



Transportation Asset Management Program 2017 Federal Aid PASER Road Survey

January 2018



WMSRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

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**WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION
(WMSRDC)**

The WMSRDC is a regional council of governments representing 127 local governments in the West Michigan counties of Lake, Mason, Muskegon, Newaygo, Oceana, and northern Ottawa.

The mission of WMSRDC is to promote and foster regional development in West Michigan... through cooperation amongst local governments.



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Transportation Asset Management Council 2017 PASER Road Survey

I. Background

What Is Asset Management?

Asset management is a concept in the transportation industry that is emerging as an important planning tool for public officials, planners, engineers, and others. Asset Management is based on an inventory of each local road network within the region. It will provide data that will allow transportation officials to monitor, plan, and strategically improve the road network. This strategic method of investment marks a break from the traditional “tactical” method of fixing roads that have the most severe problems.

The Michigan Transportation Commission has formed an Asset Management Council, with the objective to implement a state law that enacted the Asset Management Program. The Council is appointed by the Transportation Commission and answers directly to the Commission and legislature. Its five main elements include: Policy Goals and Objectives, Data Collection, Planning and Programming, Program Delivery, and Monitoring and Reporting. Its goal is to inventory all 39,000 miles of federal aid eligible roads within the State of Michigan, and according to the data collected, determine future distribution of ACT 51 transportation funds. In the future, the Asset Management Council may implement a similar initiative to collect similar information on the remaining local road network.

Regional Commission Involvement

Each year, WMSRDC staff, along with the Michigan Department of Transportation (MDOT) and a county road commission employee, collects this data within our region. Each year, staff attends a training session to review the previous year’s collection process and to retrain those who will be involved.

Each region within the state receives a laptop equipped with GIS, a GPS device, and software to collect the data. The data collection effort will require the collection of three items: PASER rating, surface type, and the number of lanes. PASER is a visual rating assessment system that rates the road surface condition for a given segment on a scale of 1-10.

PURPOSE:

The purpose of this task is to help satisfy the requirements of P.A. 499 of 2002, which establishes an Asset Management Council and charges it to develop an Asset Management Process for the State of Michigan. Regional transportation planning agencies play a significant role in this process as outlined in the following task assignments:

METHOD:

The Asset Management Council has developed a statewide process that will result in approximately 50 percent of federal aid eligible roads in the state to be rated per year using the PASER system. Activities to be undertaken as part of this task include:

1. Attendance at a 1-day training seminar on the use of PASER.
2. Participation as part of a 3-person team that will rate the federal-aid eligible roads in the region.
3. Providing the results of the PASER ratings to local agencies for review and revise where appropriate.
4. Public display of PASER ratings on website or through other public means so it is available for public review and use in project and plan development activities.
5. Transmit PASER ratings along with other roadway data (i.e. traffic counts).

PRODUCTS:

1. Road network loaded in ROADSOFIT.
2. PASER data collected on federal-aid eligible roads in region.
3. Web based or other public display of PASER road ratings on network.
4. Report to the Asset Management Council with PASER and other roadway data and transportation project completion information for the region.

II. Data Collection Process

In previous years, regional staff assisted in rating 100 percent of roads on the Federal Aid system. Beginning in 2008, regional staff rated 50 percent of the Federal Aid system miles. Due to an increase in funding and a desire to provide better data to member road agencies, data was once again collected for 100% of the Fed Aid system in 2017. Each year, WMSRDC staff, along with an MDOT employee and a county road commission employee, collects this data within the region.

The first step in this process is for each of the County Road Commission's to decide which roads will be included in the current year's rating survey. Once this has been decided a network is created in RoadSoft and exported to the Region's Laptop Data Collector (LDC). The LDC software is housed on the Region's laptop computer and connected to a GPS unit. The rating group then drives the entire network that was previously selected by the Road Commission. For each segment of road the three person team agrees on a road rating by using the PASER system, giving a numerical value for the condition of the road, 10 being new and 1 being failed.

Once the entire network has been rated, the data is exported back to the County Road Commission's RoadSoft program. After this is completed the County's data is exported to the Region, which passes the information back to the Asset Management Council.

Computer Equipment and Software:

Staff collects data using a laptop computer with the RoadSoft GIS Laptop Data Collector software. A Garmin GPS unit was connected to the laptop to track position and locate road segments. RoadSoft GIS is an asset management software package created and distributed free of charge by the Michigan Technology Institute's Technology Development Group. The current version of the program was designed with a special module to collect PASER rating data.

