

Driven to Excellence

2011-2018 MDOT Accomplishments Report





Greetings:

I am pleased to share with you the Michigan Department of Transportation's (MDOT) Accomplishments Report, "Driven by Excellence, 2011-2018."

Michigan has had to adapt to many new challenges and changes since 2011. At that time, the state was just beginning to recover from the Great Recession; the state's unemployment rate was more than 10 percent. Today, however, I am delighted to say that Michigan's comeback is stronger than ever.

MDOT was a dedicated partner in its efforts to help the state and support the economy over the past eight years. By investing wisely in all forms of transportation and by partnering with other agencies and the private sector, MDOT was able to make the most of limited funding. Many, many great projects resulted from those efforts, with positive impacts for the economy, for safety, and for the state's future.

For example, for the first time in 60 years, Detroit has an operating streetcar on Woodward Avenue, thanks to a partnership between MDOT, other government agencies, and private businesses and philanthropic organizations. The QLINE, completed in 2017, is a light rail system that runs through the heart of Detroit. It has spurred more than \$7 billion in investment in the area and more than 211 development projects. During the first year of operation, the QLINE had more than 1.3 million rides.

Michigan will also soon have a new bridge across America's busiest commercial land border, as construction of the Gordie Howe International Bridge, begun in 2018, continues. This bridge will have six lanes, spanning the Detroit River. The bridge will also allow access to pedestrians and bicyclists with a dedicated facility for them. Upon completion, the Gordie Howe will have the longest span of any cable-stayed bridge in North America.

MDOT helped support the economy by investing in non-highway transportation as well. In his first term, Gov. Rick Snyder promoted development of the Iron Belle Trail, a bicycle and pedestrian trail that would connect Belle Isle to Ironwood. When completed, it will be the longest state-designated trail in the nation, offering more



than 2,000 miles of combined trails along two separate routes, one dedicated to hiking and the other to bicycling.

With limited funding, MDOT focused on innovation and efficiency. As a result, MDOT invested in its first Flex Route on US-23, just one notable project of many new innovations. The Flex Route uses technology to turn a shoulder into a travel lane when needed, allowing MDOT to save millions of dollars while reducing congestion and improving safety.

MDOT also worked with its transit partner “The Rapid” in Grand Rapids to provide new bus rapid transit (BRT) there. The Silver Line BRT was opened in 2014 and connected downtown Grand Rapids to the southern suburbs. After it came on line, ridership in the corridor increased by 35 percent.

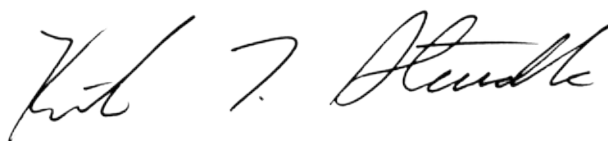
As important as these accomplishments are for today, MDOT also has an eye on tomorrow. Investments in connected vehicle infrastructure and testing sites such as Mcity and the American Center for Mobility (ACM), as well as initiatives including the Michigan Mobility Challenge, are positioning Michigan at the center of the new mobility industry. Through the efforts of PlanetM, Michigan is retaining and attracting talent and industry to ensure that this state continues to be where the future of mobility is centered.

With all these accomplishments, as well as many more mentioned in this report, MDOT has worked to improve transportation for all modes, support the economy, improve safety, and create partnerships, all while being as efficient as possible to make the best use of limited funds.

It has been my very great pleasure to serve as director of this agency for the past 13 years. Every day, I am struck by the intelligence, energy, enthusiasm, dedication and desire to help that is demonstrated by the people who work here. There are so many variables that are needed to create and sustain a transportation system, but one of the most important is the people who make it happen.

Throughout the state’s lows and the highs, MDOT and its staff will always work to make Michigan’s transportation system better than it was the day before. As Michigan continues to grow and thrive, MDOT will continue to help “pave the way” with strong partnerships, creative innovations, and effective investment in all transportation modes.

Sincerely,

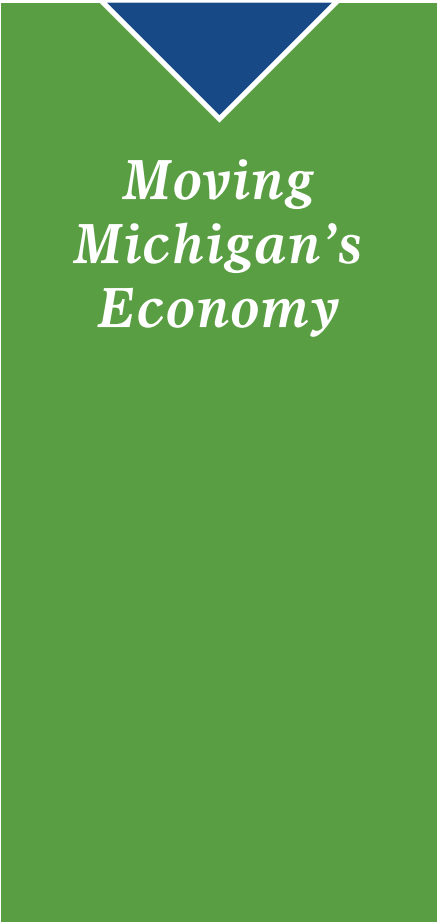


Kirk T. Steudle, Director

Michigan Department of Transportation

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Gordie Howe International Bridge, Detroit

The Gordie Howe International Bridge (GHIB) project is a new freeway-to-freeway border crossing between Detroit, Michigan, and Windsor, Ontario, that will improve the flow of international trade between the United States and Canada, the world's largest trading partnership, moving \$583 billion in freight each year. The new bridge will be publicly owned by the State of Michigan and the Government of Canada. After a groundbreaking in July 2018, construction commenced in October.

"The Gordie Howe International Bridge will open doors to global markets and enhance the essential trade relationships between Canada, Michigan, and the United States. Progress on this critical infrastructure is accelerating and that progress will continue. The issuance of the Request for Proposals, which is the result of thousands of hours of work and consultation by Canada, Michigan, and many other project stakeholders, is an all-important milestone that we have achieved together. The Gordie Howe International Bridge will be a fitting monument to the partnership between Michigan and Canada that has made our countries and our people part of an inseparable winning team."

– Rick Snyder, Governor of Michigan

I-75 Ambassador Bridge Gateway Project, Detroit

In 2012, the \$230 million I-75 Ambassador Bridge Gateway Project was completed, relieving traffic congestion on the freeways approaching the international border crossing and removing truck traffic from the local streets. The project provided direct freeway access ramps to and from the busiest international trade crossing in North America.

I-94 over the Black River/Blue Water Bridge (BWB) approach, Port Huron

MDOT completed a major project in 2012 near the city of Port Huron to widen and reconstruct 2.2 miles of I-94/I-69 near the BWB. This \$90 million project included replacing the bridge that carries I-94/I-69 over the Black River and was the first phase of the BWB plaza expansion. MDOT was awarded a federal TIGER grant to cover \$30 million of the total cost. In 2015, approximately \$50 billion in goods crossed the BWB by truck (\$27.3 billion in exports and \$22.5 billion in imports), averaging approximately \$136.5 million per day. Approximately 15 percent of the



truck trade (14.5 percent of exports shipped by truck and 15.4 percent of imports) between the United States and Canada crosses the BWB in Port Huron.

I-196 Business Loop (BL) and M-121 operational improvements, Zeeland

To serve new industrial growth in the Zeeland area, MDOT provided additional access north of the I-196 BL for increased truck traffic to the area. The project included reconstruction, additional turning lanes and weave/merge lanes on I-196 BL from M-121 (Main Avenue) to the I-196 ramps, roadway and ramp realignment, extending 84th Avenue north from the I-196 BL, concrete sidewalk enhancements, culverts, and drainage, sewer and traffic signal improvements. The improvements being constructed in 2018 will provide more direct access options to the I-196 BL and the I-196 freeway for commercial and commuter traffic in the Zeeland area.



M-72, Oscoda County

In 2014, when a local automotive supply company anticipated growth at its location on M-72 in Oscoda County, roadway improvements were needed. The company expected to double its employee numbers to around 400, with more trucks delivering supplies and distributing product. MDOT worked with the Michigan Economic Development Corp. (MEDC) to secure a Transportation Economic Development Fund grant of \$117,000 to construct a passing flare, improving safety and efficiency.



I-94 reconstruction, Battle Creek

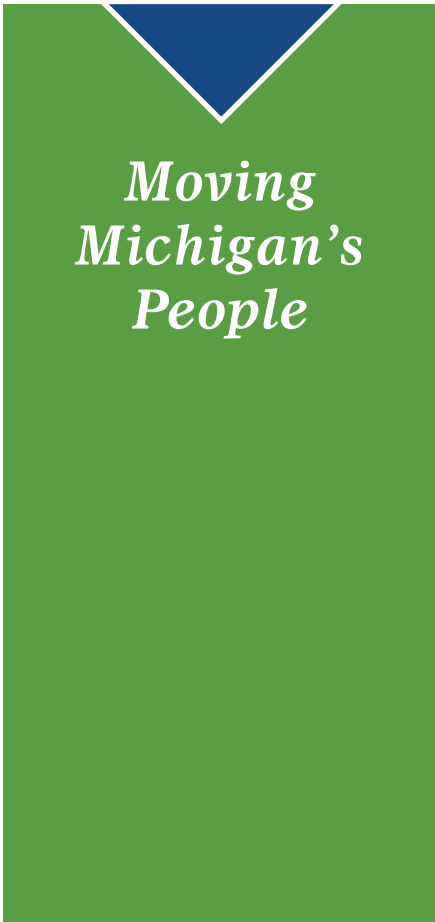
I-94 is one of the busiest commercial vehicle traffic routes in Michigan. When old concrete pavement on I-94 in the Battle Creek area needed reconstruction, MDOT determined that daytime lane closures in that area would create traffic backups of 5 miles or more. In 2016, MDOT decided to remove and replace full-depth I-94 pavement during nightly single-lane closures and reopen all lanes to traffic in the morning, thereby minimizing traffic impact. During the nighttime lane closures, deteriorating concrete was cut into 12-by-6-foot pieces and removed from various locations along the route and replaced with hot-mix asphalt. The contractor was allowed to remove only as much concrete each night as it could replace by morning. All lanes were open to traffic at 6 a.m., keeping travelers moving throughout the day.



Detroit Intermodal Freight Terminal, Detroit

The Detroit Intermodal Freight Terminal (DIFT) project, a collection of several related individual projects, is a public-private partnership between the state and several major railroads - Canadian National (CN), CP, Conrail, CSX, and Norfolk Southern (NS) - to address the deficiency in capacity of intermodal terminals, as well as eliminating major "choke points" in the rail lines serving the terminals. The first project, the West Detroit Interlocker, was constructed in 2015 as a partnership among MDOT, Conrail, and CN. Construction on the second project, the Delray Interlocker, began in 2018 as a partnership among MDOT, Conrail, CSX, and NS, and will address the most congested railroad junction in Michigan.





US-23 Flex Route, Washtenaw and Livingston counties

In 2017, MDOT opened its first Flex Route along US-23 in Washtenaw and Livingston counties. The US-23 Flex Route is 9 miles from M-14 to M-36 north of Ann Arbor. The project included construction of road, bridge and interchange operational improvements and active traffic management (ATM) strategies for the US-23 corridor to address daily congestion and overall motorist safety. Using the Flex Route's lane control gantry system, MDOT can now manage recurrent and non-recurrent congestion through technology and operational ATM strategies, including dynamic lane control and shoulder use, variable speed advisories and queue warning.

MDOT received national and state recognition when the US-23 Flex Route was awarded the highest engineering honors from the American Association of State Highway and Transportation Officials (AASHTO), the American Council of Engineering Companies (ACEC), the Conference of Minority Transportation Officials (COMTO), the Intelligent Transportation Society of America, the Mid America Association of State Transportation Officials (MAASTO), ACEC of Michigan, and COMTO Michigan. Through these awards, the project and the project team were recognized for industry innovation and transportation system safety and operations.

QLINE, Detroit

Thanks to a unique public-private effort between nonprofit organizations, the business community, and local, state and federal governments, Detroit's QLINE Woodward Avenue streetcar opened to great fanfare in 2017. The QLINE runs on a 3.3-mile route along Woodward Avenue, connecting Detroit's downtown waterfront with Midtown and the north end. QLINE began operations in May 2017 and had 50,000 riders in the first week. More than \$7 billion in investment has poured into this corridor since 2013.

"The partnership between M-1 RAIL and MDOT is transforming the Woodward Corridor and surrounding neighborhoods. I want to thank MDOT for bringing this vision to reality and helping set the stage for continued residential and business growth over the next 30 years."

– Matt Cullen, M-1 RAIL CEO



Bus Rapid Transit (BRT), Grand Rapids

The Silver Line, which opened in August 2014, paved the way for progress as Grand Rapids' (and Michigan's) first BRT system. The Silver Line runs 9.6 miles with 18 platforms connecting Grand Rapids, Kentwood, and Wyoming. Each of the unique BRT platforms have prepay ticket vending machines, real-time arrival information displays, and offer level boarding for safety and efficiency. The BRT corridor has bus-only lanes through about 65 percent of the trip and includes traffic signal priority at all 27 intersections. The Silver Line cost approximately \$39.8 million to construct (just under \$8 million in state funds) and was completed ahead of schedule and under budget. After the BRT came online, ridership in the corridor increased by 35 percent.

The success of the Silver Line paved the way for the Laker Line, the next BRT system coming to west Michigan. The 13.3-mile Laker Line will replace overcrowded existing bus routes between Grand Valley State University in Allendale to downtown Grand Rapids, with 14 elevated platform stops at key community activity centers. MDOT worked with the Interurban Transportation Partnership, Grand Rapids Area's public transit agency (known locally as The Rapid), to allow use of the state's right of way for Laker Line stops, stations and platforms.

"The governor sees the backbone of transit as BRT. We'll show him the first one." – Don Lawless, chairman of The Rapid's board of directors

I-75 near West Branch, Ogemaw County

For travelers going up north during the summer tourist season, there is always congestion, especially northbound on Friday nights and back downstate on Sunday. Along with cars and trucks, there are motor homes and vehicles pulling campers, boats, and trailers of bikes, motorcycles, or ORVs. When MDOT repaired the concrete on I-75 in Ogemaw County near West Branch in 2017, it wanted to keep traffic moving during those peak times, even during the construction project. To do that, MDOT used a design-build contract that specifically precluded northbound lane closures on Friday nights from June 23 to Sept. 3 and southbound lane closures on Sundays from May 28 to Sept. 3. The design-build contractor was also required to coordinate closely on all lane closures, ramp closures, construction signs, pavement markings, barricades, and closure locations with MDOT project managers and with any contractors working on other projects in the vicinity to avoid traffic bottlenecks during the busy summer season.

Accelerated Passenger Rail, Kalamazoo to Dearborn

Thanks to bold steps and new investment, increased passenger rail speed to a maximum of 110 mph between Kalamazoo and Dearborn is scheduled to begin next year. MDOT purchased and upgraded 135 miles of former NS track in the corridor, including installation of an incremental train control system to improve safety at higher speeds. MDOT also partnered with other Midwest states (Illinois, Missouri, and Wisconsin) to purchase modern new locomotives and rail cars capable of the higher speed.





PlanetM

Michigan has always been the leader of the automotive industry, and as vehicle and transportation technologies continue to evolve in amazing ways, Michigan continues to lead the way. PlanetM helps further that effort through a partnership of mobility organizations, communities, educational institutions, research and development, and government agencies working together to develop and deploy the mobility technologies driving the future. The initiative is a partnership at the state level between the Michigan Economic Development Corp. and MDOT intended to promote economic development and build on Michigan's place as a global leader in the automotive industry and the development of advanced mobility technology.

"Planet M represents Michigan's future as a leader in mobility and the innovations that will continue to attract investment in our state."

– Gov. Rick Snyder

American Center for Mobility: From Arsenal of Democracy to Arsenal of Technology

The American Center for Mobility (ACM) is a world class destination for testing autonomous and connected vehicles. The site, originally built by Henry Ford, once supported the efforts of World War II and built "a bomber an hour" at the height of operations. A huge workforce was needed to produce that many B-24 bombers, so a freeway was constructed connecting the semi-rural site to the population center in nearby Detroit. The freeway crossed the north end of the site and had exit and on ramps directly into



the property. The site was eventually abandoned in 2010. Then, in 2016, MDOT supported the development of the ACM with improvements to US-12 in Ypsilanti Township, reconfiguring the divided highway so both directions of traffic travel in the former eastbound US-12 roadbed. That allowed the ACM to develop a highway speed test track where real-life driving experiences can be used to test technologies and vehicle reactions in various driving scenarios. While the project's intent was to assist the ACM, it also improved the condition and look of US-12 through the Ypsilanti area, creating an urban arterial better scaled to current community traffic volumes than the former freeway. MDOT also completed pedestrian and nonmotorized improvements to address safety concerns in the area and provide a new corridor experience for commuters and the community.



