

The State of Michigan Transportation



2003-2013 PASER Road Survey

For Cass County, Michigan



Prepared by the Southwest Michigan Planning Commission
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Appendix (available at http://swmpc.org/asset_mgmt_b.asp):

- Table: Percentage of Roads in Each PASER Category By Jurisdiction
- PASER Asphalt Rating Chart
- PASER Concrete Rating Chart
- PASER Gravel Rating Chart
- Road Rating History Report
- PASER Thematic Maps

PROJECT OVERVIEW

Since 2003, the Southwest Michigan Planning Commission (SWMPC) and representatives of each of the three counties (Berrien, Cass, and Van Buren) in the Southwest Region and the Michigan Department of Transportation (MDOT) have jointly conducted annual assessments of the condition of the Southwest Region's federal aid eligible roads. These assessments have utilized the Pavement Surface Evaluation and Rating (PASER) system in establishing road conditions. The effort has been funded and administered through the State of Michigan Transportation Asset Management Council and has satisfied the Governmental Accounting Standards Board Statement 34 (GASB 34), requiring tri-annual road assessments for governmental units receiving federal aid, doing so with minimal staff over short time periods. SWMPC hopes to use the data gathered here to assist member agencies in developing plans for the effective management of their pavement networks.

METHODOLOGY: THE PASER ROAD RATING SYSTEM

PASER, or Pavement Surface Evaluation and Rating, is a visual test of the surface condition of the road that utilizes a ten-point scale, focusing on pavement conditions; structural or geometric defects are not considered in determining the ratings. Ratings are applied to road segments of varying length, with segment values ranging from 10 for a new road segment to 1 for a completely failed segment, and specific ratings determined by the number and type of surface defects. The ratings are compiled by teams of three to four individuals who drive the roads and conduct windshield surveys. PASER rating charts for asphalt, concrete, and gravel roads have been included in the appendix of this report.

PASER Rating	Pavement Quality
10	Excellent
9	
8	
7	
6	
5	
4	
3	
2	
1	Poor

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 encompasses day-to-day maintenance activities, 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 that retard future deterioration and maintain or improve the functional condition of the system without significantly increasing structural capacity. The purpose of capital preventive maintenance fixes is to protect the

pavement structure, slow the rate of pavement deterioration, and/or correct pavement surface deficiencies. These 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, addressing the structural integrity of a road.

Computer Equipment and Software

Teams collected data using a laptop computer with the RoadSoft GIS Laptop Data Collector software loaded. A Garmin GPS 35 PC TracPak Global Position System 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 purposes of this project, a team of three to four members was used for collecting PASER data. Each team member played a separate role within the vehicle during the data collection. One individual drove and collaborated in the road rating, a second navigated and also collaborated in the road ratings, and a third entered the rating information into the laptop computer; when the team rated roads within a city or village, a fourth member would be added from that city or village. The team was comprised of one SWMPC representative, one representative from a county road commission (depending upon which county the team was in at the time), and one MDOT representative from the Coloma Transportation Service Center (TSC). Several cities and villages also participated in the project. Another SWMPC staff member

Training

All participants in the survey were required to attend a daylong training session that took place at the Kalamazoo Area Transportation Study offices. Participants received an overview of the project and were 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 taught new participants how to use the RoadSoft program and guided them through the rating process.

RESULTS

County-Wide Results

As shown in Figure 1 and Table 1 below, the surface condition of federal aid eligible roads in Cass County has generally worsened from 2003 through 2013. The percentage of assessed road segments receiving a Good rating of 8-10 has decreased from a high of 35.4%

in 2003 to a low of 0.4% in 2011. Likewise, the percentage of road segments rated Poor (1-4) grew from a low of 10.7% in 2003 to highs of 57.7% in 2011. In addition, the percentage of roads rated as Fair (5-7) declined from 54.0% in 2003 to a low of 37.6% in 2013.

