

How does MDOT's pavement design and construction compare to neighboring states?

Pavement Design Standards

MDOT has developed a comprehensive strategy to maintain the statewide pavement network including:

- Performance models to monitor the "health" of the transportation system,
- A life-cycle cost process to assess and select the most cost-effective pavement materials, and
- A progressive pavement warranty program to further protect pavement projects.

MDOT follows national design standards developed by the American Association of State Highway and Transportation Officials (AASHTO).

MDOT was recognized by the Federal Highway Administration (FHWA) in 2012 as having one of the best materials acceptance processes in the country. FHWA specifically identifies Michigan as a very established and mature pavement quality assurance program.

Materials Standards

MDOT works to ensure the longevity of Michigan's pavement by using the highest quality materials. High performance material specifications are used to reduce future maintenance costs.

MDOT's commitment to continuous improvement

MDOT works with Michigan universities to research:

- applications of new materials,
- process improvement for construction and maintenance, and
- new technology at sites along the transportation network under live conditions.

MDOT relies on in-house research as well as the engineering and scientific expertise of many Michigan universities.

MDOT is a partner with the nationally recognized Michigan Transportation Asset Management Council (MTAMC). Comprised of local agencies, MTAMC collects and manages pavement condition data on federal-aid-eligible roads. The council works diligently to maximize the impact of investment in the state's roads and bridges.



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

Prepared by: MDOT Graphics\Bureaus\Transportation Planning\Intermodal Policy Division\
Brochures\Impact of Climate Pavement.indd (kh 12/16)

Michigan Department of Transportation

Pavement

Designing, building,
and maintaining
Michigan state highways
for the future



MDOT's cost-effective choices to
achieve quality pavement
in the face of serious challenges.

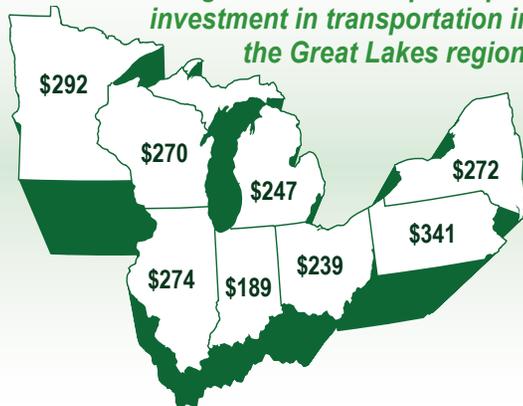


Road use and infrastructure investment compared to states in the Great Lakes region

Facts:

- More than 97 billion vehicle-miles are traveled on Michigan roads each year.
- Traffic levels in Michigan are 5 percent above the average for the region.
- Michigan's road system is larger than both New York (NY) and Pennsylvania (PA); but state transportation investment is \$3 billion less than NY and \$2 billion less than PA.
- Michigan ranks 2nd in annual vehicle repair costs to registered drivers.
- Michigan ranks 4th in excise tax rates on gasoline and diesel.
- Motor fuels in Michigan are subject to sales tax, but none of the revenue is allocated to roads.
- Michigan ranks 3rd in average vehicle registration fees.

Michigan ranks 6th in per capita investment in transportation in the Great Lakes region.



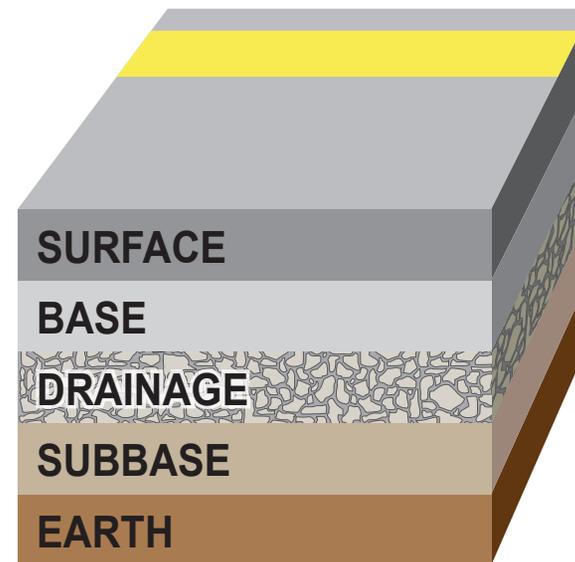
Sources:
Federal Highway Administration Statistics;
Michigan investment derived from Michigan Department of Transportation.

What design, construction, and maintenance challenges does Michigan's pavement face?

Soils and geotechnical impacts on pavement designs

Pavement design and construction in Michigan can be complicated and costly, because Michigan soils are often:

- variable,
- extremely frost-susceptible,
- contain deep, soft clay deposits, and
- destabilized by the variable water tables of the Great Lakes and 11,000 inland lakes.

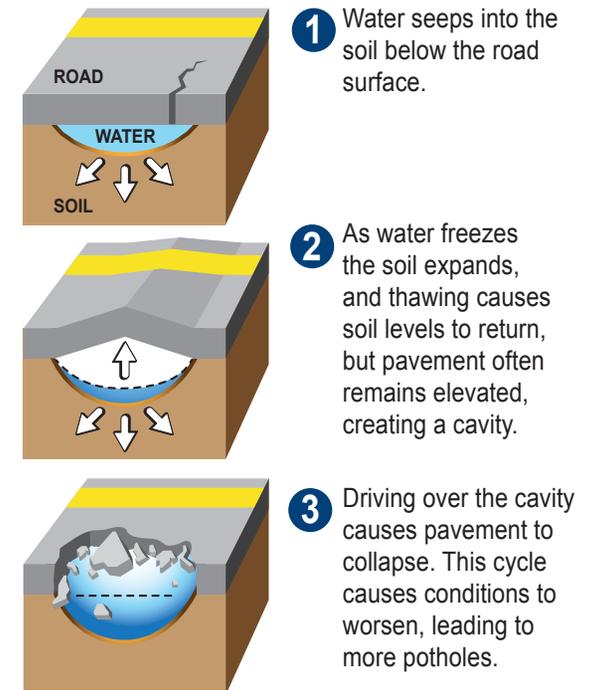


Multiple layers underneath the pavement are constructed to provide a solid, long-lasting substructure to hold against human and environmental wear and tear.

The impact of climate

Michigan's climate also contributes to the deterioration of pavements. Freeze/thaw cycles, de-icing materials and salt contribute to pavement deterioration.

Here's how cold weather causes potholes:



In summer months, extreme heat can affect some pavement, making them susceptible to:

- rutting,
- buckling, and
- raveling.

Heavy rainfall also can damage roadways if drainage systems fail.