

# The State of Michigan Transportation Asset Management Council

## 2013 PASER Survey Genesee County



Prepared by the  
Genesee County Metropolitan Planning Commission

**The State of Michigan  
Transportation Asset Management Council  
2013 PASER Road Survey  
Genesee County**

**Project Overview:**

On July 8 through July 30, 2013, GLS Region V staff, along with representatives of the Genesee County Road Commission (GCRC), City of Davison, City of Burton and the Michigan Department of Transportation (MDOT), assessed the condition of Genesee County federal aid eligible roads using the PASER road rating system as requested by the State of Michigan Asset Management Council.

**PASER Road 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. PASER rating charts for asphalt, concrete and gravel roads have 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, gravel shoulder 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 fixes 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.

**Computer Equipment and Software:**

Staff collected data using a laptop computer with the RoadSoft GIS Laptop Data Collector 7.6.1 software loaded. A GPS unit was connected to the laptop to track position and locate road segments. *Note: Please contact RoadSoft staff for questions regarding a specific GPS units' compatibility with the RoadSoft program.* 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:**

Three staff members is the optimal amount to use for collecting PASER data. One drives, one navigates and rates the roads, and the third staff member enters information into the computer. For the Genesee County road rating project there was always one Region V representative, one GCRC or City representative, and one MDOT representative present. It took 63.5 hours to rate approximately 1,016.8 linear miles of road, averaging 16 miles per hour. This report provides information in lane miles which is linear miles multiplied by the number of lanes. Lane mile calculations provide a better representation of the condition of the system and what it may take to maintain the system.

**Training:**

All participants in the survey were required to attend a day long training session hosted by the Michigan Asset Management Council. 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. Most participants felt comfortable after an hour of working the computer and rating the roads.

**Overview of the Federal Aid Network:**

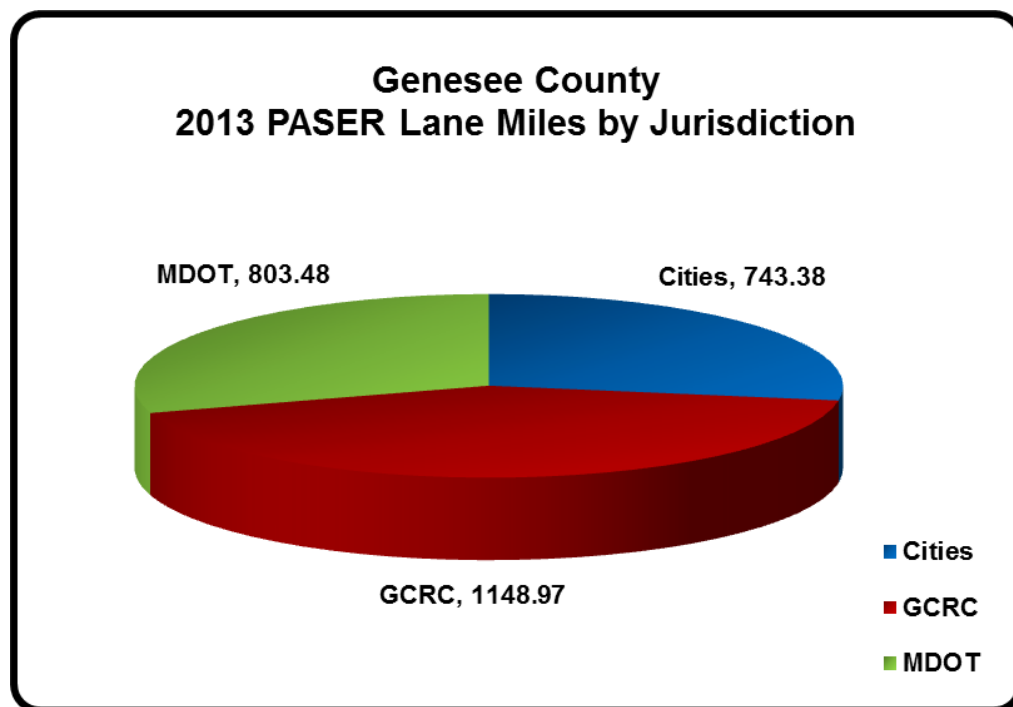
The Genesee County Federal Aid network is comprised of approximately 2,695.83 lane miles. Of the total, 1,148.97 (43%) lane miles are within Townships, which are under the jurisdiction of the Genesee County Road Commission (GCRC). Of the total roads surveyed, 2,163.01 lane miles (approximately 80%) were asphalt, 530.51 lane miles (approximately 20%) were concrete. Local Road Agencies with the greatest amount of federal aid miles within their jurisdiction are the GCRC with 1,148.97 lane miles, MDOT with 803.48 lane miles, City of Flint with 422.04 lane miles, City of Burton with 155.05 lane miles and the City of Fenton with 46.74 lane miles of federal aid roads.

2013 PASER Rating by Cities and Villages					
Description	1 to 4 Structural Improvements	5 to 7 Capital Preventative Maintenance	8 to 10 Routine Maintenance	Total Lane Miles	Percentage of PASER Lane Miles in Jurisdiction
Burton	101.67	49.01	4.37	155.05	20.8%
Clio	1.65	3.76	0.95	6.36	0.9%
Davison	2.41	3.30	1.71	7.42	1.0%
Fenton	14.57	23.30	8.87	46.74	6.3%
Flint	125.71	265.62	30.71	422.04	56.7%
Flushing	2.06	19.17	2.32	23.55	3.2%
Gaines	0.00	1.55	0.00	1.55	0.2%
Goodrich	1.88	1.51	0.49	3.88	0.5%
Grand Blanc	4.39	11.58	6.06	22.03	3.0%
Linden	2.87	8.15	0.00	11.02	1.5%
Lennon	0.00	0.00	0.00	0.00	0.0%
Montrose	0.97	0.00	0.00	0.97	0.1%
Mt Morris	6.79	6.43	0.00	13.22	1.8%
Otisville	0.00	0.00	0.00	0.00	0.0%
Otter Lake	0.00	0.00	0.48	0.48	0.1%
Swartz Creek	16.63	8.96	3.48	29.07	3.9%
Total	281.60	402.34	59.44	743.38	100%
Percentage	38%	54%	8%	100%	

2013 PASER Rating by Townships					
Description	1 to 4 Structural Improvements	5 to 7 Capital Preventative Maintenance	8 to 10 Routine Maintenance	Total Lane Miles	Percentage of PASER Lane Miles in Jurisdiction
Argentine Twp	6.90	19.82	9.87	36.59	3.2%
Atlas Twp	4.95	20.14	8.64	33.73	2.9%
Clayton Twp	0.39	22.58	13.97	36.94	3.2%
Davison Twp	33.25	25.52	5.43	64.20	5.6%
Fenton Twp	7.72	22.52	27.59	57.83	5.0%
Flint Twp	67.17	71.96	32.01	171.14	14.9%
Flushing Twp	9.62	25.79	5.53	40.94	3.6%
Forest Twp	17.27	10.59	3.75	31.61	2.8%
Gaines Twp	12.18	14.39	9.39	35.96	3.1%
Genesee Twp	73.21	40.92	9.71	123.84	10.8%
Grand Blanc Twp	70.73	44.37	13.10	128.20	11.1%
Montrose Twp	5.28	4.91	1.94	12.13	1.1%
Mt Morris Twp	74.54	57.62	16.56	148.72	12.9%
Mundy Twp	22.04	49.37	10.85	82.26	7.2%
Richfield Twp	33.00	11.86	2.01	46.87	4.1%
Thetford Twp	15.02	24.94	1.88	41.84	3.6%
Vienna Twp	11.49	29.26	15.42	56.17	4.9%
GCRC Total	464.76	496.56	187.65	1148.97	100%
Percentage	41%	43%	16%	100%	

2013 PASER Rating by Jurisdiction					
Description	1 to 4 Structural Improvements	5 to 7 Capital Preventative Maintenance	8 to 10 Routine Maintenance	Total Lane Miles	Percentage of PASER Lane Miles in Jurisdiction
Cities	281.60	402.34	59.44	<b>743.38</b>	<b>27%</b>
GCRC	464.76	496.56	187.65	<b>1148.97</b>	<b>43%</b>
MDOT	79.00	486.21	238.27	<b>803.48</b>	<b>30%</b>
Genesee Total	<b>825.36</b>	<b>1385.11</b>	<b>485.36</b>	<b>2695.83</b>	<b>100%</b>
Percentage	<b>31%</b>	<b>51%</b>	<b>18%</b>	<b>100%</b>	

\*\*\* Township federal aid roads are under the Jurisdiction of the Genesee County Road Commission (GCRC)

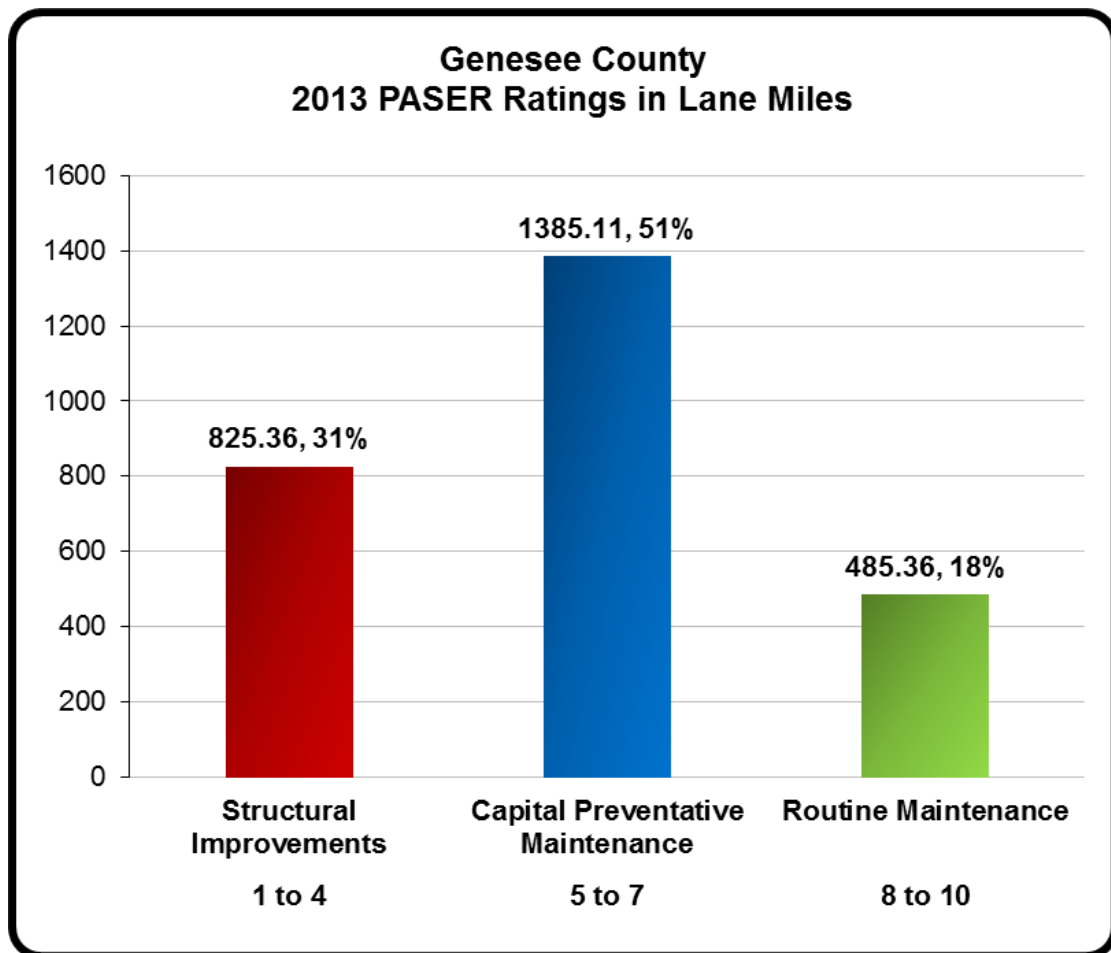


#### Results:

Approximately 2,695.83 lane miles of federal aid eligible roads were rated for this project. The chart on the following page summarizes the distribution of ratings by mileage and percentage of the total for all roads rated in the project. The data is distributed into three categories, in which 825.36 lane miles (31%) received a rating less than or equal to 4; 1,385.11 lane miles (51%) of the roads rated received a rating of 5, 6 or 7; and 485.36 lane miles (18%) of the roads rated received a rating of 8 or better. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