Mcity

Mcity started in partnership between MDOT, the University of Michigan (U of M), and other state and private partners. It is a premier location to test early-stage autonomous and connected vehicle technology. Mcity is a 32-acre facility located on the campus of U of M and includes a variety of test areas, including urban and suburban test environments. The grounds include approximately 5 lane-miles of roads with intersections, traffic signals and signs, sidewalks, simulated buildings, street lights, and obstacles such as construction barriers.



“These technologies truly open the door to 21st century mobility. Mcity is where all of the main players - the automakers, the suppliers, the traffic-sensing, the insurance, communications, big data - this whole new ecosystem, this is where they come to work together.”
 – Peter Sweatman, Director of Michigan’s Mobility Transformation Center

Connecting Michigan

Technology has enormous potential positive impact on future vehicle and driver safety and efficiency. That’s why MDOT continues to lead the way in the piloting, testing and deployment of intelligent transportation system (ITS) technology, including vehicle-to-infrastructure (V2I) technologies.



V2I technology: MDOT is in the process of installing instrumentation along hundreds of miles of freeways in southeast Michigan that has the ability to communicate valuable safety and traveler convenience information to equipped vehicles traveling the corridor. These roadside units (RSUs) can transmit information related to signal phase and timing (SPaT), curve speed warnings, roadway weather information, queue warnings, and even pavement condition information. The goal by 2020 is to expand the deployment by more than 350 miles in southeast Michigan and into rural areas as well.

ITS/connected and automated vehicle (CAV) technology:

Over the past eight years, in areas throughout southeast Michigan, MDOT has deployed:

- Enhanced messaging for dynamic message signs (DMS) that is based on real-time travel speeds and advises alternate routes at critical junctions in the freeway highway network.





- SPaT deployments that provide drivers with information about the upcoming traffic signal so drivers can adjust vehicle speed appropriately for the least amount of stop and go.
- MDOT-owned traffic signals equipped with short-range radio signals that can transmit critical information to approaching vehicles. All future MDOT-owned traffic signals are required to have this technology.
- New connected signals that use the same technology to provide operators with red light violation warning notifications so the driver can stop before running a red light.
- Queue, or wait time, information RSU transmitters along the freeway to provide trucks and other vehicles with wait time information so drivers can make informed decisions about which border crossing will be most efficient. This is especially important to commercial vehicle drivers who work with very tight time schedules.



Truck Parking Information Management System (TPIMS): TPIMS started from a need to ensure safe parking options for truck drivers in Michigan. Due to increased restrictions on driver hours and a general increase in the volume of freight, commercial vehicles were often being parked along ramp and rest area shoulders or in other unsafe locations. There wasn't a shortage of safe parking places available but there was a shortage of information. To address this, MDOT partnered with private truck stop operators and with public rest area staffs to install counting devices in the lots and provide real time information about the location and availability of safe truck parking options. This information is displayed along the freeway with roadside signs and can also be transmitted directly to devices in the cab of the truck. The information allows drivers to make better decisions about where and when they can safely park their vehicles. The effort was so successful that a coalition of eight Midwest states, including Michigan, applied for and received a federal grant to expand the system along freeways throughout the Midwest, providing a model for the rest of the country to follow.





Over the last eight years, MDOT's investment in the highway and bridge programs provided Michigan motorists with more than 3,700 lane-miles of improved roads and more than 1,300 repaired and maintained bridges. Additionally, MDOT extended the life on approximately 14,000 lane-miles of pavement using various preventive maintenance treatments.

M-231, Ottawa County: A new route, a river crossing, and an archeological excavation

The \$200 million construction of this new 7-mile route and Grand River crossing included a mile-long barrier-protected lane for pedestrians and bicyclists, providing one of only three nonmotorized ways to cross the river in Ottawa County. Before construction began, a rare archeological discovery required MDOT to excavate three potential historic sites along the M-231 path, working with archeology consultants, six sovereign Native American nations, FHWA, and the State Historic Preservation Office. The effort revealed that indigenous people had once used the land there – previously undisturbed for centuries – for harvesting wild rice and fishing for lake sturgeon. Those working on the archeological dig in 2011 and 2012 unearthed and identified pottery shards, chipped stone tools, animal bones, and other artifacts mostly buried in hearths and fire, storage and refuse pits between 1,000 and 1,500 A.D. Fortunately, no human remains were found. The effort earned the participants a Governor's Award for Historic Preservation in 2015.

96Fix, Metro Detroit

In 2014, MDOT completely shut down 7 miles of I-96 from US-24 (Telegraph Road) to Newburgh Road near I-275 to fully reconstruct 56 lane-miles of freeway and reconstruct or improve 37 overpasses in five months for \$150 million. I-96 runs through residential and business areas and the closure affected everything from school buses to delivery companies, plus 140,000 daily drivers who all had to be detoured. The public was invited to vote on the project's lane closures and timeline, ultimately choosing the complete closure for the fastest completion. In addition to public meetings, the 96Fix was one of the first projects to have its own website and ombudsman dedicated to community outreach and public engagement. The project also had dedicated social media accounts to keep the public informed.





Before reopening I-96, MDOT allowed the public onto the freeway, with an estimated 10,000 walkers, runners, cyclists and skateboarders taking advantage of the once-in-a-lifetime experience.

“MDOT should be commended for its handling of the I-96 project, and it should serve as a model for future road construction.” – The Detroit News

I-96/US-23 interchange reconstruction, Livingston County

The I-96/US-23 interchange serves 57 million motorists per year and plays a key role in the development of the Michigan economy as a significant crossroads for regional, national and international mobility. At a minimal cost to reconstruct a regionally significant freeway-to-freeway interchange, the interchange was reconstructed in 2016 using an innovative solution that addressed safety, operational and mobility challenges. The project included constructing four new through-lanes on I-96 and using the existing lanes of I-96 as a collector-distributor (CD) system. This change allows for easier and safer lane changes for ramp traffic through the interchange. It has significantly reduced crashes and has promoted better driver expectancy and understanding. The project received the 2017 AASHTO President's Transportation Award for Highways.



US-131 at Stadium Drive, Kalamazoo

This 2015 project included the complete reconstruction of the interchange into a modern single-point urban interchange (SPUI). This project eliminated weaving operations on both the freeway and surface street. The coordination that was completed for the reconstruction project included MDOT, the City of Kalamazoo, Oshtemo Township, the Road Commission of Kalamazoo County, and private developers.



US-131 Constantine bypass, St. Joseph County

The construction of the US-131 bypass of Constantine was the culmination of a nearly 14-year planning effort examining the flow of traffic from the Indiana state line to Three Rivers, Michigan. The construction of the 5-mile-long, two-lane bypass of Constantine was completed in 2013.

US-31, Emmet County

MDOT reconstructed and realigned US-31 in Emmet County from Pellston to the Levering area in 2017. Before the 4.2-mile, \$5 million reconstruction project, the route had been a source of steady complaints about the pavement condition for many years. The remote route travels through many swamps and wetlands and required replacement of the entire roadbed in many areas, in addition to the installation of three box culverts that will improve drainage and the long-term integrity of the roadway.



US-31 reconstruction and widening near Holland, Ottawa County

This limited access corridor was widened in 2017 from four to six lanes between Lakewood Boulevard and Quincy Street. The need for the widening was identified – along with the new construction of M-231 – as an important transportation investment addressing traffic and economic growth in Ottawa County. An effective partnership between MDOT Grand Region, the Macatawa Area Coordinating Council, and local municipalities led to design efforts that identified bicycle, pedestrian, aesthetic, safety and construction communication improvements to benefit drivers, tourists and the communities in this key transportation corridor in the Holland area.



I-75 reconstruction, Saginaw County

This \$46 million project, completed in 2016, was a concrete pavement reconstruction of 3.8 miles of I-75 from Dixie Highway to Hess Road in Saginaw County. The project addressed ramps, bridge replacements, drainage improvements, and construction of a noise barrier wall. The project won the 2017 AASHTO America’s Transportation Awards – People’s Choice MAASSTO Regional Award in the “under budget” category.



US-31, Petoskey

MDOT partnered with the City of Petoskey to implement the goals and objectives of the US-31 Corridor Management Plan by improving both safety and traffic flow during projects in two construction seasons. In 2014, a complex project included reconstructing US-31 from US-131 to the Mitchell Street Bridge, repairing the bridge over the Bear River, a new traffic signal, and concrete medians with vegetation to manage left turns on the corridor, all made possible through seven different funding sources. The city cooperated in this multi-faceted project by funding and making underground utility crossings and closing streets and driveway access points. Following in 2015, with support from the city, a section of US-31 west of US-131 was converted from four to three lanes that introduced a center left-turn lane, as well as adding turn lanes at other locations. Additionally, working with the city, MDOT reconfigured the US-31/US-131 intersection to include a median island to prevent left turns into nearby driveways, reducing conflicts and improving safety. MDOT also worked with a business to close a driveway closest to the intersection and created a new driveway off the side street, further reducing traffic conflicts.





Major Projects Currently Underway

I-94 modernization project, Metro Detroit

The I-94 modernization project is undergoing changes to the original design to ensure that the project merges expectations of stakeholders with safety requirements of the FHWA. The project includes 67 bridges and two major interchanges at the M-10 (Lodge Freeway) and I-75 (Chrysler Freeway) freeways. In the meantime, MDOT is rebuilding several bridges that are in very poor condition. Three bridges have been previously completed in the corridor; 11 more bridges are schedule for 2018 and 2019 construction and seven more bridges are scheduled for 2019-2022.

I-696 pavement inlay

A major repair project is under construction between April and November 2018 that involves replacing all pavement on 10 miles of I-696 (Walter Reuther Freeway) in each direction from Dequindre Road to Nieman Street in Macomb County; repair service drives from Couzens Road to I-94 in 2019; and repair 15 miles of pavement in both directions from I-275 to I-75 in Oakland County.

The work on I-696 is anticipated to be finished in November 2018. The service drives off I-696 in Macomb County will be resurfaced beginning in April 2019 and be completed in September 2019.

I-75 expedited project delivery, Metro Detroit

The widening and reconstruction of I-75 encompasses approximately 18 miles for freeway. MDOT will use an innovative contracting method called design, build, finance and maintain (DBFM) to reconstruct one portion of the route. Similar to a public-private-partnership (P3), the DBFM team will be responsible for the cost of designing, constructing and maintaining this project.

The DBFM project consists of rebuilding more than 5 miles of pavement, modernizing the freeway, and improving 28 bridges. Also included is a safety upgrade that separates traffic entering northbound I-75 from I-696, and northbound I-75 traffic exiting at 11 Mile Road. To address drainage issues in the area, MDOT is constructing a 14-foot diameter drainage tunnel to separate and meter freeway water from the local storm system.

The DBFM procurement allows for the flexibility to fund the project with availability payments spread out over 30 years, enabling additional investments on other parts of the transportation system.



I-94 road and bridge reconstruction, Jackson County

This project is on a critical corridor that serves local, national and international trade traffic on I-94 in Jackson that has increased substantially since the freeway opened to traffic in 1960. The project includes reconstructing 1.4 miles of freeway, resurfacing 7.5 miles, rebuilding and redesigning the I-94/Cooper Street interchange, including the addition of new roundabouts on each side of the new bridge and reconstructing each of the ramps, and replacing the bridge over the Grand River. The current project began in summer 2018 and will last through spring 2020.



I-75 reconstruction, Monroe County

This project is on a critical corridor that serves local, national and international trade traffic on I-75 in Monroe County. This project includes five phases of I-75 reconstruction that will be completed by 2028. The first phase was completed in 2016 from Dixie Highway to I-275. The two southern sections are currently scheduled for letting in 2019 and 2021. The final two phases require more complex agreements and environmental assessments and have not been scheduled at this time.



I-96/I-196 interchange improvements, Grand Rapids

Freeway reconstruction at the I-96/I-196 interchange in Grand Rapids involves replacing the bridge carrying westbound I-196 over eastbound I-96. The project will bring eastbound I-96 over westbound I-196 (essentially flipping the overpass) to attain a much simpler bridge to both construct and maintain. By flipping this bridge, MDOT can take full advantage of the cost and impact savings to the motoring public while constructing significant improvements to both facilities in 2018 and 2019, bringing future congestion relief sooner and at a lower cost. This provides separation for both eastbound I-196 and eastbound I-96 ramp movements to M-37/M-44 (East Beltline Avenue) and provides two clear through-lanes until eastbound I-196 merges with eastbound I-96.



US-23 Sunrise Side Heritage Route, Iosco County

MDOT has completed three projects on US-23 in Iosco County in the last five years that involve continuous improvement projects. More than 20 miles of US-23 will have been improved by these efforts, including a new project started in 2018.

The 2018 project is a 5.8-mile reconstruction project from Tawas Beach Road to Kirkland Drive. Fifteen bio-retention basins will be installed along the highway to store and filter runoff, which includes sediments before it reaches the lake. This project also is focusing on removing or relocating roadside fixed objects, such as trees and signs for safety. The projects have been done in coordination around the tourist season and with communities on their infrastructure upgrades.





Bridges

New Bureau of Bridges and Structures

Recognizing that bridges are expensive and high-profile assets, MDOT announced in 2017 the creation of the Bureau of Bridges and Structures as part of a vital effort to better align resources and streamline collaboration and cooperation. The reorganization is the result of MDOT's ongoing focus on continuous improvements and aligns with the practice of most other state DOTs. The specific bridge projects included here are just some of the projects undertaken over the past eight years to preserve and improve these important structures.

I-75 bridge over the Rouge River, Metro Detroit

MDOT is currently replacing the deck on the largest bridge in Michigan, on a primary commerce corridor for the city of Detroit. The total deck area of I-75 over the Rouge River is 100,000 square feet larger than the Mackinac Bridge.

Zilwaukee Bridge bearing replacement, Saginaw County

I-75 spans the Saginaw River with dual 8,500 post-tensioned concrete segmental box girder bridges, consisting of 1,592 concrete segments with an average weight of 160 tons each. As part of a long-term service life strategy, a project to replace 66 expansion joint bearings, 106 pier bearings, and 10 abutment bearings was executed in 2013 and 2014. Despite the sheer scale and complexity of this project, innovative contract delivery allowed

MDOT to achieve cost savings in this first-of-a-kind-project.

M-20 over the Tittabawassee River, Midland County

The M-20 bridge over the Tittabawassee River is being reconstructed, and as part of that effort will provide a grand visual entrance to downtown Midland. Aesthetic features were coordinated as a



joint effort between the locals and MDOT to complement the city's historic district, as well as the new streetscape. The project includes a very complex design and construction challenges due to the unique site conditions. The \$22 million investment includes more than 1,500 pounds of structural steel and is expected to be complete by fall 2019.

US-31 bascule bridge project, Charlevoix

The US-31 bascule bridge in Charlevoix, between Round Lake and Lake Michigan, is one of 12 movable bridges in MDOT's inventory. This bridge is a vital connector for tourism, industry, the economy, and everyday living in northwest lower Michigan. Beginning in 2017, this bridge project included substructure and steel repairs, electrical and mechanical upgrades, and replacement of the traffic warning gates and interlock switches. Additional work included repairing and sealing the concrete sidewalks and repainting.



US-131 bridge strengthening over the Muskegon River, Mecosta County

US-131 spans the Muskegon River on a northbound and southbound pair of 580-foot-long concrete box-girder structures resting 55 feet above the river. The three-span bridges were constructed in 1982 and are supported by a pair of fixed piers. As part of a long-term service life strategy, a \$5 million improvements project was executed to strengthen the structure in 2015. Work included surface sealing, deck patching, joint replacement, drainage work, girder repair, substructure repair, and electrical work.



M-86 bridge reconstruction over the Prairie River in Centerville, St. Joseph County

The new M-86 bridge over the Prairie River features two innovations: carbon fiber reinforcements, a first in the state, and it is one of only two bridges in the state with concrete bulb T-beams. The original M-86 bridge, a historic camelback pony truss bridge, was restored and relocated to the local road system in Cass County. The \$6 million investment included constructing the new bridge from July to November 2016 and restoring and relocating the original bridge from July 2016 to August 2018.



M-85 (Fort Street) bascule bridge replacement, Metro Detroit

The 2015 M-85 (Fort Street) bridge project over the Rouge River in Detroit involved replacing a double-leaf bascule bridge built in 1920 with a new state-of-the-art design of a single-leaf bascule with an overhead counterweight. The Fort Street bridge is a rolling-lift bascule and is the second-largest and heaviest bascule leaf in the world. The project received a 2017 Engineering Merit Award from the American Council of Engineering Companies of Michigan.





