Looking Ahead

Fiscal Year 2013 Projects

Focus Area	Project Title
Bridges & Structures	Development, Characterization and Applications of a Non-Proprietary Ultra High Performance Concrete for Highway Bridges
	Non-Destructive Evaluation Seminar
Intelligent Transportation Systems	Costs and Benefits of MDOT Intelligent Transportation System Deployments
Maintenance	Evaluating the Use of Unmanned Aerial Vehicles (UAVs) for Transportation Purposes
Maintenance	Evaluating the Use of Tow Plows in Michigan
Mahility C Customa Operations	Evaluating Michigan Commercial Vehicle Enforcement Strategies and Facilities
Mobility & Systems Operations	Balancing the Costs of Mobility Investments in Work Zones
	Evaluation of Non-Freeway Rumble Strips, Phase II
Traffic & Safety	Evaluating Differential and Non-Differential Freeway Truck and Bus Speed Limits
	Michigan Urban Trunkline Intersections Safety Performance Function (SPF) Development and Support

Fiscal Year 2014 Projects

Focus Area	Project Title
Bridges & Structures	Evaluation and Standardization of Accelerated Bridge Construction (ABC) Techniques
	Wireless Data Collection and Retrieval of Bridge Inspection/Management Information
	Evaluating Long-Term Capacity and Ductility of Carbon Fiber Reinforced Polymer Prestressing and Post-Tensioning
	Strands Subject to Long-Term Losses, Creep and Environmental Factors
Pavement & Materials	A Method to Assess the Use of New and Recycled Materials in Pavements
	Performance Evaluation of Subgrade Stabilization with Recycled Materials
	Improvement of Michigan Climatic Files in DARWin-ME
Statewide Development	Feasibility of Developing a Statewide Transit Mobility Measurement Tool
	Synthesis of Methods for Developing Transit Vehicle Specifications
Traffic & Safety	Evaluation of Michigan's Engineering Improvements for Older Drivers
	Evaluation of Pavement Marking Practices in Michigan
	Comparison of Alternative Pedestrian Crossing Treatments
	Michigan Urban Trunkline Segments Safety Performance Function (SPF) Development and Support

7



MISSION

Promoting innovative research for economic benefit and improved quality of life

VALUES

Quality Teamwork Customer Orientation Integrity Pride

EMDOT FIELD SERVICES

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