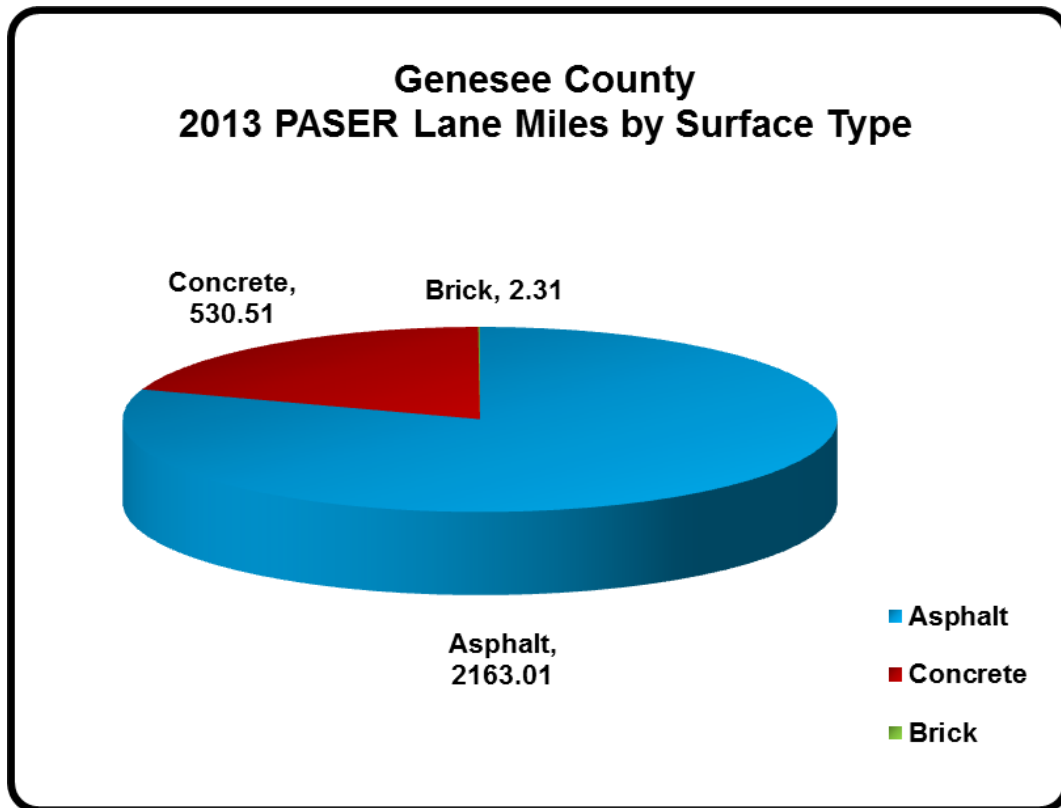
- Roads receiving a rating less than or equal to 4 require Structural Improvements
- Roads receiving a rating of 5-7 require Capital Preventive Maintenance
- Roads receiving a rating of 8 or better require only Routine Maintenance

Genesee County 2013 PASER Ratings			
PASER Rating	Prescribed Fix	Total Lane Miles	Percentage of PASER Lane Miles
1 to 4	Structural Improvements	825.36	31%
5 to 7	Capital Preventative Maintenance	1385.11	51%
8 to 10	Routine Maintenance	485.36	18%

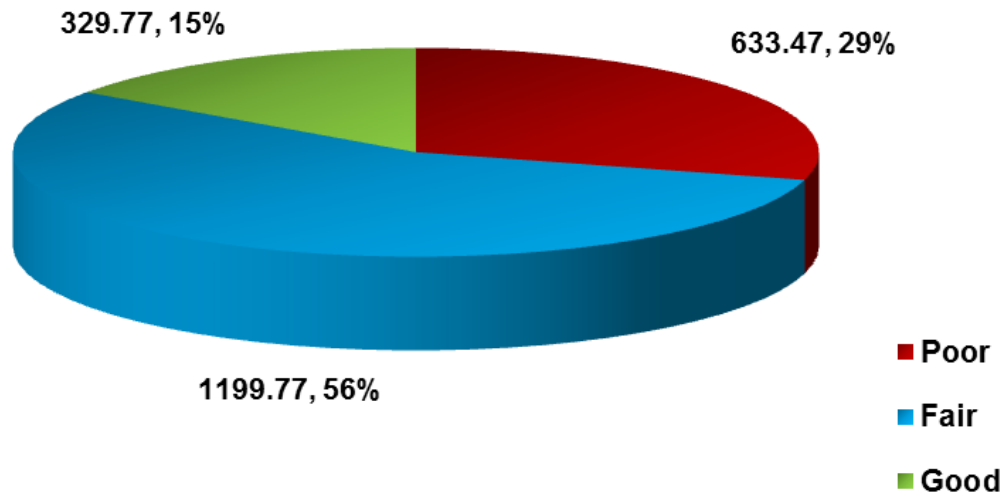


The following tables and charts provide a summary of the 2013 PASER survey ratings by surface type.

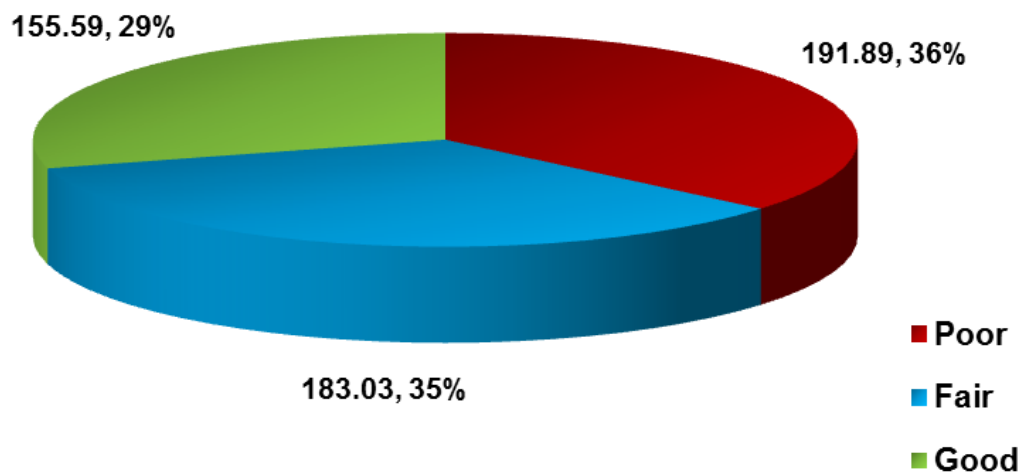
2013 PASER Rating by Surface Type					
Description	1 to 4 Structural Improvements	5 to 7 Capital Preventative Maintenance	8 to 10 Routine Maintenance	Total Lane Miles	Percentage of PASER Lane Miles
Asphalt	633.47	1199.77	329.77	2163.01	80.2%
Concrete	191.89	183.03	155.59	530.51	19.7%
Brick	0.00	2.31	0.00	2.31	0.1%
Total	825.36	1385.11	485.36	2695.83	100%
Total %	31%	51%	18%	100%	



### Genesee County 2013 PASER Asphalt Ratings in Lane Miles



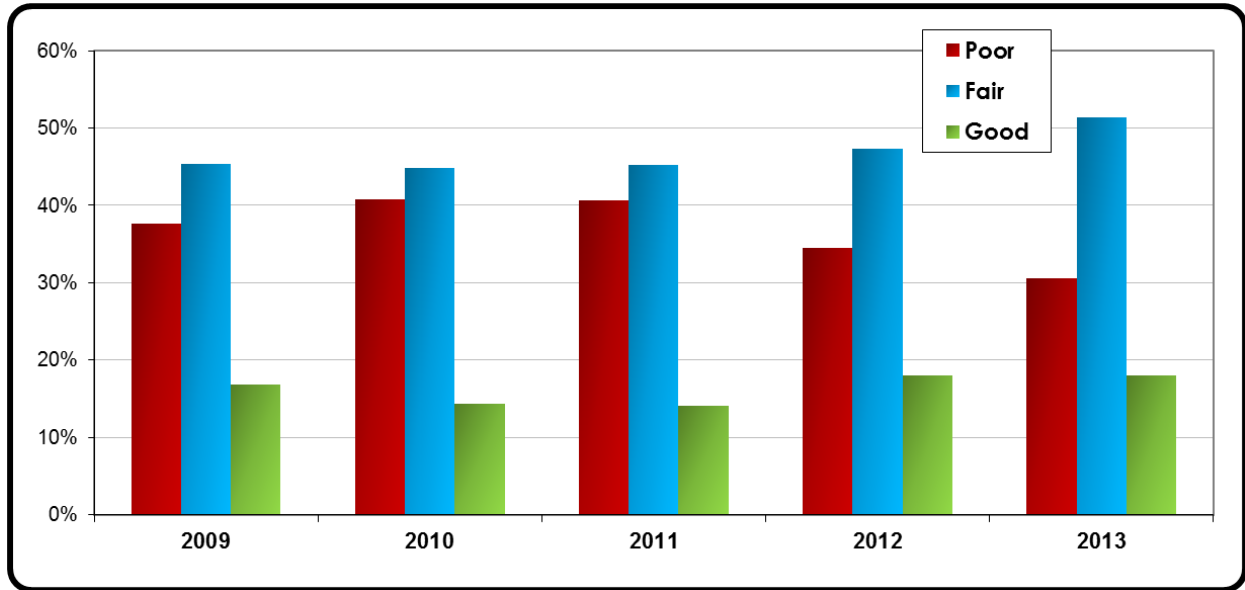
### Genesee County 2013 PASER Concrete Ratings in Lane Miles



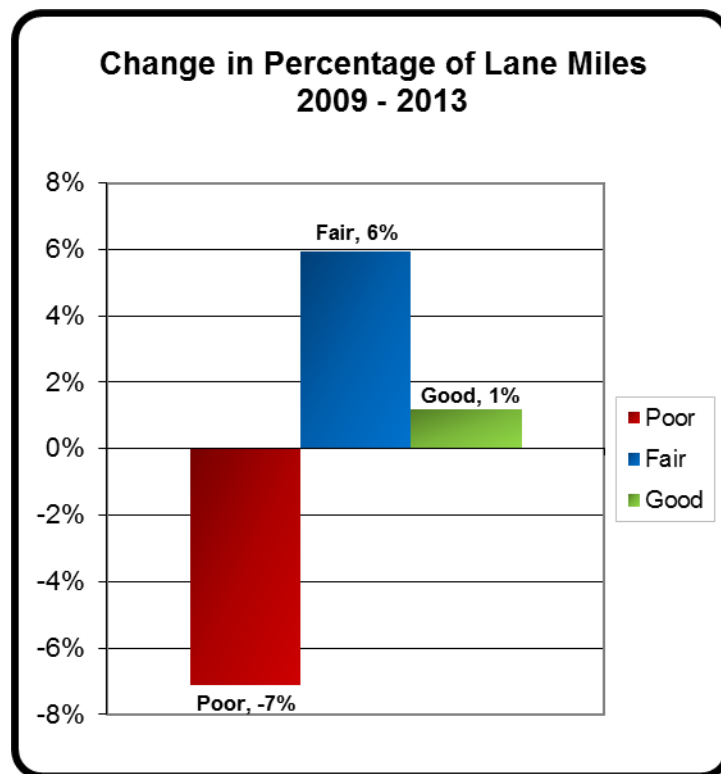


## Comparison of 2009 to 2013 Genesee County PASER Surveys

The following section analyzes data from PASER surveys conducted between 2009 and 2013 for Genesee County as a whole and for each individual road agency. The data is provided in lane miles and as percent of lane miles for a given year.



\*The graph above illustrates the percent of lane miles in each rating category for each year.



- In 2013, 31% (825.36 lane miles) of the Federal Aid Road System received a PASER rating between 1 and 4. Roads with 1 to 4 ratings require structural improvements that may include full depth repairs, a major overlay or reconstruction. This represents a decrease of 7% as compared to the 2009 rating distribution in the same category.
- In 2013, 51% (1,385.11 lane miles) of the Federal Aid Road System received a PASER rating between 5 and 7. Roads with 5 to 7 ratings require capital preventative maintenance treatments, such as partial depth joint repairs, a seal coat or crack filling. This represents an increase of 6% as compared to the 2009 rating distribution in the same category.
- In 2013, 18% (485.36 lane miles) of the Federal Aid Road System are in the PASER Rating Category of 8 to 10. Roads with 8 to 10 ratings require only routine maintenance. This represents an increase of 1% as compared to the 2009 rating distribution in the same category.

The comparison indicates that between 2011 and 2013, our overall system saw a slight improvement after several years of steady decline prior to that. The percentage of roads in poor condition decreased during this period, and the percentage of roads in fair or good condition increased. The improvement seen between 2011 and 2013 is likely due to an increase in preventative and routine maintenance treatments. For example, the Genesee County Road Commission (GCRC) substantially increased its primary road chip seal program during this time period. In 2011, the GCRC only chip sealed approximately 22 centerline miles of federal aid roads. In 2012, this number increased to 61 centerline miles. In 2013, that number increased again, to 77 centerline miles of federal aid roads. Another contributing factor was a change in how the Michigan Transportation Asset Management Council rated chip seal improvements. The previous rating for a new chip seal used to be a PASER 7, but in 2012, that rating was upgraded to a PASER 8. The increase in chip seal operation and the improved chip seal ratings help account for the improved trend in pavement condition during this time.

