

The State of Michigan Transportation Asset Management Council



2011 PASER Survey of Lapeer County

Prepared by the
Genesee County Metropolitan Planning Commission

**The State of Michigan
Transportation Asset Management Council
2011 PASER Road Survey
Lapeer County**

Project overview:

On June 6, 7 and 8, 2011, GLS Region V staff along with representatives of the Lapeer County Road Commission (LCRC) and the Michigan Department of Transportation (MDOT) assessed the condition of Lapeer 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 0 to 10 rating scale, with a value of 10 representing a new road and a value of 0 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, 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 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 0-4 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 7.2 software loaded. A Garmin GPS 35/36 TracPak 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 Lapeer County road rating project there was always one Region V representative, one LCRC representative and one MDOT representative present. It took 28 hours to rate approximately 477 linear miles of road, averaging 17 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 the 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 Lapeer County Federal Aid network is comprised of approximately 1,014 lane miles. Of the total, 624.68 (62%) lane miles are within Townships, which are under the jurisdiction of the Lapeer County Road Commission (LCRC). Local Road agencies with the greatest amount of federal aid lane miles within their jurisdiction are MDOT with approximately 317 lane miles and the City of Lapeer with approximately 42 lane miles of federal aid roads. Of the total roads surveyed, approximately 891 miles (88%) were Asphalt and 123 miles (12%) were concrete.

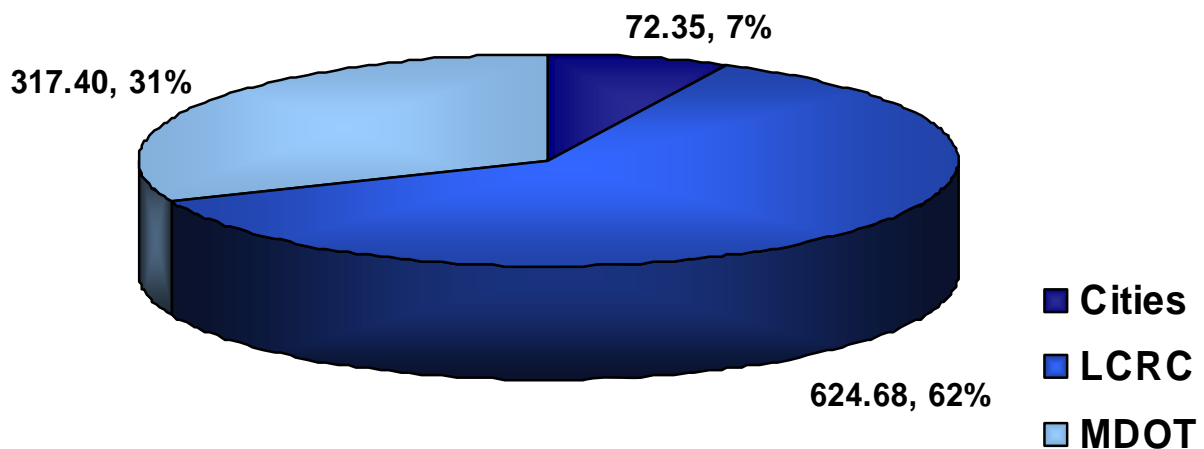
2011 PASER Rating by Cities and Villages					
Description	0 to 4 Structural Improvements	5 to 7 Capital Preventative Maintenance	8 to 10 Routine Maintenance	Total Lane Miles	Percentage of PASER Lane Miles in Jurisdiction
Almont	1.22	1.02	0.00	2.24	3.1%
Clifford	3.25	2.10	0.00	5.35	7.4%
Columbiaville	1.54	1.94	1.00	4.48	6.2%
Dryden	0.00	0.66	1.51	2.18	3.0%
Imlay City	7.60	1.27	1.33	10.21	14.1%
Lapeer	34.02	6.06	1.86	41.94	58.0%
Metamora	1.03	0.65	0.87	2.55	3.5%
North Branch	1.46	0.00	0.00	1.46	2.0%
Otter Lake	0.45	1.33	0.16	1.95	2.7%
Total	50.57	15.04	6.74	72.35	100%
Percentage	70%	21%	9%	100%	

2011 PASER Rating by Townships					
Description	0 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
Almont Twp	23.18	7.08	0.00	30.26	4.8%
Arcadia Twp	27.55	4.74	0.00	32.30	5.2%
Attica Twp	31.22	10.57	6.44	48.23	7.7%
Burlington Twp	33.30	4.53	0.00	37.84	6.1%
Burnside Twp	23.96	0.00	0.00	23.96	3.8%
Deerfield Twp	18.84	9.76	0.00	28.60	4.6%
Dryden Twp	18.20	10.50	0.00	28.70	4.6%
Elba Twp	31.61	17.66	0.61	49.88	8.0%
Goodland Twp	23.42	3.92	0.00	27.34	4.4%
Hadley Twp	15.15	17.46	0.00	32.61	5.2%
Imlay Twp	30.32	2.89	3.60	36.81	5.9%
Lapeer Twp	32.98	18.99	5.17	57.15	9.1%
Marathon Twp	17.96	19.10	0.00	37.06	5.9%
Mayfield Twp	19.87	16.25	4.30	40.42	6.5%
Metamora Twp	1.59	15.13	1.77	18.49	3.0%
North Branch Twp	23.12	0.00	0.00	23.12	3.7%
Oregon Twp	44.15	1.40	0.00	45.55	7.3%
Rich Twp	22.65	0.23	3.50	26.38	4.2%
LCRC Total	439.07	160.21	25.40	624.68	100%
Percentage	70%	26%	4%	100%	

2011 PASER Rating by Jurisdiction					
Description	0 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	50.57	15.04	6.74	72.35	7%
LCRC	439.07	160.21	25.40	624.68	62%
MDOT	91.72	134.34	91.34	317.40	31%
Lapeer Total	581.36	309.59	123.48	1014.43	100%
Percentage	57%	31%	12%	100%	

*** Township federal aid roads are under the jurisdiction of the Lapeer County Road Commission

Lapeer County 2011 PASER Lane Miles by Jurisdiction

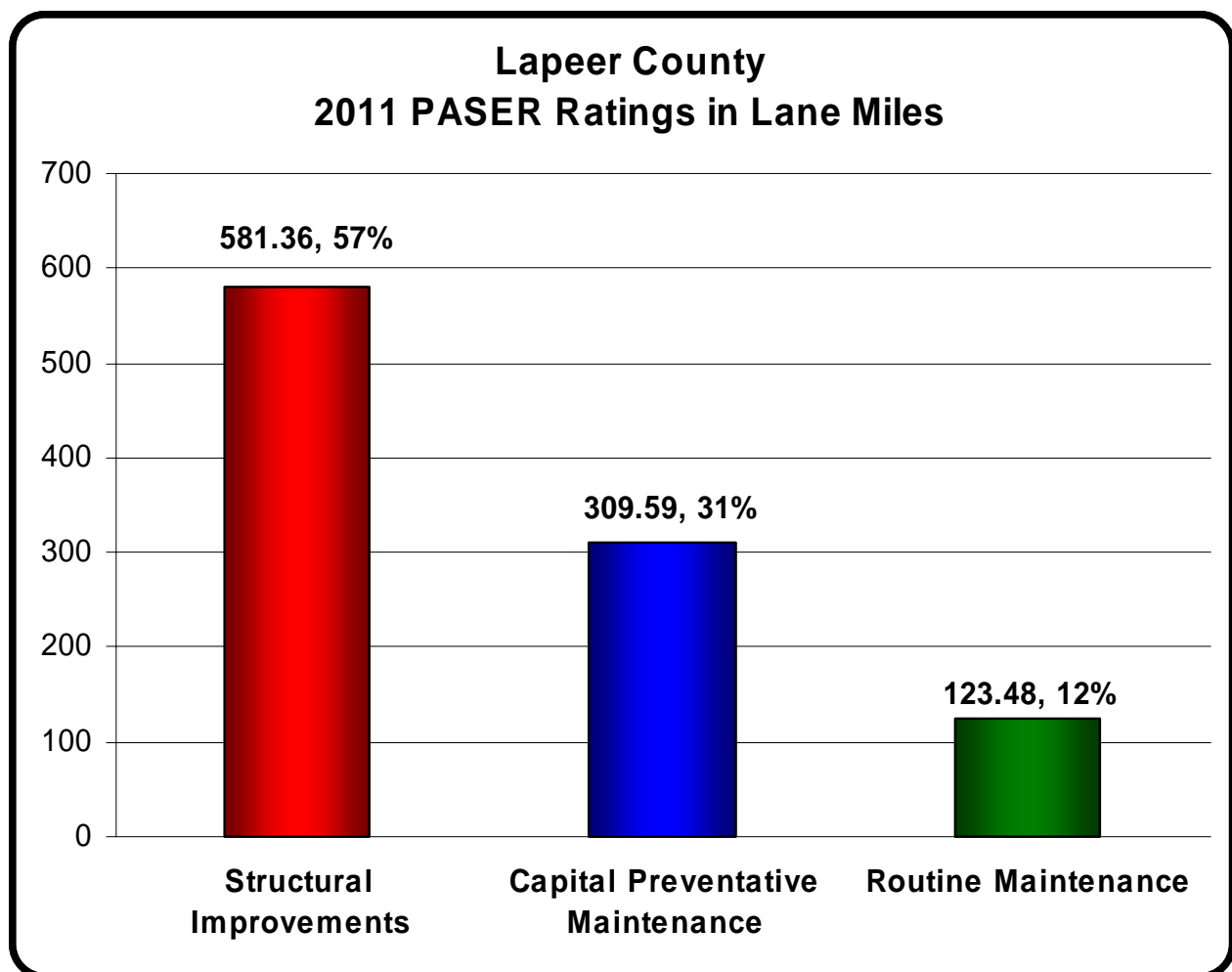


Results:

Approximately 1,014 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 disturbed into three categories, in which, 581.36 lane miles (57%) received a rating less than or equal to 4; 309.59 lane miles (31%) of the roads rated received a rating of 5, 6 or 7; and 123.48 lane miles (12%) 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

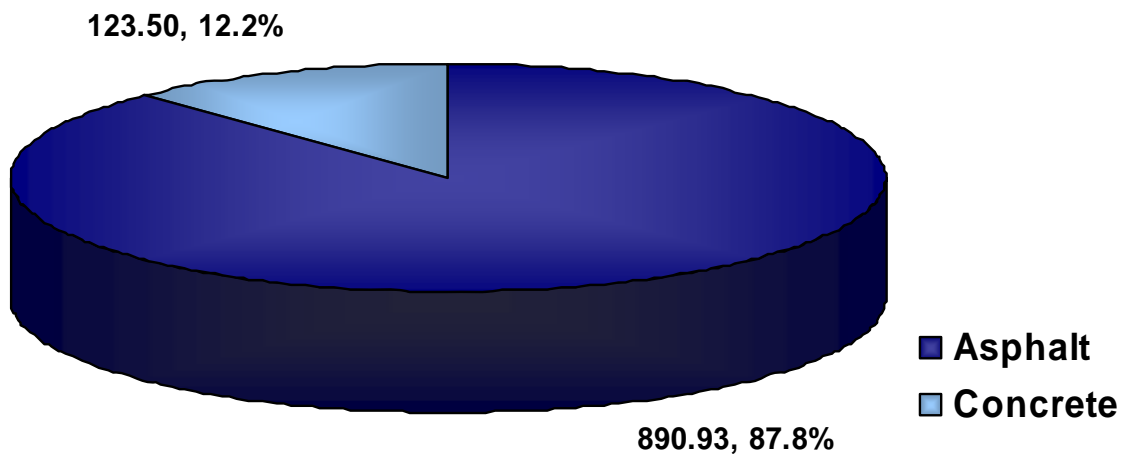
Lapeer County 2011 PASER Ratings			
PASER Rating	Prescribed Fix	Total Lane Miles	Percentage of PASER Lane Miles
0 to 4	Structural Improvements	581.36	57%
5 to 7	Capital Preventative Maintenance	309.59	31%
8 to 10	Routine Maintenance	123.48	12%



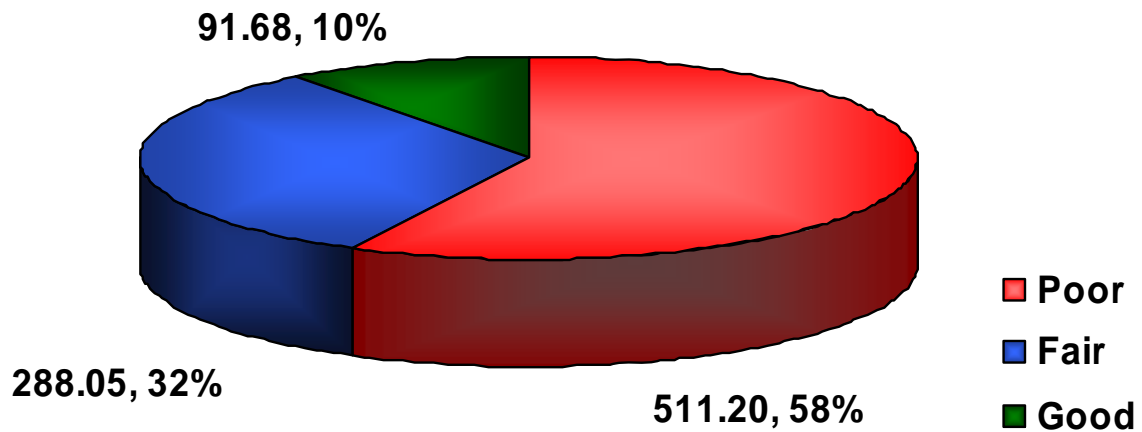
The following tables provide a summary of the 2011 PASER survey rating by surface type.

2011 PASER Rating by Surface Type					
Description	0 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
Asphalt	511.20	288.05	91.68	890.93	87.8%
Concrete	70.16	21.54	31.80	123.50	12.2%
Total	581.36	309.59	123.48	1014.43	100%
Total %	57%	31%	12%	100%	

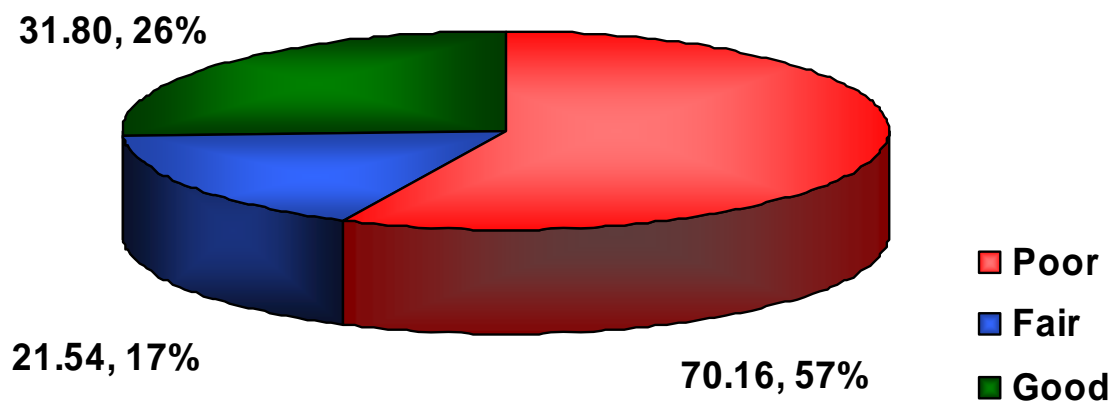
**Lapeer County
2011 PASER Lane Miles by Surface Type**



Lapeer County 2011 PASER Asphalt Ratings in Lane Miles

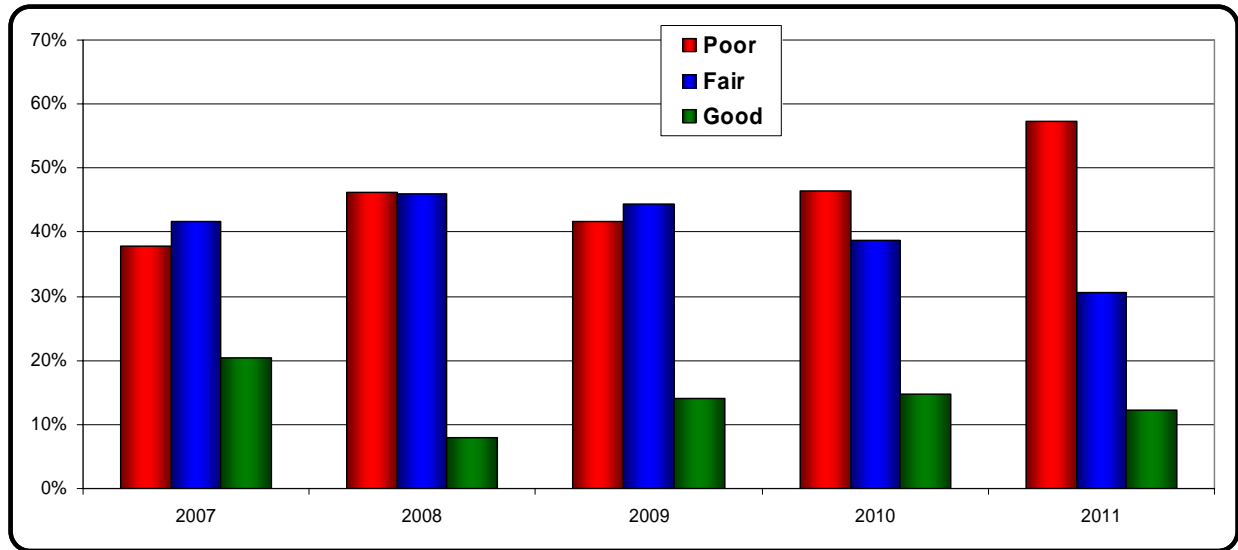


Lapeer County 2011 PASER Concrete Ratings in Lane Miles

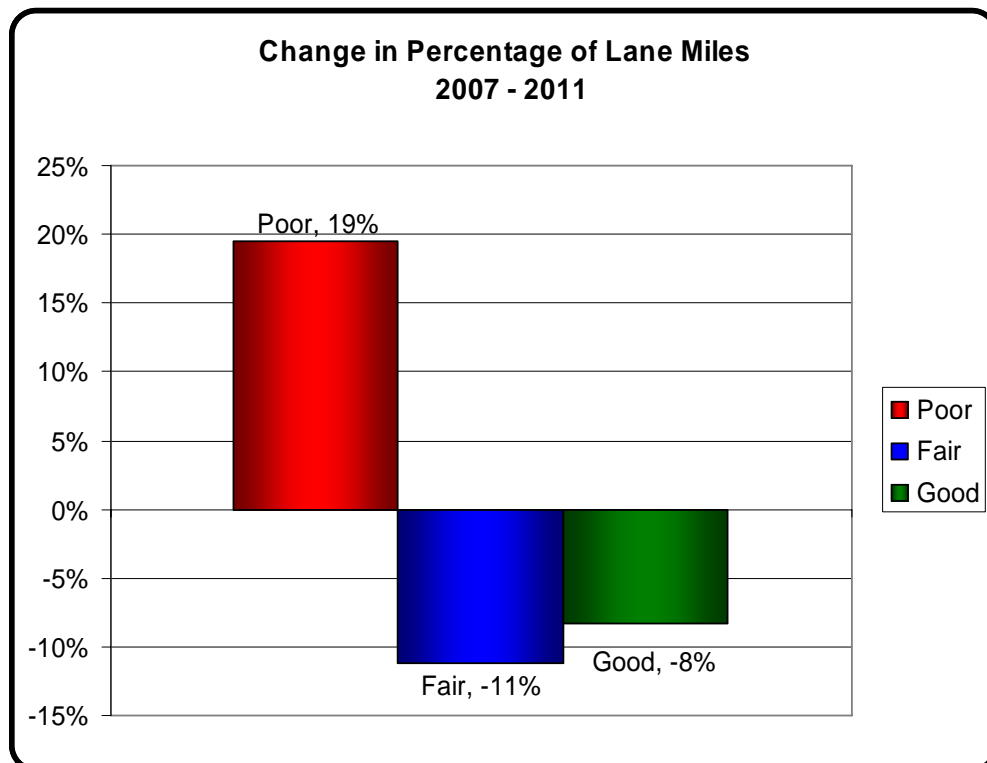


Comparison of 2007 to 2011 Lapeer County PASER Surveys

The following section analyzes data from PASER surveys conducted between 2007 and 2011 for Lapeer 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. A comparison of 2007 and 2011 data is also provided.