Figure 1: Percentage of federal-aid eligible road segments falling under surface condition classifications, by year, 2003-2013 for Cass County

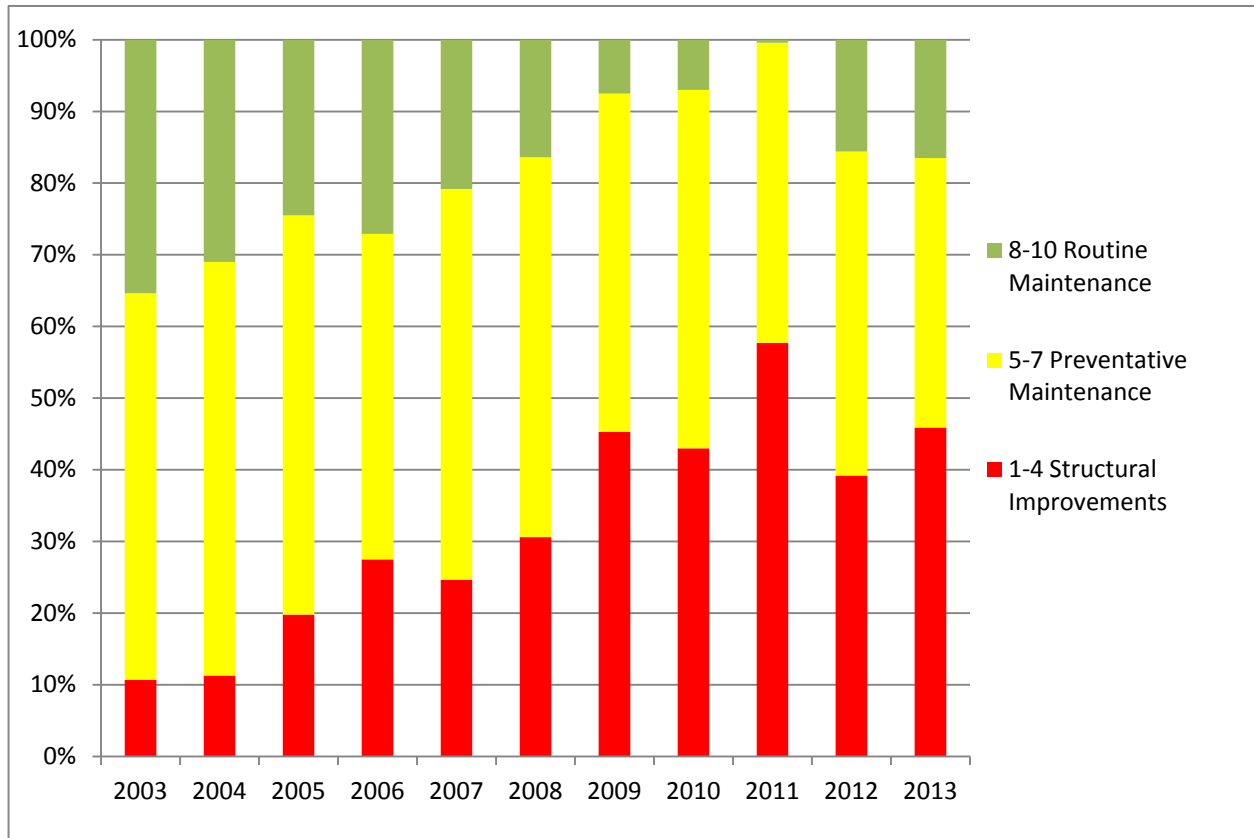


Table 1: Road segment classifications and total road-miles rated, by year

Year	1 to 4 Structural Improvements	5 to 7 Capital Preventive Maintenance	8 to 10 Routine Maintenance	Total	Total Miles Rated
2003	10.7%	54.0%	35.4%	100.0%	404.7
2004	11.3%	57.7%	31.0%	100.0%	406.0
2005	19.8%	55.7%	24.5%	100.0%	409.8
2006	27.5%	45.4%	27.1%	100.0%	368.4
2007	24.6%	54.5%	20.8%	100.0%	367.5
2008	30.6%	53.0%	16.4%	100.0%	214.0
2009	45.3%	47.2%	7.5%	100.0%	200.2
2010	43.0%	50.0%	7.0%	100.0%	252.5
2011	57.7%	41.9%	0.4%	100.0%	160.5
2012	39.2%	45.2%	15.6%	100.0%	212.5
2013	45.9%	37.6%	16.5%	100.0%	153.0
2003-2004 Totals	11.0%	55.8%	33.2%	100.0%	810.7
2012-2013 Totals	42.0%	42.0%	16.0%	100.0%	365.6
Change from 2003-04 to 2012-2013	31.0%	-13.8%	-17.2%	--	-445.1

