

Road Building and Long-Term Planning in Michigan

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Organizational Structure



MDOT Regional Service Areas and Facilities



A Healthy Economy Relies on Good Transportation

- 35% of US/Canada trade value flows through Michigan
- \$944 billion in freight is moved each year on Michigan's highways, rail, air, and water ports
- Trucking accounts for 74% of all freight tonnage moved in Michigan
- Travel & Tourism 128 million visitors to the state spend \$29.3 billion in 2024





Roads & Bridges



122,000 road miles 11,700 bridges

1 MDOT 83 County Road Agencies 531 Municipal Jurisdictions

Transportation Asset Management Council <u>www.michigan.gov/tamc</u>

Federal Aid Oversight

Michigan's Road Network







9,654 miles 4,811 bridges 82 roadside parks 77 rest areas

Planning

 Design Construction
 Operation Maintenance

 Permitting

Construction by Low Bid

Consultant Services Design – 60% +/-Const. Engineering – 55% +/-

State Trunkline Roads & Bridges - Maintenance



Snow & ice, road surface, bridge, culverts, drains, pump stations, signals, signs, roadside features

32 MDOT maintenance garages63 County road agency contracts170 Municipal contracts

Private contracts for maintenance:

- City of Pontiac
- Metro Detroit Freeway Lighting P3
- I-75 P3 (8 Mile to 13 Mile)
- Special Services like ITS devices (cameras, digital signs), fencing, guardrail, & "heavy maintenance"

Big Bridges & Border Crossings



International Bridge Independent International Authority MDOT HR & Budget Mgt

> Ambassador Bridge Privately Owned & Operated

Mackinac Bridge Independent Authority MDOT HR & Budget Mgt

Detroit-Windsor Tunnel Municipality Owned, Privately Operated

Blue Water Bridge US Half Owned by MDOT MDOT HR & Budget Mgt

> Gordie Howe International Bridge Independent International Authority Canadian HR & Budget Mgt



Transportation Funding

Estimated Transportation Revenue			
Fiscal Year 2025			
State Road-user Fees			
Vehicle registration and title tax	\$1,532 M		
Gasoline tax	\$1,303 M		
Diesel fuel tax	\$279 M		
Total of User Fees	\$3,114 M		
Income, marijuana taxes; other	\$775 M		
Total State MTF Revenue	\$3,889 M		
Federal Aid for Roads	\$1,673 M		

Transportation Funding

Expected Fund Distributions		
Fiscal Year 2025		
State Restricted Funds		
State highways	\$1,451 M	
Local roads	\$2,027 M	
Public transportation	\$286 M	
Federal Aid for Roads		
State highways (75%)	\$1,255 M	
Local roads (25%)	\$418 M	

State Trunkline Combined Freeway/Non-Freeway Pavement Condition Impacts of RBMP Investment on State Trunkline Remaining Service Life



Five-Year Transportation Program

Webpage Link https://www.michigan.gov/mdot/programs /planning/five-year-transportationprogram



Transportation Project Life Cycle



Permitting

• SHPO

• State Historic Preservation Office (SHPO) is responsible for the evaluation of historical and archaeological resources. Transportation projects that have the potential to impact these resources are subject to consultation to determine how best to minimize or mitigate the impact.

• EGLE

• The Department of Environment, Great Lakes, and Energy regulates the State's natural resources. Transportation projects require review and permitting when there is a potential to impact water resources, when there are large earth disturbances, or when contaminated material is encountered.

• Permits for Construction work in MDOT Right-of-Way

- 2024: 5,990 permits issued for \$1,368,154.66 in application fees
- Goal to issue permits with standard timeframe 85% of the time for 70 different work types.