Roads under the jurisdiction of the GCRC continued to improve through 2013. However, this was not the case in most cities and villages, where PASER ratings have steadily declined since 2009. Even with new programs put in place by the various road agencies in Genesee County, staff still anticipates the condition of the network to continue to deteriorate unless additional funding is provided. Road preservation techniques such as the chip seal program may temporarily increase PASER ratings, but more costly reconstruction will eventually be required.

A deterioration trend was analyzed during the development of the 2040 Genesee County Long Range Transportation Plan. As part of the analysis, staff used the RoadSoft program to evaluate several different maintenance scenarios and found that the only way to improve the overall condition of the system is to provide at least 3 times the current level of funding for road improvements. This is a trend that is seen in similar analysis statewide. As part of a pavement management program, an increased level

of funding would help to stabilize roads that require routine and preventative maintenance and would also be able to incrementally improve roads that require more costly structural repairs.

The data provided in the following tables represents the percent of lane miles in each rating category for each year between 2009 and 2013 and the change in each rating category between 2009 to 2013 for each jurisdiction and the County as a whole.

<b>Burton</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	7%	7%	5%	6%	3%	-4%
<b>Fair 7 to 5</b>	33%	27%	29%	34%	31%	-2%
<b>Poor 1 to 4</b>	60%	66%	66%	60%	66%	6%
<b>2013 Lane Miles:</b>			<b>155.05</b>			

<b>Clio</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	12%	15%	15%	15%	15%	3%
<b>Fair 7 to 5</b>	78%	49%	59%	41%	41%	-37%
<b>Poor 1 to 4</b>	10%	36%	26%	44%	44%	34%
<b>2013 Lane Miles:</b>			<b>6.36</b>			

<b>Davison</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	26%	26%	0%	28%	23%	-3%
<b>Fair 7 to 5</b>	27%	25%	44%	41%	45%	18%
<b>Poor 1 to 4</b>	47%	49%	56%	31%	32%	-15%
<b>2013 Lane Miles:</b>			<b>7.42</b>			

<b>Fenton</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	8%	18%	21%	21%	19%	11%
<b>Fair 7 to 5</b>	51%	43%	38%	31%	50%	-1%
<b>Poor 1 to 4</b>	41%	39%	41%	48%	31%	-10%
<b>2013 Lane Miles:</b>			<b>46.74</b>			

<b>Flint</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	20%	14%	10%	8%	7%	-13%
<b>Fair 7 to 5</b>	58%	67%	64%	73%	63%	5%
<b>Poor 1 to 4</b>	22%	19%	26%	19%	30%	8%
<b>2013 Lane Miles:</b>			<b>422.04</b>			

<b>Flushing</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	24%	7%	12%	13%	10%	-14%
<b>Fair 7 to 5</b>	64%	81%	74%	72%	81%	17%
<b>Poor 1 to 4</b>	12%	12%	14%	15%	9%	-3%
<b>2013 Lane Miles:</b>			<b>23.55</b>			

<b>Gaines</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	4%	4%	4%	0%	0%	-4%
<b>Fair 7 to 5</b>	63%	58%	60%	97%	100%	37%
<b>Poor 1 to 4</b>	33%	38%	36%	3%	0%	-33%
<b>2013 Lane Miles:</b>			<b>1.55</b>			

<b>Goodrich</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	13%	13%	13%	13%	13%	0%
<b>Fair 7 to 5</b>	28%	19%	19%	39%	39%	11%
<b>Poor 1 to 4</b>	59%	68%	68%	48%	48%	-11%
<b>2013 Lane Miles:</b>			<b>3.88</b>			

<b>Grand Blanc</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	6%	1%	10%	39%	28%	22%
<b>Fair 7 to 5</b>	50%	50%	54%	44%	53%	3%
<b>Poor 1 to 4</b>	44%	49%	36%	17%	19%	-25%
<b>2013 Lane Miles:</b>			<b>22.03</b>			

<b>Lennon</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	0%	0%	0%	0%	0%	0%
<b>Fair 7 to 5</b>	0%	0%	0%	0%	0%	0%
<b>Poor 1 to 4</b>	0%	0%	0%	0%	0%	0%
<b>2013 Lane Miles:</b>			<b>0.00</b>			

<b>Linden</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	8%	7%	0%	9%	0%	-8%
<b>Fair 7 to 5</b>	65%	67%	71%	64%	74%	9%
<b>Poor 1 to 4</b>	27%	26%	29%	27%	26%	-1%
<b>2013 Lane Miles:</b>			<b>11.02</b>			

<b>Montrose</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	0%	0%	0%	0%	0%	0%
<b>Fair 7 to 5</b>	52%	46%	13%	26%	0%	-52%
<b>Poor 1 to 4</b>	48%	54%	87%	74%	100%	52%
<b>2013 Lane Miles:</b>			<b>0.97</b>			

<b>Mt Morris</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	26%	0%	0%	0%	0%	-26%
<b>Fair 7 to 5</b>	40%	47%	45%	40%	49%	9%
<b>Poor 1 to 4</b>	34%	53%	55%	60%	51%	17%
<b>2013 Lane Miles:</b>			13.22			

<b>Otisville</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	0%	0%	0%	0%	0%	0%
<b>Fair 7 to 5</b>	0%	0%	0%	0%	0%	0%
<b>Poor 1 to 4</b>	0%	0%	0%	0%	0%	0%
<b>2013 Lane Miles:</b>			0.00			

<b>Otter Lake</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	100%	100%	100%	100%	100%	0%
<b>Fair 7 to 5</b>	0%	0%	0%	0%	0%	0%
<b>Poor 1 to 4</b>	0%	0%	0%	0%	0%	0%
<b>2013 Lane Miles:</b>			0.48			

<b>Swartz Creek</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	13%	29%	20%	10%	12%	-1%
<b>Fair 7 to 5</b>	37%	35%	16%	36%	31%	-6%
<b>Poor 1 to 4</b>	50%	36%	64%	54%	57%	7%
<b>2013 Lane Miles:</b>			29.07			

<b>Argentine Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	11%	12%	15%	49%	27%	16%
<b>Fair 7 to 5</b>	20%	20%	23%	18%	54%	34%
<b>Poor 1 to 4</b>	69%	68%	62%	33%	19%	-50%
<b>2013 Lane Miles:</b>			36.59			

<b>Atlas Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	3%	0%	6%	12%	26%	23%
<b>Fair 7 to 5</b>	31%	18%	39%	45%	60%	29%
<b>Poor 1 to 4</b>	66%	82%	55%	42%	16%	-52%
<b>2013 Lane Miles:</b>			33.73			

<b>Clayton Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	17%	17%	17%	31%	38%	21%
<b>Fair 7 to 5</b>	25%	49%	28%	39%	61%	36%
<b>Poor 1 to 4</b>	58%	34%	55%	29%	1%	-57%
<b>2013 Lane Miles:</b>			36.94			

<b>Davison Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	12%	12%	11%	12%	8%	-4%
<b>Fair 7 to 5</b>	26%	22%	24%	32%	40%	14%
<b>Poor 1 to 4</b>	62%	66%	65%	56%	52%	-10%
<b>2013 Lane Miles:</b>			<b>64.20</b>			

<b>Fenton Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	3%	1%	1%	17%	48%	45%
<b>Fair 7 to 5</b>	62%	46%	43%	40%	39%	-23%
<b>Poor 1 to 4</b>	35%	53%	56%	43%	13%	-22%
<b>2013 Lane Miles:</b>			<b>57.83</b>			

<b>Flint Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	17%	13%	15%	17%	19%	2%
<b>Fair 7 to 5</b>	50%	37%	43%	39%	42%	-8%
<b>Poor 1 to 4</b>	33%	50%	42%	44%	39%	6%
<b>2013 Lane Miles:</b>			<b>171.14</b>			

<b>Flushing Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	6%	3%	0%	9%	14%	8%
<b>Fair 7 to 5</b>	27%	17%	45%	45%	63%	36%
<b>Poor 1 to 4</b>	67%	80%	55%	46%	23%	-44%
<b>2013 Lane Miles:</b>			<b>40.94</b>			

<b>Forest Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	12%	5%	12%	12%	12%	0%
<b>Fair 7 to 5</b>	37%	25%	12%	14%	33%	-4%
<b>Poor 1 to 4</b>	51%	70%	76%	74%	55%	4%
<b>2013 Lane Miles:</b>			<b>31.61</b>			

<b>Gaines Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	0%	3%	6%	30%	26%	26%
<b>Fair 7 to 5</b>	28%	19%	21%	22%	40%	12%
<b>Poor 1 to 4</b>	72%	78%	73%	48%	34%	-38%
<b>2013 Lane Miles:</b>			<b>35.96</b>			

<b>Genesee Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	3%	5%	4%	5%	8%	5%
<b>Fair 7 to 5</b>	32%	35%	32%	37%	33%	1%
<b>Poor 1 to 4</b>	65%	60%	64%	58%	59%	-6%
<b>2013 Lane Miles:</b>			<b>123.84</b>			

<b>Grand Blanc Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	16%	12%	12%	17%	10%	-6%
<b>Fair 7 to 5</b>	23%	17%	29%	32%	35%	12%
<b>Poor 1 to 4</b>	61%	71%	59%	51%	55%	-6%
<b>2013 Lane Miles:</b>			<b>128.20</b>			

<b>Montrose Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	0%	0%	0%	33%	16%	16%
<b>Fair 7 to 5</b>	44%	18%	26%	0%	40%	-3%
<b>Poor 1 to 4</b>	56%	82%	74%	67%	44%	-13%
<b>2013 Lane Miles:</b>			<b>12.13</b>			

<b>Mt Morris Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	3%	4%	4%	5%	11%	8%
<b>Fair 7 to 5</b>	39%	31%	34%	35%	39%	0%
<b>Poor 1 to 4</b>	58%	65%	62%	60%	50%	-8%
<b>2013 Lane Miles:</b>			<b>148.72</b>			

<b>Mundy Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	5%	1%	4%	11%	13%	8%
<b>Fair 7 to 5</b>	66%	55%	53%	60%	60%	-6%
<b>Poor 1 to 4</b>	29%	44%	43%	29%	27%	-2%
<b>2013 Lane Miles:</b>			<b>82.26</b>			

<b>Richfield Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	0%	5%	4%	9%	4%	4%
<b>Fair 7 to 5</b>	28%	12%	6%	21%	26%	-2%
<b>Poor 1 to 4</b>	72%	83%	90%	70%	70%	-2%
<b>2013 Lane Miles:</b>			<b>46.87</b>			

<b>Thetford Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	0%	0%	0%	0%	5%	5%
<b>Fair 7 to 5</b>	29%	17%	15%	42%	59%	30%
<b>Poor 1 to 4</b>	71%	83%	85%	58%	36%	-35%
<b>2013 Lane Miles:</b>			<b>41.84</b>			

<b>Vienna Twp</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 2009-2013</b>
<b>Good 8 to 10</b>	12%	10%	10%	13%	27%	15%
<b>Fair 7 to 5</b>	21%	13%	22%	21%	52%	31%
<b>Poor 1 to 4</b>	67%	77%	68%	67%	21%	-46%
<b>2013 Lane Miles:</b>			<b>56.17</b>			

GCRC	2009	2010	2011	2012	2013	Change 2009-2013
Good 8 to 10	8%	7%	8%	14%	16%	8%
Fair 7 to 5	37%	29%	32%	35%	43%	6%
Poor 1 to 4	55%	64%	60%	51%	41%	-14%
2013 Lane Miles:			1148.97			

MDOT	2009	2010	2011	2012	2013	Change 2009-2013
Good 8 to 10	31%	27%	28%	31%	30%	-1%
Fair 7 to 5	54%	60%	58%	55%	60%	6%
Poor 1 to 4	15%	13%	14%	14%	10%	-5%
2013 Lane Miles:			803.48			

Cities and Villages	2009	2010	2011	2012	2013	Change 2009-2013
Good 8 to 10	15%	12%	10%	10%	8%	-7%
Fair 7 to 5	51%	55%	52%	58%	54%	3%
Poor 1 to 4	34%	33%	38%	32%	38%	4%
2013 Lane Miles:			743.38			

Genesee County	2009	2010	2011	2012	2013	Change 2009-2013
Good 8 to 10	17%	14%	14%	18%	18%	1%
Fair 7 to 5	45%	45%	45%	47%	51%	6%
Poor 1 to 4	38%	41%	41%	35%	31%	-7%
2013 Lane Miles:			2695.83			