Staff Time:

For the purpose of collecting PASER data, it is most efficient to have three people in the vehicle, one driver, one navigator/rater, and the third member who is assigned to enter information into the computer. For each county road rating project, there is always one representative from the region, one road commission employee, and one MDOT representative present.

Training:

All participants in the survey are required to attend a daylong training session. Participants receive an overview of the project and are given instruction on how to use the RoadSoft software and the PASER road rating system for data collection. Once out in the field, experienced staff members show the new participants how to use the RoadSoft program and guide them through the rating process. Most participants feel comfortable after an hour of working the computer and rating the roads.

III. PASER Rating System

The PASER road rating system was developed by the University of Wisconsin-Madison Transportation Information Center to be used as the State of Wisconsin's standard road rating system. PASER is a "windshield" road rating system that uses a 1 to 10 rating scale, with a value of 10 representing a new road and a value of 1 representing a failed road. Condition ratings are assigned by monitoring the type and amount of visual defects along a road segment while driving the segment. The PASER system interprets these observations into a condition rating. A sample PASER rating chart has been included with this report.

The State of Michigan Asset Management Council has requested that the information gathered in this survey be reported using the following categories:

- **Roads with PASER ratings of 8-10 require Routine Maintenance.** Routine maintenance is the day-to-day maintenance activities that are scheduled, such as street sweeping, drainage clearing, shoulder gravel grading, and sealing cracks to prevent standing water and water penetration.

- **Roads with PASER ratings of 5-7 require Capital Preventive Maintenance.** Capital preventive maintenance is a planned set of cost effective treatments to an existing roadway system and its appurtenances that preserves, retards future deterioration and maintains or improves the functional condition of the system without significantly increasing structural capacity. The purpose of capital preventive maintenance is to protect the pavement structure, slow the rate of pavement deterioration and/or correct pavement surface deficiencies. Surface treatments are targeted at pavement surface defects primarily caused by the environment and by pavement material deficiencies.

- **Roads with PASER ratings of 1-4 require Structural Improvements.** This category includes work identified as rehabilitation and reconstruction which address the structural integrity of a road.

This Road Rating system is illustrated on the following page.

Surface Rating		Visible Distress	General Condition / Treatment Measures
10	Excellent	None	New construction
9	Excellent	None	Recent overlay, like new.
8	Very Good	<ul style="list-style-type: none"> No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). 	Recent sealcoat or new road mix. Little or no maintenance required.
7	Good	<ul style="list-style-type: none"> Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open 1/4") spaced due to reflection or paving joints. Transverse cracks (open 1/4") spaced 10 feet or more apart, little or slight crack raveling. No patching or very few patches in excellent condition. 	First signs of aging. Maintain with routine crack filling.
6	Good	<ul style="list-style-type: none"> Slight raveling (loss of lines) and traffic wear. Longitudinal cracks (open 1/4" - 1/2") due to reflection and paving joints. Transverse cracking (open 1/4" - 1/2") some spaced less than 10 feet. Slight to moderate flushing or polishing. Occasional patching in good condition. 	Show signs of aging, sound structural condition. Could extend life with sealcoat.
5	Fair	<ul style="list-style-type: none"> Moderate to severe raveling (loss of lines and coarse aggregate). Longitudinal cracks (open 1/2") show some slight raveling and secondary cracks. First signs of longitudinal cracks near wheel path or edge. Transverse cracking and first signs of block cracking. Slight crack raveling (open 1/2"). Extensive to severe flushing or polishing. Some patching or edge wedging in good condition. 	Surface aging, sound structural condition. Needs sealcoat or non-structural overlay.
4	Fair	<ul style="list-style-type: none"> Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Block cracking (over 25 - 50% of surface). Patching in fair condition. Slight rutting or distortions (1" deep or less). 	Significant aging and first signs of need for strengthening. Would benefit from recycling or overlay.
3	Poor	<ul style="list-style-type: none"> Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Block cracking over 50% of surface. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes. 	Need patching and major overlay or complete recycling.
2	Very Poor	<ul style="list-style-type: none"> Alligator cracking (over 25% of surface). Severe distortions (over 2" deep). Extensive patching in poor condition. Potholes. 	Severe deterioration. Needs reconstruction with extensive base repair.
1	Failed	<ul style="list-style-type: none"> Severe distress with extensive loss of surface integrity. 	Failed. Needs total reconstruction.