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



The change in lane miles from 2007 to 2011 indicates a significant amount of miles decreased in the Routine Maintenance and Capital Preventive Maintenance categories and an increase in miles under the Structural Improvement category.

- In 2011, 57% (581.36 lane miles) of the Federal Aid Road System received a PASER rating between 0 and 4. Roads with 0 to 4 ratings require structural improvements that may include full depth repairs, a major overlay or reconstruction. This represents an increase of 19% as compared to the 2007 rating distribution in the same category.
- In 2011, 31% (309.59 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 a decrease of 11% as compared to the 2007 rating distribution in the same category.
- In 2011, 12% (123.48 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 a decrease of 8% as compared to the 2007 rating distribution in the same category.

In general, the comparison indicates that the overall system is deteriorating rather than improving. This trend is common throughout the state and was analyzed in detail for the development of the Genesee County 2035 Long Range Transportation Plan. As part of the analysis Genesee County staff used the RoadSoft program to evaluate several different maintenance scenarios and found that the only way to improve the overall condition of the Genesee County system would be to provide at least 3 times the current level of funding for road improvements. As part of a pavement management program this 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. Similar studies have been conducted across the state with comparative results and it would be a reasonable assumption that this analysis is also true for Lapeer County.

The data provided in the following tables represent the percent of lane miles in each rating category for each year between 2007 and 2011 and the change in each rating category between 2007 to 2011 for each jurisdiction and the County as a whole.

Almont	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	20%	74%	60%	59%	45%	25%
Poor 0 to 4	80%	26%	40%	41%	55%	-25%
				2011 Lane Miles: 2.24		

Clifford	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	39%	39%	0%	0%
Fair 7 to 5	29%	0%	0%	0%	39%	10%
Poor 0 to 4	71%	100%	61%	61%	61%	-10%
				2011 Lane Miles: 5.35		

Columbiaville	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	3%	0%	22%	22%	22%	19%
Fair 7 to 5	83%	78%	45%	45%	43%	-40%
Poor 0 to 4	14%	22%	33%	33%	35%	21%
				2011 Lane Miles: 4.48		

Dryden	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	42%	70%	69%	69%
Fair 7 to 5	0%	0%	58%	30%	31%	31%
Poor 0 to 4	100%	100%	0%	0%	0%	-100%
				2011 Lane Miles: 2.18		

Imlay City	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	7%	0%	0%	25%	13%	6%
Fair 7 to 5	0%	0%	0%	0%	12%	12%
Poor 0 to 4	93%	100%	100%	75%	75%	-18%
				2011 Lane Miles: 10.21		

Lapeer	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	3%	2%	2%	5%	4%	1%
Fair 7 to 5	61%	40%	52%	34%	14%	-47%
Poor 0 to 4	36%	58%	46%	61%	82%	46%
				2011 Lane Miles: 41.94		

Metamora	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	60%	60%	34%	34%
Fair 7 to 5	0%	0%	0%	0%	26%	26%
Poor 0 to 4	100%	100%	40%	40%	40%	-60%
				2011 Lane Miles: 2.55		

North Branch	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	0%	0%	0%	0%	0%	0%
Poor 0 to 4	100%	100%	100%	100%	100%	0%
2011 Lane Miles:				1.46		

Otter Lake	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	92%	92%	77%	77%	8%	-84%
Fair 7 to 5	0%	0%	23%	23%	68%	68%
Poor 0 to 4	8%	8%	0%	0%	24%	16%
2011 Lane Miles:				1.95		

Almont Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	17%	17%	17%	0%	0%	-17%
Fair 7 to 5	56%	56%	50%	30%	23%	-33%
Poor 0 to 4	27%	27%	33%	70%	77%	50%
2011 Lane Miles:				30.26		

Arcadia Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	79%	48%	45%	47%	15%	-64%
Poor 0 to 4	21%	52%	55%	53%	85%	64%
2011 Lane Miles:				32.30		

Attica Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	8%	1%	5%	6%	13%	5%
Fair 7 to 5	7%	14%	18%	17%	22%	15%
Poor 0 to 4	85%	85%	77%	77%	65%	-20%
2011 Lane Miles:				48.23		

Burlington Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	13%	0%	0%	0%	0%	-13%
Fair 7 to 5	36%	27%	25%	24%	12%	-24%
Poor 0 to 4	51%	73%	75%	76%	88%	37%
2011 Lane Miles:				37.84		

Burnside Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	50%	34%	13%	8%	0%	-50%
Poor 0 to 4	50%	66%	87%	92%	100%	50%
2011 Lane Miles:				23.96		

Deerfield Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	21%	7%	0%	0%
Fair 7 to 5	4%	11%	31%	14%	34%	30%
Poor 0 to 4	96%	89%	48%	79%	66%	-30%
2011 Lane Miles:				28.60		

Dryden Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	14%	0%	0%	0%	0%	-14%
Fair 7 to 5	33%	47%	43%	23%	37%	4%
Poor 0 to 4	53%	53%	57%	77%	63%	10%
2011 Lane Miles:				28.70		

Elba Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	11%	2%	6%	9%	1%	-10%
Fair 7 to 5	55%	63%	56%	42%	36%	-19%
Poor 0 to 4	34%	35%	38%	49%	63%	29%
2011 Lane Miles:				49.88		

Goodland Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	21%	7%	0%	0%	0%	-21%
Fair 7 to 5	61%	35%	35%	21%	14%	-47%
Poor 0 to 4	18%	58%	65%	79%	86%	68%
2011 Lane Miles:				27.34		

Hadley Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	33%	13%	10%	13%	0%	-33%
Fair 7 to 5	44%	64%	76%	69%	54%	10%
Poor 0 to 4	23%	23%	14%	18%	46%	23%
2011 Lane Miles:				32.61		

Imlay Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	7%	8%	0%	0%	10%	3%
Fair 7 to 5	29%	27%	11%	8%	8%	-21%
Poor 0 to 4	64%	65%	89%	92%	82%	18%
2011 Lane Miles:				36.81		

Lapeer Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	29%	23%	11%	2%	9%	-20%
Fair 7 to 5	17%	37%	40%	37%	33%	16%
Poor 0 to 4	54%	40%	49%	61%	58%	4%
2011 Lane Miles:				57.15		

Marathon Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	51%	48%	51%	37%	52%	1%
Poor 0 to 4	49%	52%	49%	63%	48%	-1%
2011 Lane Miles:						37.06

Mayfield Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	28%	8%	32%	29%	11%	-17%
Fair 7 to 5	15%	35%	24%	26%	40%	25%
Poor 0 to 4	57%	57%	44%	45%	49%	-8%
2011 Lane Miles:						40.42

Metamora Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	82%	17%	15%	15%	10%	-72%
Fair 7 to 5	9%	69%	81%	67%	82%	73%
Poor 0 to 4	9%	14%	4%	18%	8%	-1%
2011 Lane Miles:						18.49

North Branch Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	39%	39%	26%	9%	0%	-39%
Poor 0 to 4	61%	61%	74%	91%	100%	39%
2011 Lane Miles:						23.12

Oregon Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	44%	27%	20%	12%	3%	-41%
Poor 0 to 4	56%	73%	80%	88%	97%	41%
2011 Lane Miles:						45.55

Rich Twp	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	10%	10%	13%	13%	13%	3%
Fair 7 to 5	10%	4%	3%	0%	1%	-9%
Poor 0 to 4	80%	86%	84%	87%	86%	6%
2011 Lane Miles:						26.38

LCRC	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	14%	6%	7%	5%	4%	-10%
Fair 7 to 5	35%	38%	36%	28%	26%	-9%
Poor 0 to 4	51%	56%	57%	67%	70%	19%
2011 Lane Miles:						624.68

MDOT	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	37%	13%	28%	32%	29%	-8%
Fair 7 to 5	55%	67%	64%	64%	42%	-13%
Poor 0 to 4	8%	20%	8%	4%	29%	21%
2011 Lane Miles:				317.40		