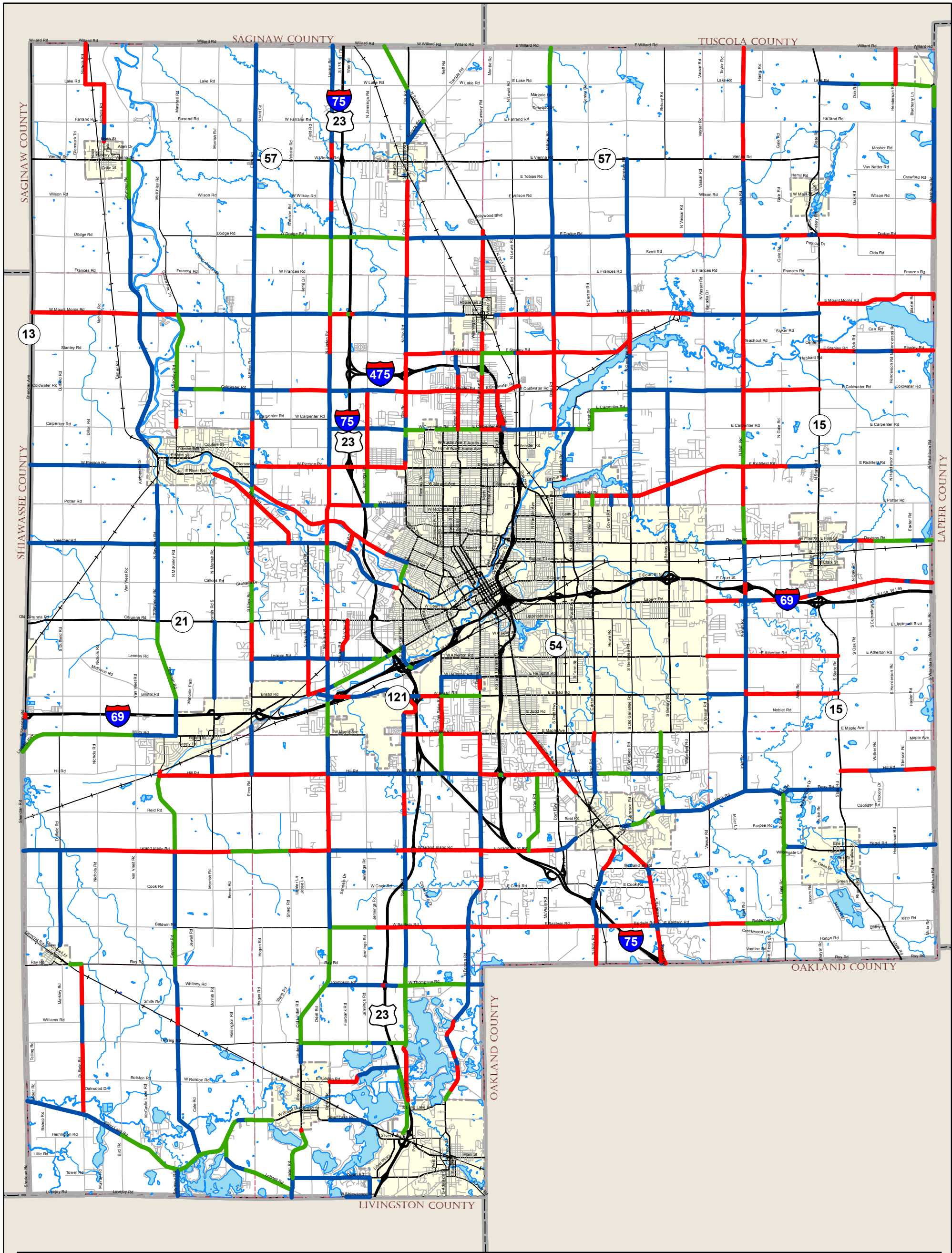
#### Updating the ratings:

According to the Governmental Accounting Standards Board Statement 34 (GASB 34), governmental units receiving, or applying for federal money must assess the condition of their roads at least once every three years. This project has laid the foundation to meet the requirements of GASB 34 and continues to demonstrate that it can be accomplished with minimal staff in a relatively short period of time.

*To obtain a digital copy of the data collected in this study each Local Road Agency (LRA) must submit a written request to Region V staff. The data will be distributed as a RoadSoft GIS file, so each LRA must also obtain a copy of the latest RoadSoft GIS program from Michigan Tech prior to using the data.*



# **PASER THEMATIC MAPS**

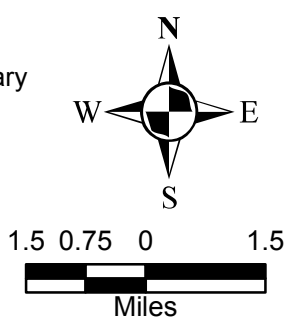


## Genesee County Road Commission Roads

- |                    |             |                    |                    |
|--------------------|-------------|--------------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          | Municipal Boundary |
| Arterials          | Local Roads | Rivers and Streams |                    |

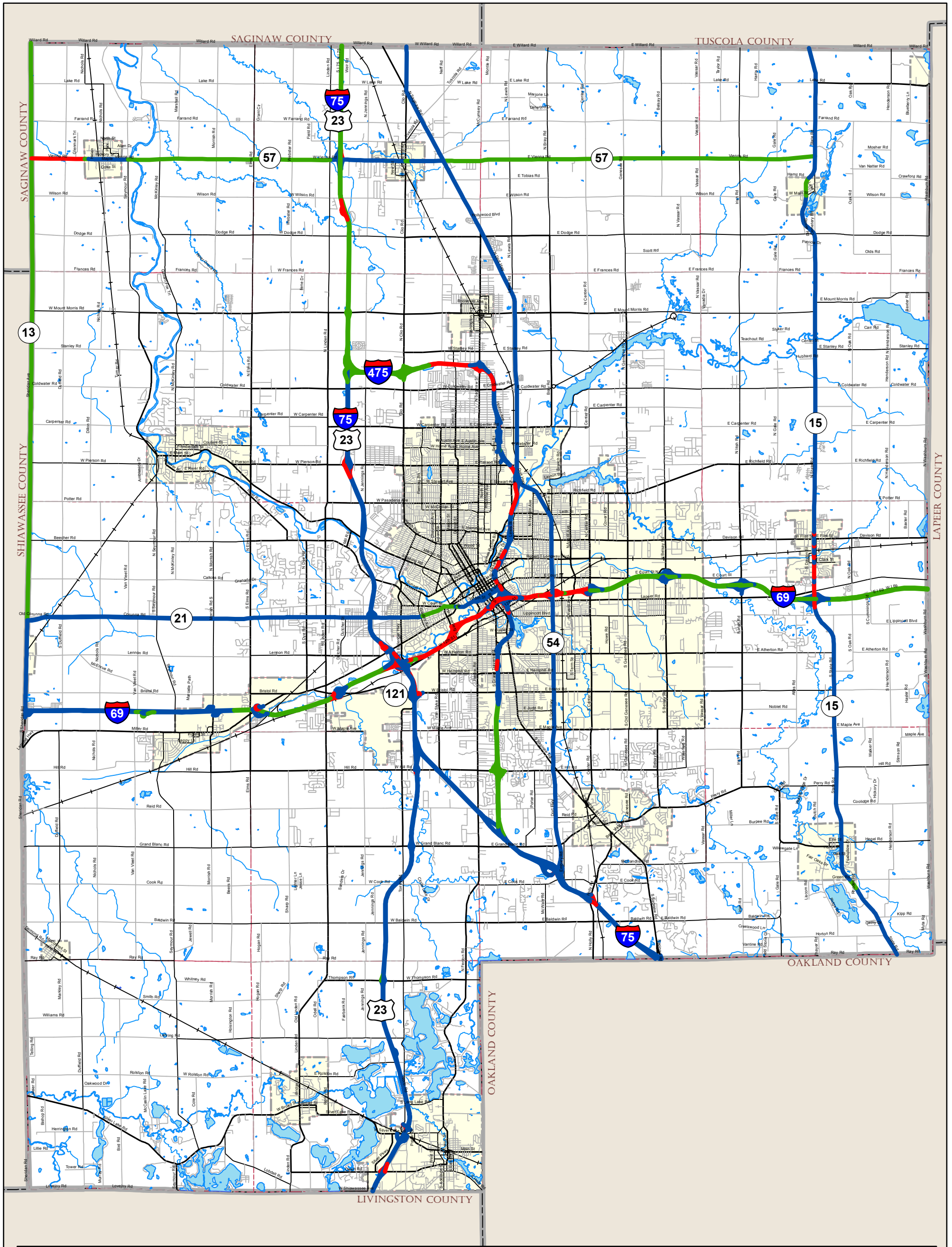
### 2013 PASER Survey

- |  |  |
|--|--|
|  | Rating 8-10 (Routine Maintenance, 187.65 lane miles)             |
|  | Rating 5-7 (Capital Preventative Maintenance, 496.56 lane miles) |
|  | Rating 1-4 (Structural Improvements, 464.76 lane miles)          |



Sources: Michigan Geographic Framework Vs5a  
Date: September 2013  
d:\maps\transportation\2013Paser\  
Genesee\GCRC\_small.mxd



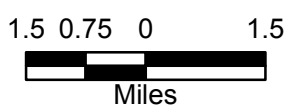
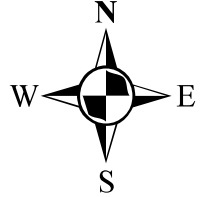


# Genesee County MDOT Roads

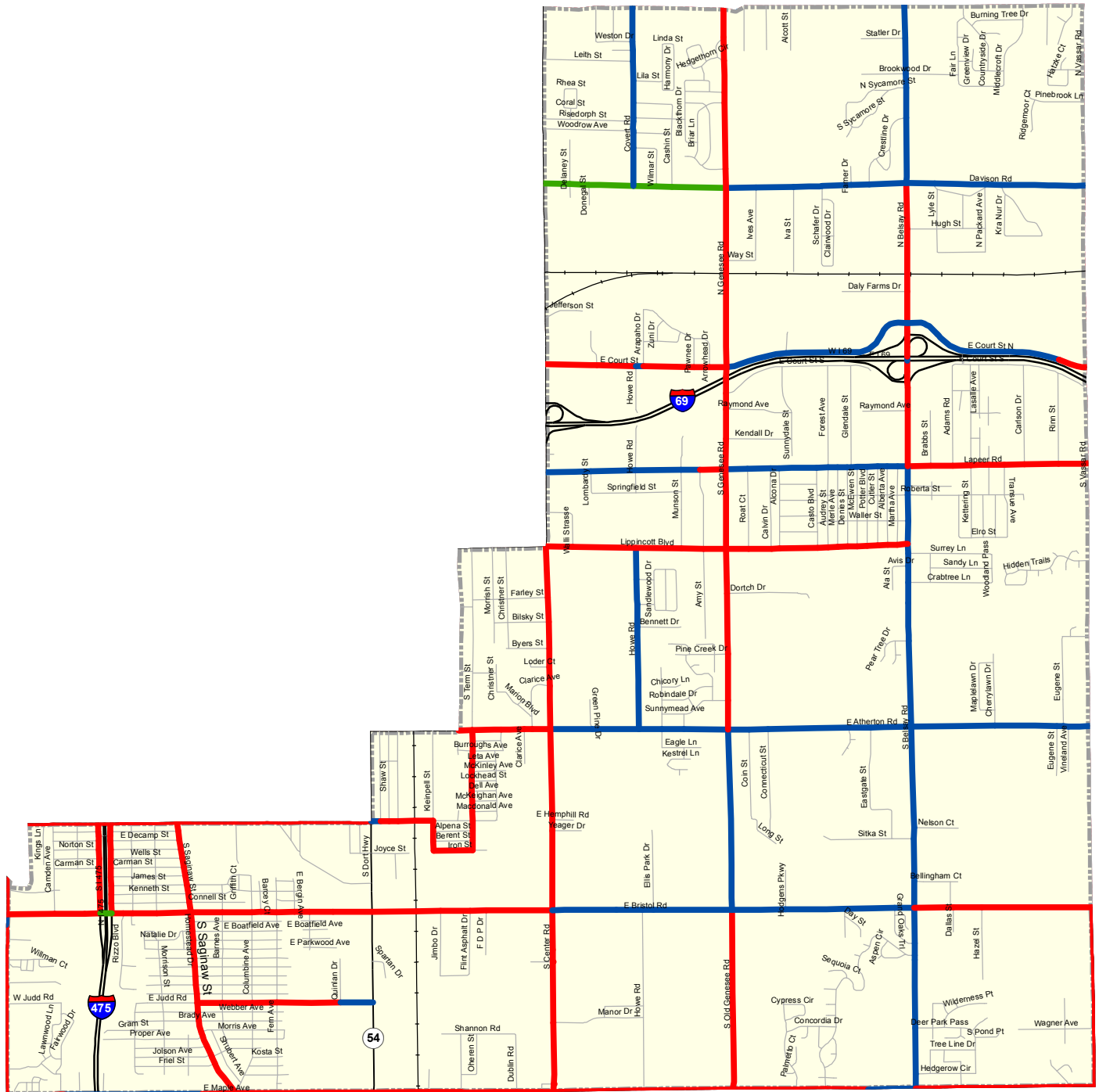
- |                    |             |                    |                    |
|--------------------|-------------|--------------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          | Municipal Boundary |
| Arterials          | Local Roads | Rivers and Streams |                    |

