The State of Michigan Transportation Asset Management Council

2012 PASER Survey
of
Lapeer County

Prepared by the
Genesee County Metropolitan Planning Commission

The State of Michigan
Transportation Asset Management Council
2012 PASER Road Survey
Lapeer County

Project overview:

On June 19, 20 and 25, 2012, 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 7.4 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 Lapeer County road rating project there was always one Region V representative, one LCRC representative and one MDOT representative present. It took 22 hours to rate approximately 422 linear miles of road, averaging 19 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:

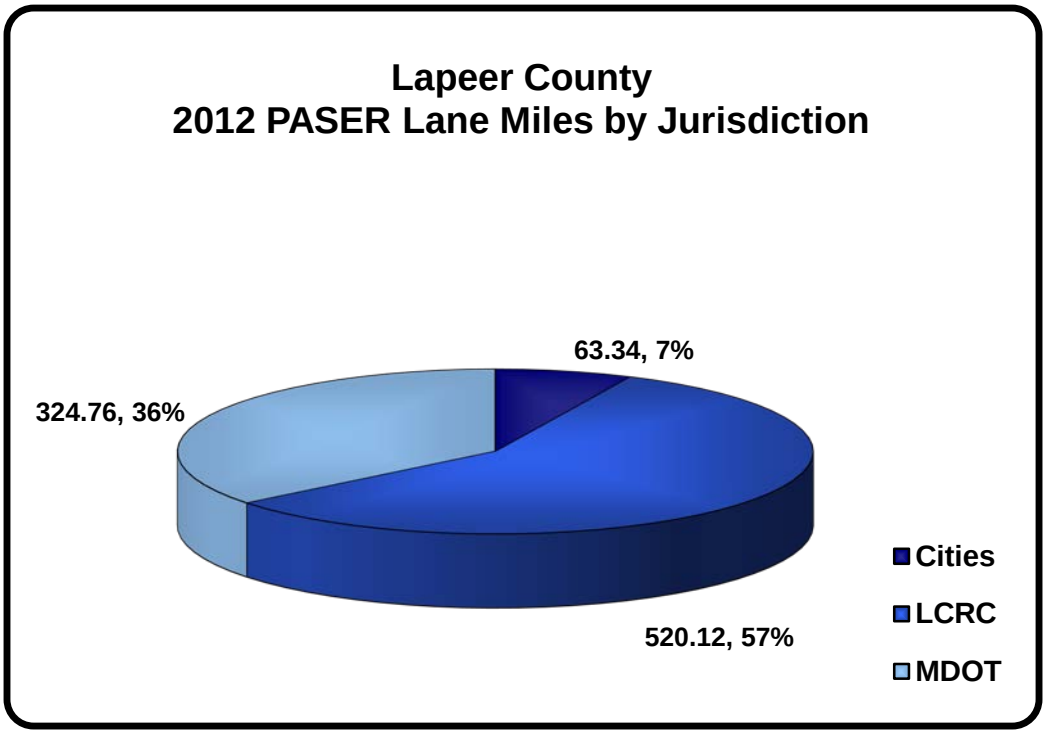
The Lapeer County Federal Aid network is comprised of approximately 908.22 lane miles. Of the total, 520.12 (57%) lane miles are within Townships, which are under the jurisdiction of the Lapeer County Road Commission (LCRC). Local Road agencies with the greatest amount of federal aid lane miles within their jurisdiction are MDOT with approximately 324.76 lane miles and the City of Lapeer with approximately 41.34 lane miles of federal aid roads. Of the total roads surveyed, approximately 775 miles (85.3%) were Asphalt and 133 miles (14.7%) were concrete.

2012 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	1.06	0.00	0.00	1.06	1.7%
Clifford	3.36	1.99	0.00	5.35	8.4%
Columbiaville	2.29	1.03	0.00	3.32	5.2%
Dryden	0.75	0.73	0.70	2.18	3.4%
Imlay City	3.39	1.77	0.00	5.16	8.2%
Lapeer	29.23	10.03	2.08	41.34	65.3%
Metamora	0.00	0.65	0.87	1.52	2.4%
North Branch	1.46	0.00	0.00	1.46	2.3%
Otter Lake	0.77	0.00	1.17	1.95	3.1%
Total	42.31	16.20	4.83	63.34	100%
Percentage	67%	25%	8%	100%	

2012 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	6.17	6.08	4.95	17.20	3.3%
Arcadia Twp	32.30	0.00	0.00	32.30	6.2%
Attica Twp	16.58	5.18	14.44	36.21	7.0%
Burlington Twp	25.60	0.00	0.38	25.97	5.0%
Burnside Twp	11.98	0.00	0.00	11.98	2.3%
Deerfield Twp	18.84	9.76	0.00	28.60	5.5%
Dryden Twp	22.34	1.38	0.98	24.70	4.7%
Elba Twp	39.28	10.10	0.50	49.88	9.6%
Goodland Twp	19.42	3.92	0.00	23.34	4.5%
Hadley Twp	25.06	7.05	0.50	32.61	6.3%
Imlay Twp	12.05	2.47	3.60	18.13	3.5%
Lapeer Twp	27.28	9.34	13.81	50.44	9.7%
Marathon Twp	22.12	11.05	0.00	33.17	6.4%
Mayfield Twp	22.98	10.14	7.30	40.42	7.8%
Metamora Twp	5.55	5.12	4.70	15.37	3.0%
North Branch Twp	23.12	0.00	0.00	23.12	4.4%
Oregon Twp	39.10	0.23	0.00	39.34	7.6%
Rich Twp	17.13	0.00	0.23	17.36	3.3%
LCRC Total	386.90	81.83	51.39	520.12	100%
Percentage	74%	16%	10%	100%	