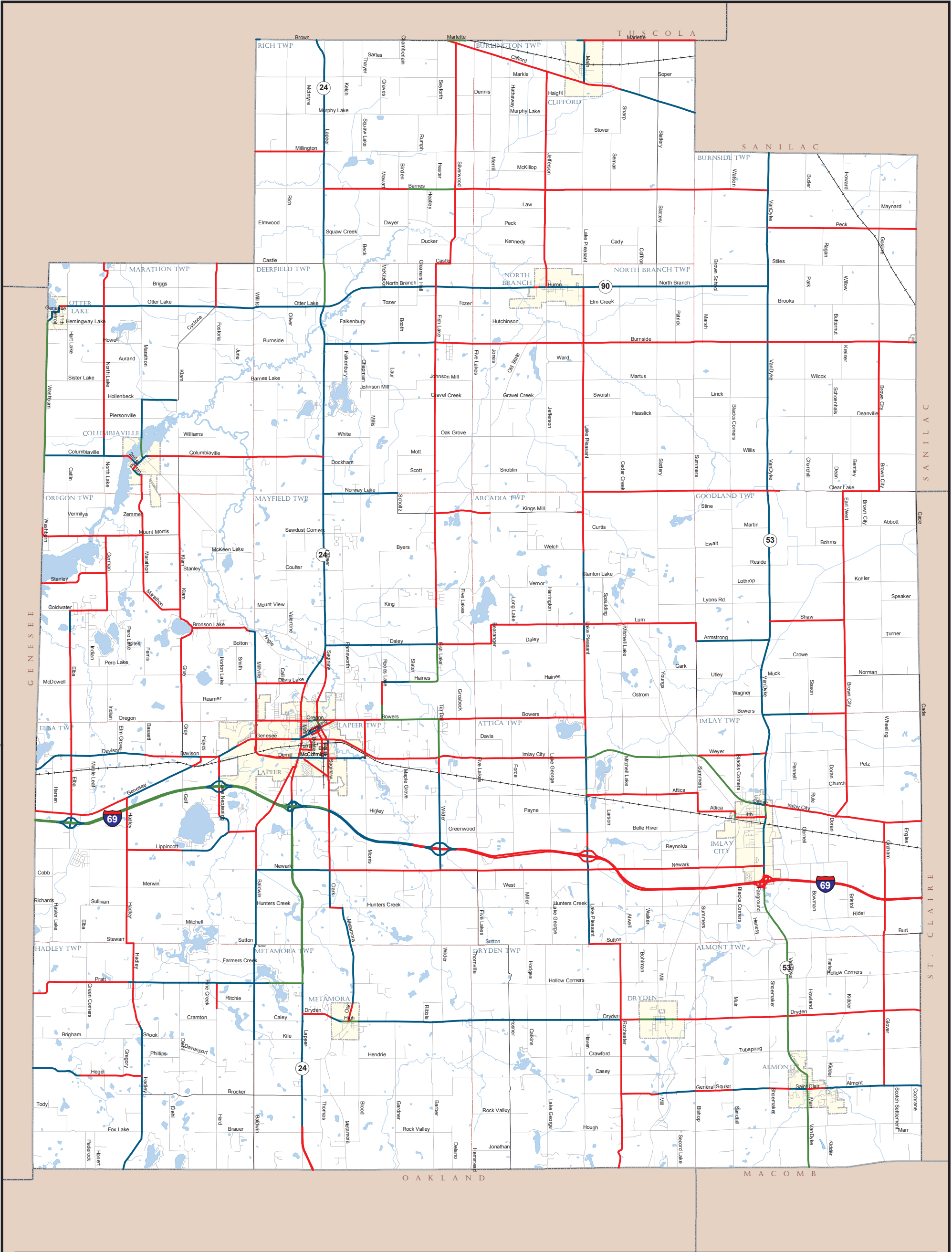
Lapeer County	2007	2008	2009	2010	2011	Change 2007-2011
Good 8 to 10	20%	8%	14%	15%	12%	-8%
Fair 7 to 5	42%	46%	44%	39%	31%	-11%
Poor 0 to 4	38%	46%	42%	46%	57%	19%
2011 Lane Miles:				1014.43		

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 continues to provide 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 must submit a written request to GLS 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

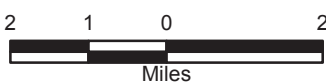
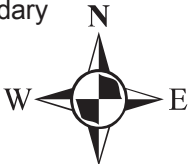


Lapeer County Roads

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

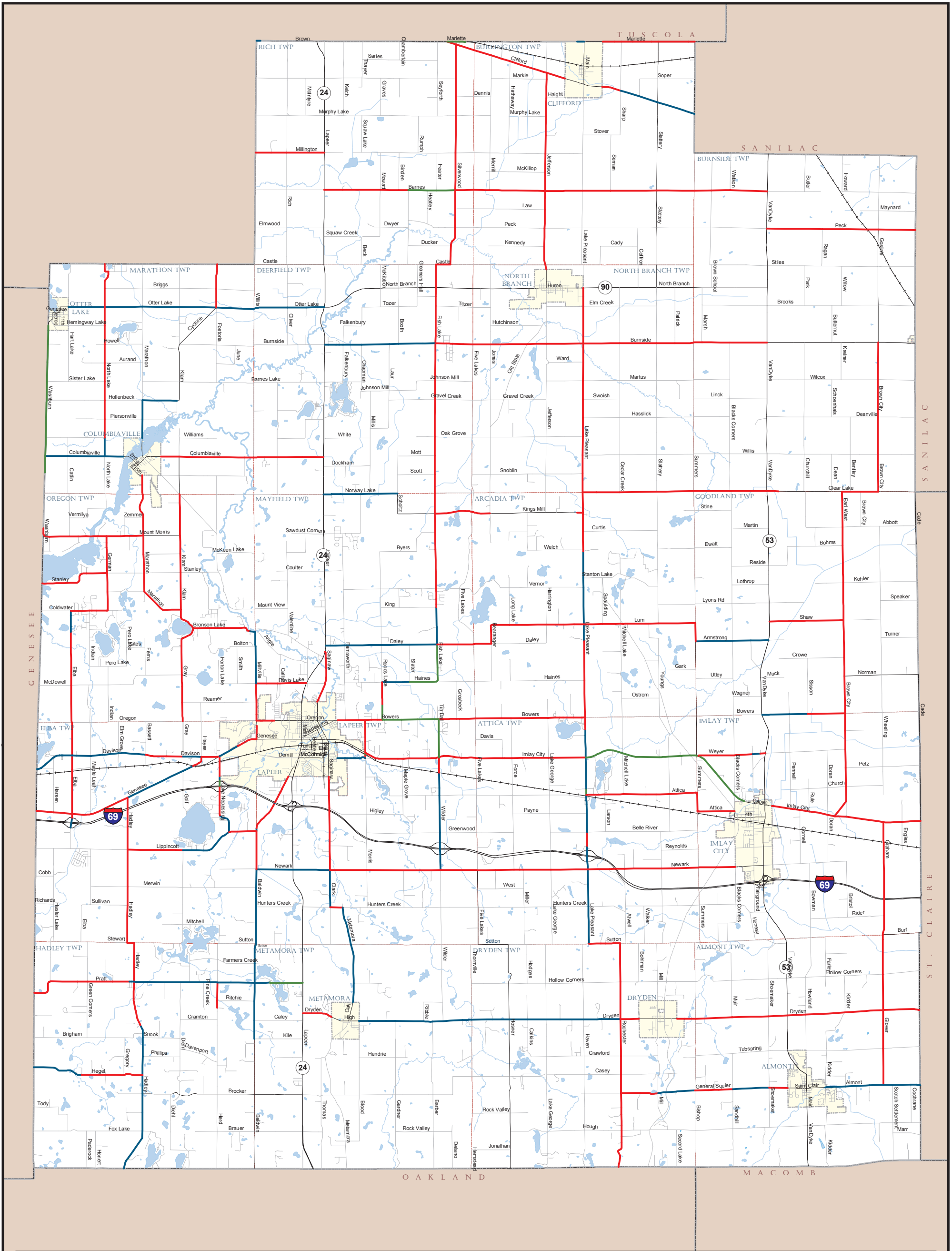
2011 PASER Survey

- Rating 8-10 (Routine Maintenance, 123.48 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 309.59 lane miles)
- Rating 1-4 (Structural Improvements, 581.36 lane miles)



Sources: Michigan Geographic Framework Vs5a
Date: September 2011
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Lapeer County Road Commission Roads