## 2013 PASER Survey

- |  |  |
|--|--|
|  | Rating 8-10 (Routine Maintenance, 238.27 lane miles)             |
|  | Rating 5-7 (Capital Preventative Maintenance, 486.21 lane miles) |
|  | Rating 1-4 (Structural Improvements, 79.00 lane miles)           |



Sources: Michigan Geographic Framework Vs5a  
Date: September 2013  
d:\maps\transportation\2013Paser\Genesee\MDOT.mxd



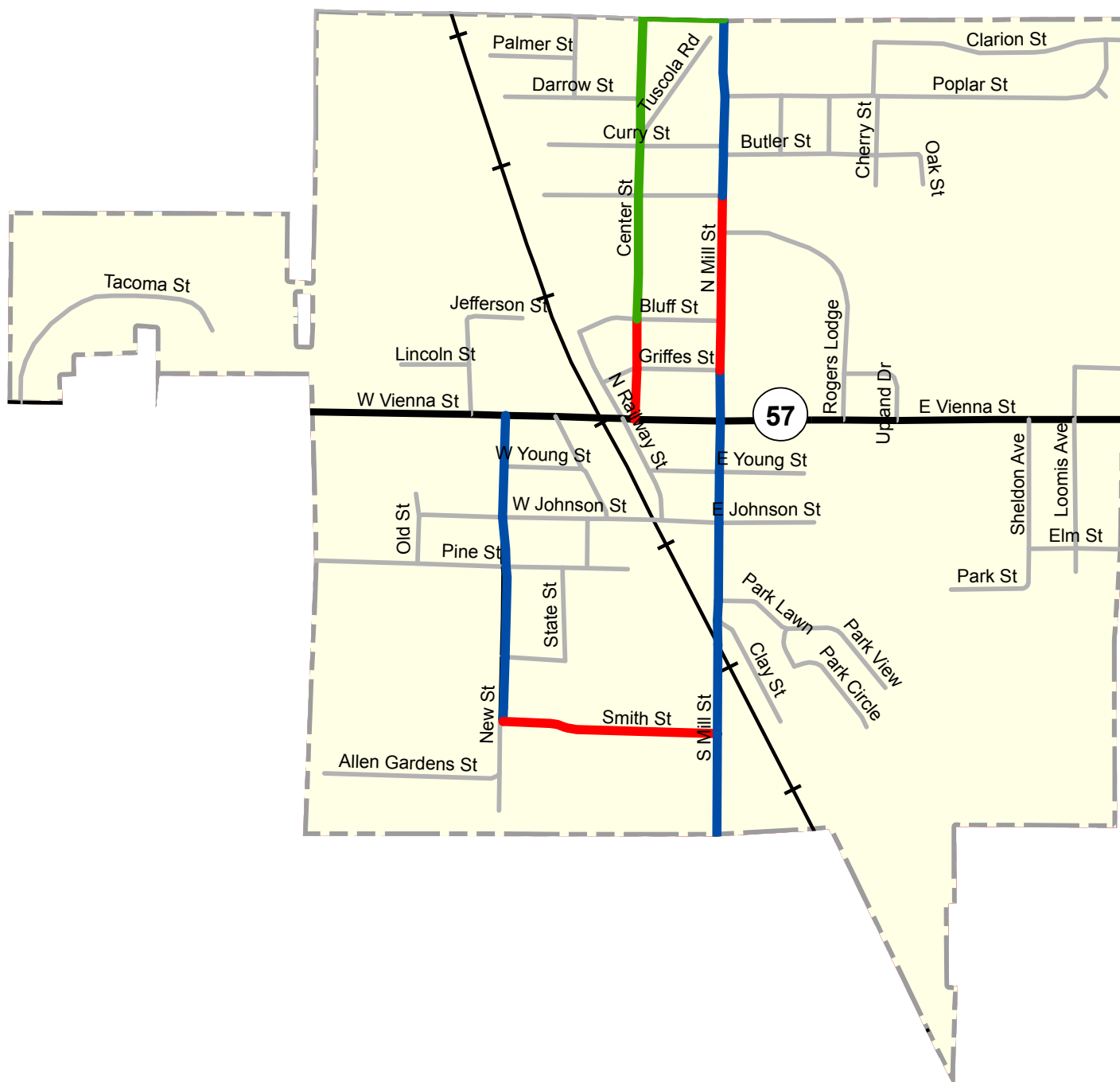
## City of Burton

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

- Rating 8-10 (Routine Maintenance, 4.37 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 49.01 lane miles)
- Rating 1-4 (Structural Improvements, 101.67 lane miles)





## City of Clio

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

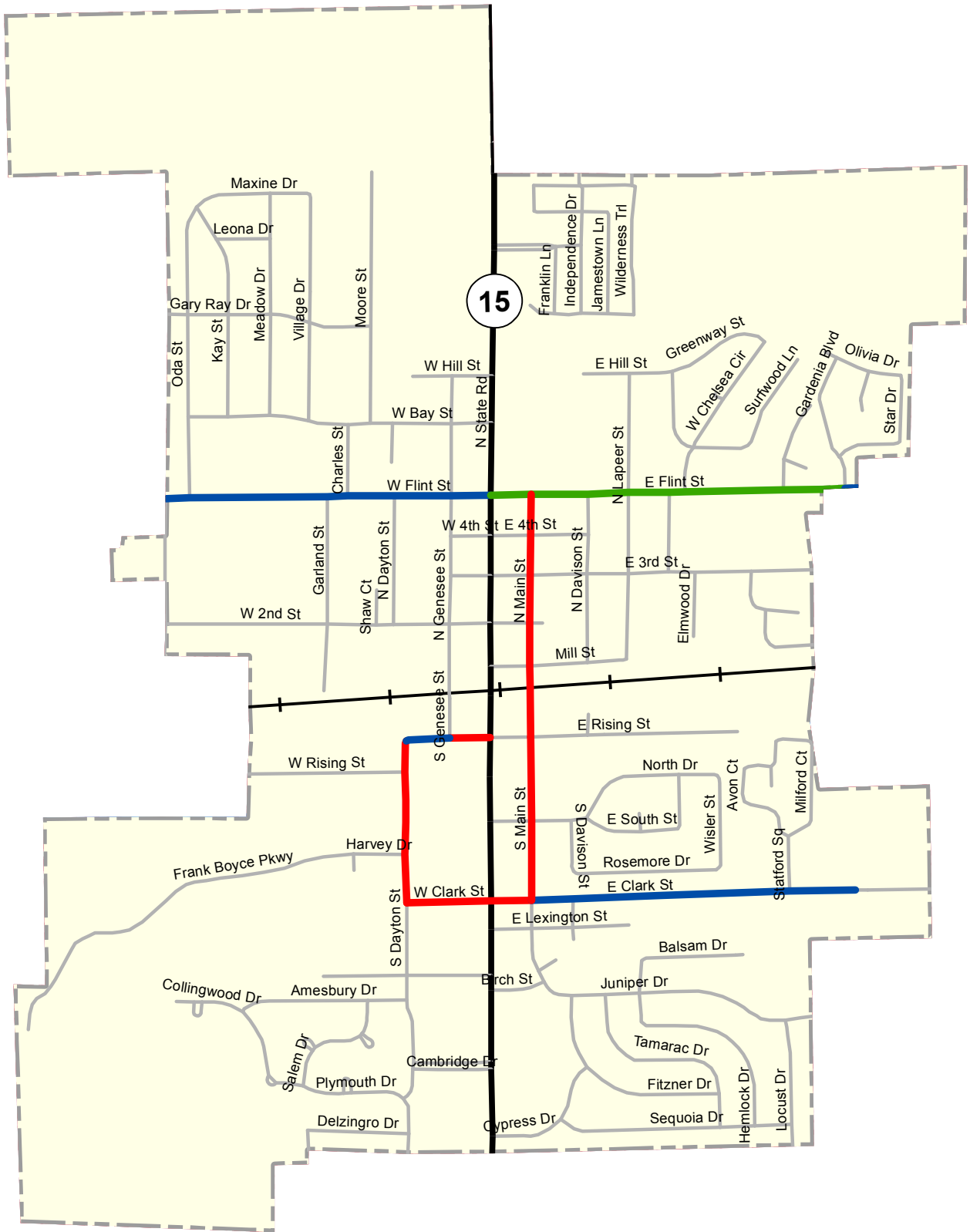
### 2013 PASER Survey

- |  |  |
|--|--|
|  | Rating 8-10 (Routine Maintenance, 0.95 lane miles)             |
|  | Rating 5-7 (Capital Preventative Maintenance, 3.76 lane miles) |
|  | Rating 1-4 (Structural Improvements, 1.65 lane miles)          |



0.1 0.05 0 0.1  
Miles

Sources: Michigan Geographic Framework Vs5a  
Date: September 2013  
d:\maps\transportation\2013Paser\Genesee\Clio.mxd

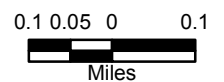


## City of Davison

- |  |                    |  |             |  |                    |
|--|--------------------|--|-------------|--|--------------------|
|  | Interstate/Freeway |  | Collectors  |  | Railroads          |
|  | Arterials          |  | Local Roads |  | Rivers and Streams |

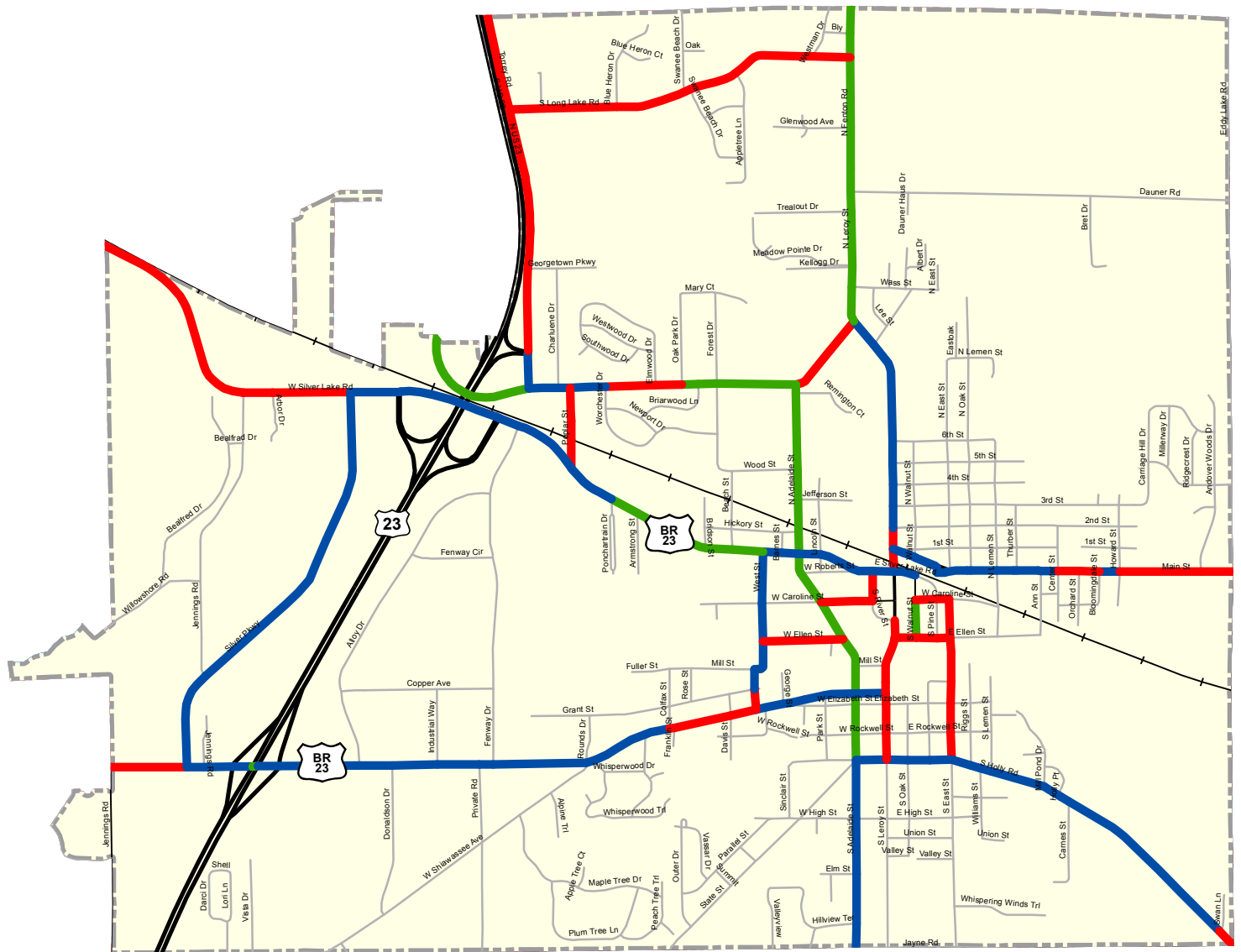
### 2013 PASER Survey

- Rating 8-10 (Routine Maintenance, 1.71 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 3.30 lane miles)
- Rating 1-4 (Structural Improvements, 2.41 lane miles)