2012 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	42.31	16.20	4.83	**63.34**	**7%**
LCRC	386.90	81.83	51.39	**520.12**	**57%**
MDOT	81.65	145.08	98.03	**324.76**	**36%**
Lapeer Total	**510.86**	**243.11**	**154.25**	**908.22**	**100%**
Percentage	**56%**	**27%**	**17%**	**100%**	

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

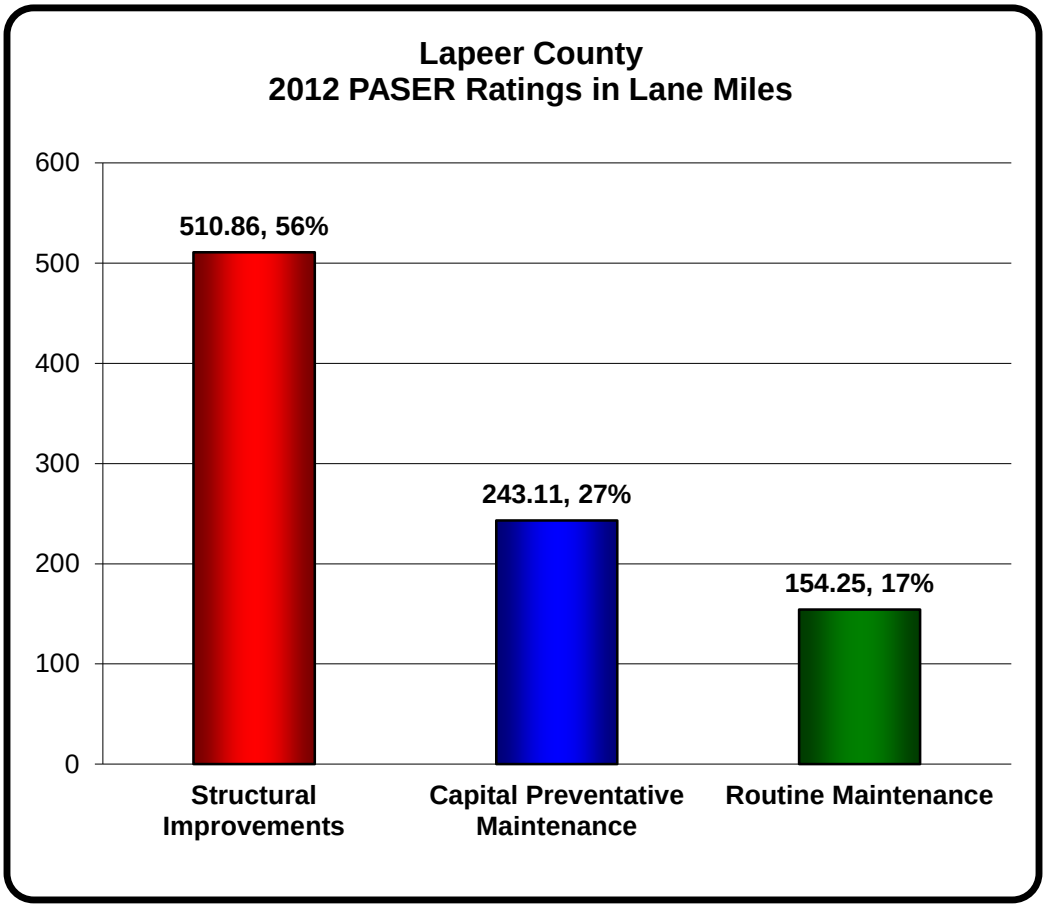


Results:

Approximately 908.22 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, 510.86 lane miles (56%) received a rating less than or equal to 4; 243.11 lane miles (27%) of the roads rated received a rating of 5, 6 or 7; and 154.25 lane miles (17%) 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:

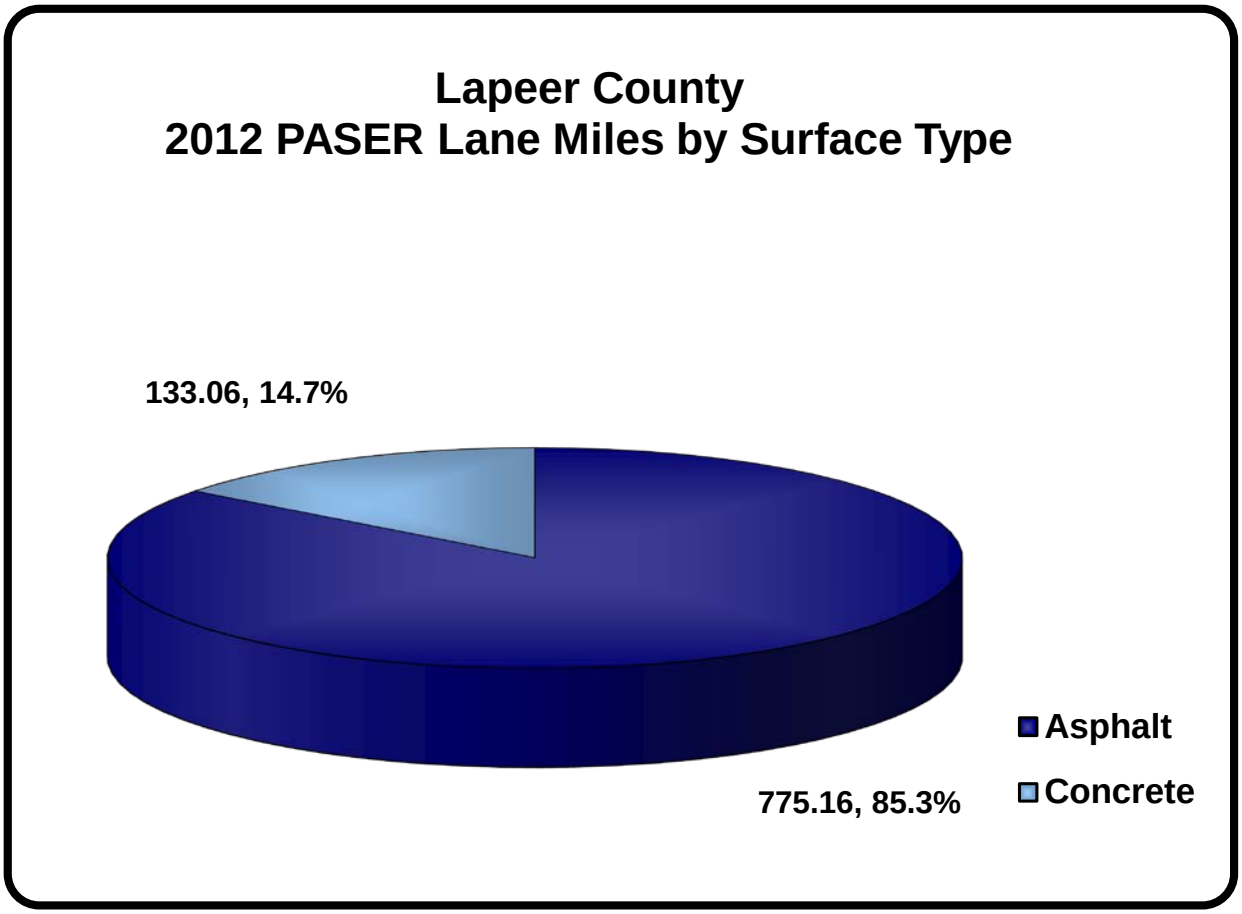
- Roads receiving a rating less than or equal to 4 require Structural Improvements
- Roads receiving a rating of 5-7 require Capital Preventive Maintenance
- Roads receiving a rating of 8 or better require only Routine Maintenance

Lapeer County 2012 PASER Ratings			
PASER Rating	Prescribed Fix	Total Lane Miles	Percentage of PASER Lane Miles
0 to 4	Structural Improvements	510.86	56%
5 to 7	Capital Preventative Maintenance	243.11	27%
8 to 10	Routine Maintenance	154.25	17%

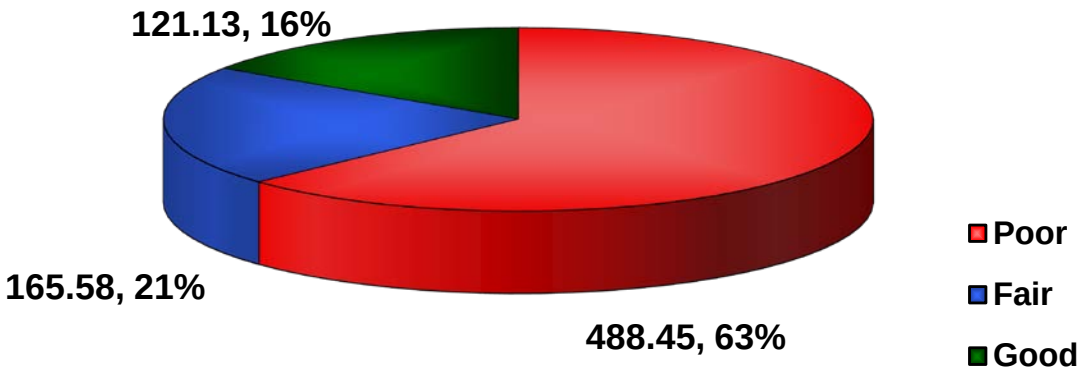


The following tables provide a summary of the 2012 PASER survey rating by surface type.

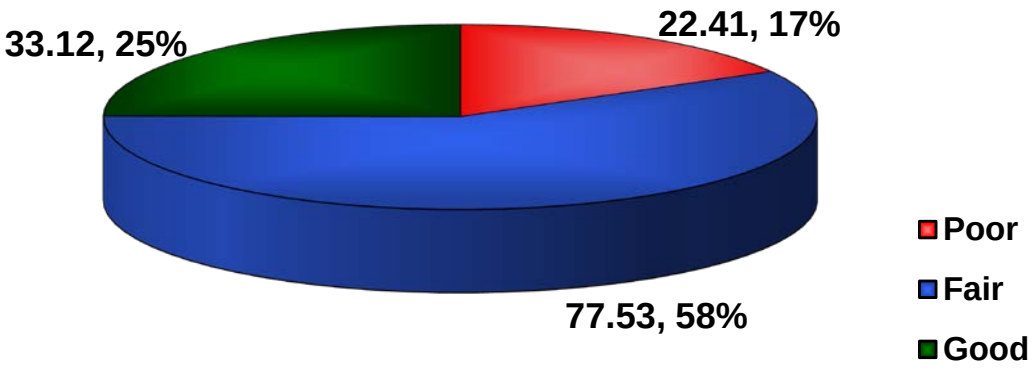
2012 PASER Rating by Surface Type					
Description	**0 to 4 Structural Improvements**	**5 to 7 Capital Preventative Maintenance**	**8 to 10 Routine Maintenance**	**Total Lane Miles**	**Percentage of PASER Lane Miles in Jurisdiction**
Asphalt	488.45	165.58	121.13	**775.16**	**85.3%**
Concrete	22.41	77.53	33.12	**133.06**	**14.7%**
Total	**510.86**	**243.11**	**154.25**	**908.22**	**100%**
Total %	**56%**	**27%**	**17%**	**100%**	