US-2 bridge replacements over the Escanaba River, Delta County

MDOT is investing \$20.5 million to replace both the US-2 bridge over the Escanaba River and the Escanaba and Lake Superior (E&LS) Railroad bridge over US-2. This two-year project also includes reconstructing and realigning 0.8 miles of roadway and replacing 3,000 feet of E&LS Railroad track. The project area includes a very popular county camp ground/park, the Verso paper mill, a residential trailer park, and a railroad bridge, and is located along a bridge with the highest traffic counts in the U.P. Its success required early and continuous communication with many stakeholders before and during construction. Construction of a new bridge over the Escanaba River provided an opportunity to remove two critical barriers preventing a nonmotorized connection between Gladstone and Escanaba: the barrier-separated pathway on the bridge and the culvert beneath the railroad viaduct. These two facilities will be connected with a separated pathway between Pioneer Trail Park and CR 426 (N Third Street). The project will be completed in 2018.



National leader in carbon fiber reinforced polymer

MDOT took the lead in developing and proposing to AASHTO a national design specification for carbon fiber reinforced polymer (CFRP) prestressed concrete bridge elements. That proposal was approved by the AASHTO Committee on Bridges and Structures in June 2018. CFRP is a corrosion-free option for pre-tensioning and post-tensioning applications on concrete bridge elements. It performs comparably to steel in the finished product in terms of material handling, structural erection, constructability, and other factors. CFRP's other benefits include lower life cycle costs due to reduced maintenance and repair requirements. Today, departments of transportation from Maine to California are recognizing a host of practical advantages of CFRP. The cost of CFRP, although only a fraction of the cost of an overall bridge project, is falling as applications, supply, and technology continue to advance.



"This is the material for the future. It will be very sustainable and, from a corrosion point of view, this material isn't going to corrode like steel. It has twice the lifespan of steel."

– Dr. Nabil Grace, Ph.D., P.E., Lawrence Technological University





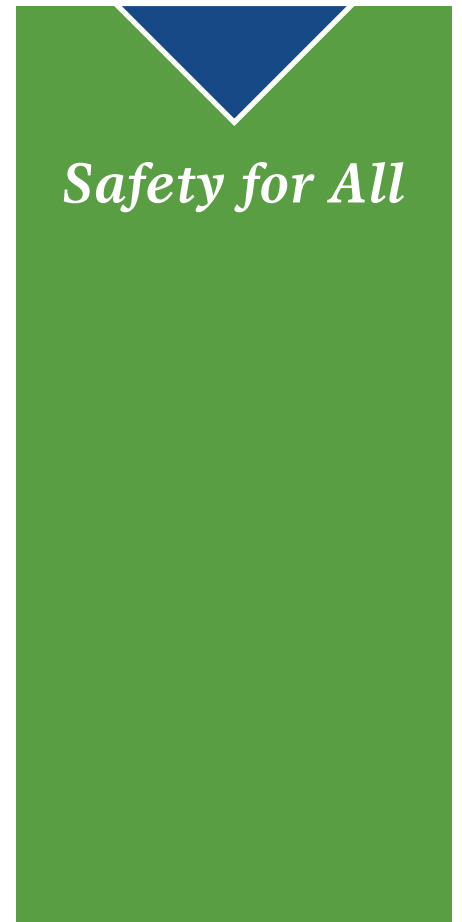
Every employee at MDOT understands the importance of safety in every decision made and every action taken. From planning and design to construction and the environment, safety is always a primary consideration. Here are a few highlights of MDOT's ongoing safety efforts.

Toward Zero Deaths

MDOT works with Michigan State Police on an ongoing effort called [Toward Zero Deaths](#), an education campaign to encourage a culture of safety. Beyond the slogan, however, MDOT has implemented many new techniques and technologies in its effort to improve the safety of everyone using Michigan's roads and transportation systems. MDOT's efforts are broad, from pavement treatments such as roadside rumble strips to "gridsmart" traffic signal integration, from coordinated training with law enforcement on vehicle operation and pedestrian safety to discussing options with local officials for safer travel corridors, and from green lights on snowplows to high-visibility reflectors on sign posts to ice-sensing equipment installed on bridges to make winter driving safer.

Lane departure crash mitigation

Nationwide, about half of all traffic fatalities are associated with lane departure crashes that result in head-on or fixed object collisions or vehicle overturns. While they appear to happen randomly and seem harder to react to, implementing lower cost, systemic safety improvements can help reduce the risk of lane departures. Targeted projects like high-friction surface treatments help in wet pavement conditions. Corridor improvements of installing additional signs and curve delineation help during all times of day, especially at night. Removing fixed objects, widening shoulder, and installing cable median barrier all are part of the plan to reduce lane departures.





MDOT has installed 277 miles of cable guardrail over the past eight years.

Work zone safety

Improving work zone safety helps protect travelers. MDOT completely rewrote its [Work Zone Safety and Mobility Manual](#) to improve guidance for pedestrian traffic in work zones. MDOT is the first state DOT in the country to require temporary wet reflective markings in work zones that are visible at night in the rain, unlike standard markings. MDOT encourages the use of speed trailers to keep drivers aware of their speed in the work zone and, beginning in October 2018, all MDOT projects will use fluorescent drums and grabber cones that increase visibility at a distance even in low light and foggy conditions.

While improving work zone safety is important for travelers, it is vital for highway construction workers. MDOT coordinates efforts with county, state and motor carrier law enforcement agencies, and has offered work zone safety training over the past five years that has reached 750 MDOT employees, contractors, consultants, or local officials annually.



Construction safety

Beyond work zone safety is safety on the construction site itself. MDOT has undertaken multiple efforts to improve construction safety, including greater emphasis on high-visibility clothing, instructing MDOT and contract employees how to prevent workplace falls, implementing new rules for the use of silica in construction, and creating an internal Michigan Occupational Safety and Health Administration (MIOSHA) citation website where MDOT employees can monitor worksite safety violations, including citations issued to contractors. MIOSHA citations issued to MDOT have been posted on the site since 2011 and are updated annually. The number of citations and inspections MDOT has received have declined since 2013.

“Never before have so many key national roadway safety organizations worked together for a united effort. The adoption and implementation of the Toward Zero Deaths vision by so many partners demonstrates a unified commitment and major step in the effort to transform our nation’s traffic safety culture.” – Kirk Steudle, State Transportation Director



Bike safety

At the behest of the City of Grand Rapids, MDOT partnered with the city and FHWA to conduct a three-year bicycle safety education campaign. The project was successful, achieving an 81 percent decrease in fatal/serious injury crashes between 2015 and 2016, bucking statewide statistics for that year; and a 24 percent reduction in bicycle-involved crashes, the lowest since 2007. The campaign website had more than 32 million views in the first year, exceeding industry standards for a campaign of this scale. As part of the project, a “playbook” was developed to guide other communities through the planning and implementation for similar bicycle safety education campaigns with the goal of providing safer streets for all travelers.



Freeway Courtesy Patrol

Michigan's Freeway Courtesy Patrol (FCP) is a big hit with stranded motorists. The FCP's prompt action to help remove vehicles from the shoulder of the roadway helps reduce congestion, too. In and around Ann Arbor, the FCP has helped an average of more than 5,000 drivers per year since it began in 2013. In southeast Michigan, where the patrol has been in operation longer, the FCP has helped an average of almost 36,000 drivers per year and towed away an additional average of nearly 10,000 abandoned vehicles per year since 2010. In total, the FCP has helped more than 336,000 Michigan motorists over the years.

"I hit an enormous crater on southbound I-275 in Monroe this morning. While waiting on the shoulder for roadside assistance, I was pleasantly surprised by an MDOT courtesy van. He was very nice and changed my tire in 10 minutes. Sadly, I did not get his name but wanted to share my appreciation! Our potholes are bad, yes, but how nice to have this service when you really need it. Great job!"

Dilemma zone detection

In 2015, MDOT installed dilemma zone detection for the first time in the U.P. at an intersection in Gladstone. This technology extends yellow and red signal phases to minimize the potential for angle crashes. The system observes approaching traffic, measures speed and extends signal timing if a vehicle will not be able to stop for a red light. This helps improve safety at intersections with higher crash risk.

Rural traffic alert systems

The US-131/Intertown Road intersection south of Petoskey had been the site of many serious and several fatal crashes over the years. The intersection lies in a valley on US-131, making it difficult for drivers to see and react to other vehicles. To address the problem, MDOT installed a radar detection system to warn drivers of vehicles at the intersection well before they would ever see them. In the first use of the combined technology in the state, MDOT installed both a Rural Intersection Warning System (RIWS) and a Rural Intersection Collision Avoidance System (RICAS). The RIWS is activated by a series of sensor "pucks" embedded in the pavement that detect approaching vehicles on Intertown Road. The RICAS uses radar to sense US-131 traffic that has slowed or stopped to make a turn. Both systems trigger a flashing beacon on signs 800 feet on either end of the intersection, warning drivers to "Watch for Traffic" ahead. To reconstruct the intersection and adjacent highway would have cost an estimated \$2 million to \$4 million. By installing the warning system, MDOT helped address the problem for less than \$50,000. Since the installation of these devices in 2015, there has been a 43 percent reduction in crashes and an 80 percent decrease in injuries.





Constructing Smarter and Safer... Safer, more efficient intersections and interchanges

MDOT has improved intersections at key locations across the state to make them safer and more efficient. Roundabouts are increasingly popular and, in more heavily traveled areas connecting to freeway traffic, diverging diamond intersections (DDIs) are very effective. These intersection and interchange upgrades improve safety, maintain or increase traffic throughput, and often incorporate elements to address pedestrian safety or improve the appearance of the community. A few such improvements are highlighted here.

Diverging diamond interchanges (DDIs)

“This innovative interchange will benefit our residents and be enormously advantageous to our thriving business community. We are pleased to be partnering with MDOT on this important project that will enhance commerce and vastly improve motorist safety.”

– Mayor Kevin McDaniel, Auburn Hills



Photo below: Michigan’s first DDI was completed as part of a \$24 million reconstruction project on I-75 in Auburn Hills, and included a new multi-use path, decorative lighting and landscaping. The DDI reduces conflict points and delays, improves pedestrian safety and lowers traffic speeds.



MDOT partnered with Grand Rapids Township and the Kent County Road Commission to build the DDI at the I-96/Cascade Road intersection with enhancements on the bridge and additional work on the adjacent roadway segments and intersections.

Roundabouts

"I just drove through the new roundabout at M-37 and M-115 - it's great! What a good idea. I was headed south, so where I formerly had to stop and wait I merely had to slow down. I'm glad you tried a new approach."

– Traverse City resident

1 - Roundabouts have been constructed in Ishpeming and Marquette, with another to come in Sault Ste. Marie. This photo shows the roundabout at US-41/M-28 at the Marquette Hospital Entrance.

2 - This roundabout on M-52 helps calm traffic and improve pedestrian safety near downtown Adrian.

3 - MDOT chose roundabouts for the intersections on its US-23 Flex Route in Livingston and Washtenaw counties because they decreased the cost of reconstructing the interchanges and allowed for narrower bridges.

4 - The roundabout on US-12 at Old M-205 and Five Points Road near Allenton, Cass County, won the Michigan Concrete Association's Michigan Awards of Excellence in 2016.

5 - The roundabout at US-127 BR/Mission Street in Mt. Pleasant, completed in July 2017, reduced a previously high crash rate and included drainage improvements, new signs, lighting, and a five-year materials and workmanship pavement warranty.

6 - The North Region's first roundabout at M-115/M-37 in Mesick, Wexford County, was constructed as a major safety improvement. The roundabout project included replacing existing stop signs, combining and relocating several driveways, rerouting a major regional snowmobile trail, and installing LED lighting for the intersection.

7 - The roundabout at M-11/Remembrance Road in Walker, which resolved multiple operation and safety issues, was the result of a strong partnership between the City of Walker, MDOT, and the Grand Valley Metro Council. This project received a 2015 Good Government Team Award.





More Than Highways

MDOT has made great strides working to improve transportation for everyone, on every mode of transportation. Although MDOT doesn't own much of the infrastructure that serves other modes, it works closely with other transportation providers to promote improvements to the complete multi-modal network. These are just a few of the countless projects MDOT helped move forward over the past eight years.

Airports

Since 2011, MDOT's Office of Aeronautics has administered more than 50 runway improvement projects through more than \$400 million in federal grants, including:

Detroit Metropolitan Wayne County Airport (DTW): In 2017, the DTW Airport Authority reconstructed one of its main runways, critical to the airport's operational efficiency and business continuity, along with associated taxiways, and replaced runway and taxiway lights with LED technology. The project received the Institute for Sustainable Infrastructure Envision Silver Award, which recognizes sustainable infrastructure across environmental, social, and economic impacts. The \$106 million project was completed within one construction season.

Marquette, Sawyer International Airport (SAW): Over several years, Marquette's Sawyer International Airport improved one of its main runways, shortening the 12,070-foot runway to 9,070 feet and improving the remaining pavement at a cost of \$5.6 million. The FAA had wanted to reduce the length of the runway to 6,500 feet but listened to the Sawyer

International Airport management and local leaders and allowed the longer improvement. This length allowed the community to recruit and retain businesses who repair and refurbish large jumbo jets.

Jackson County Reynolds Field (JXN): In order to improve safety, Jackson County Reynolds Field airport realigned its primary runway over a span of six years. The new primary runway is 5,370 feet long



by 100 feet wide and replaces the same length runway. The realignment allows for proper safety areas and approaches. This \$12 million construction project included demolition of the old runway, taxiways, and hangar, and installation of fencing, storm sewer, new runway, lighting, snow removal, and emergency equipment storage facility and navigational aids.

Holland, West Michigan Regional Airport (BIV): In 2016, a new 7,500-square-foot business center and terminal building and aircraft apron were constructed at this public-use general aviation airport, replacing an outdated terminal building with less than 2,000 square feet of space. The \$6.8 million project was accomplished using funding from federal, state, local airport authority, and private contributions. Now, instead of the business travelers going through an old ranch house, they can use a modern terminal with all the associated amenities.

Sault Ste. Marie, Chippewa County International Airport: In 2014, the Chippewa County International Airport undertook a \$1.6 million project to improve one of its runways and installed new lights for improved safety. This project narrowed the runway from its 200-foot width to the standard 150-foot width. The old width remained from the airport's days as a B-52 bomber base. This reduction in width reduces maintenance and snow removal costs for the airport and local government.

Drones

The Michigan Unmanned Aerial Systems (UAS) Task Force, established by Public Act 436 of 2016 to develop statewide policy recommendations on the operation, use, and regulation of unmanned aircraft systems, or drones, within the state of Michigan, is housed within the Office of Aeronautics. The UAS Task Force completed a final report, including 13 recommendations for UAS integration and operations within the state. The task force continues to meet as new areas of concern are identified.

Transit

Over the last eight years, MDOT's Office of Passenger Transportation has provided funding for more than 900 vans and buses for rural and specialized transit providers and provided approximately \$230 million in state match of federal capital funding awarded to urban transit agencies.

Flint Your Ride Service Center: The Flint Mass Transportation Authority opened the new Davison Your Ride Service Center in 2018. The facility, which sits on seven acres, holds 21 demand-response vehicles and has a fueling station, serving the city of Davison and surrounding townships.

Ann Arbor Transit: The Ann Arbor Area Transportation Authority (AAATA) had several major facility projects over the past eight years. In 2010, AAATA partnered with the University Michigan to construct a \$2.3 million joint transit center to accommodate transfers between the two systems. In 2013, AAATA did a \$2.3 million, 20,000-square-foot expansion to its storage garage to increase indoor storage for buses. In 2014, AAATA completed an \$8.5 million rebuild of the Blake Transit Center in downtown Ann Arbor.





“The Blake Transit Center will help to improve the quality of life in Washtenaw County by providing residents with a modern, clean and visually appealing structure that will better accommodate riders, embrace new eco-friendly technologies and enhance the public transit customer experience.” – Michael Ford, AAATA CEO

Alpena: In 2017, the Thunder Bay Transportation Authority (TBTA) completed construction of a \$7.5 million, 43,000-square-foot facility with space for administrative, maintenance and vehicle storage.

Clinton County: In 2017, Clinton Transit completed a \$1 million project to construct new administrative and maintenance facilities.

Eaton County: In 2014, the Eaton County Transportation Authority completed a major facility renovation, including a \$1.6 million, 2,100-square-foot expansion to the administration/operations building.

Alger County: The Alger County Public Transportation (ALTRAN) Authority’s facility was destroyed by a fire in 2015. A new building was constructed using the layout of the previous building, with the exception of bus storage, which was re-designed to fit more vehicles indoors. The maintenance facility was improved and a conference room was added. The grand opening for the \$1.9 million, 11,000-square-foot replacement facility was held in May 2017.

Rail

All aboard: In conjunction with major improvements to accelerate rail between Dearborn and Kalamazoo, MDOT worked with local officials to implement station improvements as well. New passenger rail stations have been constructed in Grand Rapids, East Lansing, Troy, and Dearborn since 2011. Station improvements have been implemented in Battle Creek, Jackson, Bangor, and Royal Oak. A study for a new station is underway in Ann Arbor.

Freight rail improvements: MDOT continues to work to improve the 530-mile state-owned freight rail system. In 2018, MDOT completed a project to upgrade four bridges and approved more than \$7.1 million to fund additional capital projects on the Ann Arbor-Traverse City corridor. The most notable new project on that line involves the reconstruction of 3 miles of track, complete with rail replacement, between Rosebush and Clare.