- Interstate/Freeway

Arterials

Collectors

Local Roads

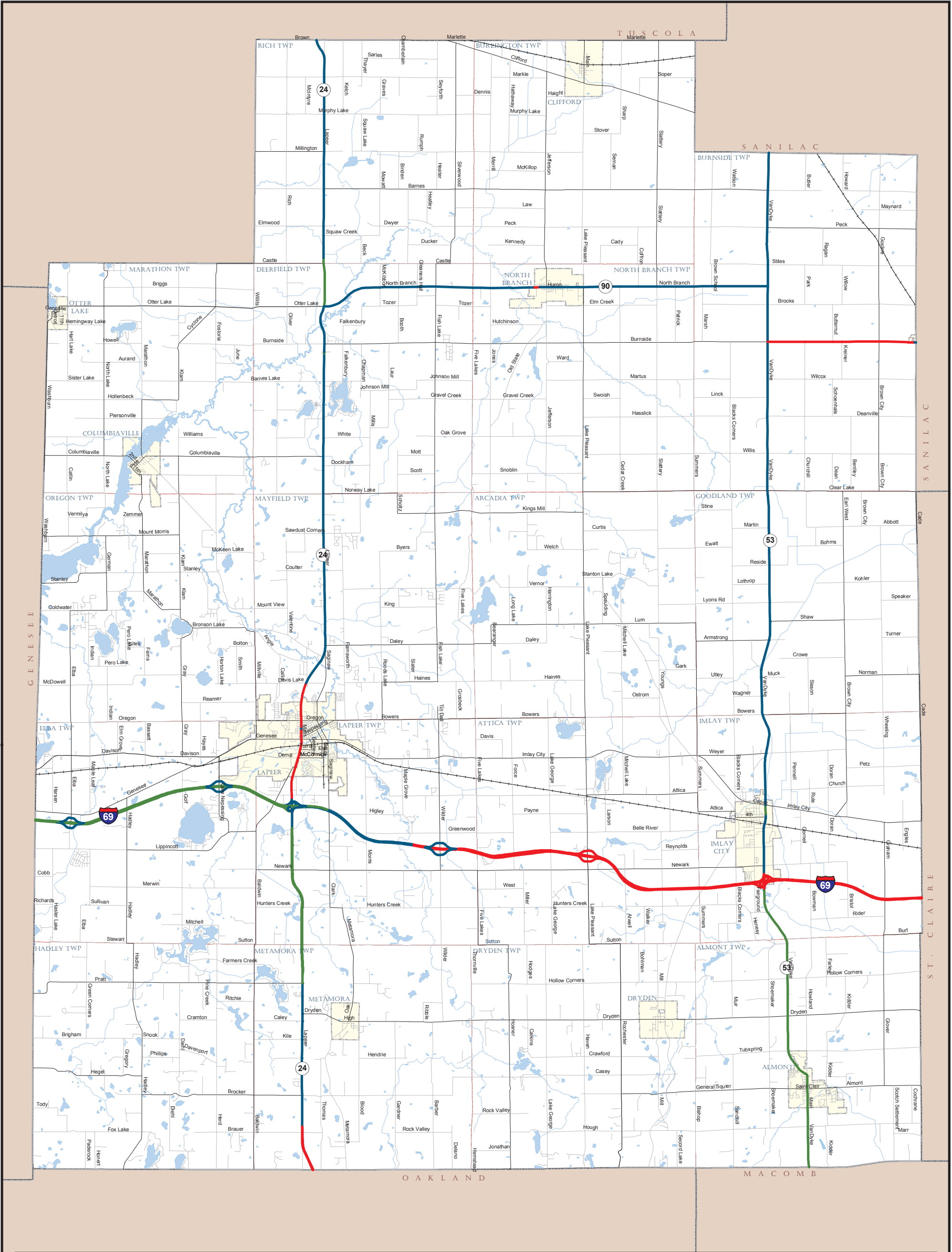
Railroads

Rivers and Streams

Municipal Boundary
- ## 2011 PASER Survey
- Rating 8-10 (Routine Maintenance, 25.40 lane miles)

Rating 5-7 (Capital Preventative Maintenance, 160.21 lane miles)

Rating 1-4 (Structural Improvements, 439.07 lane miles)
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- Sources: Michigan Geographic Framework V5a
Date: September 2011
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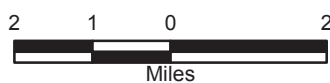
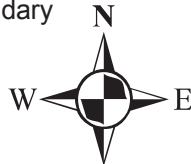


Lapeer County MDOT Roads

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

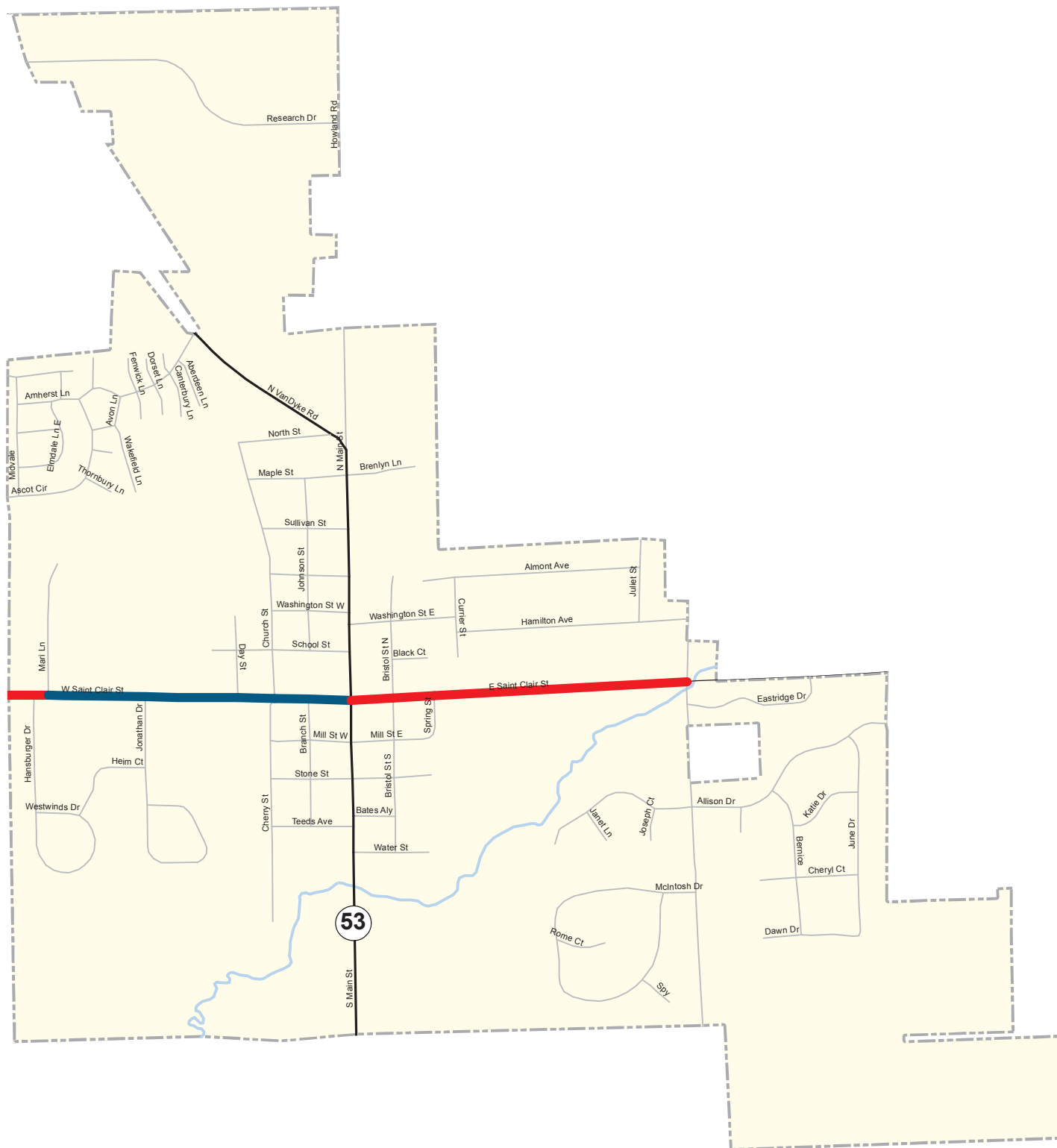
2011 PASER Survey

- Rating 8-10 (Routine Maintenance, 91.34 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 134.34 lane miles)
- Rating 1-4 (Structural Improvements, 91.72 lane miles)



Sources: Michigan Geographic Framework V5a
Date: September 2011
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Village of Almont



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

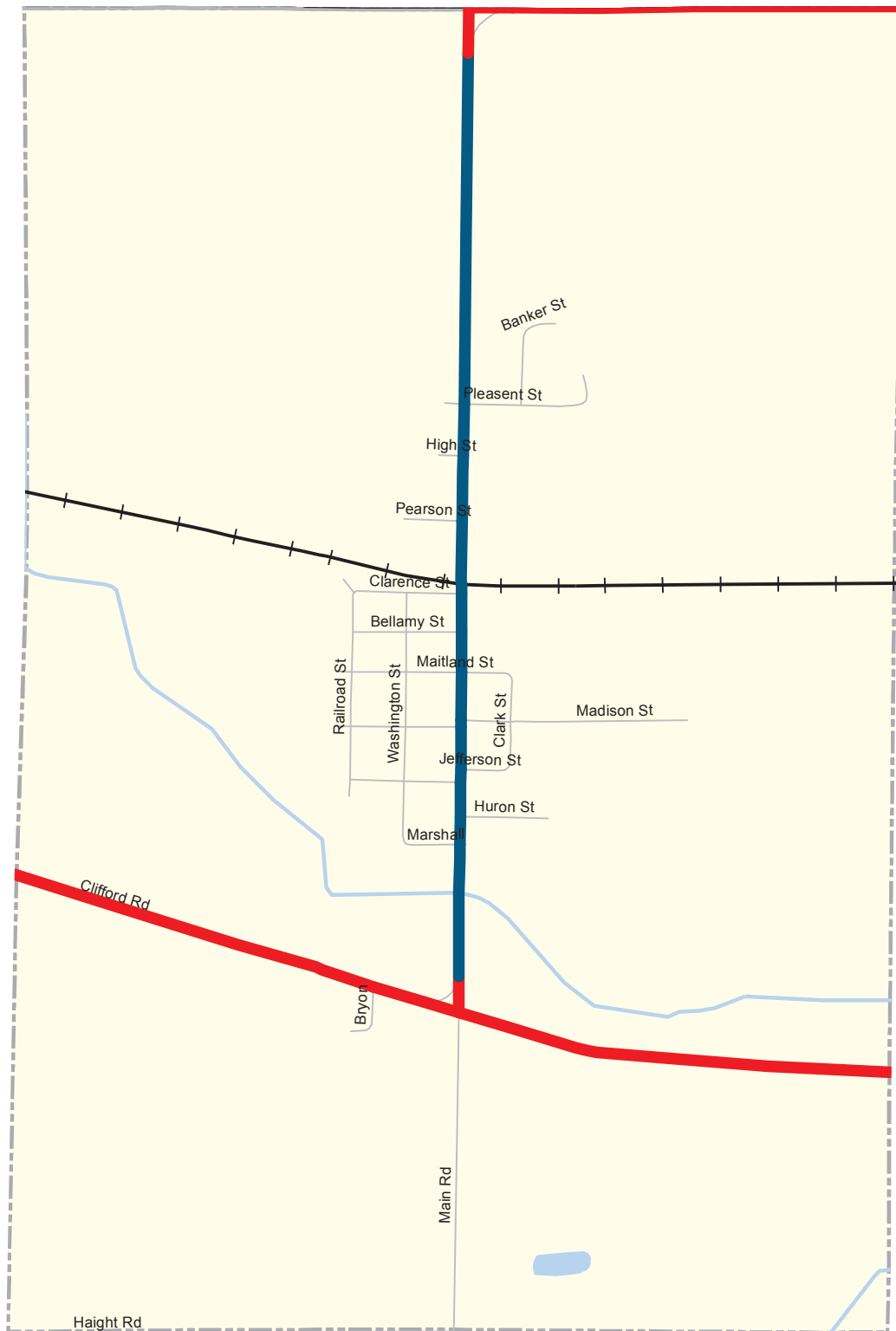
2011 PASER Survey

- Rating 8-10 (Routine Maintenance, 0.0 miles)
- Rating 5-7 (Capital Preventative Maintenance, 1.02 lane miles)
- Rating 1-4 (Structural Improvements, 1.22 lane miles)