Lapeer County 2012 PASER
Asphalt Ratings in Lane Miles

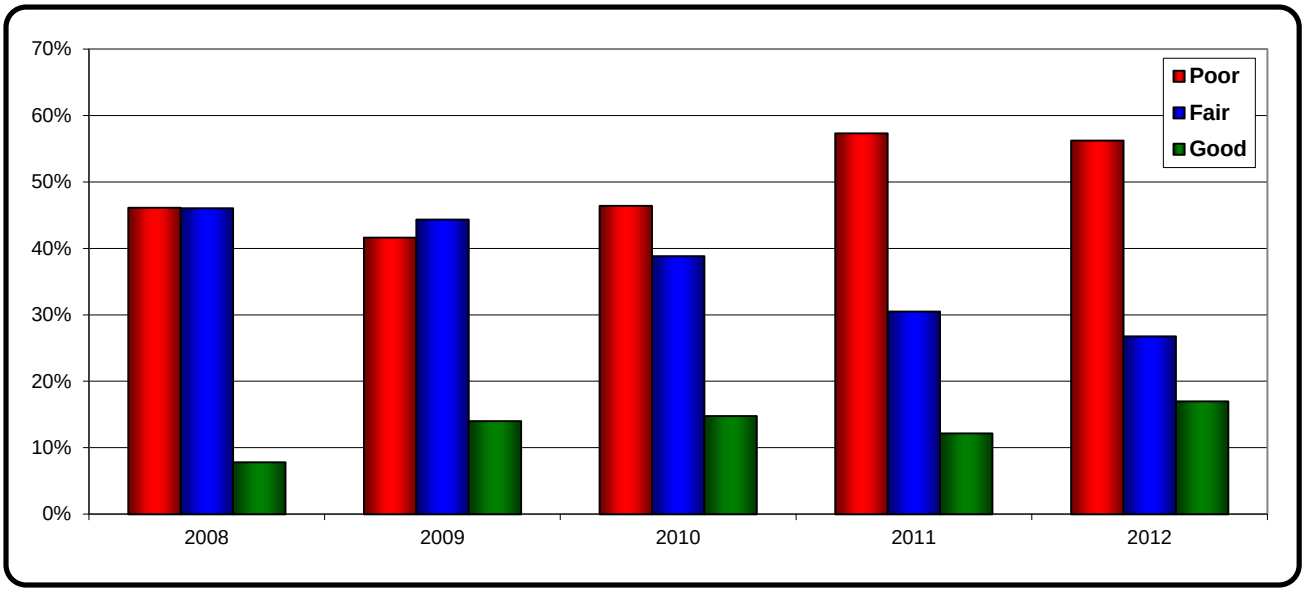


Lapeer County 2012 PASER
Concrete Ratings in Lane Miles

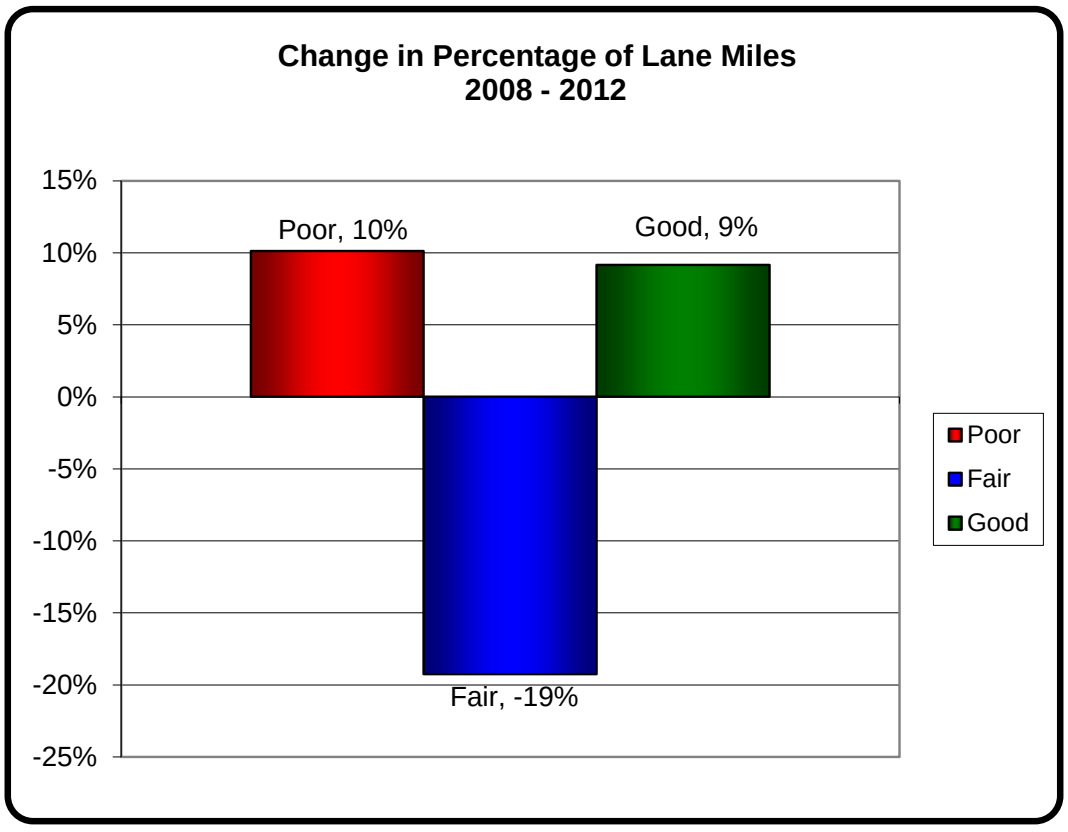


Comparison of 2008 to 2012 Lapeer County PASER Surveys

The following section analyzes data from PASER surveys conducted between 2008 and 2012 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.



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



The change in lane miles from 2008 to 2012 indicates a significant amount of miles decreased in the Capital Preventative Maintenance category and an increase in miles in the Routine Maintenance and Structural Improvement categories.

- In 2012, 56% (510.86 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 10% as compared to the 2008 rating distribution in the same category.

- In 2012, 27% (243.12 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 19% as compared to the 2008 rating distribution in the same category.

- In 2012, 17% (154.25 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 9% as compared to the 2008 rating distribution in the same category.

In general, the comparison indicates that the overall system is deteriorating rather then 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 2008 and 2012 and the change in each rating category between 2008 to 2012 for each jurisdiction and the County as a whole.

Almont	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	74%	60%	59%	45%	0%	-74%
Poor 0 to 4	26%	40%	41%	55%	100%	74%
			2012 Lane Miles:	1.06		

Clifford	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	39%	39%	0%	0%	0%
Fair 7 to 5	0%	0%	0%	39%	37%	37%
Poor 0 to 4	100%	61%	61%	61%	63%	-37%
			2012 Lane Miles:	5.35		

Columbiaville	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	22%	22%	22%	0%	0%
Fair 7 to 5	78%	45%	45%	43%	31%	-47%
Poor 0 to 4	22%	33%	33%	35%	69%	47%
			2012 Lane Miles:	3.32		

Dryden	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	42%	70%	69%	32%	32%
Fair 7 to 5	0%	58%	30%	31%	34%	34%
Poor 0 to 4	100%	0%	0%	0%	34%	-66%
			2012 Lane Miles:	2.18		

Imlay City	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	25%	13%	0%	0%
Fair 7 to 5	0%	0%	0%	12%	34%	34%
Poor 0 to 4	100%	100%	75%	75%	66%	-34%