While surface conditions show a clear downward trend, it is important to exercise care in making specific comparisons between years. Between 2003 and 2007, efforts were made to rate the entire network of federal aid eligible roads in Cass County. Beginning in 2008, however, the road network was split approximately in half, with alternating halves of the county being assessed on consecutive years. Thus, ratings changes between consecutive years primarily represent surface condition ratings of entirely different road segments, as opposed to changes in condition of the same segments. To account for this, Table 1 contains a row demonstrating the change in average conditions over 2003-2004 to the average conditions over 2012-2013. Again, though, the results display a clear trend toward decreasing surface ratings. It is worth noting, however, that there was an increase in road miles rated as Good between 2011 and 2013, which would indicate improvement along the same roadway segments in almost all cases.

Road Ratings by Jurisdiction

In addition to the aggregate county-wide conditions displayed above, Table 2 (starting on page 8, also available in Excel format at http://swmpc.org/asset_mgmt_b.asp) displays yearly rating data by local jurisdiction. The portion of the table displayed on page 14 of this document provides a detailed list of how road conditions have changed at the jurisdictional

level over the past 8-9 years. Of the 20 cities, villages, and townships in Cass County with federal aid eligible roads, 18 have seen an increase over this time in the percentage of their federal aid eligible roads in poor condition, while, similarly only 2 have seen an increase in the percentage of roads in good condition. Deterioration of the pavement network seems to be the overarching trend.

In addition, 12 jurisdictions have seen a decrease in the percentage of their roads in fair condition. This decrease is directly related to the increase in the number of road miles in poor condition throughout Cass County. The reason for an increase in roads in poor condition is likely a lack of timely preventative maintenance treatments to roads that were previously maintained in fair condition, even for those jurisdictions where the percentage of roads in good condition has increased. Part of SWMPC’s aim in compiling the PASER ratings and publishing an annual report is to promote planning that emphasizes structural improvements, preventative maintenance, and routine maintenance as a coordinated strategy for achieving and sustaining high- quality infrastructure.

Table 2: Percentage of Federal Aid Eligible Roads in Each PASER Category by Jurisdiction

Cass County Jurisdictions	2 0 0 3				2 0 0 4			
	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated
Calvin Twp	6.8%	46.1%	47.1%	25.8	1.8%	68.9%	29.3%	25.8
Cassopolis	0.0%	81.2%	18.8%	1.3	0.0%	74.9%	25.1%	1.3
Dowagiac	10.0%	56.0%	34.0%	14.4	17.1%	56.6%	26.3%	14.7
Edwardsburg	11.3%	52.3%	36.5%	0.9	0.0%	100.0%	0.0%	0.9
Howard Twp	0.0%	74.1%	25.9%	27.3	2.3%	83.2%	14.5%	28.1
Jefferson Twp	3.2%	74.2%	22.6%	31.2	0.0%	81.3%	18.7%	31.2
Lagrange Twp	19.6%	39.0%	41.4%	36.1	21.6%	40.2%	38.2%	36.2
Marcellus	78.6%	21.4%	0.0%	0.3	86.5%	13.5%	0.0%	0.3
Marcellus Twp	8.0%	62.1%	29.9%	15.0	19.6%	31.0%	49.4%	15.0
Mason Twp	0.9%	39.6%	59.5%	20.5	0.0%	50.8%	49.2%	20.5
Milton Twp	4.3%	73.4%	22.3%	26.3	1.1%	77.8%	21.2%	26.3
Newberg Twp	24.9%	26.5%	48.6%	32.3	29.3%	28.0%	42.8%	32.3
Ontwa Twp	0.0%	58.7%	41.3%	22.9	0.0%	76.8%	23.2%	22.9
Penn Twp	18.8%	53.2%	28.0%	29.0	22.1%	47.4%	30.5%	29.0
Pokagon Twp	4.9%	82.0%	13.1%	24.4	11.0%	72.2%	16.8%	24.4
Porter Twp	7.2%	70.8%	22.1%	32.0	11.8%	60.2%	28.0%	32.0
Silver Creek Twp	18.2%	38.4%	43.5%	22.8	16.0%	33.3%	50.7%	22.9
Vandalia	0.0%	0.0%	100.0%	0.4	0.0%	100.0%	0.0%	0.4
Volinia Twp	21.2%	29.6%	49.2%	21.2	18.8%	55.8%	25.4%	21.2
Wayne Twp	16.6%	37.0%	46.5%	20.7	5.1%	50.0%	44.9%	20.8