Sources: Michigan Geographic Framework Vs5A  
 Date: September 2013  
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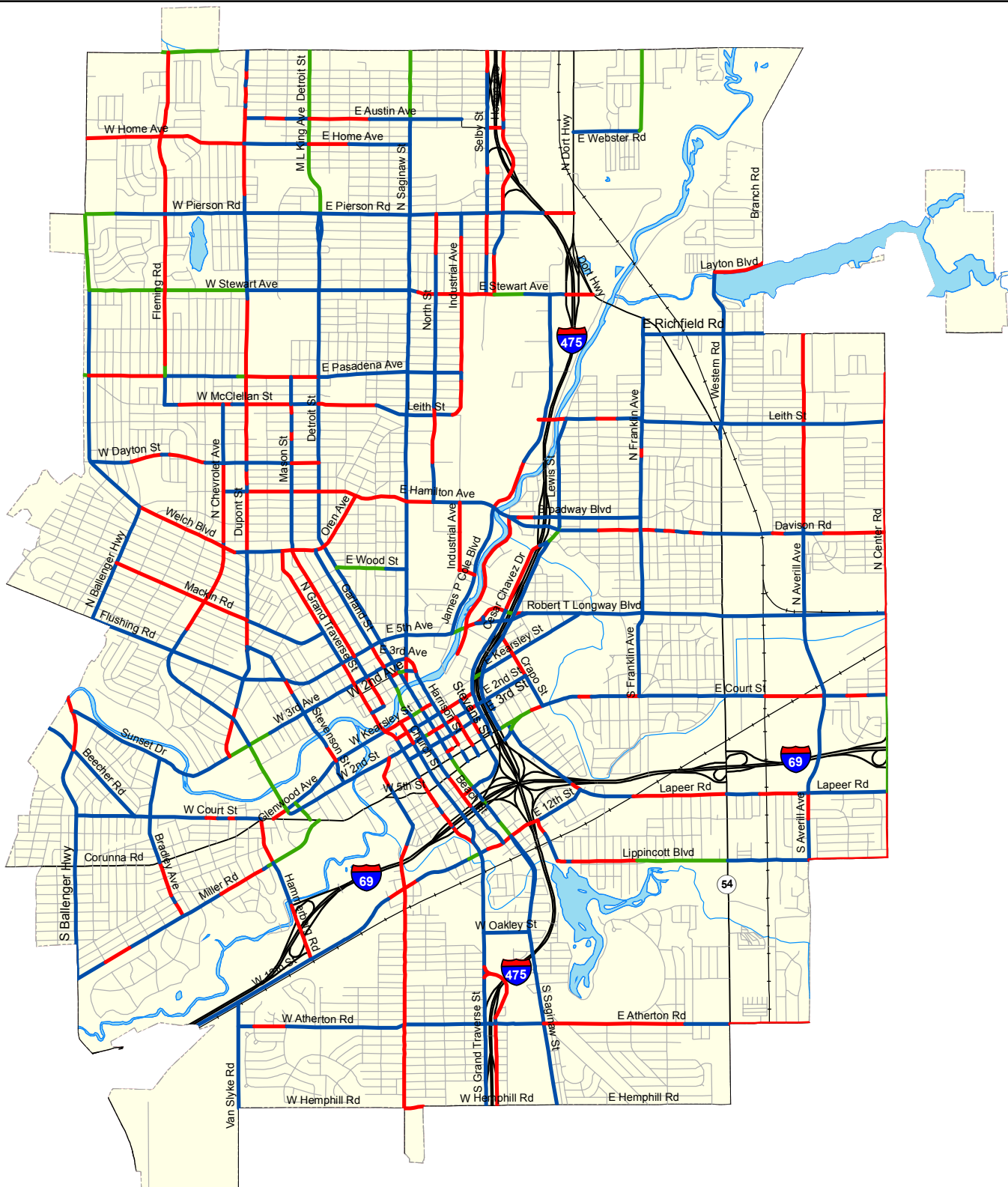
## City of Fenton

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

- |  |   |
|--|---|
|  | Rating 8-10 (Routine Maintenance, 8.87 lane miles)              |
|  | Rating 5-7 (Capital Preventative Maintenance, 23.30 lane miles) |
|  | Rating 1-4 (Structural Improvements, 14.57 lane miles)          |



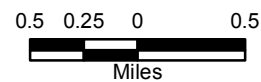


## City of Flint

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

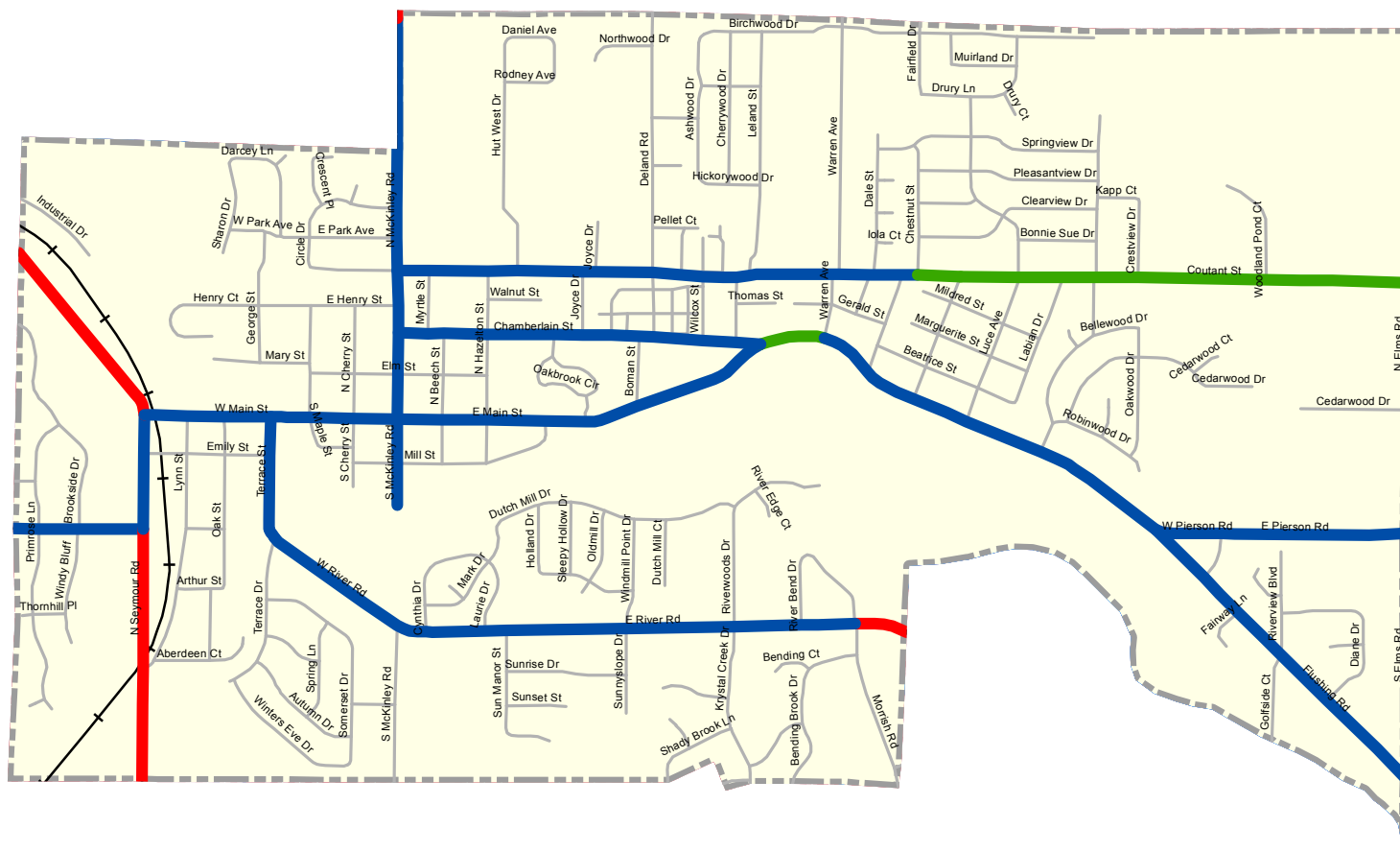
### 2013 PASER Survey

- Rating 8-10 (Routine Maintenance, 30.71 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 265.62 lane miles)
- Rating 1-4 (Structural Improvements, 125.71 lane miles)



Sources: Michigan Geographic Framework Vs5a  
 Date: September 2013  
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## City of Flushing

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

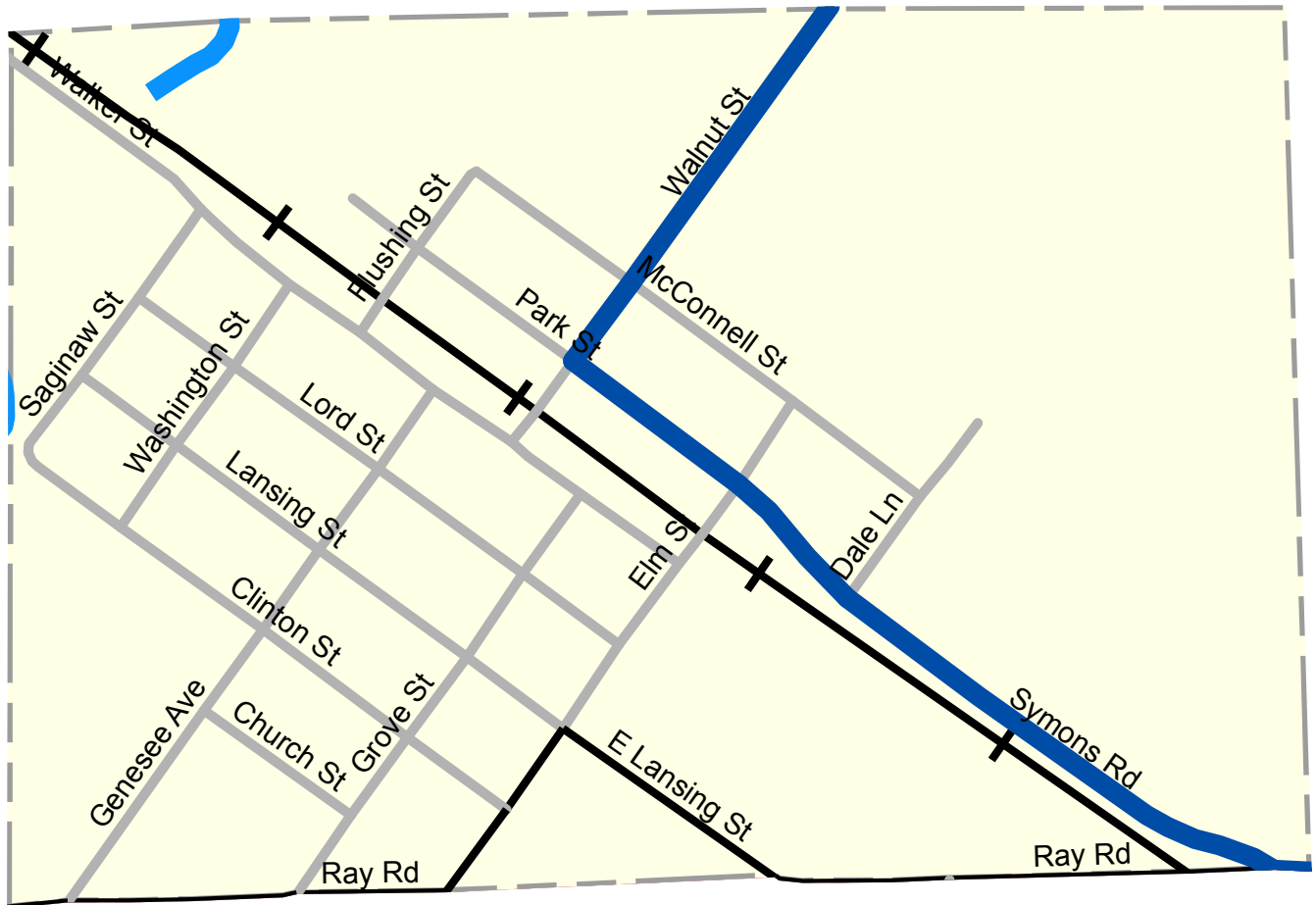
- Rating 8-10 (Routine Maintenance, 2.32 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 19.17 lane miles)
- Rating 1-4 (Structural Improvements, 2.06 lane miles)









0.15 0.075 0 0.15  
Miles






Sources: Michigan Geographic Framework Vs5a  
Date: September 2013  
d:\maps\transportation\2013Paser\Genesee\Flushing.mxd