Bikes on trains: Amtrak, with support from MDOT, began accepting reservations for roll-on bicycle transport on the Blue Water line in 2013. The service was expanded to include the Pere Marquette Line in 2016, and the Wolverine Line in 2018. The new services expand multi-modal transportation options to communities served by Amtrak and, since implementation, hundreds of reservations for bicycle transport are made on an annual basis.



Marine

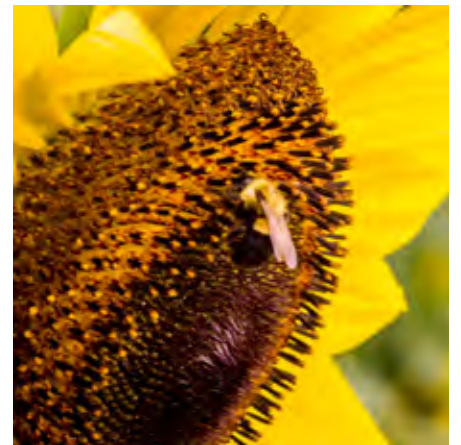
Could a new Soo Lock be on the way? Construction of a second large lock to enable passage of 1,000-foot modern freighters between Lake Superior and the lower Great Lakes has been a goal for decades. The proposed lock would have dimensions similar to the existing 50-year-old Poe Lock and would replace two closed World War I-era locks. The new lock would provide critical redundancy and allow for improvements of the aging Poe Lock. Construction of the new lock was authorized by Congress in 2007 at 100 percent federal funding. The locks are owned and operated by the U.S. Army Corps of Engineers, which completed a new economic validation study for the project in 2018. The new study updated the benefit/cost ratio to 2.42, allowing the project to move forward with Congressional funding. The State of Michigan sent President Trump a letter that same month pledging \$50 million in an effort to advance the long-needed project and allow it to rank highly among competing national infrastructure needs. If funding is made available in Fiscal Year 2019-20, then construction would begin in 2021 and the new lock could be operational by 2027.



In support of pollinators

MDOT's extensive right of way provides an opportunity to help support traveling pollinators like bees and butterflies that are so critical to the success of Michigan's agriculture industry. Like other states in the Midwest, MDOT is working to help improve pollinator habitat along its right of way.

- MDOT's Integrated Roadside Vegetation Management Program incorporates pollinator-friendly best management practices that encourage the maintenance and enhancement of pollinator plants and habitat.
- Over the past three years, sunflowers were planted at interchanges or in the highway median in locations in Saginaw, Bay, and Isabella counties to provide low-maintenance sources of pollen with visual appeal for travelers.
- Along I-75 in Monroe County, which is undergoing reconstruction, MDOT has transplanted thousands of Sullivant's Milkweed to the Sterling State Park lake plain prairie restoration area. This milkweed species, along with other milkweeds, plays an important role in the recovery of monarch butterfly populations, which have recently declined.
- Monarch Way Stations have also been installed at rest areas and Welcome Centers through a program working with master gardener volunteers. For the price of a few hundred dollars a year in plants, these volunteers help ensure attractive food sources for butterflies that travel as far south as Mexico each winter.
- In 2016, MDOT was awarded the Turney Hernandez Award for outstanding roadside vegetation management programs, the highest honor presented by the National Roadside Vegetation Management Association.





Detroit Riverfront projects

Fifteen years ago, a visionary group of community leaders initiated the Detroit Riverfront Conservancy to revitalize a neglected, blighted area of crumbling buildings, abandoned vehicles and vacant lots filled with weeds. The original founding partners, the City of Detroit, GM, and the Kresge Foundation, worked with multiple stakeholders to revitalize the riverfront and transform it into an economic catalyst for a stronger Detroit. Now, an estimated 3 million people a year visit to take advantage of its scenic beauty, special events, free programs and public art. The transformation of the riverfront has brought a new vibrancy to downtown with new restaurants, businesses and hotels sprouting up, bringing more than \$1 billion in new investments. The State of Michigan partners in this effort include the Governor's Office, the Legislature, MDOT, MEDC, Department of Natural Resources (DNR), and the MI Natural Resources Trust Fund.

"Greenway connections and expanded park space connect nearby communities to the river, catalyzing investments that respect Detroit's history while embracing the character of the district."

– Skidmore, Owings and Merrill, LLP

https://www.som.com/projects/detroit_east_riverfront_framework_plan



A thousand miles of U.S. Bicycle Routes (USBR)

Since 2010, MDOT has worked with local partners to identify and designate USBRs across the state. USBRs are on-road designations for cyclists.

- USBR 20 crosses central Michigan from Marine City to Ludington, connecting to Ontario and Wisconsin via ferries on both ends.
- USBR 35 follows the Lake Michigan shore from the Indiana border across the Mackinac Bridge to Sault Ste. Marie.
- USBR 10 crosses the Upper Peninsula from St. Ignace to Iron Mountain.
- Michigan's system is tied with Florida for second place for total USBR mileage, with 1,008 miles. Alaska has the top spot at 1,414 miles.



Paths to connecting communities

Tourism is vitally important to the Michigan economy and Michigan leads the nation in attracting a new segment of the industry: bicycle tourists. Studies show that bicycle tourists spend between \$100 to \$230 per overnight stay on food, lodging and other essentials. MDOT worked with consultants to estimate the economic impact of bicycling in 2014 and determined that just six major bicycle tour events, out of 300 annually, generated a total impact of \$21.9 million from out-of-state participants. To enhance bicycle tourism across the state, MDOT has undertaken several projects such as:

- The Iron Belle Trail, featured elsewhere in this document, is a key new tourist attraction, that spans from the Detroit waterfront to the western end of the U.P. in Ironwood.



- The M-45 pedestrian tunnel in Walker won the Transportation Achievement Award from the Institute of Transportation Engineers Michigan for excellence in the “advancement of transportation to meet human needs.”
- The Iron Ore Heritage Trail in Marquette County starts at Negaunee and continues east to Marquette.
- The Michigan Avenue Nonmotorized Path in Jackson was constructed as part of a larger project on I-94.
- The US-127 right of way path in Gratiot County was built as part of a construction project on US-127. It will ultimately connect two larger trail networks in mid-Michigan.

“We are following the original plank road that was used in the mid-1850s to take the newly discovered ore to the Lake Superior harbor for shipping to steel mills. Users of this section of the trail will go past early mine sites, forges, quarries, active tracks that continue to bring ore to the harbor, and the Michigan Iron Industry Museum.”

– Carol Fulsher, Iron Ore Heritage Recreation Authority Administrator

Progress starts with policy

In 2010, legislation was passed that required MDOT to work toward “complete streets,” which consider all users of the system within the context and function of the street. Elements that improve safety, access, transit corridors, meet Americans With Disabilities Act (ADA) requirements, or contribute to bike and pedestrian movements are key components. Following that legislation, MDOT worked with a Complete Streets Advisory Committee to develop suggested language for a State Transportation Commission policy (adopted in 2012) and to develop model language for local complete streets policies. For many years, MDOT has used a context sensitive solutions (CSS) process to develop transportation projects using a collaborative interdisciplinary approach where MDOT solicits dialogue with local governments, road commissions, industry groups, land use advocates, and state agencies early in a project’s planning phase. A cooperative spirit and an awareness of community interests help achieve the ultimate goal: projects that fit their surroundings while effectively serving transportation needs. MDOT is also currently working through a multi-modal development and delivery (M2D2) process, a team approach to refine MDOT standards, guidance, and processes to reflect best practices in this area.





Partnerships Make Sense

MDOT's business is founded on good working partnerships. All construction projects are undertaken in partnership with private contractors, and most winter maintenance is accomplished through partnership with county road commissions. MDOT has also undertaken a number of P3s and innovative contracts to design, build, finance, operate, and/or maintain its infrastructure.

Lighting the way

One P3 that shines brightly is helping to keep the lights on along southeast Michigan freeways. When copper theft and a lack of funding made it impossible for MDOT to keep enough lights on, it initiated an innovative P3, the first in the country aimed at improving freeway lighting. In 2015, MDOT contracted with Freeway Lighting Partners, LLC (FLP) to install, operate and maintain new lights throughout the area. Since then, FLP installed more than 13,000 new energy-efficient LED lighting fixtures, then took over their operation and maintenance. FLP provides monthly reporting on its [website](#), routinely achieving the required 98 percent success rate in 2018. As a result, Metro Detroit has better lighting, better freeway visibility, and improved safety. New LED lights are saving energy and taxpayers are saving money, as the annual cost of the contract is less than MDOT would have had to pay for repairs.

Project partnerships

MDOT works closely with local community partners to address issues that need to be solved as part of project planning, including utility coordination, nonmotorized improvements, historic preservation issues, access management improvements, and others. These are just a few highlights:



For major downtown reconstruction projects in Hancock and Ironwood, MDOT partnered with the cities and the local business communities to keep traffic flowing and businesses busy during these two-year efforts.

MDOT partnered with Cascade Charter Township; the cities of Grand Rapids, Kentwood, and Wyoming; impacted property owners; and the Interurban Transit Partnership to install 7 miles of sidewalks on 28th Street from US-131 east to I-96.

MDOT worked with the State Historic Preservation Office to improve to historic status the Au Sable River Bridge in Grayling, the only steel rigid frame bridge in Michigan. MDOT also worked with the DNR regarding potential fish and natural resources impacts because the Au Sable River is one of Michigan's blue ribbon trout streams.

"We're pleased that things have gone so smoothly. This is a major improvement to our community. We have a rebuilt highway, improved traffic flow, and we've visually cleaned up the US-2 corridor - the entrance to Ironwood and Michigan." – Ironwood City Manager Scott Erickson

"MDOT has, I think, made a serious effort to get public input, to listen to the concerns of both the city and our committees - the planning commission, the DDA, and our bike and pedestrian committee - and I think it will be a great project." – Glenn Anderson, Hancock City Manager



Tribal partnerships

MDOT has a strong history of working cooperatively with Native American tribal governments on specific transportation improvements, including projects at locations across the state. Over the past eight years, MDOT's partnership with the tribes has expanded to include work beyond the pavement.

Growing wild rice: MDOT is an active participant in the Michigan Wild Rice Initiative (MWRI), an effort to protect, preserve, and restore manoomin/mnomen culture in Michigan. MDOT staff are actively planting manoomin, or wild rice, in areas of wetland mitigation banking sites and partnering with Michigan's tribes to share seed.

Teaching tribal history: MDOT worked with representatives from 10 sovereign Native American nations in Michigan, five state agencies, two universities, and three private organizations to develop curriculum units for third and fifth grades related to tribal history. The ["Ancestors, Archaeology and the Anishinabek: Bridging the Past into the Future"](#) lesson plans meet current social studies and literacy standards. The effort was presented at the 2018 Tribal Education Departments National Assembly "Regional Conference on Education and Sovereignty" in collaboration with the Pokagon Band of Potawatomi in New Buffalo.



Regional transit in southeast Michigan

Enacting legislation that created the Southeast Michigan Regional Transit Authority (RTA) was a major accomplishment, putting Metro Detroit in a position to develop broad, coordinated transit throughout the area. MDOT worked with the Southeast Michigan Council of Governments (SEMCOG) to staff the RTA for the first year-and-a-half and provided \$8.5 million in state and federal funding over the past five years for administration and specific planning efforts.

Safe Drivers, Smart Options

In 2014, MDOT undertook a three-year effort to improve roadway safety for an expanding population of drivers 65 or older, thereby improving safety for all drivers. The goal of the effort was to plan, test, implement and evaluate a statewide safety education and intervention effort to help keep Michigan's aging adults safely mobile. MDOT worked with the Michigan Department of State (MDOS) and the University of Michigan Transportation Research





Institute, as well as numerous other organizations, including those representing the elderly, state and local law enforcement, and the medical community, to develop the [Safe Drivers, Smart Options](#) strategies. The effort, now housed at MDOS, is intended to be used by aging adults, family, friends, and professionals who work with aging adults to ensure that their mobility needs are met. The effort was recognized in 2017 by the American Association of Motor Vehicle Administrators as a regional winner for the Excellence in Government Partnership Award.

Providing greater flexibility for rural agencies

MDOT continued to strengthen its partnership with rural task force (RTF) and regional planning agencies over the past eight years. In 2018, MDOT expanded its Local Federal Fund Exchange Program to provide greater funding flexibility for local agencies and provided training for local partners. These efforts have enhanced the effectiveness of the RTF program, reinforced the federal planning process and allowed flexibility for counties to maximize funding for project delivery. MDOT was invited to share information on the success of the effort in two multi-state educational conferences over the past year.



Taking a new path

Since 2011, Transportation Alternatives Program (TAP) grants to state and local agencies helped construct 575 miles of separated pathways (trails), paved shoulders for walking and biking, and bike lanes. Approximately \$24 million is available annually through a competitive grant process. Of this, \$17 million is awarded by MDOT and \$7 million is awarded by metropolitan planning organizations (MPOs) in urban areas with populations greater than 200,000. With changes in federal law, Michigan's TAP program has evolved the partnership with the MPOs to allow both MDOT and MPO grant applications to be submitted through the MDOT Grant System and benefit from the TAP technical review process, which helps ensure timely project construction.



Flying into the future

MDOT updated its Michigan Aviation System Plan (MASP) in 2017 with input from airport sponsors, airport users, the aviation industry, community business interests, and local officials, as well as the FAA. The plan sets forth the system and facility goals for Michigan airports based on each airport's role in serving community needs. The plan provides the basis for project identification for the Airport Capital Improvement Program. As part of the plan's update, MDOT also updated its Airport Community Benefits Assessment Tool. The tool calculates the positive financial impact of an airport on the local community, using specific local economic indicators, including employment, payroll, airport functions and services. Using data from 114 of the 226 public use airports, MDOT estimates that Michigan's airport network produces nearly \$22 billion of economic benefits each year.



One Call-One Click transit services

MDOT partnered with Michigan Association of United Ways in 2013 to secure federal funding to create a statewide One Call-One Click center. Over the next three years, the project expanded to unify the capacity of eight regional 211 call centers into a shared, statewide service delivery platform. The 211 call centers help provide a critical connection between people in need and appropriate services, including transportation, job training, and emergency relief. The project also partnered with the Michigan Veterans Affairs Agency to implement the 1-800-MICH-VET Helpline and started screening 211 callers for veteran status.

Managing mobility

MDOT partnered with Michigan Transportation Connection (MTC), a statewide nonprofit brokerage system, to secure FTA funding for an effort to create mobility management centers throughout Michigan in 2017. The centers are based on regional prosperity regions and provide non-emergency medical transportation for those in need. Transit agencies, Area Agencies on Aging organizations, and nonprofit organizations house the mobility management centers. MTC now oversees the system and coordinates with Michigan 211 in regard to software and telecommunication.

Intercity bus route cost-sharing with Wisconsin

MDOT entered into a partnership with the Wisconsin DOT (WisDOT) in 2016 to share the costs of the intercity bus route running between Escanaba and Milwaukee. MDOT agreed to provide the state match in return for WisDOT's federal funds - a fully equal arrangement. This route had previously been entirely paid for by MDOT. Now MDOT is using its federal funds for other projects within Michigan.

Michigan Mobility Challenge

In 2018, MDOT provided \$8 million in funding through a competitive process for local agencies with new ideas about how to solve mobility problems for seniors, persons with disabilities, and veterans. Project teams that received an award included public and private partners using new technology and innovative service models to change the status quo. Projects were selected from across the state to provide lessons learned for urban, rural and suburban communities for Michigan and the rest of the country.

Bike-sharing in Detroit

Through a P3 funded with a \$1 million federal TAP grant that leveraged corporate and foundation support, the City of Detroit was able to purchase and install 43 self-serve bike-share stations in 10 Detroit neighborhoods. MoGo launched in 2017 with 430 bikes, which were ridden out to their respective locations by members of the community. MoGo logged more than 132,000 rides in its first year of operations, which exceeded initial projections by 32 percent.

"I use MoGo for commuting and recreation. I don't have to worry about parking costs. The stations are in places I need to get to. It's just really convenient." – MoGo rider





Partnerships to keep Michigan's economy moving

Good multi-modal transportation networks are vitally important to freight movement. MDOT promotes and participates in meetings of the Commission on Logistics and Supply Chain Collaboration (LSC), created by law to provide insight and advice on freight policy. MDOT also attends meetings of the Port Authority Advisory Committee, created by Gov. Snyder to further initiatives for recreational and freight ports. MDOT participated in Gov. Snyder's Regional Prosperity Initiative, intended to coordinate and encourage regional planning. MDOT was also part of the governor's 21st Century Infrastructure Commission, which worked to identify future infrastructure needs and recommend strategies to strengthen and coordination infrastructure investment.