0.08 0.04 0 0.08
Miles

Sources: Michigan Geographic Framework V5a
Date: September 2011
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Village of Clifford



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

2011 PASER Survey

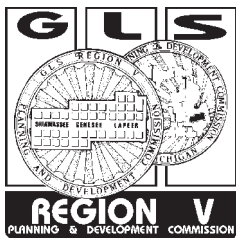
- Rating 8-10 (Routine Maintenance, 0.0 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 2.10 lane miles)
- Rating 1-4 (Structural Improvements, 3.25 lane miles)



Sources: Michigan Geographic Framework Vs5a
 Date: September 2011
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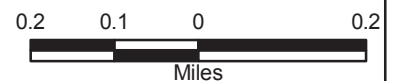
Village of Columbiaville



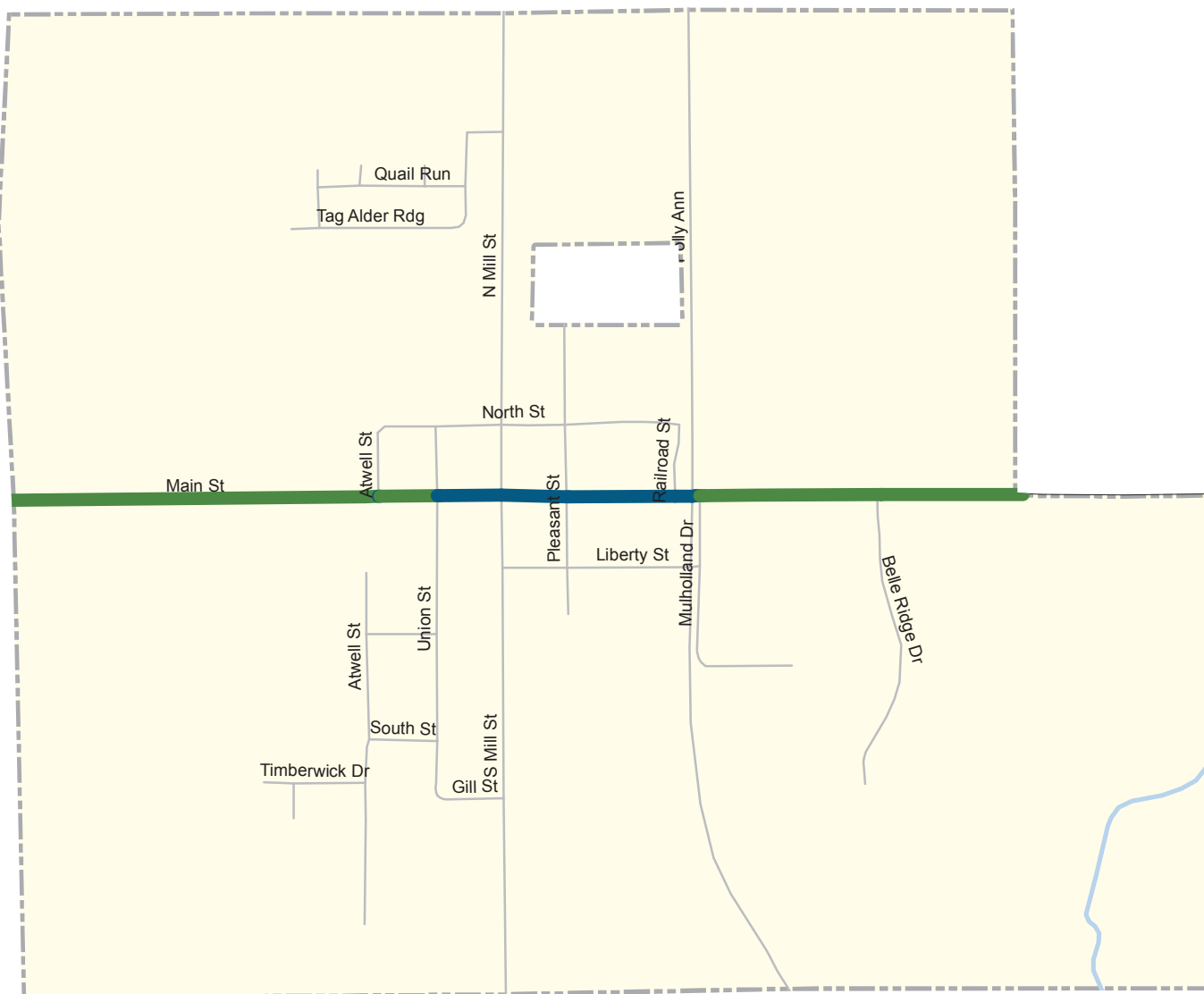
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| | Interstate/Freeway | | Collectors | | Railroads |
| | Arterials | | Local Roads | | Rivers and Streams |

2011 PASER Survey

- Rating 8-10 (Routine Maintenance, 1.00 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 1.94 lane miles)
- Rating 1-4 (Structural Improvements, 1.54 lane miles)



Sources: Michigan Geographic Framework Vs5a
 Date: September 2011
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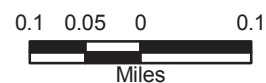
Village of Dryden



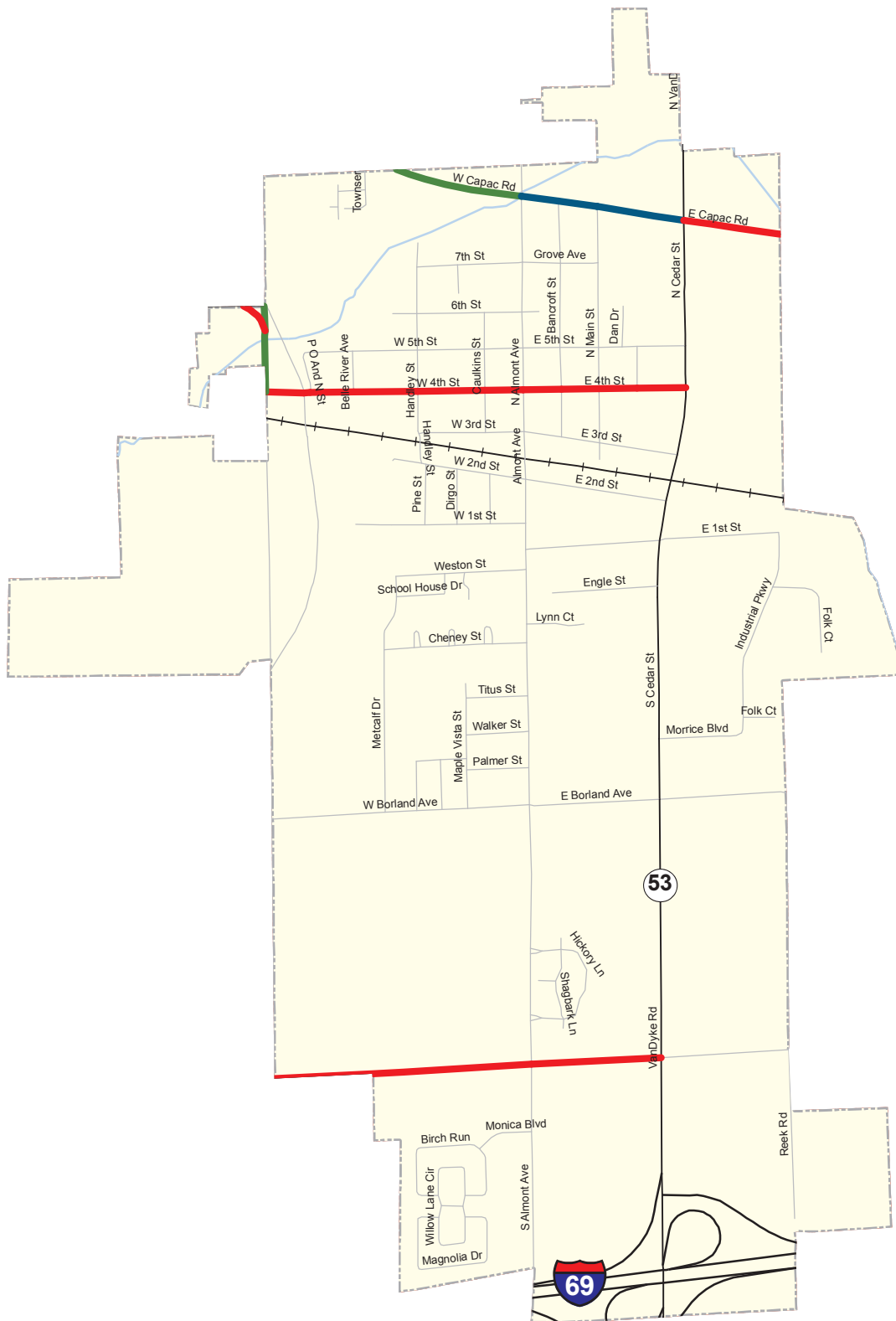
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| Interstate/Freeway | Collectors | Railroads |
| Arterials | Local Roads | Rivers and Streams |