IV. County Projects

Summary: West Michigan Shoreline Regional Development Commission

In 2017, Region staff rated approximately 2020 miles of Federal Aid eligible roads. While individual county summaries are included in the following pages, a summary of road ratings for all counties is illustrated in the following table.

	Structural Improvements	Capital Preventive Maintenance	Routine Maintenance
Mason	213.273	75.533	5.762
Lake	206.65	50.546	7.191
Newaygo	370.428	75.095	15.158
Muskegon	360.991	236.537	31.17
Oceana	242.178	103.827	26.178
TOTAL MILES	1393.52	541.538	85.459
PERCENTAGE	68.97%	26.80%	4.23%

The majority of Federal Aid eligible roads, 68.97 %, are in need of structural improvements. Typical actions required for this category would consist of reconstruction, major overlay, or complete rehabilitation. The second highest percentage of Federal Aid eligible roads within the region, 26.80%, falls into the category of needing some type of capital preventive maintenance. These activities may include crack sealing, seal-coating, or non-structural overlays. The lowest percentage, 4.23%, falls into the category of only needing routine maintenance. Roads in this category need little to no maintenance.

Lake County

Project overview:

In 2017, West Michigan Shoreline Regional Development Commission staff, along with representatives of the Lake County Road Commission (LCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Lake County's federal-aid eligible roads using the PASER road rating system, instead of the 50% requested by the State of Michigan Asset Management Council.

Results:

Approximately 288 miles of federal-aid eligible roads were rated in 2017 for this project. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

2017

PASER Rating Prescribed Fix Miles Percent of Total Miles Rated

1-4 Structural Improvements 206.65 miles (71.59%)

5-7 Capital Preventative Maintenance 50.546 miles (17.53%)

8-10 Routine Maintenance 7.191 (2.49%)

Current Surface Rating Mileage Summary

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*	
	10	9	8	7	6	5	4	3	2	1			Not Rated
Asphalt-Standard	0.000	0.000	6.688	5.970	12.978	9.220	20.017	52.996	10.377	0.000	4.806	123.052	3.893
Graded Earth	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.000
Gravel-Standard	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.192	19.192	0.000
Sealcoat-Standard	0.000	0.000	0.503	3.617	11.259	7.502	5.088	29.422	77.465	11.287	0.000	146.143	2.800
Total Centerline Mileage	0.000	0.000	7.191	9.587	24.237	16.722	25.105	82.418	87.84	11.287	24.033	288.422	3.080

*APR=Average Paser Rating calculated by weighting the mileage with the paser value

Mason County

Project overview:

In 2017, West Michigan Shoreline Regional Development staff, along with representatives of the Mason County Road Commission (MCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Mason County's federal-aid eligible roads using the PASER road rating system, instead of the 50% requested by the State of Michigan Asset Management Council.

Results:

Approximately 310 miles of federal-aid eligible roads were rated for this project in 2017. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