Cass County Jurisdictions	2 0 0 5				2 0 0 6			
	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated
Calvin Twp	5.7%	61.3%	33.0%	25.8	20.1%	60.7%	19.2%	23.9
Cassopolis	6.1%	88.7%	5.2%	1.3	52.7%	47.3%	0.0%	1.2
Dowagiac	26.6%	52.0%	21.5%	14.7	36.6%	43.3%	20.1%	14.7
Edwardsburg	11.3%	88.7%	0.0%	0.9	0.0%	56.1%	43.9%	0.9
Howard Twp	24.7%	53.9%	21.4%	29.4	44.9%	29.5%	25.7%	29.8
Jefferson Twp	8.2%	64.9%	26.9%	31.2	35.7%	49.8%	14.5%	31.2
Lagrange Twp	18.6%	66.5%	14.9%	36.2	19.8%	65.7%	14.5%	32.6
Marcellus	100.0%	0.0%	0.0%	0.3	0.0%	0.0%	100.0%	0.3
Marcellus Twp	24.5%	49.6%	25.9%	15.0	16.8%	49.8%	33.3%	16.2
Mason Twp	6.4%	31.5%	62.1%	20.5	15.3%	14.6%	70.1%	17.3
Milton Twp	31.0%	51.1%	17.9%	27.1	56.4%	33.4%	10.2%	27.6
Newberg Twp	32.1%	49.4%	18.6%	32.3	27.5%	48.5%	24.0%	21.8
Ontwa Twp	23.4%	60.0%	16.7%	23.9	27.4%	32.0%	40.6%	24.2
Penn Twp	16.2%	57.7%	26.0%	29.0	30.6%	39.3%	30.0%	19.1
Pokagon Twp	13.9%	77.2%	8.8%	24.9	17.6%	41.9%	40.6%	24.9
Porter Twp	35.0%	38.1%	26.9%	32.0	25.6%	34.5%	39.9%	31.5
Silver Creek Twp	15.4%	74.9%	9.7%	22.9	19.7%	53.9%	26.3%	22.9
Vandalia	0.0%	100.0%	0.0%	0.4	N/A	N/A	N/A	0.0
Volinia Twp	18.8%	45.8%	35.4%	21.2	0.0%	91.3%	8.7%	12.7
Wayne Twp	13.1%	44.5%	42.4%	20.8	20.2%	54.3%	25.5%	15.8

Cass County Jurisdictions	2 0 0 7				2 0 0 8			
	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated
Calvin Twp	24.4%	58.8%	16.8%	23.9	0.0%	0.0%	0.0%	0.0
Cassopolis	60.7%	39.3%	0.0%	1.3	60.3%	39.7%	0.0%	1.2
Dowagiac	26.4%	42.1%	31.5%	14.7	39.3%	46.3%	14.4%	14.7
Edwardsburg	56.1%	0.0%	43.9%	0.9	0.0%	0.0%	0.0%	0.0
Howard Twp	25.8%	48.5%	25.6%	29.8	0.0%	0.0%	0.0%	0.0
Jefferson Twp	37.8%	57.4%	4.8%	31.3	0.0%	0.0%	0.0%	0.0
Lagrange Twp	11.1%	69.5%	19.4%	32.7	20.5%	53.8%	25.6%	32.6
Marcellus	0.0%	16.7%	83.3%	0.3	0.0%	15.1%	84.9%	0.3
Marcellus Twp	23.0%	77.0%	0.0%	17.1	20.1%	63.7%	16.2%	16.2
Mason Twp	8.7%	57.1%	34.1%	15.1	0.0%	0.0%	0.0%	0.0
Milton Twp	45.8%	45.8%	8.4%	27.7	0.0%	0.0%	0.0%	0.0
Newberg Twp	0.0%	68.5%	31.5%	21.8	4.6%	39.3%	56.1%	21.8
Ontwa Twp	32.1%	32.5%	35.4%	24.2	0.0%	0.0%	0.0%	0.0
Penn Twp	19.3%	59.4%	21.3%	19.1	27.5%	63.1%	9.4%	19.1
Pokagon Twp	24.0%	35.8%	40.2%	24.9	31.0%	50.5%	18.5%	24.7
Porter Twp	31.6%	25.6%	42.8%	31.5	51.1%	39.1%	9.8%	32.0
Silver Creek Twp	29.5%	66.3%	4.2%	22.9	39.2%	60.8%	0.0%	22.9
Vandalia	N/A	N/A	N/A	0.0	N/A	N/A	N/A	0.0
Volinia Twp	3.9%	92.4%	3.7%	12.7	37.9%	62.1%	0.0%	12.7
Wayne Twp	24.1%	75.9%	0.0%	15.8	30.9%	68.6%	0.5%	15.8