2011 PASER Survey

- Rating 8-10 (Routine Maintenance, 1.51 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.66 lane miles)
- Rating 1-4 (Structural Improvements, 0.0 lane miles)



Sources: Michigan Geographic Framework Vs5a
 Date: September 2011
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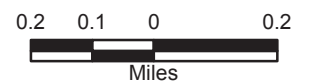


Imlay City

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

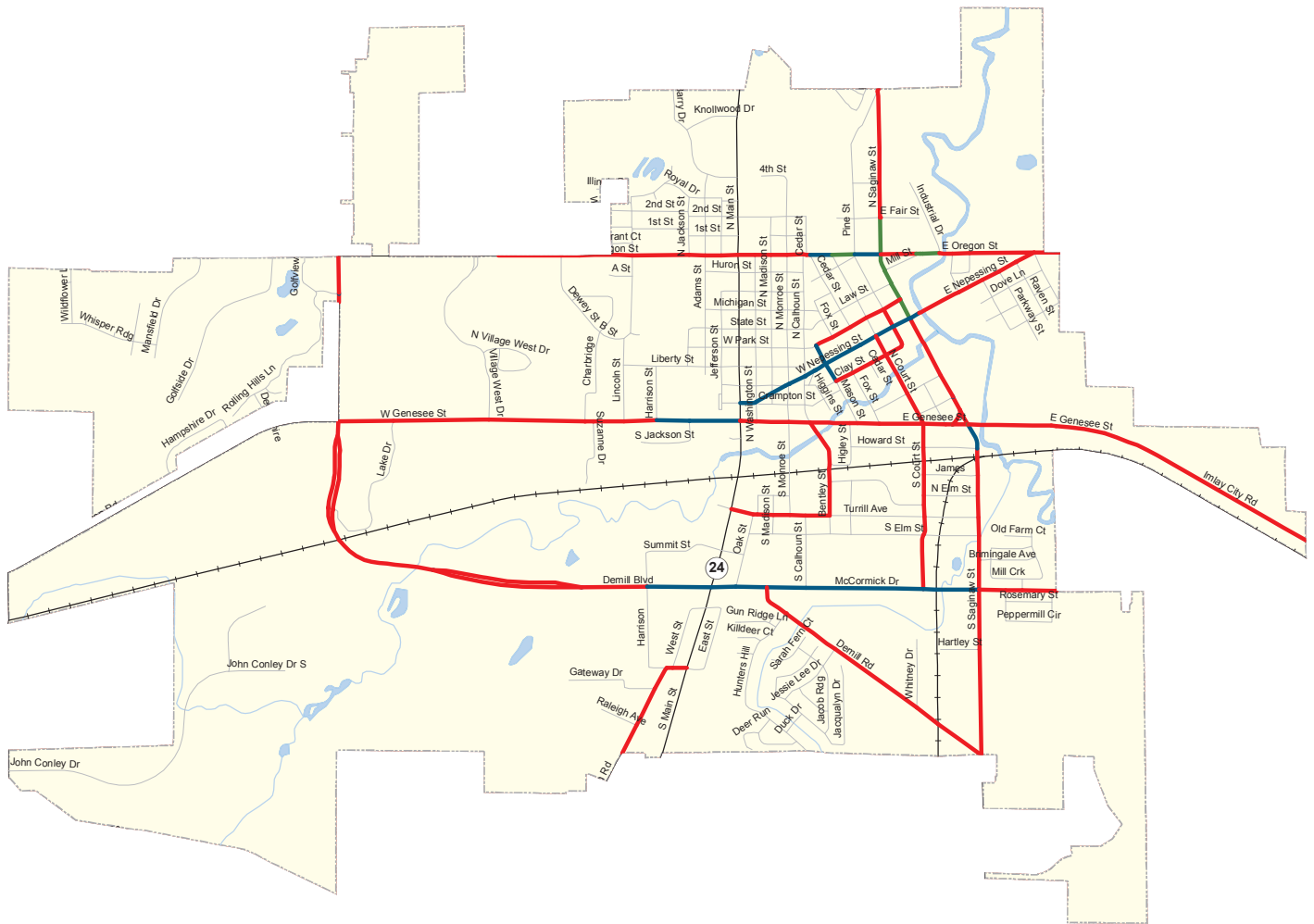
2011 PASER Survey

- Rating 8-10 (Routine Maintenance, 1.33 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 1.27 miles)
- Rating 1-4 (Structural Improvements, 7.60 lane miles)



Sources: Michigan Geographic Framework Vs5A
 Date: September 2011
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City of Lapeer

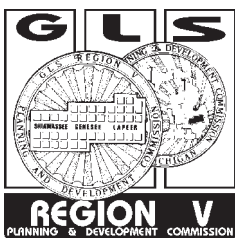
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| Interstate/Freeway | Collectors | Railroads |
| Arterials | Local Roads | Rivers and Streams |

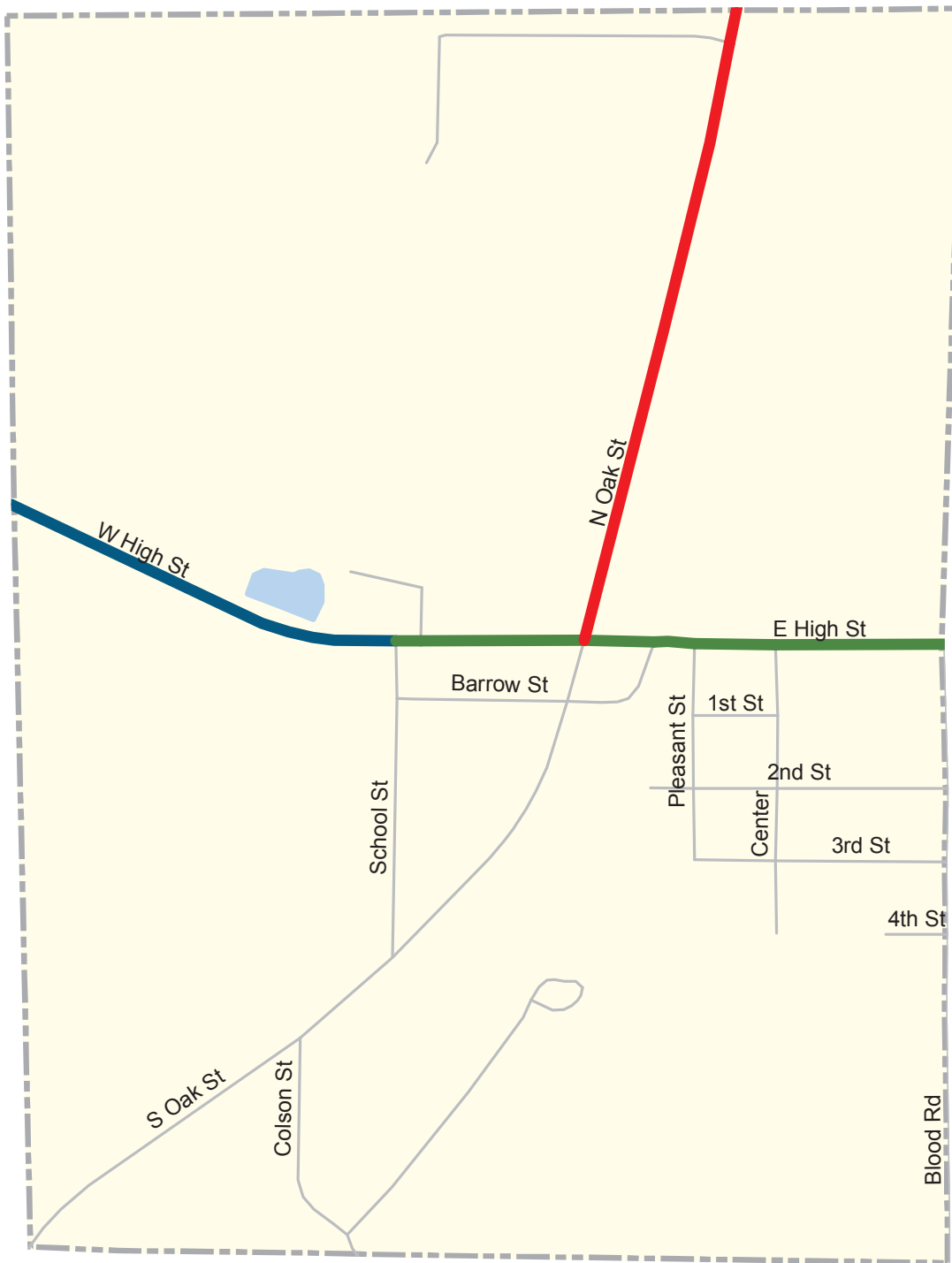
2011 PASER Survey

- Rating 8-10 (Routine Maintenance, 1.86 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 6.06 lane miles)
- Rating 1-4 (Structural Improvements, 34.02 lane miles)



Sources: Michigan Geographic Framework V5a
 Date: September 2011
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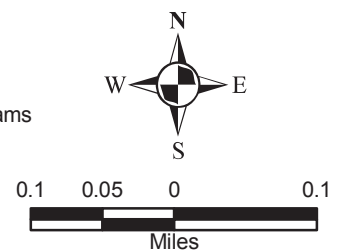
Village of Metamora