Safe Routes to School (SRTS)



MDOT continues to partner with the Michigan Fitness Foundation, the Michigan State University (MSU) College of Environmental Engineering, MSU School of Planning Design and Construction, and the Michigan Association of Planning to make it safer for children to walk or bike to school. The past eight years have seen an increase in district-wide participation, improving community participation and sustainability of the program after the initial grant award. From 2011 to 2017, grants were issued to more than 200 elementary and middle schools. Most grants (\$22.2 million) were used for construction, providing some 55 miles of new or replacement sidewalk, 4 miles of shared-use path, dozens of intersection and crosswalk improvements, traffic refuge islands, and new signs and ADA-compliant ramps. Additional grants (\$1.2 million) were issued for local SRTS education and encouragement activities, such as pedestrian safety training events, walk/bike to school clubs, bicycle training, safety patrols, and others.



Convenient carpools

MDOT continued its very successful carpool lot partnership with Meijer stores, adding a new location in Sault Ste. Marie in 2017. Agreements have also been signed with the Meijer store in Escanaba, which will be installed in 2019. In the recent past, MDOT has also successfully initiated additional P3s with local retailers and nonprofit agencies at five strategic locations across the U.P. Locations include:

- Delta County, at the US-2/US-41 intersection in Rapid River
- Gogebic County, at the US-2 and US-45 intersection in Watersmeet
- Marquette County, at the M-28/US-41 intersection in Harvey
- Marquette County, along M-28 BL in downtown Ishpeming
- Marquette County, at the M-553/CR 480 intersection near the Crossroads



Road Watchers report ice and snow

In an innovative partnership with the driving public, MDOT's North Region recruited commuters and other drivers to help report winter weather problems and road conditions on specific routes. This crowdsourced approach helps improve the region's ability to address specific winter maintenance problems quickly and more efficiently, improving safety for everyone. Region staff used the established connection to inform participants about maintenance practices and limitations, which resulted in greater understanding of the department's efforts. At the end of each season, staff not only received constructive criticism for maintenance practices, but also many compliments regarding the Road Watchers initiative and our winter maintenance accomplishments. The program has been so successful it has since been expanded to other regions of MDOT, including pothole reporting in late winter and spring.

"It actually made me feel as if I was contributing to safety on our local roads." – Road Watchers participant

Wayne County bridge program

MDOT recently partnered with Wayne County on two very important initiatives. MDOT provided technical expertise and guidance to Wayne County on the bridge inspection and bridge load rating of two very old, very specialized bridges on Hines Drive. They were in poor condition and, through the appropriate analysis techniques provided by MDOT, Wayne County was able to load rate the bridges and subsequently restrict traffic, thus ensuring public safety.

At the same time, MDOT assisted Wayne County by providing both technical expertise and partnering with the FHWA to ensure federal aid could be applied on Allen Road and Pennsylvania Road over Dix-Toledo Avenue. As a result, Wayne County will be able to make \$5.7 million worth of improvements using state and federal funds, improving both the condition and the safety of two important bridges in the county.

Sister agencies helping each other

MDOT developed a partnership with the DNR to provide project development and share resources where possible. Working through a steering committee and a variety of interagency program agreements, MDOT will be overseeing or building a DNR project in each MDOT region in FY 2019. MDOT rated the condition of all DNR roads in 2018 and has looked at ways to share facilities and large equipment. Working with the DNR, MDOT is trying to streamline wetland mitigation, and has cooperated on pollinator habitat, stormwater runoff, invasive species, conservation easements, and grant applications.





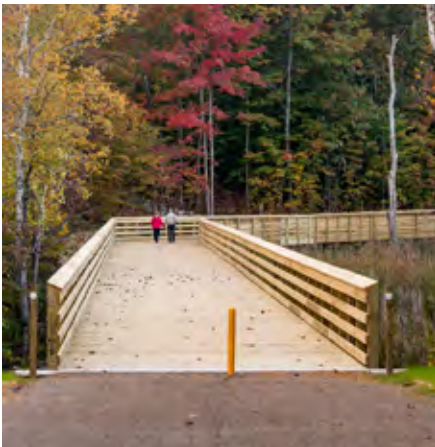
Belle Isle

Since the State of Michigan took control of Belle Isle in 2013, attendance has gone from less than 1 million visitors a year to more than 4 million annually. As part of that effort, MDOT worked with the DNR to make improvements, resolve day-to-day safety and other issues, and give public updates. MDOT has spent more than \$4 million rebuilding roads on the west end of the island and is doing major maintenance work on the MacArthur Bridge. As part of that work, MDOT repaved the parking lot of the Belle Isle Boat Club and worked with the DNR to resolve stormwater issues there. MDOT also provides guidance on signs to help control wrong-way traffic and offers input for event permits that require detours or lane closures, such as walk/runs or the Detroit Grand Prix. MDOT is also working with the DNR and the Friends of the Detroit River to permit a bridge and culvert for fish passage at Lake Okonoka and to repair the pedestrian bridge across Blue Heron Lagoon damaged by high river levels.



Sleeping Bear Heritage Trail

The Sleeping Bear Heritage Trail was a priority project of the Leelanau Scenic Heritage Route Committee in partnership with the Sleeping Bear Dunes National Lakeshore, Friends of Sleeping Bear Dunes, MDOT, and the Traverse Area Recreation and Transportation (TART) Trails to provide alternative transportation options for visitors to the lakeshore. A work group was formed in late 2005 to implement the planning process, which included setting a route, completing an environmental assessment, obtaining grants, design engineering, and construction. The first 4-mile segment of trail from the Dune Climb to Glen Arbor was completed in June 2012 to provide walking and bicycling access to the Dune Climb, historic Glen Haven, DH Day Campground, the group campground, and Glen Arbor. In 2014, a 5.5-mile segment from the Dune Climb south to Empire was completed. A 3.5-mile trail segment was constructed in 2015 from Fisher Road outside of Glen Arbor to the Port Oneida Historic District, including 600 feet of boardwalk over a wetland area. In 2016, a 4.5-mile segment of trail was completed from Port Oneida Road to CR 669/Bohemian Road, for a total of 17 miles.



US-31/M-72 Grand Traverse area

MDOT worked with partners in the Grand Traverse area to agree on improvements to the corridor leading into this northern recreational community. Using a Planning and Environmental Linkage (PEL) process, a plan was developed for the corridor from 14th Street/Silver Lake north to US-31 (Grandview Parkway) at Grand Traverse Bay. MDOT created a local advisory committee of diverse stakeholders and hired consultants to do the historical and cultural inventory and run the overall project. Along with MDOT staff, the consultants compiled the city's concept recommendations, engaged the public in a variety of ways, and developed alternatives for each intersection by consensus to find an approach that would fit this highway and the community. In 2016, the PEL was successfully completed with approval from the city, MDOT, and the FHWA.





MDOT makes it a point to involve its customers early in the development of transportation plans and projects. From regional pedestrian and bicycle committees to help inform nonmotorized plans to the Freight Advisory Council that provides input to the federal State Freight Plan to attending countless community meetings on land use and transportation issues, MDOT works hard to provide opportunities for transportation stakeholders and the public to participate and listen closely to what they have to say.

Where road and bridge projects are concerned, MDOT staff engage in one-on-one communication with local governments and stakeholders early when planning for major projects, to identify goals for the project, and coordinate with planned local projects. MDOT creates local advisory committees to encourage stakeholder engagement on major projects, a practice that started with planning for the Gordie Howe International Bridge and has since been expanded to other major projects, including the reconstruction of I-94 and redevelopment of I-375.

Attitudes and Perception (A&P) survey

Six times in the past eight years, MDOT has surveyed the public to gain an in-depth understanding of satisfaction with the state's transportation system. The information from the A&P survey helps drive the goals of the state long-range transportation plan.

MI Travel Counts Travel survey

MDOT, in cooperation with SEMCOG, in 2015 conducted the third survey of its MI Travel Counts household travel survey. More than 25,000 randomly selected households across the state participated in the survey by providing household demographic information and then reporting in detail their travel for one day. The information collected is used to develop travel demand models that provide the basis for transportation planning and help set priorities for future transportation investments.

Connecting planning and the environment

Most people think of the environment as fields, flowers, streams and trees, but it also includes the built environment, particularly when history is involved. Over the years, Traverse City officials had created several proposed concepts to improve US-31/M-37, commonly known as Division Street. MDOT worked with the community to find the most effective solution





through a process known as Planning and Environmental Linkage. MDOT created a local advisory committee that included stakeholders representing the city, county, tribes, township, natural resources, historical resources, schools, neighborhood associations, economic development, and transportation agencies. MDOT also engaged the public through four public input meetings over a year to develop by consensus the preferred alternatives and operational improvements that fit both the highway and community, and were approved by the city, MDOT, and the FHWA.

Online bike maps

Undertaken initially to save money and improve turnaround time for customers, MDOT's efforts to consolidate its Road and Trail Biking maps by region, and make them available through E-Michigan, has garnered a great response from the public. In fact, 2018 summer map orders were the highest ever, with requests this year from customers across North America and as far away as Alaska and Quebec. Maps are available [online](#) and can be purchased individually for \$5 (to cover the cost of shipping and handling) or a complete set covering all regions of the state for \$35.

"Those are awesome maps with the road shoulder width and traffic volume indicated, as well as bike trails. I wish other states would follow your lead."
– Maggie Ardito, Brevard County, Florida



Aviation customer and stakeholder support

The Michigan Aeronautics Commission (MAC) has created committees of stakeholders, including representatives from state and federal agencies, airport sponsors or tenants, community officials, airport users and industry representatives, dedicated to specific interests in aviation – safety, unmanned aviation systems (UAS, or drones), commercial aviation, and general aviation – to help identify challenges, opportunities, resources and ideas for improvement.

MDOT Office of Aeronautics staff hold annual airport-specific project planning meetings with airport sponsors and FAA managers to discuss airport development plans and identify the airport's challenges, as well as any assistance FAA or MDOT can offer. MDOT staff also provide hands-on training to airport staff in the use of e-administrative systems for computer programs on project planning, development and administration.



Bus inspections and regulatory reforms

In 2017, MDOT won a President's Award for Administration from AASHTO for its efforts to improve regulation of for-hire passenger transportation.

Beginning in 2014, MDOT transformed its approach to bus regulation from one of documenting carrier non-compliance to a customer-based approach, with the goal of all MDOT-inspected buses passing their first inspection. To help reach this goal, MDOT prepared an inspection manual and guidance documents to provide consistent guidelines for both carriers and MDOT and produced videos that walked viewers step by step through all aspects of an inspection. By 2017, more than 90 percent of inspected buses did pass the first time.

In 2017, MDOT was able to secure legislative reform to make Michigan's regulation of for-hire passenger transportation more rational for the industry



and more achievable for MDOT. The changes in law allowed ridesourcing companies like Uber and Lyft to operate legally in Michigan. It also shifted regulation of small for-hire vehicles, such as limousines, to the Michigan Department of Licensing and Regulatory Affairs (LARA). Responsibility for regulating vehicles seating more passengers, like buses, remained with MDOT. Because of its customer-based approach to bus inspections, by the time the bus law bill was before the Legislature, most bus companies saw MDOT as a partner in vehicle safety. And, despite increases to the number and of types of buses subject to MDOT inspection and increased inspection fees, there was no opposition voiced by the companies that would be subject to the law.

MDOT on social media

Social media offer a fast and relatively inexpensive way to communicate with customers, and MDOT has made the most of that opportunity.

[MDOT](#), its region offices, and a few of its offices and Transportation Service Centers use their Twitter accounts to alert the public to important or interesting transportation news. Together, they have received a combined total of more than 140,000 followers. MDOT's [Facebook page](#) is likewise popular, with more than 36,000 followers. The Facebook page not only offers news of interest, but also provides an opportunity for folks with questions or complaints to get a prompt reply. MDOT's Facebook followers often share compliments, as well.

MDOT's [YouTube account](#) features useful and informative videos that have received a combined total of more than 2.1 million views. Popular favorites include a video on how to use a roundabout (322,000 views) and another explaining the flashing yellow left-turn signal (203,000 views).

Finally, MDOT's "[Pic of the Day](#)" Instagram account features informative, sometimes historic, sometimes positively breath-taking, photos of the transportation system and the wonders of Michigan. It has gained more than 6,000 followers since it began in 2013, making it the number one Instagram account among state DOTs nationwide.



“I am so thankful for the team of people that work their tails off to keep our roads as safe as possible in one of the worst locations in America for road maintenance when it comes to winter weather. I can’t imagine the stress and thankless job you all do. Thank you for doing all you can and pushing for more to keep our roads safe!!”

– Comment on MDOT’s Facebook page, December 2017.

The most-liked MDOT Pic of the Day featured the American Flag being proudly displayed on the Mackinac Bridge on Memorial Day 2017.



Pothole reporting

Michigan's frequent freeze-thaw cycles make potholes annoyingly common, and winter 2018 was the worst pothole season Michigan has seen. To enlist the help of the public in battling potholes, MDOT has implemented some easy reporting mechanisms: the public can report a pothole through the MDOT [website](#) or by calling the pothole reporting hotline at 888-296-4546.

Number of Potholes Reported

Year:	2015		2016		2017		2018 (Q1 and Q2)	
Reporting Method:	Website	Hotline	Website	Hotline	Website	Hotline	Website	Hotline
Statewide Totals:	1,203	145	1,405	326	1,998	455	6,562	1,427
Combined Statewide Totals:	1,348		1,731		2,453		7,989	





Winter 2015 1-94 crash and response

On Jan. 9, 2015, while a winter storm with single-digit temperatures was producing bands of lake effect snow and whiteout conditions, a single-truck spin-out resulted in a 193-vehicle crash. Over the course of 44 hours, incident response was coordinated with multiple fire departments, state police, the county sheriff, MDOT, and towing. A fireworks truck ignited, stranded motorists and passengers were evacuated, a formic acid tanker had to be contained, fires were extinguished, vehicles were relocated, and pavement had to be cleared.

In the months following the crash, MDOT and Michigan State Police conducted an extensive 143-mile road safety audit from the Indiana state line to US-127 in Jackson County, reviewing crash data, interviewing staff, and conducting field reviews. The report provided a comprehensive list of opportunities for safety enhancements that are being implemented in conjunction with projects in the corridor.

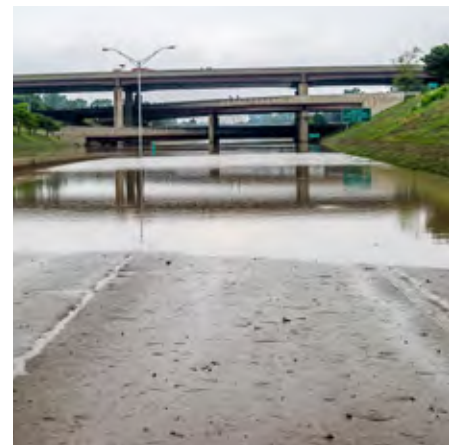
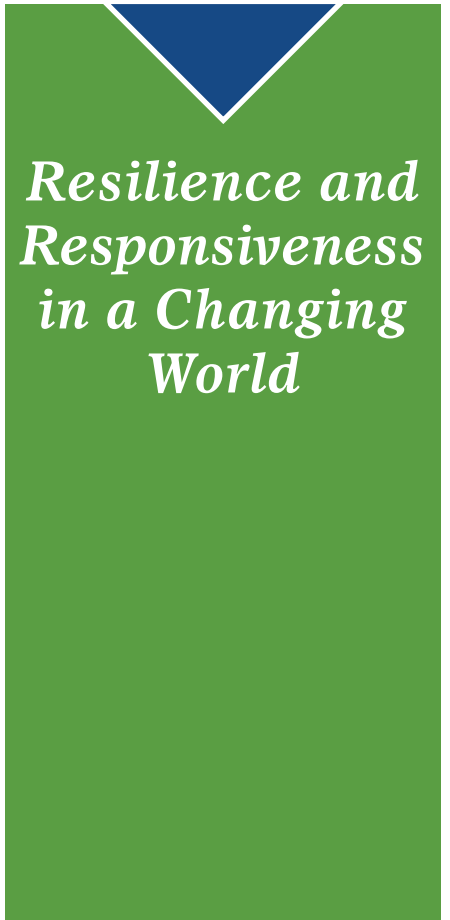
Clearing incidents faster

To ensure that traffic moves efficiently on Michigan roads, MDOT completed traffic incident management plans. These plans allow MDOT to react more quickly to incidents on national and state highways of significance to help sustain the efficient and reliable movement of people and goods. MDOT also developed rapid response performance measurements that provide annual data on major traffic incidents and transportation infrastructure damage to help MDOT improve its response and learn from past incidents.

When it rains, it pours

Recent extreme rain events have prompted MDOT to focus its attention on the systems that support the daily use of roadways, such as pump stations and culverts. Pump station maintenance and upgrades were made to reduce the likelihood of flooding, like the flooding that occurred on I-696 in 2014. The department is also working to inventory the location and condition of culverts that drain and carry water away from the roadways.

During an intense rain storm in the U.P., a culvert along M-94 failed. A rapid reconstruction of the road was needed because there were few other reasonable alternative routes. The culvert failure prompted innovations to expedite reconstruction and improve coordination with local road and other agencies.