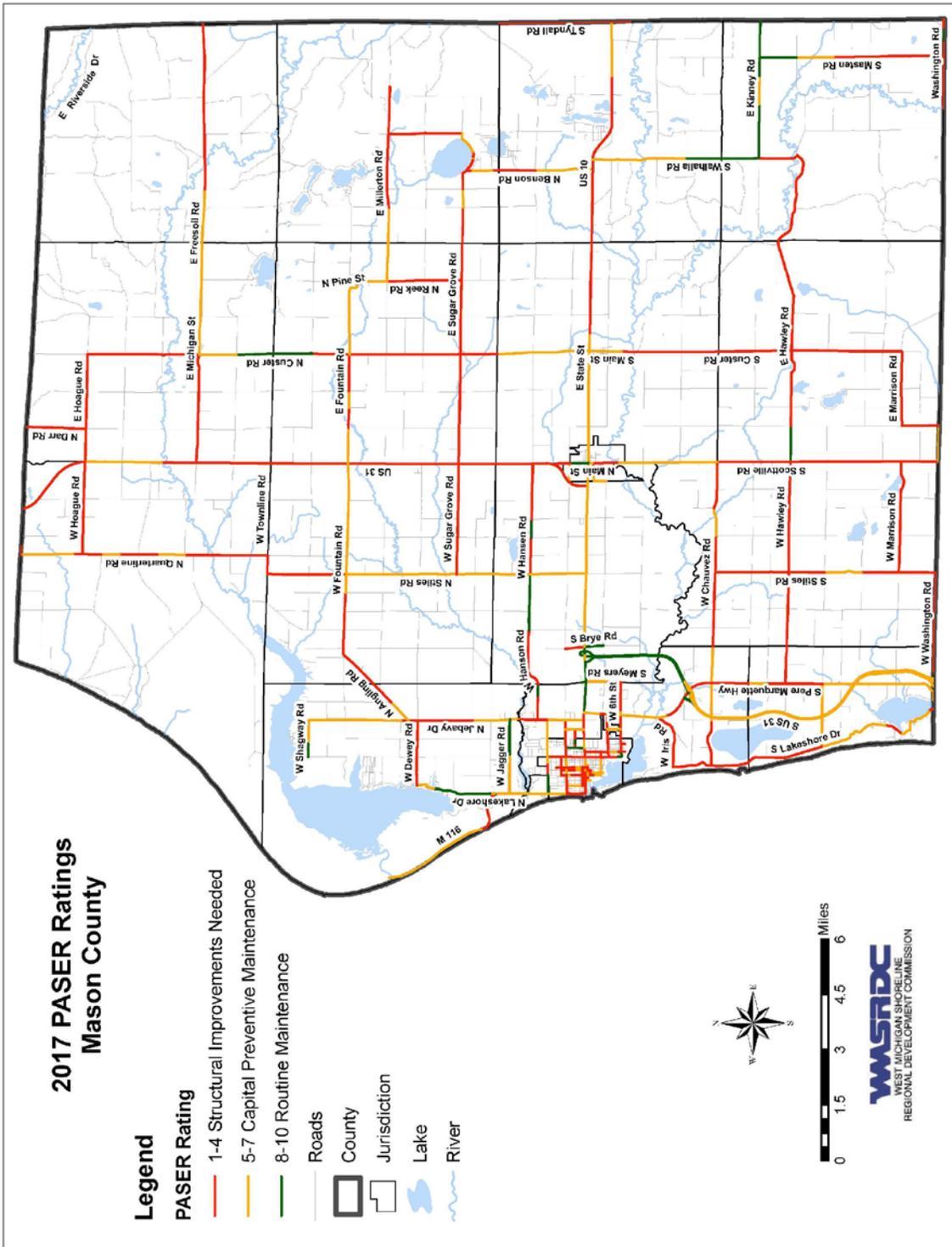
2017

PASER Rating Prescribed Fix Miles Percent of Total Miles Rated

1-4 Structural Improvements 213.273 miles (68.71%)

5-7 Capital Preventative Maintenance 75.533 miles (24.347%)

8-10 Routine Maintenance 5.762 miles (1.86%)



Current Surface Rating Mileage Summary

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*	
	10	9	8	7	6	5	4	3	2	1			Not Rated
Asphalt-Standard	0.000	0.000	5.762	10.468	21.128	39.076	54.660	88.052	60.747	2.898	3.018	285.809	3.669
Composite	0.000	0.000	0.000	0.000	0.074	2.390	1.830	4.053	0.324	0.000	0.000	8.671	3.751
Concrete-Standard	0.000	0.000	0.000	1.427	0.472	0.000	0.000	0.000	0.000	0.000	0.000	1.899	6.751
Gravel-Standard	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.788	12.788	0.000
Sealcoat-Standard	0.000	0.000	0.000	0.000	0.000	0.498	0.000	0.000	0.717	0.000	0.000	1.215	3.230
Total Centerline Mileage	0.000	0.000	5.762	11.895	21.674	41.964	56.490	92.105	61.78	2.898	15.806	310.382	3.537

*APR=Average Paser Rating calculated by weighting the mileage with the passer value

Muskegon County

Project overview:

In 2017, West Michigan Shoreline Regional Development Commission staff, along with representatives of the Muskegon County Road Commission (MCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Muskegon County's federal-aid eligible roads using the PASER road rating system, instead of the 50% requested by the State of Michigan Asset Management Council.

