

Pavement Demonstration Project Annual Status Report
Public Act 51 of 1951, Section 247.651i
(as amended by Public Act 457 of 2016)
May 2025

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Project Selection

Selection of candidate projects is a collaborative effort among Michigan Department of Transportation (MDOT) Construction Field Services pavement personnel, MDOT region personnel, and pavement industry groups. Once a demonstration project is identified, it goes to MDOT’s Engineering Operations Committee for formal approval. Once approved, the project becomes part of the Pavement Demonstration Program. All costs for the demonstration project are funded by the respective MDOT region’s rehabilitation and reconstruction budget.

Project Finalization Process

All active demonstration projects are continually evaluated to determine if there is enough information to create appropriate performance curves and make a final determination as to their applicability to standard MDOT practice. A separate technical report, Pavement Demonstration Program Project Evaluation, provides further details about final recommendations and is available upon request. Once a project is recommended for finalization, a final comprehensive report about the project and its findings will be published and its annual monitoring will end.

Project List

See Table 1 for a list of all pavement demonstration projects.

Table 1. Pavement Demonstration Project List

Year Built	Route/Road	Region	County	Location	Description	Status
2003	I-75 NB	North	Ogemaw	Ski Park Road to Roscommon County Line	Unbonded concrete overlay	Final
2005	M-84/Bay Road SB	Bay	Bay/Saginaw	Pierce Road to Delta Road	Asphalt perpetual pavement	Final
2005	M-3/Gratiot Avenue	Metro	Wayne	St. Aubin Street to McClellan Street	Thin unbonded concrete overlay	Final
2005	M-13/Euclid Avenue	Bay	Bay	Mary Drive to North Street	Low volume concrete reconstruct	Final
2005	I-96 WB	Metro	Wayne	M-39 to Schaeffer Road	Asphalt perpetual pavement	Final
2006	M-99/Eaton Rapids Road	University	Jackson	Village of Springport	Low volume concrete reconstruct	Final

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Year Built	Route/Road	Region	County	Location	Description	Status
2008	I-75 NB	North	Cheboygan	Topinabee Mail Route Road north for 2.37 miles	Asphalt perpetual pavement over rubblized concrete	Final
2010	M-1/Woodward Avenue	Metro	Wayne	Tuxedo Street to Chandler Street	Thin unbonded concrete overlay	Final
2020	I-94	University	Jackson	M-60 to Elm Street	Continuously reinforced concrete pavement	Active
2023	US-10 WB	Bay	Bay	7 Mile Road to west of Gies Street	Asphalt reconstruction on reduced base and subbase	Active
2024	US-24	Metro	Wayne	Grand River to north of 8 Mile Road	Asphalt reconstruction modification per stabilized subgrade	Active

NB = northbound; SB = southbound; WB = westbound

To ensure cost balance between concrete and asphalt demonstration projects, the latest asphalt project (US-24), with an estimated pavement engineered cross-section of \$3.2 million, is planned to be balanced with one or more concrete projects totaling at least \$2.4 million (in accordance with the law requirement that costs remain within 25 percent).

The following is a brief description of the status and/or condition of each active project based on field visits in April 2025. Condition ratings of good/fair/poor have been assigned to each project based on a subjective evaluation of the condition at the time of the latest field visit. Ratings are intended to provide a general sense of the performance (in terms of anticipated distress and ride quality per the design type) of each project and may not reflect future decisions about performance after all relevant information is obtained to make a final determination.

I-94 (M-60 to Elm Street, Jackson County, University Region):

This is a 6-lane (three lanes in each direction) reconstruction project using a 13-inch thick continuously reinforced concrete pavement (CRCP). The CRCP pavement type is designed to have tight transverse cracks, spaced from 1.5-feet to 6.0-feet apart to maximize load-transfer efficiency and minimize flexural stresses. Due to the existence of underground abandoned mineshafts within the right-of-way of this roadway, CRCP was selected to provide additional safety against the risk of subsidence. This is the first use of CRCP by MDOT since the late-1970s. Construction began in spring of 2019, with the eastbound direction completed in the same year. The westbound direction was completed in 2020.

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The following is a summary of the latest condition survey:

For both bounds, tight transverse cracks have appeared as expected, spaced 3-feet to 6-feet apart. This crack spacing is adequate, but some intersecting cracks continue to be observed intermittently in both bounds, occurring approximately every 20 to 200-feet. These intersecting cracks will be monitored for future progression and potential distress since cracks in CRCP are often relatively straight and do not typically intersect. So far, these intersecting cracks have not exhibited discernable excess spalling or pop-outs. For the eastbound section, some cracks have developed intermittent very minor, chip spalls (approximately ½-inch by 1-inch), particularly west of the Cooper Street overpass. Notably, larger minor spalls (approximately 1-inch by 2-inches) were observed in the right lane at stations 2131+30 and 2138+80. For westbound, intermittent chip spalls were observed throughout the entire length, particularly in the rightmost lane. Very straight transverse cracking was observed at eastbound stations 2134+50, 2135+00, 2147+20, 2148+80, and 2152+20 as well as westbound stations 2151+25, 2149+00, 2145+20, 2140+00, and 2133+00. These can indicate a stopped paving sequence or sympathy cracking from the shoulder transverse joint. These locations will continue to be monitored for future potential distress, but to date, there are no observed problems at these locations. No longitudinal cracks were observed in either bound. Minimal faulting was observed for the longitudinal joint between the rightmost lane and center lane at eastbound station 2135+00. For the jointed plain concrete pavement shoulders and ramp lanes, the joints generally remain straight and tight. However, a single crack was observed in the left shoulder of the westbound Cooper Street on ramp, and in eastbound, minor spalling was observed for some of the transverse joints. The spalling on the eastbound ramp is likely due to post-construction damage, as the pattern suggests abrasion from an object being dragged diagonally across the pavement surface towards the shoulder. The performance of this pavement section is currently characterized as good.

US-10 Westbound (7 Mile Road to west of Gies Street, Bay County, Bay Region):

This is a hot mix asphalt (HMA) reconstruction project that started construction in 2023 and was completed in the same year. It is a divided freeway that has two lanes in each direction with two interchanges, located at Mackinaw Road and I-75. The standard (control) cross-section (from bottom to top) is 18-inches of sand subbase, 6-inches of dense-graded aggregate base, and 8-inches of HMA pavement. In contrast, the demonstration cross-section (reduced subbase) reduced the subbase thickness to 10-inches, subsequently requiring an increase to the HMA thickness so that it is 10-inches. Therefore, this project is split into four sections with descriptions and locations defined by the following test sections (from west to east along project length):

- Section 1: Standard section (control) with reuse of existing subbase, 1.51 miles
- Section 2: Reduced subbase with new and partial reuse of existing subbase, 1.38 miles
- Section 3: Reduced subbase with reuse of existing subbase, 0.65 miles
- Section 4: Standard section (control) with new subbase, 1.85 miles

This pavement demonstration project will provide information on whether the thickness of the unbound base and/or subbase can be reduced and continue to provide adequate performance (frost resistance) as compared to the current standard total thickness of base and subbase, and if so, for what conditions (climate, subgrade, etc.) this may be acceptable.

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The following is a summary of the latest condition survey:

This pavement has minimal visible distress, except for localized surface damage near Mackinaw Road bridge and Culver Creek culvert, likely related to the 2024 construction of the bridge and supplemental culvert work. Uniform-width surface abrasion suggests contact with a temporary barrier wall, while other consistently offset, short (less than 3-feet) transverse gouges appear to be from parked construction equipment or vehicles. All damage is in the left (passing) lane, within approximately 500-feet of the noted locations. All 3 transverse cold joint locations, where stopped paving sequences seem to have occurred, were ground in 2024 to minimize their separation and any faulting. The longitudinal centerline construction joint is mostly very tight, except for some minor faulting (less than 0.25-inches) observed from the I-75 bridge to approximately 1,700-feet west. The performance of this pavement section is currently characterized as good.

US-24 (Grand River Avenue to 8 Mile Road, Wayne County, Metro Region):

This is an HMA reconstruction project that started construction in 2023 and was completed in 2024. Within the project limits, US-24 is a boulevard with four lanes in each direction and additional intermittent inside and outside turn lanes. The cross-section (from bottom to top) is 8-inches of sand subbase, 16-inches of open-graded drainage course, and 7-inches of HMA pavement. Two sections have cement stabilized subgrade, with one of those sections eliminating the 8-inches of sand subbase. This project is split into three sections with descriptions and locations defined by the following test sections:

- Section 1: Stabilized subgrade and no sand subbase, 0.37 miles
- Section 2: Stabilized subgrade with sand subbase, 0.34 miles
- Section 3: Standard section (control without stabilization), 0.27 miles

This pavement demonstration project will provide MDOT with information regarding the benefits to HMA reconstruction projects due to stabilizing subgrade. The three sections will help MDOT understand the influence of stabilized subgrade on the performance, and if the engineered cross-section can be reduced due to the improved subgrade (test section 1).

The following is a summary of the latest condition survey:

This pavement is in as-constructed condition, with a few minor construction-related issues. This includes 4 distinct transverse cold joint locations, 2 per direction, where stopped paving sequences seem to have occurred. Additionally, in both directions, the longitudinal centerline construction joint has intermittent faulting, up to 0.25-inches. This is likely due to potential differential support conditions as per project phasing, constructing the right two lanes prior to the left two lanes. Notably, approximately 100-feet of adjacent cracking, 2 to 6-inches from the southbound centerline longitudinal joint was observed between Pembroke Avenue and Norfolk Road. The 100-feet of cracking will be sealed during the summer of 2025 and will be monitored for further warranty actions. The performance of this pavement section is currently characterized as good.