MDOT has worked closely with its state and local partners to recover from disaster. Serious flooding events in the greater Grand Rapids area in 2013 and more recently in the U.P. in 2018 also provided MDOT the opportunity to work closely with its partners to improve response to emergencies and coordinate recovery.

Erosion

A section of US-31 in Petoskey was at risk for erosion. In 2012, it was determined that the long-term fix should be to move the roadway away from the bluff the next time the road needed major work. Continual monitoring of the erosion indicated further deterioration. In spring 2016, retaining walls were constructed at two locations to stabilize the worst erosion sites. They were designed and positioned to fit with plans for a 2019 construction project that will protect the roadway in the future and reopen a sidewalk that has been closed in this location for more than 20 years.



Securing Michigan's safety

Keeping Michigan's citizens safe from the unexpected, MDOT either leads or participates in:

- Security assessments for critical infrastructure and key resources.
- Multi-agency drills and exercises for nuclear power plants and cyber security threats.
- Flood mitigation efforts with the Federal Emergency Management Agency (FEMA).
- Homeland Security grants to improve equipment and operations.
- Development of joint standard operating procedures for emergency closure of state highways and access control.
- Evacuation impact assessments with Michigan State Police and MDOT.
- Agency work group on pandemic level influenza.





Winter maintenance

MDOT works year-round seeking better ways to enhance winter road maintenance by improving operational practices, implementing new technologies, and using state-of-the-art equipment.

Noteworthy innovations include:

- Automated vehicle location technology helps to clear snow and ice faster and allows the public to track plows and view photos on the Mi Drive traffic information website (www.michigan.gov/drive).
- MDOT's Road Weather Information System (RWIS) monitors atmospheric and road surface conditions to better manage winter maintenance activities and provides travel information to motorists on Mi Drive.
- Maintenance decision support system (MDSS) tools allow for improved decision-making by providing data about road conditions in real time.
- Green lights on trucks for easier visibility and increased safety.
- Increased use of wing plows/tow plows for efficiency.
- Maintenance peer academies for improved maintenance training and updated winter truck driving schools.
- MDOT-produced safety training videos on various topics, including tow plows and guardrails.

"We haven't had any rear-end crashes with the green lights on the trucks that we've had for the past two years and that's what we're really trying to eliminate."

*– Jerry Byrne,
KCRC Deputy Managing Director*





Automated vehicle location (AVL) and MDSS

At the 2014 ITS World Congress, MDOT was awarded a Best of ITS Award for its AVL and MDSS program implementation. During the previous fall and winter, MDOT equipped 270 winter maintenance trucks with AVL equipment. With this technology, MDOT garages can better monitor their winter operations response and view critical information from the trucks in real time, such as the location of the trucks, plow position, pavement temperature, salt application rate, and camera images. The AVL data is fed into an MDSS that provides specific treatment recommendations to plow operators based on current and forecasted weather conditions, pavement type, level of service goals, and operational/performance data from the trucks.



Design technology innovation

MDOT continually seeks new technologies and design methods that have the potential to optimize performance and safety while maximizing the investment of public funds. New innovations include:

- Light detection and ranging (LiDAR) scanning technology for high-load hits and detailed bridge inspections takes detailed remote measurements with a laser to produce point clouds from which computer-aided design (CAD) drawings can be produced to analyze damage and vulnerabilities of existing structures. This translates into cost and time savings for the inspections and ensuing maintenance activities, as well as increased safety and reducing the impact on traffic.
- Multi-beam sound navigation and ranging (SONAR) collects high-resolution mapping data and provides detailed images for scour inspection and hydraulic surveys.
- Stringless paving uses automated machine guidance (AMG) construction equipment that applies 3-D engineered model data to accurately direct paving operations on-site, reducing preparation work and the number of stakes needed to build projects.



Bridge innovations

MDOT is leading the way in advancing innovation in bridge construction. A few examples include:

- Serving as the first state in the nation to use corrosion-resistant CFRP materials to extend bridge life expectancies.
- Deploying accelerated bridge construction techniques in the form of four bridge slides, saving motorists time and money.
- Using ultra-violet cured-in-place pipe that extends and replaces failing culverts.
- Deploying sensors on the Mackinac Bridge and Cut River Bridge to form a wireless infrastructure data collection system to monitor bridge security, weather, and traffic.
- Designing MDOT's first network tied-arch bridge where the bridge is built off-site followed by a structural move for placement.
- Using drones to inspect bridges.



Administrative innovations

MDOT has initiated a variety of changes that integrate digital technologies into its business/construction operations. Many of the initiatives replace paper with electronic processes that improve workflow, increase transparency, improve safety, enhance quality, and save time and money. A key example of this initiative is e-Construction, which is defined as the collection, review, approval, and distribution of highway construction contract documents in a paperless environment. The e-Construction process involves:

- Electronically capturing construction data.
- Electronic submission of all construction documentation.
- Increased use of mobile devices.
- Increased automation of document review and approval.
- Use of electronic signatures by all parties throughout the process.
- Secure document and workflow management accessible to all stakeholders on any device.

Annual savings from e-Construction are estimated at approximately \$12 million in added efficiencies each year. Implementation of these tools has resulted in significant cost savings for MDOT's private sector partners as well, with the prospect of even greater cost and time savings in the future.

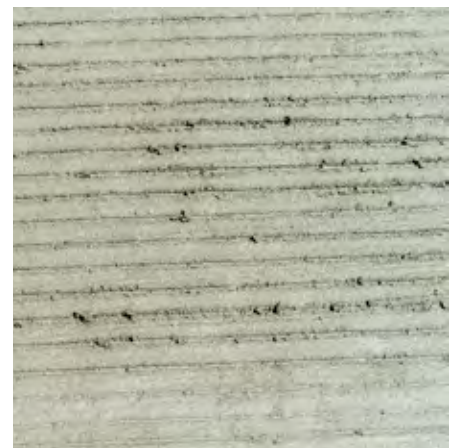
Endurance testing

Striving to achieve longer lasting pavements has been a part of MDOT's culture for years. MDOT continues to support development and implementation of innovations in designing, constructing, and maintaining its roadways to maximize value to the taxpayers. As a result of Public Act 175 of 2015 and the Roads Innovation Task Force (RITF) Report, MDOT committed to designing and constructing four long-life pavements using hot mix asphalt (HMA) and concrete. The four different long-life pavements include: 30-year HMA on US-131 in the Grand Region; 30-year concrete on I-69 in the Bay Region; 50-year HMA on I-475 in the Bay Region; and a 50-year concrete on US-131 in the Grand Region.

While these projects are monitored to determine benefits and costs, MDOT will continue to review and incorporate new materials, technologies, design improvements, and construction methods having the potential to improve pavement performance.

I-275 concrete inlay, Metro Detroit

In 2016, MDOT addressed a poor pavement condition on I-275 by constructing a concrete pavement inlay that removed and replaced the concrete driving surface while retaining the road base materials. The project also included preventive maintenance work on 16 bridges and 15 ramps and served as a platform for innovation. In support of the auto industry's research and development of connected vehicle technology, 15 dedicated short-range communication (DSRC) RSUs were installed, facilitating a pilot initiative to provide real-time work zone information in cooperation with internal and external partners. State of the art 3-D design models and





advanced GPS methods to measure completed areas and document contractor compliance were employed, resulting in the project being opened to traffic in a record 121 days.

Addressing graffiti, Metro Detroit

A few years ago, Detroit faced a challenge familiar to many metro areas: a rise in unwanted graffiti on public infrastructure. MDOT noticed that not only was tagging abundant on bridges and abutment walls, but it was also becoming increasingly prevalent on overhead signs. At one point, more than 90 signs that hung 15 feet in the air were tagged along Metro Detroit free-ways with traffic flowing freely below them, hindering removal of the graffiti.

MDOT's secret weapon was a graffiti tracking tool that used geographic information system technology to gather field data. A user-friendly app lets maintenance workers use tablets and smartphones to capture key data about each tag (including geo-coded location and a photo) to populate an online database. MDOT's efforts paid off, with 76 signs cleaned over a total of 35 cleaning days. The ongoing effort has led to a decline in new tags and is now being used in other parts of the state.

"Having the graffiti information and photos in the online map was critical for us to be able to efficiently and accurately report the status of the cleaning work to our stakeholders throughout the cleaning process."

– Tony Kratofil, Metro Region Engineer



Transportation Alternatives Program

Michigan was the first state in the nation to roll out an electronic grant application system for federal Transportation Alternatives Program (TAP) funding, increasing transparency and accountability. The system provides an online application, automated review process, communications management, grant tracking and reporting, and electronic file storage. TAP is the largest funder of trail construction in Michigan.



Zipper wall, Kent County

A second pilot of 50-year concrete pavement will be completed in 2018 in Kent County using RITF innovative paving techniques and materials. The project includes the addition of a moveable barrier wall (or "zipper wall") to maintain traffic during construction. The zipper wall is moved twice per day, allowing contractors to maintain two lanes of travel open during peak volumes. The addition of the moveable barrier allows construction to be completed within one season as opposed to two seasons, resulting in cost savings over the original estimate. In addition, safety is improved by separating construction traffic from the traveling public.



Advancing Geographic Information Systems (GIS)

Over the last eight years, MDOT has advanced the use of GIS from basic map production and analysis tools to a robust technology platform that supports multiple core functions across the department, other state agencies, local partners, universities, the private sector, and the public. Because of MDOT's investment in GIS, several activities now benefit from its use, including construction and billboard permits, traffic count programs, performance-based maintenance, Adopt-A-Highway programs, construction warranties, tagged signs, Mi Drive, wetland mitigation, carpool lot monitoring, rest area management, and the environmental review process. In addition, MDOT partnered with MSU to develop GIS training for staff. To date, this program has provided training for 300 employees.

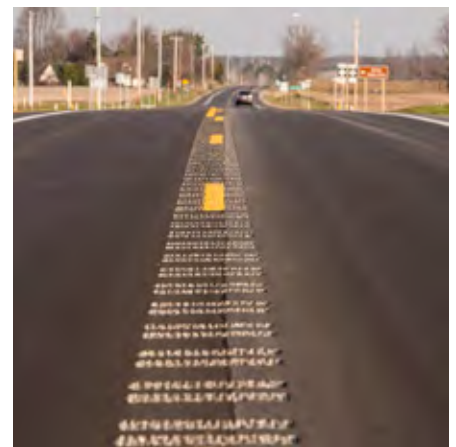
The latest phase of GIS advancement facilitates greater integration of GIS into MDOT's business processes. Plans for the next phase of GIS development are already taking shape for 2019 and beyond.

Advances in Civil Integrated Management (CIM)

In 2015, MDOT concluded its involvement in the National Cooperative Highway Research Program (NCHRP) Advances in Civil Integrated Management (CIM) research project conducted through the U.S. Domestic Scan program. The research was requested by AASHTO, with funding provided through the National Cooperative Highway Research Program.

CIM is the technology-enabled collection, organization, managed accessibility, and use of accurate data and information throughout the life cycle of a transportation asset by all stakeholders. The principle is to use data throughout the life cycle of a transportation asset to spend less time and effort collecting data as compared to traditional methods. This promotes efficiency in each process and limits the risk of using outdated data and duplication, providing cost savings.

As a result of the research project, the effort laid a foundational framework for a CIM initiative to be adopted by transportation agencies.





Saving Money

The Michigan State Transportation Commission's (STC) goal is for MDOT to deliver its transportation program within 5 percent of original bid value. MDOT has met or exceeded this goal every year.

MDOT works continually to make the most of every dollar and has encouraged its employees to come up with innovative approaches that reduce costs. From big ideas to small ones, MDOT's employees have stepped up to cut costs in safe and effective ways. MDOT's [Economies, Efficiencies, and Innovations](#) report documents ideas that have led to an estimated \$675 million in savings over the past eight years. Just a few highlights from that effort are included here:

Project budget performance

MDOT Project Comparison Original Contract Costs versus Final Contract Costs			
Calendar Year	Original Contract Cost	Final Contract Cost	Percent Difference
2002	\$791,862,948.24	\$810,033,317.51	2.3%
2003	\$572,692,542.94	\$586,844,085.37	2.5%
2004	\$797,262,244.08	\$814,737,092.15	2.2%
2005	\$941,448,620.30	\$937,237,709.98	-0.5%
2006	\$580,343,367.59	\$581,951,064.12	0.3%
2007	\$777,582,980.29	\$810,428,814.94	4.2%
2008	\$967,285,996.11	\$983,915,828.12	1.7%
2009	\$726,981,046.84	\$750,956,601.62	3.3%
2010	\$615,818,269.64	\$615,142,561.83	-0.1%
2011	\$833,072,906.02	\$842,999,015.92	1.2%
2012	\$771,130,483.23	\$768,530,401.94	-0.3%
2013	\$1,127,211,347.22	\$1,139,133,968.99	1.1%
2014	\$645,898,553.12	\$649,413,716.71	0.5%
2015	\$709,329,893.84	\$712,559,685.99	0.5%
2016	\$690,303,760.44	\$704,409,643.58	2%
2017	\$865,144,563.78	\$862,462,531.03	-0.3%

Removing unneeded bridges

To reduce future bridge maintenance costs, MDOT has begun to eliminate bridges that are no longer necessary.

- In 2016, a structure that once carried I-94 traffic over 40th Street (a local street) was reconstructed to instead carry local traffic over the interstate, resulting in a more conventional interchange configuration. The project reduced the bridge size by more than 40 percent, resulting in reduced user delay and travel times for freight traffic dropping by 75 percent.
- In 2015, MDOT took advantage of an opportunity to remove a bridge spanning I-94 as part of an interchange reconstruction project. The Cork Street bridge was in close proximity to another crossing and reconfiguring the interchange allowed for the structure to be taken out of service.
- Two trunkline structures spanning abandoned rail lines in MDOT's Southwest Region are being removed in 2018 and 2019 since the grade separations are no longer needed. The cost for removal is similar to one improvements project and will result in a safer transportation system.



Leveraging federal funds

In August 2017, MDOT's Office of Passenger Transportation began its first Intercity Bus Project using the federal in-kind match program for the new bus route running between Detroit and Port Huron. This program allows the operating expense of a route run by a private carrier (Greyhound) to be used in place of state match for the federal funds, thus freeing up the state funding for other transit uses. This route is a three-year demonstration project that will help determine, among other things, if MDOT will use the federal in-kind option for future projects.



Being Green – Saving Green Solar power carpool lots

In 2012, MDOT, in partnership with the Pure Michigan Energy Office, used a \$650,000 U.S. Department of Energy grant to install alternative energy technology in the city of Grand Rapids at the I-96/M-44 (East Beltline Avenue) interchange. The innovative project placed solar panels above selected parking spaces within an existing MDOT carpool lot. These solar arrays feed power directly into the electrical grid during the day and offset the power needed for the freeway interchange lights at night.

The system produces approximately 106,000 kilowatt-hours per year, resulting in an estimated annual energy savings of \$13,500. In addition, revenue from Solar Renewable Energy Credits help to further offset the cost of the system. The green energy that this system will produce is the equivalent of reducing carbon dioxide emissions by approximately 80.6 tons per year, or roughly 9,047 gallons of gasoline.





Energy-efficient LEDs

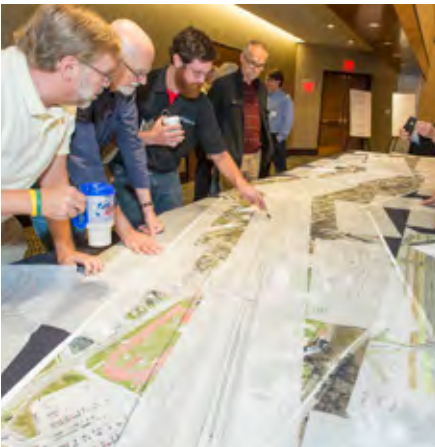
MDOT has undertaken energy-efficient light-emitting diode (LED) lighting projects designed to save energy and millions of taxpayer dollars. The Metro Detroit Freeway Lighting P3 and other LED lighting projects have been completed or are in progress in other parts of the state. The International Bridge Authority (IBA) in Sault Ste. Marie replaced older, high-pressure sodium fixtures on the bridge deck and arches in 2015, resulting in an expected 55 percent reduction in energy usage and estimated savings of at least \$44,310 in energy costs and \$30,330 in maintenance costs over the life of the fixtures. In addition, MDOT has LED projects completed or under way at the US-2/I-75 interchange in St. Ignace and at the Mackinac Bridge. LED lighting is also being incorporated into future project designs.

“On top of the higher operational success, we get brighter streets and much more efficient lighting. It was more than just changing out light bulbs. There were a lot of places where the wiring was gone. There are many poles themselves that were just too far gone to save and had to be replaced.” – Lt. Gov. Brian Calley



Project planning efficiencies

MDOT proudly celebrates the 20th anniversary of the Five-Year Transportation Program (5YTP) (1999 - 2019) and its recognition in the transportation industry as a key resource for statewide planning and asset management. The 5YTP has guided MDOT's investment decisions and allowed the department to prioritize projects using a goal-oriented, performance-based approach. The 5YTP continues to optimize project delivery and provide the STC, Michigan Legislature, partnering agencies and the public with the list of transportation projects planned for the upcoming five years.