## Village of Gaines

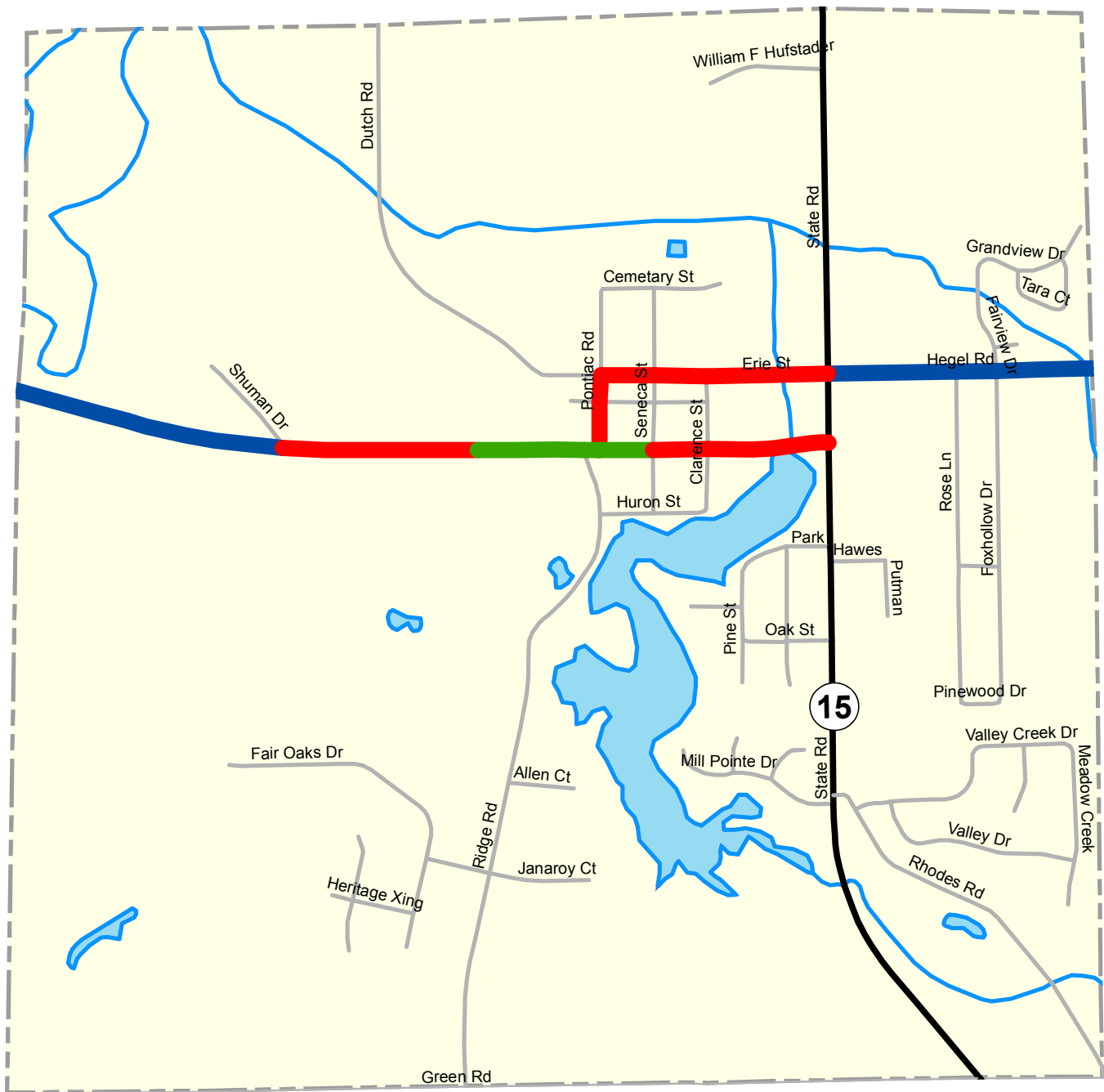
- |  |   |   |
|--|---|---|
|  Interstate/Freeway |  Collectors  |  Railroads          |
|  Arterials          |  Local Roads |  Rivers and Streams |

### 2013 PASER Survey

- |   |  |
|---|--|
|  | Rating 8-10 (Routine Maintenance, 0.0 lane miles)              |
|  | Rating 5-7 (Capital Preventative Maintenance, 1.55 lane miles) |
|  | Rating 1-4 (Structural Improvements, 0.0 lane miles)           |



Sources: Michigan Geographic Framework Vs5a  
 Date: September 2013  
 d:\maps\transportation\2013Paser\Genesee\Gaines.mxd

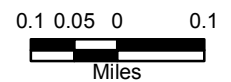


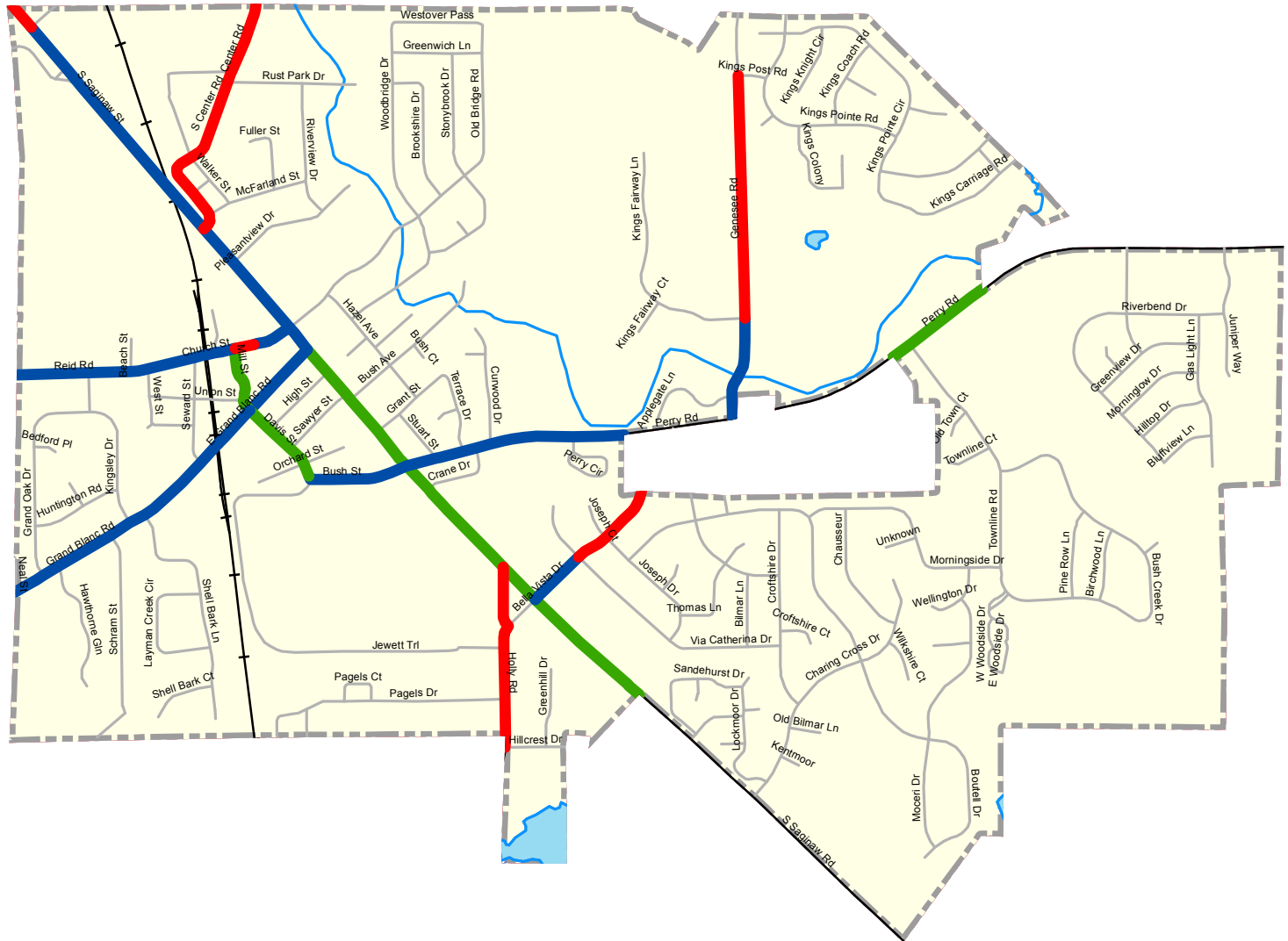
## Village of Goodrich

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

- |  |  |
|--|--|
|  | Rating 8-10 (Routine Maintenance, 0.49 lane miles)             |
|  | Rating 5-7 (Capital Preventative Maintenance, 1.51 lane miles) |
|  | Rating 1-4 (Structural Improvements, 1.88 lane miles)          |





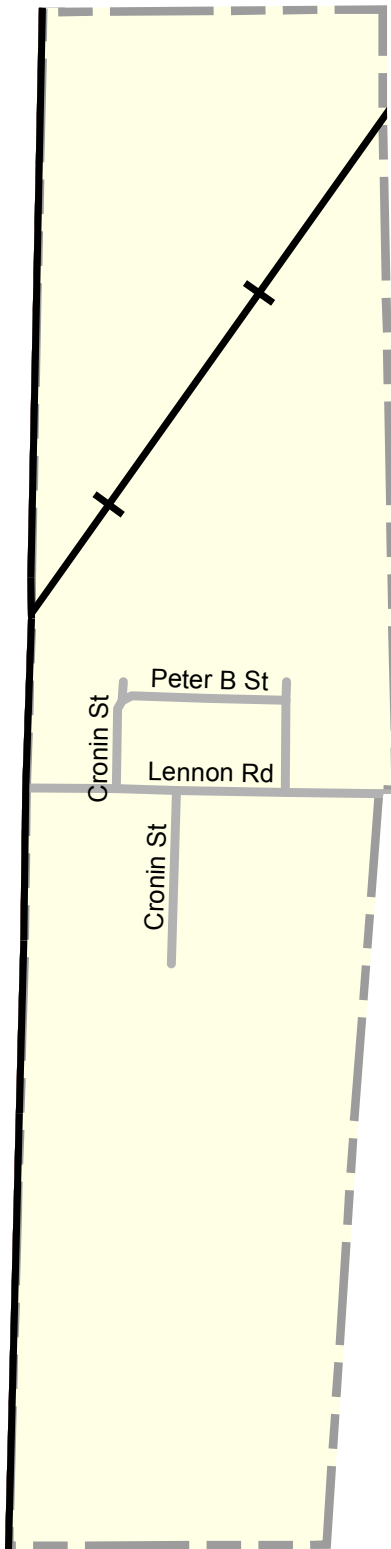
## City of Grand Blanc

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

- |  |   |
|--|---|
|  | Rating 8-10 (Routine Maintenance, 6.06 lane miles)              |
|  | Rating 5-7 (Capital Preventative Maintenance, 11.58 lane miles) |
|  | Rating 1-4 (Structural Improvements, 4.39 lane miles)           |





## Village of Lennon

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

- |  |   |
|--|---|
|  | Rating 8-10 (Routine Maintenance, 0.0 lane miles)             |
|  | Rating 5-7 (Capital Preventative Maintenance, 0.0 lane miles) |
|  | Rating 1-4 (Structural Improvements, 0.0 lane miles)          |





## City of Linden



- |  |                    |  |             |  |                    |
|--|--------------------|--|-------------|--|--------------------|
|  | Interstate/Freeway |  | Collectors  |  | Railroads          |
|  | Arterials          |  | Local Roads |  | Rivers and Streams |

### 2013 PASER Survey

- |  |  |
|--|--|
|  | Rating 8-10 (Routine Maintenance, 0.0 lane miles)              |
|  | Rating 5-7 (Capital Preventative Maintenance, 8.15 lane miles) |
|  | Rating 1-4 (Structural Improvements, 2.87 lane miles)          |



0.15 0.075 0 0.15  
Miles

Sources: Michigan Geographic Framework Vs5a  
Date: September 2013  
d:\maps\transportation\2013Paser\Genesee\Linden.mxd