Results:

Approximately 628 miles of federal-aid eligible roads were rated for this project in 2017. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

2017

PASER Rating Prescribed Fix Miles / Percent of Total Miles Rated

1-4 Structural Improvements 360.991 miles (57.42%)

5-7 Capital Preventative Maintenance 236.537 miles (37.62%)

8-10 Routine Maintenance 31.170 miles (4.96%)

Current Surface Rating Mileage Summary

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*	
	10	9	8	7	6	5	4	3	2	1			Not Rated
Asphalt-Standard	0.000	0.423	25.515	64.064	78.322	75.431	115.342	116.828	59.420	10.495	0.000	545.840	4.479
Composite	0.000	0.000	3.584	1.816	2.792	7.069	21.446	13.269	6.951	2.923	0.000	59.850	3.941
Concrete-Standard	0.000	1.108	0.540	1.961	2.773	2.309	8.682	3.481	1.627	0.175	0.000	22.656	4.626
Crushed Asphalt Base	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.008	2.000
Gravel-Standard	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.073	0.000	0.000	0.073	2.000
Sealcoat-Standard	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.262	0.000	0.000	0.262	2.000
Unimproved Earth	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.029	0.044	0.682
Total Centerline Mileage	0.000	1.531	29.639	67.841	83.887	84.809	145.470	133.578	68.35	13.593	0.029	628.733	4.431

*APR=Average Paser Rating calculated by weighting the mileage with the paser value

Newaygo County

Project overview:

In 2017, West Michigan Shoreline Regional Development Commission staff, along with representatives of the Newaygo County Road Commission (NCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Newaygo County's federal-aid eligible roads using the PASER road rating system, instead of the 50% requested by the State of Michigan Asset Management Council.

Results:

Approximately 472 miles of federal-aid eligible roads were rated for this project. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or better require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capitol Preventative Maintenance
- Roads receiving a rating less than or equal to 4 require Structural Improvements

2017

PASER Rating Prescribed Fix Miles / Percent of Total Miles Rated

1-4 Structural Improvements 370.428 miles (78.42%)

5-7 Capital Preventative Maintenance 75.095 miles (15.90%)

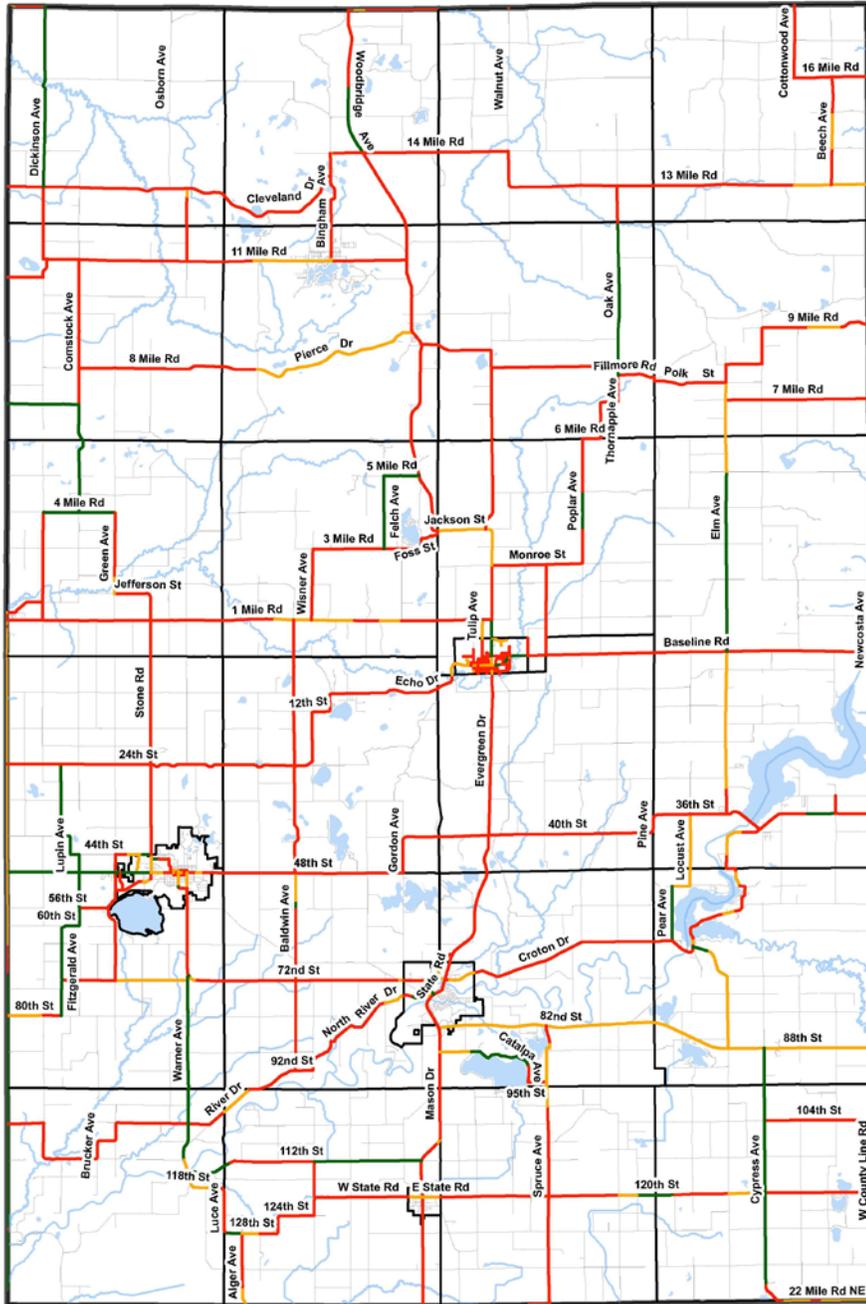
8-10 Routine Maintenance 15.518 miles (3.29%)