Recently, the timeline for the 5YTP was adjusted to coordinate with the development of the federally required State Transportation Improvement Program (STIP), which envelopes projects selected at the MPO level that will use federal funds. Prior to lining up the development processes, the list of projects for each document was pulled at different times, resulting in variations in the information presented about planned construction projects. The synchronization allows for public involvement and outreach processes to be conducted simultaneously, saving staff time and state resources.

The JobNet program is also providing efficiencies by allowing the MPOs and other local units to input project information required for the STIP electronically. Local project information in the database now comes directly from the MPOs, therefore reducing the number of errors. It also decreases the time needed to review amendments to the STIP, improving timing for the project approval process.



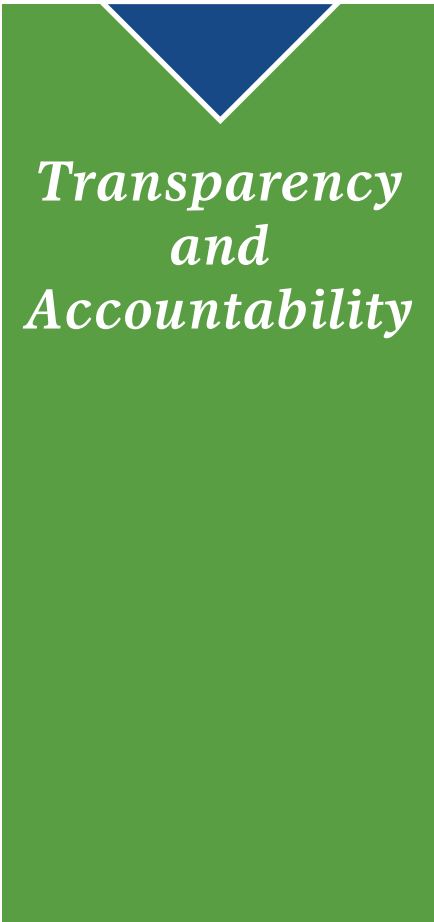
International Bridge

The International Bridge Authority reconstructed the toll plaza in Sault Ste. Marie for \$8.9 million between 2014 and 2016 and finished the planned 24-month construction manager general contractor (CMGC) construction project in 16 months on budget. CMGC contract negotiations saved the authority \$1.7 million.

The total investment at the Sault Ste. Marie International Bridge over the last eight years is more than \$52.1 million. Using innovative projects and contracting provided an additional realized savings of \$5.3 million. Capital investments have included \$12.1 million from toll revenue and \$40 million from Canadian Border Infrastructure funds. All toll revenue earned at the bridge is reinvested in the bridge.

The authority and International Bridge Administration (IBA) are 2017 recipients of the America Council of Engineering Companies of Michigan Merit Award, the Transportation Asset Management Council Organization Award, and the Sault Ste. Marie (Ontario) Chamber of Commerce 2017 Innovation Award.





2015 revenue package

Years of debate over transportation fees and finance resulted in passage in 2015 of laws that will contribute \$1.2 billion per year to road and transit funding in Michigan by FY 2021.

Beginning in January 2017, road-user fees were increased by \$600 million per year. Most car and truck registration taxes were increased by 20 percent. Motor-fuel fees were increased from 18.7 to 26.3 cents per gallon for gasoline and 15.0 to 26.3 cents per gallon for diesel fuel, and the road-use fee was applied to natural gas for the first time. Surtaxes were added to the registration tax for electric cars. The increased revenue is divided among 697 road and transit agencies.

Beginning in October 2018, income tax revenue is appropriated to Michigan's 617 road agencies according to the Act 51 formula: \$150 million in 2019, \$325 million in 2020, and \$600 million in 2021 and later years.

The 2015 revenue package was accompanied by additional strengthening of Michigan's laws requiring use of competitive bidding by road agencies and warranties on road construction.

"It's not just about asking for more revenue. It's about investing in Michigan's future to create jobs." – Gov. Rick Snyder

Redirecting aviation sales tax to State Aeronautics Fund

Federal regulations require that revenues generated at airports be used to build and maintain airport facilities. When a portion of Michigan's sales tax revenue from aviation was found not to comply with this requirement, MDOT worked with the FAA, the Department of Treasury, the aviation and airport industry, and the Legislature to direct a portion of aviation fuel tax revenue to the State Aeronautics Fund, effective in 2017. In recognition of its contribution to airline sales tax revenues, Wayne County Metropolitan Airport receives a specific share of the generated funds; the remainder are distributed subject to state aviation goals.



Dashboard/performance measures

Michigan publicly reports “dashboard” indicators of performance on the factors of greatest interest to MDOT’s customers.

The [Michigan Infrastructure Dashboard](#) reports on the percentage of pavements and bridges in good or fair condition, traffic fatality and injury reduction, construction projects completed on schedule, and the percent of traffic incidents cleared within two hours. The [MiScorecard Performance Summary](#) publishes MDOT’s current statistics on 43 variables involving road safety, traffic and trade volume, efficiency, project completion, pavement roughness, remaining pavement life, local transit, permit issuance, and organizational improvement.

Detailed data produced for federal reporting for MDOT’s federal-aid routes are available to the public in the [System Condition Report](#). The annual [Asset Management Report](#) of the Transportation Asset Management Council summarizes the state of Michigan’s 40,000 most-important local and state road miles.

Some performance indicators are available in real time. Road users can see the operating speed on Michigan highways instantaneously on the [Mi Drive](#) website and view actual road conditions through cameras at strategic locations before beginning a trip and choosing a route.

“Performance measurements are critical to our commitment to deliver the highest quality transportation services and encourage accountability, innovative thinking and making the best use of our limited resources.”

– Kirk Steudle, State Transportation Director



Federal performance measures progress

Because of MDOT’s historic work in asset management and system monitoring, Michigan was well-equipped to comply with federal law on Transportation Performance Management when it was enacted in 2012 and expanded in 2015. In return for the \$1 billion per year that Michigan receives in federal highway aid, federal law requires that the state measure and report performance in the basic functions of the highway program. Especially for the interstate system, states are required to report on pavement condition, bridge condition, safety, and reliability and delay to auto and truck traffic.

Debt management

MDOT is able to issue debt that is not a general obligation of the state. This financing authority has been an effective tool to advance the delivery of construction projects. As of September 2017, MDOT was managing a \$1.4 billion bond program. Over the last eight years, the department has focused on refunding existing debt and, as a result, will realize \$221 million in interest savings over the life of the bonds. A significant example of the department’s refunding efforts was the FY 2016 refunding of \$697.7 million, which resulted in interest savings of \$159.2 million. Since 2010, MDOT has reduced outstanding debt by more than \$900 million.



Performance-based maintenance

Performance-based maintenance (PBM) is a system that manages maintenance based on performance outcomes. MDOT's use of PBM will fundamentally change the way it performs and measures its highway maintenance work. This change follows national and international leading practices that focus on the outcomes of maintenance activities instead of the process of performing them. By carefully monitoring results instead of just counting inputs, MDOT can deliver consistent outcomes in an efficient and effective manner at a lower cost. Moving to outcome-focused maintenance will continue to encourage innovative use of very limited resources in the years to come.



Michigan's Performance Measure Dashboards

Michigan Transportation Asset Management Council
www.michigan.gov/tamc

617 Road Owning Agencies

123,989 Centerline Miles

Background
 The Transportation Asset Management Council was created out of PA 499 of 2002. The Council is a legislated body that reports to the State Transportation Commission and consists of representatives from agencies who own roads or are responsible for road funding. One of the goals of the council is to advise the STC on a statewide asset management strategy. In 2011, Michigan's newly elected Governor Rick Snyder called for greater accountability and transparency in the use of public funds by the State's 600+ road & bridge owning jurisdictions. Later that year, the Transportation Asset Management Council began an effort to create a web-based Performance Measure Dashboard depicting condition, operation, and investment in Michigan's public road & bridge system. By doing so, the Council is meeting the Governor's challenge by creating performance measure dashboards that are useful at both the statewide and local jurisdiction levels.

Michigan Road Agencies at a Glance

	State	County	City/Village	Total
Agencies that own roads	3	83	513	617
Centerline Miles	18,292	89,482	21,305	123,989
Percent of Public Roads	15.0%	72.1%	17.1%	100%
Federal Aid Miles	13,077	28,776	4,466	44,319
Bridges	8,428	5,675	835	18,940
Expenditures (2011)	\$5,447,775,296	\$5,073,986,229	\$620,857,296	\$8,142,342,787
Percent of VMT	52.4%	31.3%	16.2%	100%

Powerful Tools
 Comparison Feature allows user to compare up to 8 agencies pavement and bridge metrics.

Pavement Comparison Dashboard
 The Pavement Comparison Dashboard provides a powerful tool to compare your agency with other areas or jurisdictions.

Pavement Dashboard
 Summary Pavement Pavement Comparison
 The Pavement Dashboard shows Road Conditions, Trend Analysis and Forecasting based on PASER ratings of Good, Fair and Poor.

Fast Facts
 43 Performance Measures
 6 Multi-Functional Dashboards
 2 Comparative Dashboards
 617 Road Owning Agencies
 Local, State and Federal Data
 >180,000 annual site hits
 >30 Agencies Leveraging Tools
 Formal Dashboard Committee

Technology
 Michigan Geographic Framework
 Statewide Linear Referencing
 ArcGIS
 Xeebus (Dashboard Software)
 Business Objects
 Oracle Database
 SQL Server
 Crystal Reports
 7 Data marts with over 10 Teams

Note: Some of the TAMC website functionality will not work on certain devices until technology updates occur. (Flash is currently needed for the dashboards)



Training opportunities

Providing training opportunities has been identified as a priority for MDOT. Support and prioritization of training by MDOT management has helped continue the “culture of excellence” in the department. MDOT now has a Workforce Development (WFD) Program consisting of a Foundational Curriculum for new employees, a Supervisor/Manager Curriculum for new supervisors and managers, and a Continuing Education Guide. The program was designed to ensure all MDOT employees have the same baseline level of knowledge and training regarding important and select organizational topics, regardless of their specific work area.

Mi-TIME

Every hour in Michigan, six injury crashes occur, putting first responders potentially in harm’s way every day. Congestion from these incidents often generates secondary crashes, further increasing traveler delay and frustration. To reduce the impacts of these crashes, MDOT developed the Michigan’s Traffic Incident Management Effort (Mi-TIME) training in 2014. This training provides the responder community with traffic incident management (TIM) standards and good practices, with the overall purpose of enhancing quick clearance efforts and improving responder and motorist safety. Since the program began, MDOT has trained nearly 6,200 responders, including staff from MDOT, state and local law enforcement, fire, EMS, local road agencies, towing services, and anyone working with traffic incidents.

A gold-level Veteran-Friendly Employer

MDOT was recognized in 2017 by the Michigan Veterans Affairs Agency (MVAA) as a gold-level Veteran-Friendly Employer. The Veteran-Friendly Employer program helps veterans to more easily recognize job opportunities in a variety of industries and identify employers committed to hiring and supporting veteran talent in their workforces.





Creating opportunities

In response to community requests for greater access to and participation in MDOT's projects and programs in Metro Detroit, MDOT initiated the Partnership for Diversity and Opportunity in Transportation in 2010. This new coalition focused on ways that partners could collaborate to improve access for local, minority workers and small businesses into the heavy construction industry. Several hallmark programs have since grown out of these partnerships, including but not limited to:

- The Construction Science Expo provides exposure to construction-related careers for 1,000 Detroit-area middle schoolers annually.
- The MiRoad2Work.org communication platform promotes opportunities in the heavy construction industry and aimed to demystify the pathways into the construction skilled trades.
- The Access for All pre-apprenticeship training program is tailored specifically to meet the needs of the heavy construction industry. The program has successfully placed more than 90 percent of participants as apprentices.
- Investments and industry partnerships with career technical education facilities and programs in Detroit Public Schools.
- Unique small business contracts on the I-94 modernization project. These contracts provide opportunities for small engineering and construction businesses to receive needs-based training and development to help them grow their businesses. More than a dozen consultants have participated, many of whom have opened Detroit offices, hired additional staff, and successfully competed for work with MDOT and others.



Transportation and Civil Engineering (TRAC) program

MDOT's TRAC program is a way to reach younger students who may be interested in transportation jobs. The TRAC program is designed to enhance math, science, and social science in Michigan's 6th through 12th grades in a manner that encourages students to consider careers specifically in civil engineering. Over the past 15 years, TRAC has worked with hundreds of schools and thousands of students. In 2018, MDOT's TRAC students won 1st place in all categories at the National Bridge Challenge and seven out of nine of the available top places.



Engaging employees and partners

Over the past 12 years, MDOT has trained hundreds of local road agency staff, as well as its own staff, on planning and designing pedestrian and bicycle infrastructure, including design consistent with the Americans with Disabilities Act. In 2018, MDOT's bicycle and pedestrian transportation education programs were recognized with a President's Award in the Intermodal Category by AASHTO.



Iron Belle Trail

The Iron Belle Trail is the longest designated state trail in the nation and includes a route for hiking and a route for biking between Belle Isle Park in Detroit and Ironwood in the U.P. The 1,273-mile hiking route (72 percent complete as of 2018) incorporates a large portion of the existing North Country National Scenic Trail. It traverses the west side of the Lower Peninsula and borders Lake Superior in the U.P. The 791-mile bicycle route (63 percent complete as of 2018) uses existing multi-use trails and follows US-2, a designated U.S. Bicycle Route in the U.P.

MDOT is supporting the DNR-led effort, along with multiple local, regional, nonprofit, and corporate partners and sponsors, to complete the trail. MDOT's efforts include awarding grant funding, as well as providing technical assistance, design, project management, and construction engineering expertise. MDOT is also partnering with the DNR and local stakeholders to pair Iron Belle Trail construction with road and bridge construction projects where feasible.

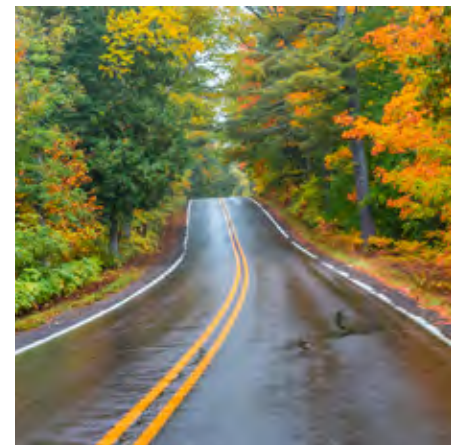
Pure Michigan Byways

MDOT and the MEDC collaborated to reinvent the longstanding Heritage Route program, a grassroots effort to preserve the state's unique scenic, historic and recreational highways. In 2014, the Legislature changed the name to the Pure Michigan Byway program, rebranding and aligning the program much more closely with the national American Byways program and the wildly successful Pure Michigan travel and tourism initiatives. Michigan's wonders are easily accessible from the collection of 23 state and national byways and tour routes, totaling approximately 1,152 miles. Each byway description in the [Pure Michigan Byways and Tour Routes Driving Guide](#) highlights scenic, natural, historical, cultural, and archaeological attractions along the route. Maps and information regarding availability of services, time needed to drive and enjoy each byway and tour route, and the best times of year to travel are also included. This program will help ensure the rich heritage of local highways and roadsides continues to play an important role in improving Michigan's economy and quality of life.

Showcasing Michigan

*“Michigan is
the place to be.
Our trails
take you to
every corner of
the state.”*

*– Paul Yauk,
DNR Trails
Coordinator*





National and Midwest conferences

Michigan has taken pride in hosting a variety of national transportation conferences over the past eight years. Even international conferences, such as the ITS World Congress, have selected Michigan as their meeting location.

ITS World Congress, held in Detroit in 2014, alternates in location between North America, Europe, and Asia each year. Attracting more than 10,000 people from roughly 65 countries, the conference showcased the most advanced transportation technologies surrounding the future of mobility, technology and regulations. Other nationally significant conferences hosted by Michigan include:

2011

- AASHTO Annual Meeting, Detroit

2012

- AASHTO Spring Meeting, Traverse City

2013

- AASHTO Committee on Transportation Communication Conference (TransComm), Grand Rapids

2016

- National Safety Rest Area Conference, Traverse City
- FHWA e-Construction as Disruptive Technology Conference, Detroit

2017

- Midwest Rail Conference, Kalamazoo

2018

- ITS, Detroit
- MAASTO, Traverse City
- Mid-America Freight Coalition (MAFC), Traverse City





Expert testimony

When Congress seeks an expert to testify about transportation specifics, State Transportation Director Kirk Steudle is high on their list. Director Steudle has testified at several Congressional committee hearings over the past decade.