			2012 Lane Miles:	5.16		

Lapeer	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	2%	2%	5%	4%	5%	3%
Fair 7 to 5	40%	52%	34%	14%	24%	-16%
Poor 0 to 4	58%	46%	61%	82%	71%	13%
			2012 Lane Miles:	41.34		

Metamora	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	60%	60%	34%	57%	57%
Fair 7 to 5	0%	0%	0%	26%	43%	43%
Poor 0 to 4	100%	40%	40%	40%	0%	-100%
			2012 Lane Miles:	1.52		

North Branch	2008	2009	2010	2011	2012	Change 2008-2012
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%
			2012 Lane Miles:	1.46		

Otter Lake	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	92%	77%	77%	8%	60%	-32%
Fair 7 to 5	0%	23%	23%	68%	0%	0%
Poor 0 to 4	8%	0%	0%	24%	40%	32%
			2012 Lane Miles:	1.95		

Almont Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	17%	17%	0%	0%	29%	12%
Fair 7 to 5	56%	50%	30%	23%	35%	-21%
Poor 0 to 4	27%	33%	70%	77%	36%	9%
			2012 Lane Miles:	17.20		

Arcadia Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	48%	45%	47%	15%	0%	-48%
Poor 0 to 4	52%	55%	53%	85%	100%	48%
			2012 Lane Miles:	32.30		

Attica Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	1%	5%	6%	13%	40%	39%
Fair 7 to 5	14%	18%	17%	22%	14%	0%
Poor 0 to 4	85%	77%	77%	65%	46%	-39%
			2012 Lane Miles:	36.21		

Burlington Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	0%	0%	1%	1%
Fair 7 to 5	27%	25%	24%	12%	0%	-27%
Poor 0 to 4	73%	75%	76%	88%	99%	26%
			2012 Lane Miles:	25.97		

Burnside Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	34%	13%	8%	0%	0%	-34%
Poor 0 to 4	66%	87%	92%	100%	100%	34%
			2012 Lane Miles:	11.98		

Deerfield Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	21%	7%	0%	0%	0%
Fair 7 to 5	11%	31%	14%	34%	34%	23%
Poor 0 to 4	89%	48%	79%	66%	66%	-23%
			2012 Lane Miles:	28.60		

Dryden Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	0%	0%	4%	4%
Fair 7 to 5	47%	43%	23%	37%	6%	-41%
Poor 0 to 4	53%	57%	77%	63%	90%	37%
			2012 Lane Miles:	24.70		

Elba Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	2%	6%	9%	1%	1%	-1%
Fair 7 to 5	63%	56%	42%	36%	20%	-43%
Poor 0 to 4	35%	38%	49%	63%	79%	44%
			2012 Lane Miles:	49.88		

Goodland Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	7%	0%	0%	0%	0%	-7%
Fair 7 to 5	35%	35%	21%	14%	17%	-18%
Poor 0 to 4	58%	65%	79%	86%	83%	25%
			2012 Lane Miles:	23.34		