2017 PASER Ratings Newway County

Legend

PASER Rating

- 1-4 Structural Improvements Needed
- 5-7 Capital Preventive Maintenance
- 8-10 Routine Maintenance
- Roads
- County
- Jurisdiction
- Lake
- ~ River



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Current Surface Rating Mileage Summary

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*	
	10	9	8	7	6	5	4	3	2	1			Not Rated
Asphalt-Standard	0.000	0.000	14.684	12.738	27.057	33.196	51.690	132.254	121.175	38.510	1.788	433.092	3.277
Asphalt-Standard2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.138	0.000	0.000	0.000	1.138	3.000
Asphalt-Standard2.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.045	3.000
Composite	0.000	0.000	0.834	0.000	0.454	1.650	5.211	14.966	1.710	0.000	0.000	24.825	3.497
Graded Earth	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.431	0.431	0.000
Gravel-Standard	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.276	0.000	5.856	11.132	0.948
Sealcoat-Standard	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.500	0.957	0.000	0.000	1.461	2.348
Unimproved Earth	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.229	0.229	0.000
Total Centerline Mileage	0.000	0.000	15.518	12.738	27.511	34.846	56.905	148.903	129.11	38.510	8.304	472.353	3.226

*APR=Average Paser Rating calculated by weighting the mileage with the passer value

Oceana County

Project overview:

In 2017, West Michigan Shoreline Regional Development Commission staff, along with representatives of the Oceana County Road Commission (OCRC) and the Michigan Department of Transportation (MDOT), assessed the condition of 100% of Oceana County's federal-aid eligible roads using the PASER road rating system, as requested by the State of Michigan Asset Management Council.

Results:

Approximately 372 miles of federal-aid eligible roads were rated for this project in 2017. The following summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

- Roads receiving a rating of 8 or higher require only Routine Maintenance
- Roads receiving a rating of 5-7 require Capital Preventative Maintenance
- Roads receiving a rating of 4 or less require Structural Improvements

2017

PASER Rating Prescribed Fix Miles / Percent of Total Miles Rated

1-4 Structural Improvements 242.178 miles (64.95%)

5-7 Capital Preventative Maintenance 103.827 miles (27.84%)

8-10 Routine Maintenance 26.178 miles (7.02%)

Current Surface Rating Mileage Summary

Surface Subtype	PASER Rating										Total Centerline Mileage	APR*	
	10	9	8	7	6	5	4	3	2	1			Not Rated
Asphalt-Standard	0.000	0.000	7.979	19.184	29.052	13.889	39.812	49.876	96.844	34.456	0.000	291.092	3.363
Composite	0.000	0.343	14.408	9.756	10.061	11.459	7.220	5.803	6.198	0.000	0.000	65.248	5.563
Concrete-Standard	0.000	0.000	3.448	0.000	3.663	6.763	1.762	0.169	0.039	0.000	0.000	15.844	5.744
Gravel-Standard	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.636	0.636	0.000
Unimproved Earth	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.063	0.063	0.000
Total Centerline Mileage	0.000	0.343	25.835	28.940	42.776	32.111	48.794	55.848	103.08	34.456	0.699	372.883	3.843

*APR=Average Paser Rating calculated by weighting the mileage with the paser value