House:

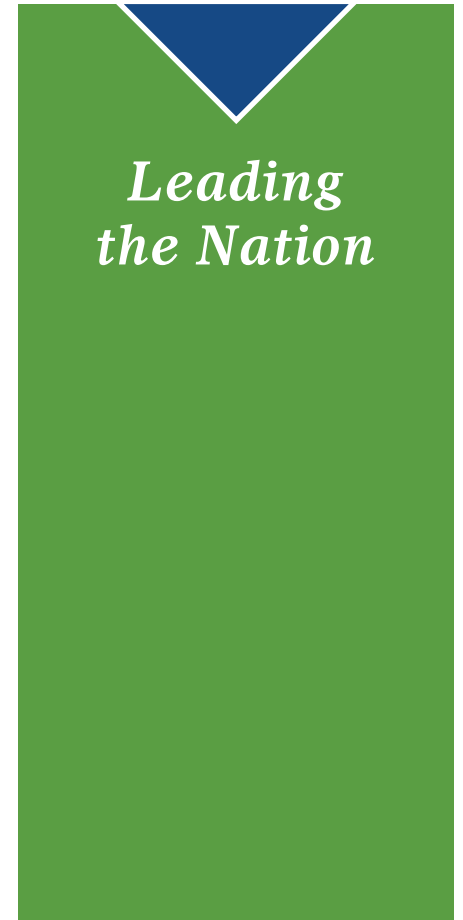
- **April 20, 2010** – Subcommittee on Railroads, Pipelines, and Hazardous Materials of the Committee on Transportation and Infrastructure; Hearing – High-Speed Rail Grants Awarded Under the Recovery Act
- **Nov. 19, 2013** – Subcommittee on Highways and Transit (Committee on Transportation and Infrastructure); Hearing – How Automated Vehicles Will Shape the Future of Surface Transportation
- **Nov. 15, 2016** – Subcommittee on Commerce, Manufacturing and Trade (Committee of Energy Commerce); Hearing – Disrupter Series: Self Driving Cars

Senate:

- **April 14, 2010** – Committee on Environment and Public Works; Hearing: Opportunities to Improve Transportation Safety

Director Steudle has also received numerous national and international awards for his contributions to transportation, including:

- 2010** – AASHTO MacDonald Award for Lifetime Achievement in Transportation
- 2011** – P.D. McLean Award from the Washington, D.C.-based Road Gang for Excellence in Highway Transportation
- 2015** – America's Top 25 Doers, Dreamers, and Drivers, Government Technology
- 2015** – Theodore M. Matson Memorial Award, Institute of Transportation Engineers
- 2015** – Outstanding Public Official Award, American Society of Civil Engineers
- 2016** – W.N. Carey, Jr., Distinguished Service Award, Transportation Research Board
- 2016** – Horace H. Rackham Humanitarian Award
- 2016** – ITS World Congress Hall of Fame Award
- 2018** – AASHTO President's Award for Exceptional Contributions to the Industry



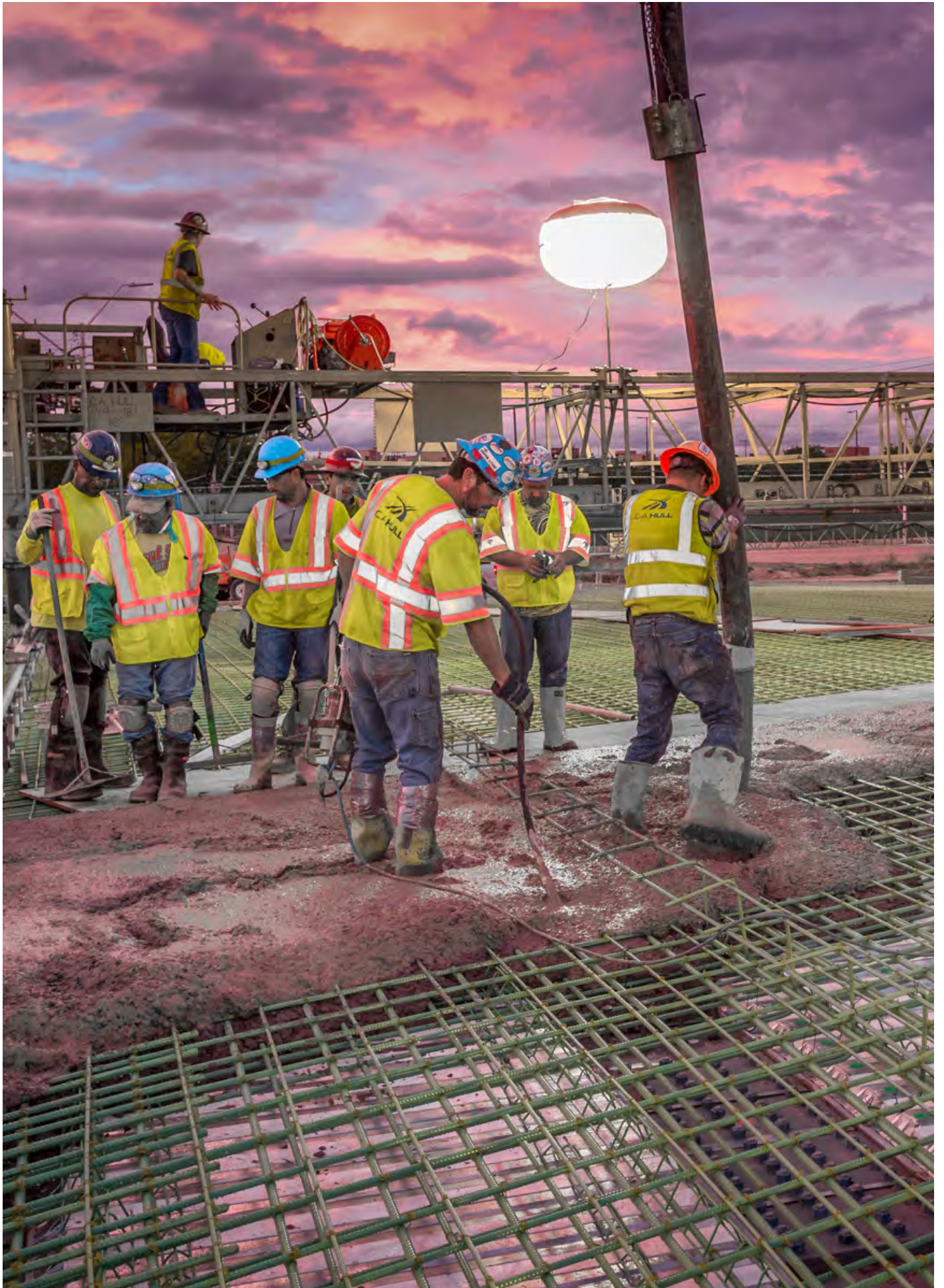
MDOT's national recognition

Over the past eight years, MDOT has received national and international recognition with nearly 70 awards. In addition, MDOT has been recognized here at home with more than 130 regional and state awards. The list of national awards appears in the pages that follow.

Year	Award	Award Level	Project (if any)	Awarding Entity
2014	Best Paper Award	International	I-94 Truck Parking Project	Intelligent Transportation Society - World Congress
2016	Local Government Hall of Fame Award	International	Connected and Automated Vehicle Efforts	Intelligent Transportation Society - World Congress
2011	Outstanding Services Award	National	Transportation Technical Assistance (MTAP)	American Association of State Highway and Transportation Officials
2011	National Smokey Bear Award for Wildfire Prevention	National	Using electronic messages to alert travelers of extreme fire hazards, partnering with DNR to erect electronic "fire danger" Smokey sign at the Clare Welcome Center on US-127, and for incorporating Firewise landscaping into three areas	The Cooperative Forest Fire Prevention Program, the USDA Forest Service, and the National Association of State Foresters
2011	State Aviation Distinguished Service Award	National		National Association of State Aviation Officials
2012	Project Achievement Award	National	I-96 over Portland Trail Project	American Concrete Pipe Association
2012	Research Sweet Sixteen	National	Recommendations for Meeting the Transportation Needs for Michigan's Aging Population	American Association of State Highway and Transportation Officials
2012	NAPA Excellence in Asphalt Pavement Award	National	US-2 Gogebic County Project	National Asphalt Paving Association
2012	Silver Performance Excellence Award for Team Excellence	National		American Association of State Highway and Transportation Officials
2013	Research Final Four	National	Benefits of Non-Freeway Rumble Strips	American Association of State Highway and Transportation Officials
2013	Research Sweet Sixteen	National	Benefits of Non-Freeway Rumble Strips	American Association of State Highway and Transportation Officials
2013	Safe and Sustainable Snow Fighting Award	National	Demonstration of Best Practices in Salt Storage	National Salt Institute
2013	NAPA HMA Paving Award	National	I-75 Hartwick Pines (Grayling) Project	National Asphalt Pavement Association
2013	America's Transportation's Awards - Best Use of Innovation	National	M-150/Rochester Road (Main Street Makeover)	American Association of State Highway and Transportation Officials
2013	State Aviation Distinguished Service Award	National		National Association of State Aviation Officials
2014	Best of ITS Award for the Best New Innovative Practice-Partnership Deployment	National	Best New Innovative Practice-Partnership Deployment category for the Automatic Vehicle Location (AVL) and Maintenance Decision Support System (MDSS) Project	Intelligent Transportation Society of America
2014	Top Ten Award	National	I-96 Telegraph Road to Newburgh Road (96Fix)	Roads and Bridges Magazine
2014	Francis B. Francois Award for Innovation	National		American Association of State Highway and Transportation Officials
2015	Roadway Safety Award	National	Award for installing 5,700 miles of rumble strips down centerlines of Michigan's rural highways.	Federal Highway Authority and Roadway Safety Foundation
2015	Project Achievement Award	National	Bridge Replacement with Precast Box Culvert on M-142 over Phillip Drain	American Concrete Pipe Association
2015	W.N. Carey, Jr., Distinguished Service Award	National	For the development of connected vehicle technology	Intelligent Transportation Society of America
2015	America's Transportation Awards - Best Use of Innovation	National	I-96 Telegraph Road to Newburgh Road (96Fix)	American Association of State Highway and Transportation Officials
2015	President's Transportation Award	National	I-96 Telegraph Road to Newburgh Road (96Fix)	American Association of State Highway and Transportation Officials
2015	ACEC Engineering Honorable Conceptor Award	National	I-96 Telegraph Road to Newburgh Road (96Fix)	American Council of Engineering Companies

2015	ACEC's Partnership Charter Award	National	I-96 Telegraph Road to Newburgh Road (96Fix)	American Council of Engineering Companies
2015	ASCE's 2015 Outstanding Civil Engineering Achievement Award	National	I-96 Telegraph Road to Newburgh Road (96Fix)	American Society of Civil Engineers
2015	Midwest Best Projects Recognition	National	I-96 Telegraph Road to Newburgh Road (96Fix)	Engineering News Record
2015	Construction and Design Award	National	I-96 Telegraph Road to Newburgh Road (96Fix)	Engineering Society of Detroit
2015	Partnered Project of the Year Award	National	I-96 Telegraph Road to Newburgh Road (96Fix)	International Partnering Institute
2015	National Excellence in Concrete Paving Award	National	I-96 Telegraph Road to Newburgh Road (96Fix)	Michigan Concrete Association
2015	Project Achievement Award	National	M-142 over Phillip Drain	American Concrete Pipe Association
2015	Honorable Mention in the Lateral Slide Category	National	M-50 Bridge over I-96 Bridge Slide Design, Lowell Township	National Accelerated Bridge Construction Conference
2015	ACEC Honorable Conceptor Award	National	M-50 Bridge Slide Project	American Council of Engineering Companies
2015	National Roadway Safety Award in the Infrastructure and Operational Improvements Category	National	Statewide Non-Freeway Rumble Strip Initiative	Federal Highway Authority and Roadway Safety Foundation
2015	NAPA Quality in Construction Award	National	US-23 Paving Project, Iosco County	National Asphalt Pavement Association
2016	President's Transportation Award for Water Transportation	National	Conference of Great Lakes and St. Lawrence Governors and Premiers Maritime Task Force	American Association of State Highway and Transportation Officials
2016	Research Sweet Sixteen	National	Evaluation of Michigan's Engineering Improvements for Older Drivers	American Association of State Highway and Transportation Officials
2016	Quality of Life/Community Development - Large category	National	M-231 Project in Ottawa County	American Association of State Highway and Transportation Officials
2016	Quality in Construction Award	National	M-66/M-55 Lake City	National Asphalt Pavement Association
2016	Quality in Construction Award	National	Northbound US-131 Mecosta County	National Asphalt Pavement Association
2016	100 Best Fleets in the Americas Award (#66)	National	Outstanding Operations	National Association of Fleet Administrators
2016	President's Transportation Award	National	Research Achievement	American Association of State Highway and Transportation Officials
2016	President's Transportation Award for Research	National	Unmanned Aerial Vehicle Research	American Association of State Highway and Transportation Officials
2016	Award of Merit	National	US-131 over Muskegon River	International Concrete Repair Institute
2016	Quality in Construction Award - 2016 Larry H. Lemon	National	US-2, Iron County	National Asphalt Pavement Association
2016	Quality in Construction Award	National	US-31 in Muskegon and Oceana	National Asphalt Pavement Association
2017	Innovation Project Award	National	Freeway Lighting P3	National Council for Public/Private Partnerships
2017	Outstanding Rehabilitated Bridges	National	Houghton/Hancock Bridge	Susquehanna Chapter of the Association of Bridge Construction and Design (ABCD)
2017	National Excellence in Concrete Paving Award	National	I-275 Inlay Project	Michigan Concrete Association
2017	Quality in Construction Award	National	I-75 Asphalt Overlay and Pavement Repairs	National Asphalt Pavement Association
2017	President's Transportation Award	National	I-75 Corridor Conservation	American Association of State Highway and Transportation Officials
2017	Quality in Construction Award	National	I-94 High-Volume Ultra-Thin Overlay	National Asphalt Pavement Association
2017	President's Transportation Awards - Highways	National	I-96/US-23 Interchange Reconstruction Project	American Association of State Highway and Transportation Officials
2017	President's Transportation Award for Public Transportation	National	M-1 Rail	American Association of State Highway and Transportation Officials

2017	Project Achievement Award	National	M-43 Culvert Replacements	American Concrete Pipe Association
2017	President's Transportation Award - Administration	National	MDOT For-Hire Passenger Transportation Team PA 432	American Association of State Highway and Transportation Officials
2017	National Public-Private Partnership Award Winner: Outstanding Project Innovation Award	National	Metro Region Freeway Lighting	National Council for Public-Private Partnerships
2017	100 Best Fleets in the Americas - 2017 (#30)	National	Outstanding Operations	National Association of Fleet Administrators
2017	President's Transportation Award for Highways	National	Public Transportation Achievement	American Association of State Highway and Transportation Officials
2017	Turney Hernandez Award for Outstanding Roadside Vegetation Management	National	Roadside Vegetation Management Program	National Roadside Vegetation Management Association
2017	Award of Recognition for 10 Years Distinguished Service	National	Technical and Application Architecture Task Force	American Association of State Highway and Transportation Officials
2018	Best IT Collaboration Award	National	AASHTOWare Project - Construction Materials	American Association of State Highway and Transportation Officials
2018	President's Transportation Award - Intermodal	National	Bicycle and Pedestrian Transportation Education	American Association of State Highway and Transportation Officials
2018	100 Best Fleets in the Americas - 2018 (#16)	National	Outstanding Operations	National Association of Fleet Administrators
2018	Safety Award	National	The Comparison of Alternative Pedestrian Crossing Treatments	American Association of State Highway and Transportation Officials
2018	President's Transportation Award - Highways	National	US-23 Flex Route	American Association of State Highway and Transportation Officials
2018	Best of ITS Award - Transportation Systems Operations	National	US-23 Flex Route	Intelligent Transportation Society of America
2018	Research Sweet Sixteen	National	Wireless Data Collection Retrievals of Bridge Inspection/Management Information (Research Project)	American Association of State Highway and Transportation Officials
2018	2018 Industry Innovation Safety Award	National	US-23 Flex Route	Conference of Minority Transportation Officials
2018	2018 Innovation Award (Outstanding Business Achievement)	National	Canadian Bridge Arch Painting and Bridge Bearing Replacements	Sault Ste. Marie (Ontario) Chamber of Commerce
2018	2018 Operations Excellence Award	National	US-23 Flex Route	Mid America Association of State Transportation Officials
2018	AASHTOWare Project 4.0 Funding Award	National	AASHTOWare Project 4.0	AASHTOWare Project Task Force
2018	America's Transportation Award for Quality of Life/Community Development	National	I-94 Modernization, Detroit	American Association of State Highway and Transportation Officials
2018	President's Award	National	Many exceptional contributions to the state of Michigan, the department, the transportation industry and to AASHTO	American Association of State Highway and Transportation Officials





*Providing the highest quality
integrated transportation services for economic benefit
and improved quality of life.*