Cass County Jurisdictions	2 0 0 9				2 0 1 0			
	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated
Calvin Twp	37.7%	62.3%	0.0%	25.8	N/A	N/A	N/A	0.0
Cassopolis	41.3%	58.7%	0.0%	0.4	45.9%	54.1%	0.0%	1.3
Dowagiac	N/A	N/A	N/A	0.0	43.9%	53.3%	2.7%	14.7
Edwardsburg	0.0%	0.0%	100.0%	0.9	N/A	N/A	N/A	0.0
Howard Twp	23.5%	71.8%	4.8%	29.9	N/A	N/A	N/A	0.0
Jefferson Twp	59.3%	40.7%	0.0%	31.3	N/A	N/A	N/A	0.0
Lagrange Twp	74.6%	25.4%	0.0%	4.1	35.9%	57.0%	7.0%	36.2
Marcellus	N/A	N/A	N/A	0.0	0.0%	100.0%	0.0%	0.3
Marcellus Twp	100.0%	0.0%	0.0%	0.9	59.3%	40.7%	0.0%	17.1
Mason Twp	21.6%	42.9%	35.5%	20.5	N/A	N/A	N/A	N/A
Milton Twp	61.4%	36.5%	2.2%	27.7	49.3%	50.7%	0.0%	0.6
Newberg Twp	84.2%	15.8%	0.0%	10.5	26.9%	54.5%	18.5%	32.3
Ontwa Twp	47.6%	32.2%	20.2%	24.1	N/A	N/A	N/A	0.0
Penn Twp	35.0%	65.0%	0.0%	9.9	39.7%	52.2%	8.2%	29.0
Pokagon Twp	0.0%	100.0%	0.0%	0.1	54.0%	40.3%	5.7%	23.8
Porter Twp	100.0%	0.0%	0.0%	0.3	43.3%	48.4%	8.2%	32.0
Silver Creek Twp	N/A	N/A	N/A	0.0	51.1%	44.5%	4.4%	22.9
Vandalia	50.6%	49.4%	0.0%	0.4	0.0%	100.0%	0.0%	0.4
Volinia Twp	41.5%	58.5%	0.0%	8.5	55.9%	44.1%	0.0%	21.2
Wayne Twp	39.9%	60.1%	0.0%	5.0	36.8%	56.2%	7.0%	20.8

Cass County Jurisdictions	2011				2012			
	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated
Calvin Twp	54.4%	45.6%	0.0%	23.9	N/A	N/A	N/A	0.0
Cassopolis	N/A	N/A	N/A	0.0	45.5%	54.5%	0.0%	1.3
Dowagiac	N/A	N/A	N/A	0.0	40.1%	38.1%	21.8%	14.6
Edwardsburg	0.0%	88.7%	11.3%	0.9	N/A	N/A	N/A	0.0
Howard Twp	55.5%	44.5%	0.0%	30.0	N/A	N/A	N/A	0.0
Jefferson Twp	67.2%	32.8%	0.0%	31.2	N/A	N/A	N/A	0.0
Lagrange Twp	N/A	N/A	N/A	0.0	47.0%	50.8%	2.2%	32.7
Marcellus	N/A	N/A	N/A	0.0	0.0%	0.0%	100%	0.3
Marcellus Twp	N/A	N/A	N/A	0.0	51.9%	25.1%	23.0%	16.2
Mason Twp	22.7%	77.3%	0.0%	15.1	N/A	N/A	N/A	0.0
Milton Twp	74.2%	25.8%	0.0%	27.7	N/A	N/A	N/A	0.0
Newberg Twp	N/A	N/A	N/A	0.0	19.8%	53.1%	27.0%	21.8
Ontwa Twp	62.6%	36.4%	1.0%	24.2	N/A	N/A	N/A	0.0
Penn Twp	N/A	N/A	N/A	0.0	22.7%	56.4%	20.9%	19.1
Pokagon Twp	N/A	N/A	N/A	0.0	52.8%	44.6%	2.5%	24.9
Porter Twp	N/A	N/A	N/A	0.0	26.1%	52.9%	21.0%	31.2
Silver Creek Twp	N/A	N/A	N/A	0.0	52.2%	32.9%	14.9%	22.9
Vandalia	N/A	N/A	N/A	0.0	N/A	N/A	N/A	0.0
Volinia Twp	N/A	N/A	N/A	0.0	56.1%	12.1%	31.8%	12.7
Wayne Twp	N/A	N/A	N/A	0.0	27.8%	67.3%	4.9%	15.0