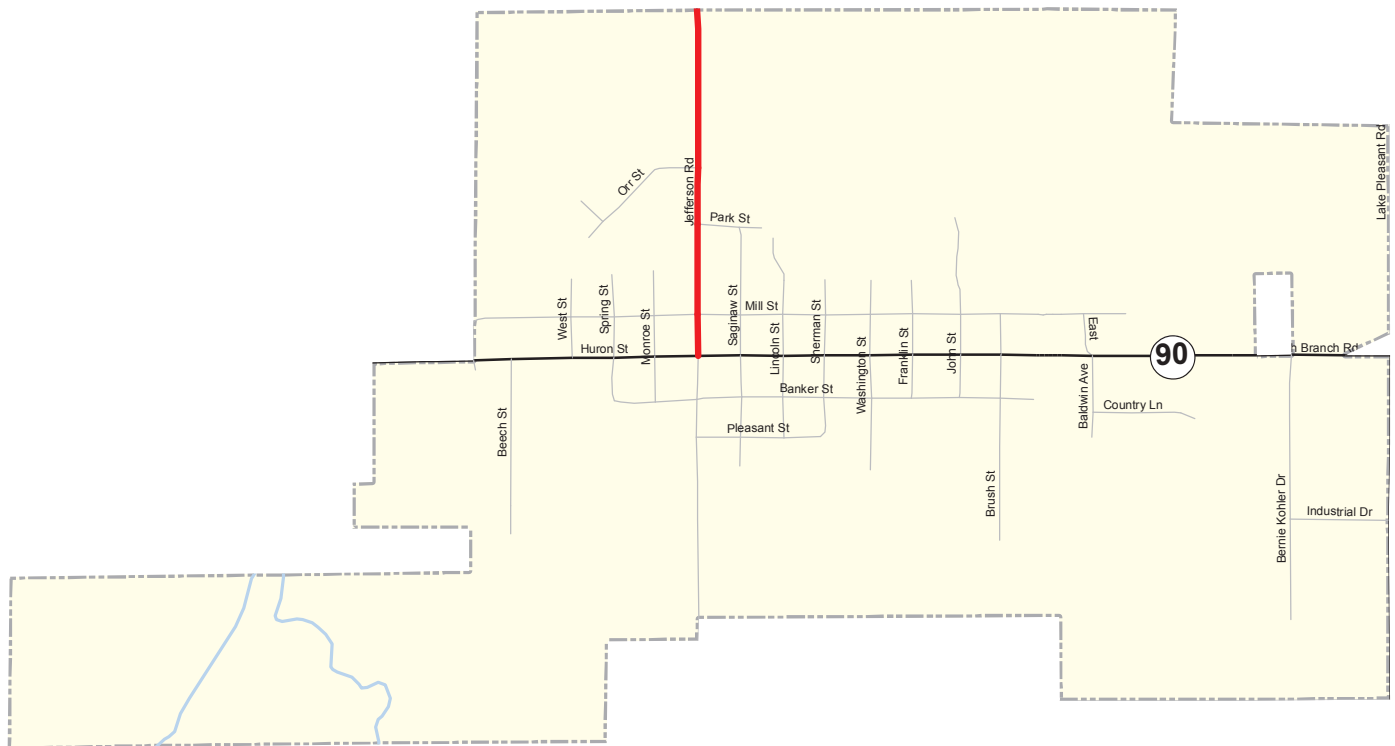
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| Interstate/Freeway | Collectors | Railroads |
| Arterials | Local Roads | Rivers and Streams |

2011 PASER Survey

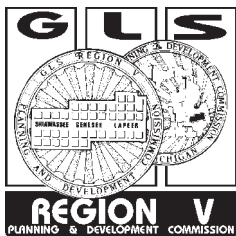
- Rating 8-10 (Routine Maintenance, 0.87 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.65 lane miles)
- Rating 1-4 (Structural Improvements, 1.03 lane miles)



Sources: Michigan Geographic Framework Vs5a
 Date: September 2011
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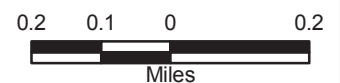
Village of North Branch



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

2011 PASER Survey

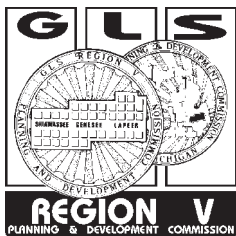
- Rating 8-10 (Routine Maintenance, 0.0 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.0 lane miles)
- Rating 1-4 (Structural Improvements, 1.46 lane miles)



Sources: Michigan Geographic Framework V/s5a
Date: September 2011
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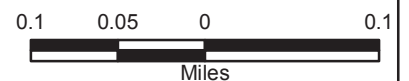
Village of Otter Lake



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

2011 PASER Survey

- Rating 8-10 (Routine Maintenance, 0.16 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 1.33 lane miles)
- Rating 1-4 (Structural Improvements, 0.45 lane miles)



Sources: Michigan Geographic Framework Vs5a
 Date: September 2011
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Concrete - PASER Manual Rating System

PASER — Rating System

Rating system

Surface rating	Visible distress *	General condition/ Treatment measures
10 Excellent	None	New pavement. No maintenance required.
9 Excellent	Traffic wear in wheelpath. Slight map cracking or pop-outs.	Recent concrete overlay or joint rehabilitation—like new. No maintenance required.
8 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. Recent asphalt overlay. Little or no maintenance required.
7 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) or utility patch. More extensive surface scaling. Seal open joints and other routine maintenance.
6 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.

* Note: Individual roadways may not have all of the types of distress listed for any particular rating. They may have only one or two types.

PASER — Rating System

Rating system

Surface rating	Visible distress *	General condition/ Treatment measures
5 Fair	<p>Moderate to severe polishing or scaling over 25% of the surface.</p> <p>High reinforcing steel causing surface spalling.</p> <p>Some joints and cracks have begun spalling.</p> <p>First signs of joint or crack faulting (1/4").</p> <p>Multiple corner cracks with broken pieces.</p> <p>Moderate settlement or frost heave areas.</p> <p>Patching showing distress.</p>	<p>First signs of joint or crack spalling or faulting.</p> <p>Grind to repair surface defects.</p> <p>Some partial depth joint repairs needed.</p>
4 Fair	<p>Severe polishing, scaling, map cracking or spalling, over 50% of the area.</p> <p>Joints and cracks show moderate to severe spalling.</p> <p>Pumping and faulting of joints (1/2") with fair ride.</p> <p>Several slabs have multiple transverse or meander cracks with moderate spalling. Spalled area broken into several pieces.</p> <p>Corner cracks with missing pieces or patches.</p> <p>Pavement blowups.</p>	<p>Needs some full depth repairs, grinding, and/or asphalt overlay to correct surface defects.</p>
3 Poor	<p>Most joints and cracks are open, with multiple parallel cracks, severe spalling or faulting.</p> <p>D-cracking is evident.</p> <p>Severe faulting (1") giving poor ride.</p> <p>Extensive patching in fair to poor condition.</p> <p>Many transverse and meander cracks, open and severely spalled.</p>	<p>Needs extensive full depth patching plus some full slab replacement.</p>
2 Very Poor	<p>Extensive slab cracking, severely spalled and patched.</p> <p>Joints failed.</p> <p>Patching in very poor condition.</p> <p>Severe and extensive settlements or frost heaves.</p>	<p>Recycle and/or rebuild pavement.</p>
1 Failed	<p>Restricted speed.</p> <p>Extensive potholes.</p> <p>Almost total loss of pavement integrity.</p>	<p>Total reconstruction.</p>

* Note: Individual roadways may not have all of the types of distress listed for any particular rating. They may have only one or two types.

Asphalt - PASER Manual Rating System

PASER — Rating System

Surface Rating	Visible Distress*	General Condition/ Treatment Measures
5 Fair	<p>Moderate to severe ravelling (loss of fine and coarse aggregate).</p> <p>Longitudinal and transverse cracks (open 1/2") show first signs of slight ravelling and secondary cracks. First signs of longitudinal cracks near pavement edge.</p> <p>Block cracking up to 50% of surface.</p> <p>Extensive to severe flushing or polishing.</p> <p>Some patching or edge wedging in good condition.</p>	<p>Surface aging, sound structural condition.</p> <p>Needs sealcoat or nonstructural overlay.</p>
4 Fair	<p>Severe surface ravelling.</p> <p>Multiple longitudinal and transverse cracking with slight ravelling.</p> <p>Longitudinal cracking in wheel path.</p> <p>Block cracking (over 50% of surface).</p> <p>Patching in fair condition.</p> <p>Slight rutting or distortions (1/2" deep or less).</p>	<p>Significant aging and first signs of need for strengthening. Would benefit from recycling or overlay.</p>
3 Poor	<p>Closely spaced longitudinal and transverse cracks often showing ravelling and crack erosion.</p> <p>Severe block cracking.</p> <p>Some alligator cracking (less than 25% of surface).</p> <p>Patches in fair to poor condition.</p> <p>Moderate rutting or distortion (1" or 2" deep).</p> <p>Occasional potholes.</p>	<p>Needs patching and major overlay or complete recycling.</p>
2 Very Poor	<p>Alligator cracking (over 25% of surface).</p> <p>Severe distortions (over 2" deep).</p> <p>Extensive patching in poor condition.</p> <p>Potholes.</p>	<p>Severe deterioration.</p> <p>Needs reconstruction with extensive base repair.</p>
1 Failed	<p>Severe distress with extensive loss of surface integrity.</p>	<p>Failed. Needs total reconstruction.</p>

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

PASER — Rating System

Rating System

Surface Rating	Visible Distress*	General Condition/ Treatment Measures
10 Excellent	None.	New construction.
9 Excellent	None.	Recent overlay, like new.
8 Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). All cracks sealed or tight (open 1/4" or less).	Recent sealcoat or new road mix. Little or no maintenance required.
7 Good	Very slight or no ravelling, surface shows some traffic wear. Longitudinal cracks (open 1/4") due to reflection or paving joints. Transverse cracks (open 1/4") spaced 10 feet or more apart, little or slight crack ravelling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6 Good	Slight ravelling (loss of fines) and traffic wear. Longitudinal cracks (open 1/4"—1/2") due to reflection and paving joints. Transverse cracking (open 1/4" to 1/2") some spaced less than 10 feet. First sign of block cracking. Slight to moderate flushing or polishing. Occasional patching in good condition.	Show signs of aging, sound structural condition. Could extend life with sealcoat.

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