Hadley Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	13%	10%	13%	0%	1%	-12%
Fair 7 to 5	64%	76%	69%	54%	22%	-42%
Poor 0 to 4	23%	14%	18%	46%	77%	54%
			2012 Lane Miles:	32.61		

Imlay Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	8%	0%	0%	10%	20%	12%
Fair 7 to 5	27%	11%	8%	8%	14%	-14%
Poor 0 to 4	65%	89%	92%	82%	66%	2%
			2012 Lane Miles:	18.13		

Lapeer Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	23%	11%	2%	9%	27%	4%
Fair 7 to 5	37%	40%	37%	33%	19%	-18%
Poor 0 to 4	40%	49%	61%	58%	54%	14%
			2012 Lane Miles:	50.44		

Marathon Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	48%	51%	37%	52%	33%	-15%
Poor 0 to 4	52%	49%	63%	48%	67%	15%
			2012 Lane Miles:	33.17		

Mayfield Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	8%	32%	29%	11%	18%	10%
Fair 7 to 5	35%	24%	26%	40%	25%	-10%
Poor 0 to 4	57%	44%	45%	49%	57%	0%
			2012 Lane Miles:	40.42		

Metamora Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	17%	15%	15%	10%	31%	14%
Fair 7 to 5	69%	81%	67%	82%	33%	-36%
Poor 0 to 4	14%	4%	18%	8%	36%	22%
			2012 Lane Miles:	15.37		

North Branch Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	39%	26%	9%	0%	0%	-39%
Poor 0 to 4	61%	74%	91%	100%	100%	39%
			2012 Lane Miles:	23.12		

Oregon Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	0%	0%	0%	0%	0%	0%
Fair 7 to 5	27%	20%	12%	3%	1%	-26%
Poor 0 to 4	73%	80%	88%	97%	99%	26%
			2012 Lane Miles:	39.34		

Rich Twp	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	10%	13%	13%	13%	1%	-9%
Fair 7 to 5	4%	3%	0%	1%	0%	-4%
Poor 0 to 4	86%	84%	87%	86%	99%	13%
			2012 Lane Miles:	17.36		

LCRC	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	6%	7%	5%	4%	10%	4%
Fair 7 to 5	38%	36%	28%	26%	16%	-22%
Poor 0 to 4	56%	57%	67%	70%	74%	18%
			2012 Lane Miles:	624.68		

MDOT	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	13%	28%	32%	29%	30%	17%
Fair 7 to 5	67%	64%	64%	42%	45%	-22%
Poor 0 to 4	20%	8%	4%	29%	25%	5%
			2012 Lane Miles:	324.76		

Lapeer County	2008	2009	2010	2011	2012	Change 2008-2012
Good 8 to 10	8%	14%	15%	12%	17%	9%
Fair 7 to 5	46%	44%	39%	31%	27%	-19%
Poor 0 to 4	46%	42%	46%	57%	56%	10%
			2012 Lane Miles:	908.22		

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

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 154.25 lane miles)

Rating 5-7 (Capital Preventative Maintenance, 243.11 lane miles)

Rating 1-4 (Structural Improvements, 510.86 lane miles)

N
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S

2 1 0 2
Miles

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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GLS REGION V PLANNING & DEVELOPMENT COMMISSION

Lapeer County Road Commission Roads

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

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 51.39 lane miles)
Rating 5-7 (Capital Preventative Maintenance, 81.84 lane miles)
Rating 1-4 (Structural Improvements, 386.90 lane miles)

N
W E
S

1.5 0.75 0 1.5
Miles

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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GLS REGION V PLANNING & DEVELOPMENT COMMISSION

Lapeer County MDOT Roads

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

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 98.03 lane miles)

Rating 5-7 (Capital Preventative Maintenance, 145.08 lane miles)

Rating 1-4 (Structural Improvements, 81.65 lane miles)