	2013			
	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	Total Miles Rated
Cass County Jurisdictions				
Calvin Twp	50.2%	49.8%	0.0%	23.9
Cassopolis	N/A	N/A	N/A	0.0
Dowagiac	N/A	N/A	N/A	0.0
Edwardsburg	17.1%	82.9%	11.3%	0.9
Howard Twp	36.8%	62.4%	0.8%	30.0
Jefferson Twp	67.7%	23.5%	8.9%	31.2
Lagrange Twp	N/A	N/A	N/A	0.0
Marcellus	N/A	N/A	N/A	0.0
Marcellus Twp	N/A	N/A	N/A	0.0
Mason Twp	15.1%	41.9%	43.0%	15.1
Milton Twp	45.3%	29.7%	25.0%	27.7
Newberg Twp	N/A	N/A	N/A	0.0
Ontwa Twp	45.7%	18.0%	36.3%	24.2
Penn Twp	N/A	N/A	N/A	0.0
Pokagon Twp	N/A	N/A	N/A	0.0
Porter Twp	N/A	N/A	N/A	0.0
Silver Creek Twp	N/A	N/A	N/A	0.0
Vandalia	N/A	N/A	N/A	0.0
Volinia Twp	N/A	N/A	N/A	0.0
Wayne Twp	N/A	N/A	N/A	0.0

Cass County Jurisdictions	Change from 2003 to 2012/2013			Change in Total Miles Rated
	Struc. Impr. (1 to 4)	Cap. Prev. (5 to 7)	Rout. Maint. (8 to 10)	
Calvin Twp	43.4%	3.7%	-47.1%	-1.9
Cassopolis	45.5%	-26.7%	-18.8%	0.0
Dowagiac	30.1%	-17.9%	-12.2%	0.2
Edwardsburg	5.8%	30.6%	-25.2%	0.0
Howard Twp	36.8%	-11.7%	-25.9%	2.7
Jefferson Twp	64.5%	-50.7%	-13.7%	0.0
Lagrange Twp	27.4%	11.8%	-39.2%	-3.4
Marcellus	-78.6%	-21.4%	100.0%	0.0
Marcellus Twp	43.9%	-37.0%	-6.9%	1.2
Mason Twp	14.2%	2.3%	-16.5%	-5.4
Milton Twp	41.0%	-43.7%	2.7%	1.4
Newberg Twp	-5.1%	26.6%	-21.6%	-10.5
Ontwa Twp	45.7%	-40.7%	-5.0%	1.3
Penn Twp	3.9%	3.2%	-7.1%	-9.9
Pokagon Twp	47.9%	-37.4%	-10.6%	0.5
Porter Twp	18.9%	-17.9%	-1.1%	-0.8
Silver Creek Twp	34.0%	-5.5%	-28.6%	0.1
Vandalia	N/A	N/A	N/A	N/A
Volinia Twp	34.9%	-17.5%	-17.4%	-8.4
Wayne Twp	11.2%	30.3%	-41.6%	-5.7

*The total of 2012 and 2013 ratings was used in order to show results for full Federal Aid Eligible network (see page 7 of this report). Red shading indicates deterioration, or an increase in the percentage of poor-condition roads or a decrease in the percentage of good-condition roads, respectively. Green indicates improvement, or respective decreases in poor-condition roads or increases in good-condition roads.