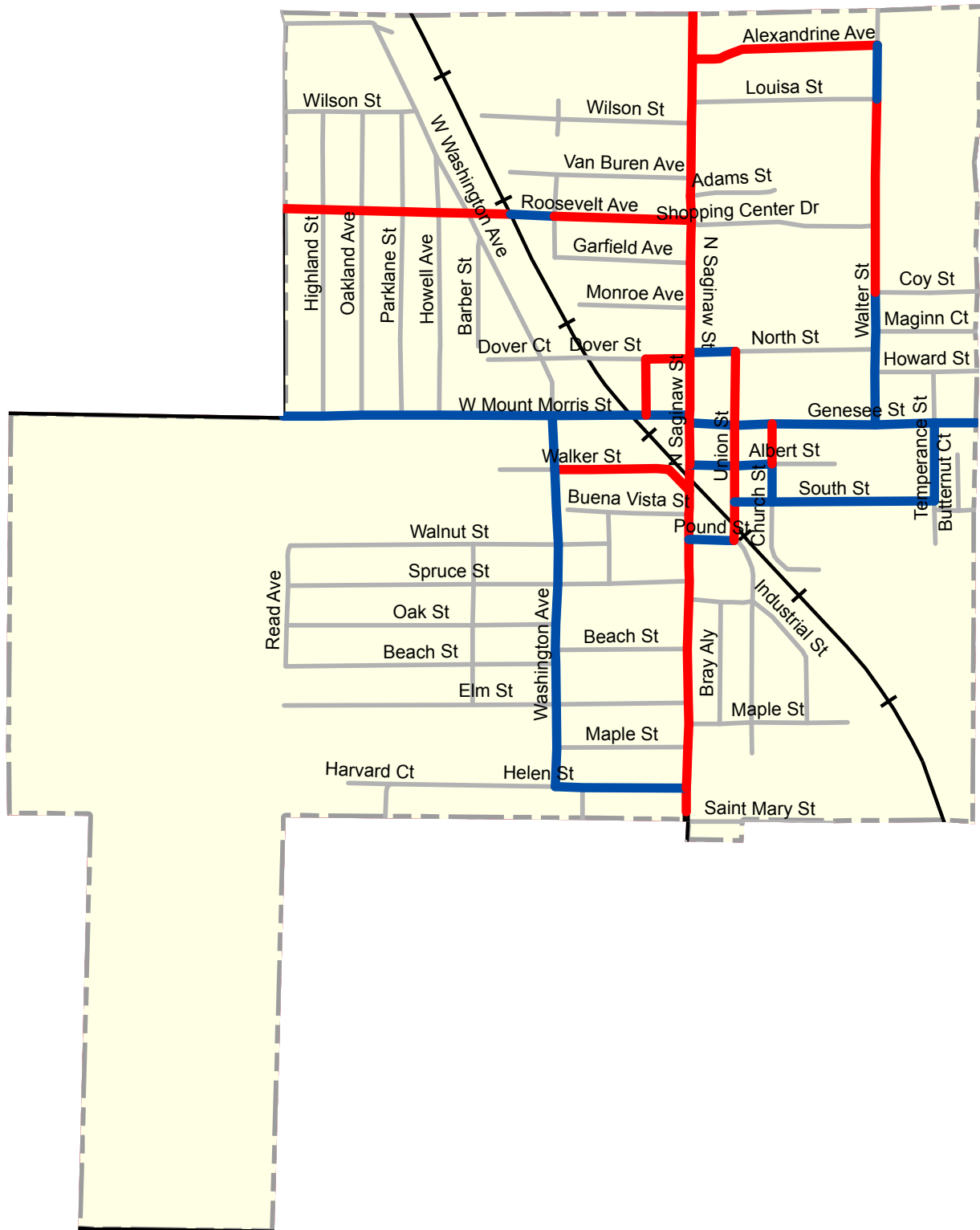
## City of Montrose

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

- |  |   |
|--|---|
|  | Rating 8-10 (Routine Maintenance, 0.0 lane miles)             |
|  | Rating 5-7 (Capital Preventative Maintenance, 0.0 lane miles) |
|  | Rating 1-4 (Structural Improvements, 0.97 lane miles)         |



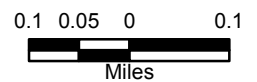


## City of Mt. Morris

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey







- |  |  |
|--|--|
|  | Rating 8-10 (Routine Maintenance, 0.00 miles)                  |
|  | Rating 5-7 (Capital Preventative Maintenance, 6.43 lane miles) |
|  | Rating 1-4 (Structural Improvements, 6.79 lane miles)          |








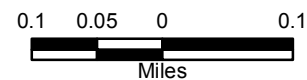
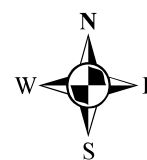


## Village of Otisville

- |  |   |   |
|--|---|---|
|  Interstate/Freeway |  Collectors  |  Railroads          |
|  Arterials          |  Local Roads |  Rivers and Streams |

### 2013 PASER Survey

- |   |   |
|---|---|
|  | Rating 8-10 (Routine Maintenance, 0.0 lane miles)             |
|  | Rating 5-7 (Capital Preventative Maintenance, 0.0 lane miles) |
|  | Rating 1-4 (Structural Improvements, 0.0 lane miles)          |



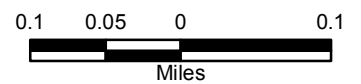


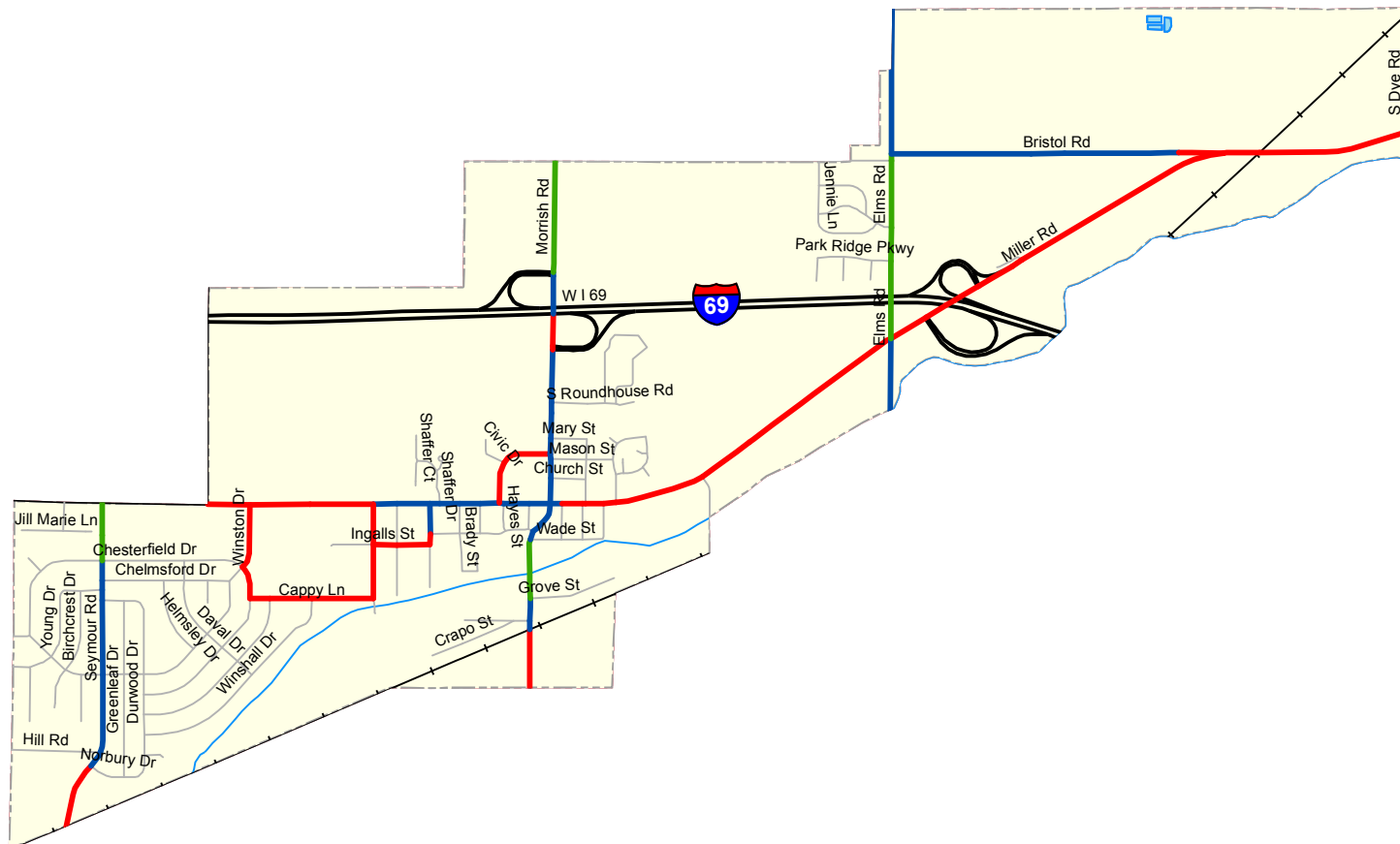
## Village of Otter Lake

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

- |  |   |
|--|---|
|  | Rating 8-10 (Routine Maintenance, 0.48 lane miles)            |
|  | Rating 5-7 (Capital Preventative Maintenance, 0.0 lane miles) |
|  | Rating 1-4 (Structural Improvements, 0.0 lane miles)          |



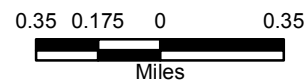


## City of Swartz Creek

- |                    |             |                    |
|--------------------|-------------|--------------------|
| Interstate/Freeway | Collectors  | Railroads          |
| Arterials          | Local Roads | Rivers and Streams |

### 2013 PASER Survey

- |  |  |
|--|--|
|  | Rating 8-10 (Routine Maintenance, 3.48 lane miles)             |
|  | Rating 5-7 (Capital Preventative Maintenance, 8.96 lane miles) |
|  | Rating 1-4 (Structural Improvements, 16.63 lane miles)         |



# Concrete - PASER Rating System Manual

## Rating system

Surface rating	Visible distress*	General condition/ treatment measures
<b>10</b> Excellent	None.	New pavement. No maintenance required.
<b>9</b> Excellent	Traffic wear in wheelpath. Slight map cracking or pop-outs.	Recent concrete overlay or joint rehabilitation. Like new condition. No maintenance required.
<b>8</b> Very Good	Pop-outs, map cracking, or minor surface defects. Slight surface scaling. Partial loss of joint sealant. Isolated meander cracks, tight or well sealed. Isolated cracks at manholes, tight or well sealed.	More surface wear or slight defects. Little or no maintenance required.
<b>7</b> Good	More extensive surface scaling. Some open joints. Isolated transverse or longitudinal cracks, tight or well sealed. Some manhole displacement and cracking. First utility patch, in good condition. First noticeable settlement or heave area.	First sign of transverse cracks (all tight); first utility patch. More extensive surface scaling. Seal open joints and other routine maintenance.
<b>6</b> Good	Moderate scaling in several locations. A few isolated surface spalls. Shallow reinforcement causing cracks. Several corner cracks, tight or well sealed. Open (1/4" wide) longitudinal or transverse joints and more frequent transverse cracks (some open 1/4").	First signs of shallow reinforcement or corner cracking. Needs general joint and crack sealing. Scaled areas could be overlaid.
<b>5</b> Fair	Moderate to severe polishing or scaling over 25% of the surface. High reinforcing steel causing surface spalling. Some joints and cracks have begun spalling. First signs of joint or crack faulting (1/4"). Multiple corner cracks with broken pieces. Moderate settlement or frost heave areas. Patching showing distress.	First signs of joint or crack spalling or faulting. Grind to repair surface defects. Some partial depth patching or joint repairs needed.
<b>4</b> Fair	Severe polishing, scaling, map cracking, or spalling over 50% of the area. Joints and cracks show moderate to severe spalling. Pumping and faulting of joints (1/2") with fair ride. Several slabs have multiple transverse or meander cracks with moderate spalling. Spalled area broken into several pieces. Corner cracks with missing pieces or patches. Pavement blowups.	Needs some full depth repairs, grinding, and/or asphalt overlay to correct surface defects.
<b>3</b> Poor	Most joints and cracks are open, with multiple parallel cracks, severe spalling, or faulting. D-cracking is evident. Severe faulting (1") giving poor ride. Extensive patching in fair to poor condition. Many transverse and meander cracks, open and severely spalled.	Needs extensive full depth patching plus some full slab replacement.
<b>2</b> Very Poor	Extensive slab cracking, severely spalled and patched. Joints failed. Patching in very poor condition. Severe and extensive settlements or frost heaves.	Recycle and/or rebuild pavement.
<b>1</b> Failed	Restricted speed. Extensive potholes. Almost total loss of pavement integrity.	Total reconstruction.

\* Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.

# **Asphalt - PASER Rating System Manual**

## Rating system

Surface rating	Visible distress*	General condition/ treatment measures
<b>10</b> Excellent	None.	New construction.
<b>9</b> Excellent	None.	Recent overlay. Like new.
<b>8</b> Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). All cracks sealed or tight (open less than 1/4").	Recent sealcoat or new cold mix. Little or no maintenance required.
<b>7</b> Good	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open 1/4") due to reflection or paving joints. Transverse cracks (open 1/4") spaced 10' 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.
<b>6</b> Good	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open 1/4"–1/2"), some spaced less than 10'. First sign of block cracking. Slight to moderate flushing or polishing. Occasional patching in good condition.	Shows signs of aging. Sound structural condition. Could extend life with sealcoat.
<b>5</b> Fair	Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open 1/2") show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs sealcoat or thin non-structural overlay (less than 2")
<b>4</b> Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50% of surface). Patching in fair condition. Slight rutting or distortions (1/2" deep or less).	Significant aging and first signs of need for strengthening. Would benefit from a structural overlay (2" or more).
<b>3</b> Poor	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Severe block cracking. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes.	Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.
<b>2</b> Very Poor	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. Pulverization of old pavement is effective.
<b>1</b> Failed	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

\* Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.