N
W E
S

1.5 0.75 0 1.5
Miles

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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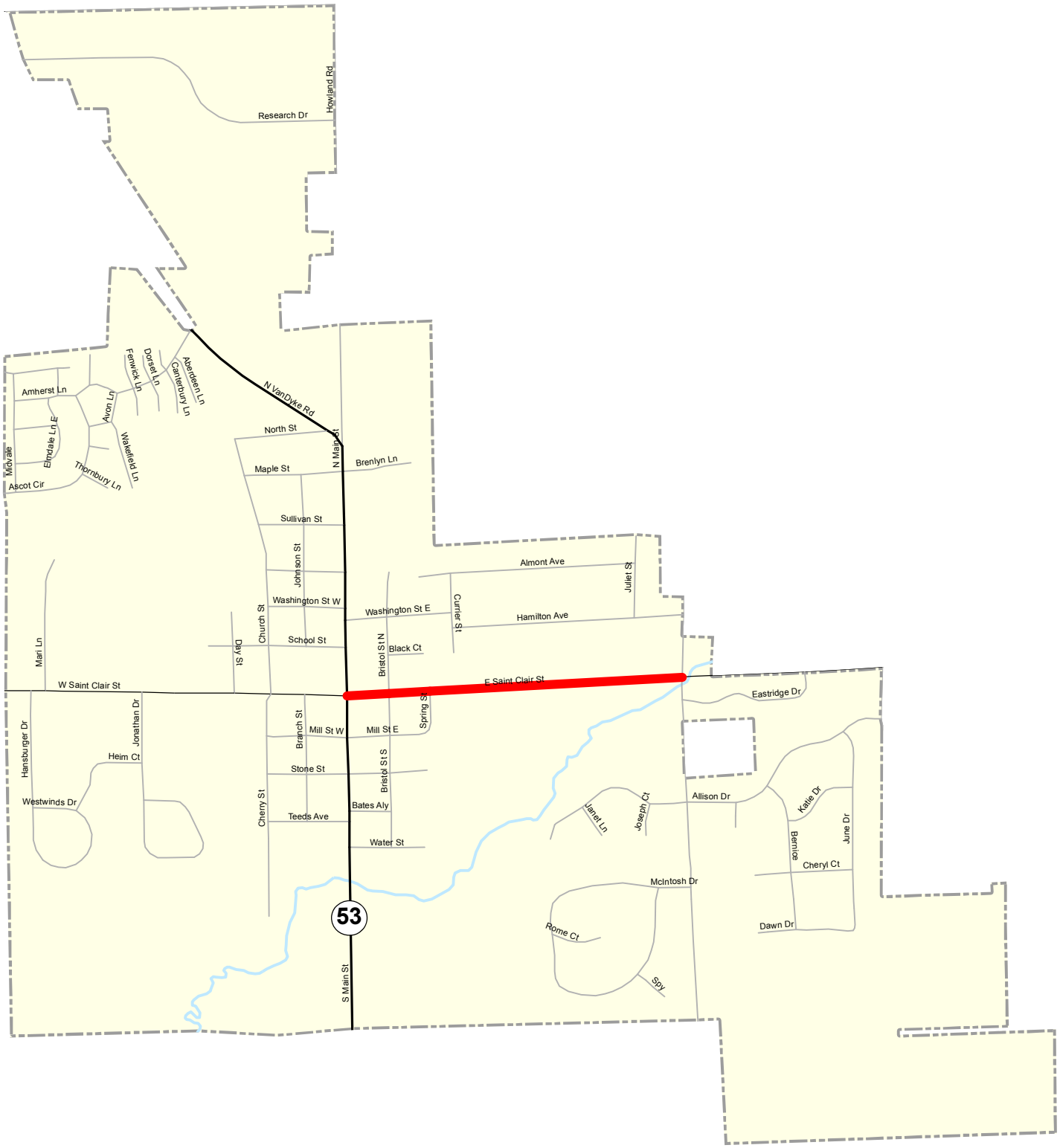
GLS REGION V PLANNING & DEVELOPMENT COMMISSION



Village of Almont

GLS REGION V PLANNING & DEVELOPMENT COMMISSION

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 0.0 miles)

Rating 5-7 (Capital Preventative Maintenance, 0.0 lane miles)

Rating 1-4 (Structural Improvements, 1.06 lane miles)

0.1 0.05 0 0.1
Miles

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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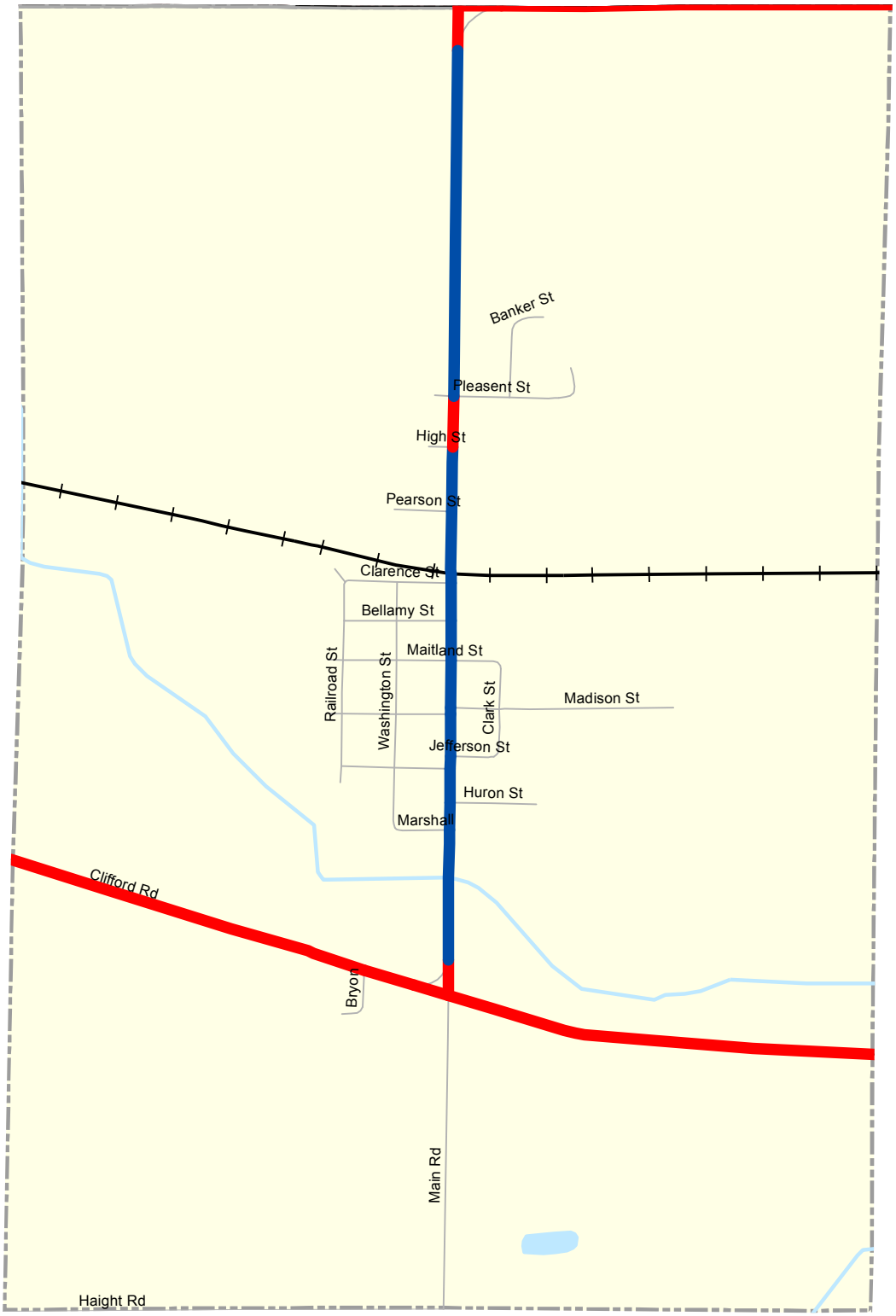