• Transport Permits (Oversize and Overweight Vehicles)

- 2024: 94,237 permits issued for \$4,650,994.00 in application fees
- Goal to issue permits within 12 business hours 90% of the time



Contract and Contractor Requirements

- Contract Specifications
 - End Result Specifications
 - Means and Methods are Contractor Responsibility
 - Balance Risk between Parties
- Low Bid
 - Federal Requirement
 - Innovative Contracting Exceptions
- Contractor
 - Prequalification
 - Sufficient Labor, Equipment, and Materials
 - Contract Compliance and Federal, State, and Local Laws
 - Federal Prevailing Wage and State Prevailing Wage



Construction Industry Partnerships

- 5 Primary Industry Associations
 - Michigan Infrastructure and Transportation Association, Michigan Aggregates Association, Asphalt Pavement Association of Michigan, Michigan Concrete Association, and Michigan Road Preservation Association
- Quarterly Leadership Meetings
 - All Associations
 - MDOT Executive Leadership
 - Industry Executive Leadership
- Monthly, bi-Monthly or Quarterly Industry Operations Meetings
 - Each Association
 - MDOT Subject Matter Experts
 - Industry Representatives
- Individual Topic or Project Meetings
 - Design Phase Meetings, Pre-Bid Meetings, Specification Discussion, etc.
 - Respective Industry Association
 - MDOT Central Office or Project Staff
 - Industry Members









MDOT Oversight of Contractor Work

- Field Inspection
- Contract Administration
 - Wage Rates and Labor Laws
 - DBE Requirements
 - Environmental
- Material Testing
 - Contractor Quality Control
 - Owner Quality Assurance
- Measurement and Payment
- Adaption to Change
 - Unknowns, differing site conditions
 - Claims



MDOT Use of Service Consultants for Construction Oversight Work

- MDOT utilizes consultants to supplement direct force staff.
- 20 percent of Construction Engineering is Full Consultant Oversight
- 50 percent of Work Retained Uses As-Needed Consultant Staff
 - Construction Inspection
 - Material Testing
 - Density Inspection
- Construction Engineering cost is typically between 5 and 15 percent of Project Costs.



Construction Innovations

- E-Construction
 - No Paper Files
- Value Engineering Change Proposals
 - Savings to Both Parties
- Dispute Review Boards
 - Early Claim Resolution
 - Reduced Claim Numbers
- Collaborative Environment
 - BlueBeam Reviews
 - Alternate Technical Concepts (ATC)
- Incentives and Disincentives
 - Early Completion Enticement
 - Late Completion Assessment



MDOT Construction Project Oversight Performance

Summary of MDOT Projects To Date

Calendar Year	Original Project Cost	Final Project Cost	Percent Difference
2009	\$726,981,046.84	\$750,956,601.62	3.30%
2010	\$615,818,269.64	\$615,142,561.83	-0.11%
2011	\$833,072,906.02	\$842,999,015.92	1.19%
2012	\$771,130,483.23	\$768,530,401.94	-0.34%
2013	\$1,127,211,347.22	\$1,139,133,968.99	1.06%
2014	\$645,898,553.12	\$649,413,716.71	0.54%
2015	\$709,329,893.84	\$712,559,685.99	0.46%
2016	\$690,303,760.44	\$704,409,643.58	2.04%
2017	\$865,144,563.78	\$862,462,531.03	-0.31%
2018	\$625,072,360.55	\$634,821,481.36	1.56%
2019	\$1,116,644,266.64	\$1,116,217,220.06	-0.04%
2020	\$827,434,317.54	\$831,112,832.97	0.44%
2021	\$699,891,662.63	\$701,068,653.42	0.17%
2022	\$634,158,716.32	\$638,127,710.37	0.63%
2023	\$869,323,273.20	\$870,340,643.08	0.12%
2024	\$1,012,399,597.60	\$1,021,932,651.32	0.94%

Pavement and Material Standards

- Pavement design
 - Mechanistic-Empirical Pavement Design (state of the practice)
 - Reconstruction Design
 - Rehabilitation Design (implementation in process)
 - Strong pavement design community meets to discuss design issues, best practices, etc.
- Life Cycle Cost Analysis
 - State law (MCL 247.651h)
 - Projects with more than \$1.5 million in pavement costs
 - Use of historic pavement performance data and maintenance histories
 - Process reviewed with concrete and asphalt paving industries every 4 years for updates and enhancements
- Alternate Pavement Bids
 - Innovative contracting method
 - Project plans developed for both concrete and asphalt pavement alternatives
 - Contractor can bid on either pavement type
 - Incorporates LCCA concepts of estimated future maintenance cost and user delay costs

Pavement and Material Standards

- Capital Preventive Maintenance (CPM) Program
 - MDOT's CPM program utilizes cost effective treatments to preserve existing pavements
 - Treatments include Crack Sealing, Chip Seal, Microsurface, Concrete Pavement Repair, and Hot Mix Asphalt Thin-lays
 - Treatments prevent water intrusion, oxidation, and can improve friction
 - 2024 Construction Year, 2,613 lane-miles of treatments
 - 2,268 lane-miles of Pavement Seals
 - 345 lane-miles of Functional Enhancements



Pavement and Material Standards

- MDOT uses specifications approved by the FHWA which are based on national standards coordinated by the American Association of State Highway and Transportation Officials (AASHTO)
- MDOT includes warranty requirements on most of its pavement projects (Public Act 175 of 2015).
- MDOT uses materials that are typically locally and regionally supplied
- Specifications require specific materials to be tested prior to incorporation.
- Research Program continual efforts to enhance material and pavement performance.



New Materials and Products

- New Materials Steering Committee
 and Guidance Document
- Tools Used for Evaluation
 - New Materials Evaluation Procedures
 - Pavement Demonstration Program
 - Research Findings & Results
 - National & International Studies



Pavement Demonstration and Research

- European Pavement Project
- HMA Perpetual Pavement
- Thin Concrete Overlays

- Low Volume Concrete Reconstruct
- Continuously Reinforced Concrete
- Long Life (30 and 50 year) Reconstruction Projects



Pavement Warranties

- Started in 1997
 - Public Act 79 of 1997 (effective July 28, 1997)
- Updated in 2016
 - Public Act 175 of 2015 (effective April 1, 2016)
- 4,927 Warranties to date
- 681 Active Warranties
- 12 Percent have required corrective action
- Michigan is national leader in warranty administration

Pavement Warranties and Risk

- Most common warranty is manufacturers warranty
- Pavement Warranties = Risk Transfer
 - Materials and Workmanship Warranties
 - Performance Warranties
- Warranties are limited in road construction
- MDOT requires a pavement warranty
- Contractor Responsibilities



Road and Bridge Warranty Program

- Materials and Workmanship Warranties
 - Transfer Risk for Material Selection and Workmanship from Agency to Contractor
 - Typically, a 3- or 5-Year Warranty Period
- Performance Warranties
 - Transfer Risk For Design, Material Selection, and Workmanship To Contractor
 - Typically, A 2 To 3 Year Warranty Period For Capital Preventive Maintenance (CPM) and Bridge Projects



Warranty Program

- Warranty Types
 - Reconstruction and Rehabilitation
 - Capital Preventive Maintenance
 - Bridge
- Warranty Length 2, 3, or 5 years
- Distress Thresholds for the Specifications are Based on Michigan Pavement Performance Data
- Contractors are Required to Obtain a Warranty Bond for the Life of the Warranty
- Conflict Resolution Process to Resolve Disputes



Warranty Process and Costs

- Warranty Acceptance
 - Warranty Begins When Road is Open to Traffic
- Inspection
 - Interim and Final Inspections Are Conducted
 - Distresses Are Counted
- Corrective Actions May Be Required If Warranty Thresholds Are Exceeded
- Contractor must obtain a Warranty Surety Bond
- Contractor adds Risk Cost to their Unit Bid Price for a Warranted Item



THANK YOU *Questions?*