Village of Clifford

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

0.1 0.05 0 0.1
Miles

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 0.0 lane miles)
Rating 5-7 (Capital Preventative Maintenance, 1.986 lane miles)
Rating 1-4 (Structural Improvements, 3.364 lane miles)

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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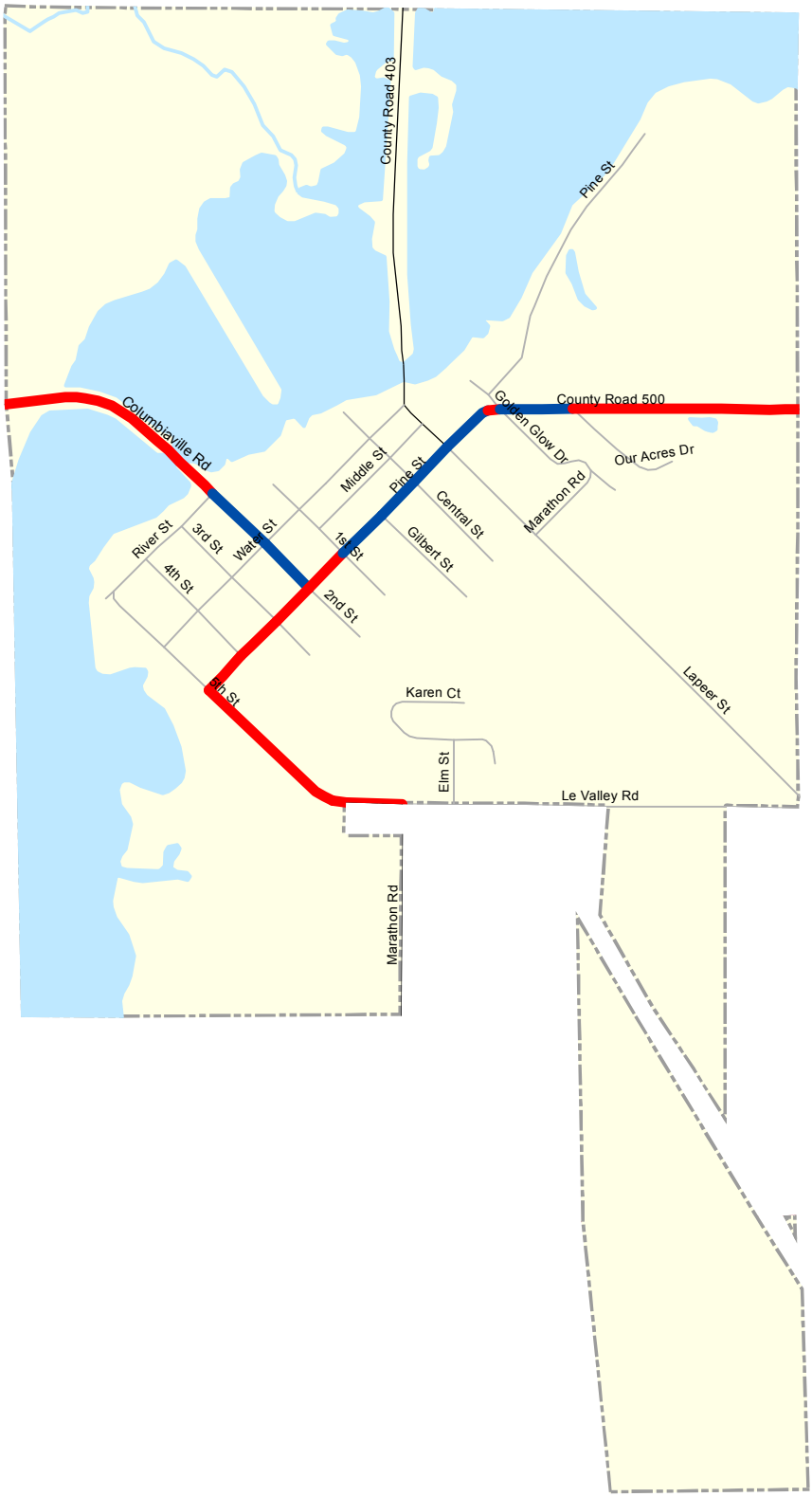
GLS REGION V PLANNING & DEVELOPMENT COMMISSION



Village of Columbiaville

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 0.0 lane miles)
Rating 5-7 (Capital Preventative Maintenance, 1.034 lane miles)
Rating 1-4 (Structural Improvements, 2.288 lane miles)

0.15 0.075 0 0.15
Miles

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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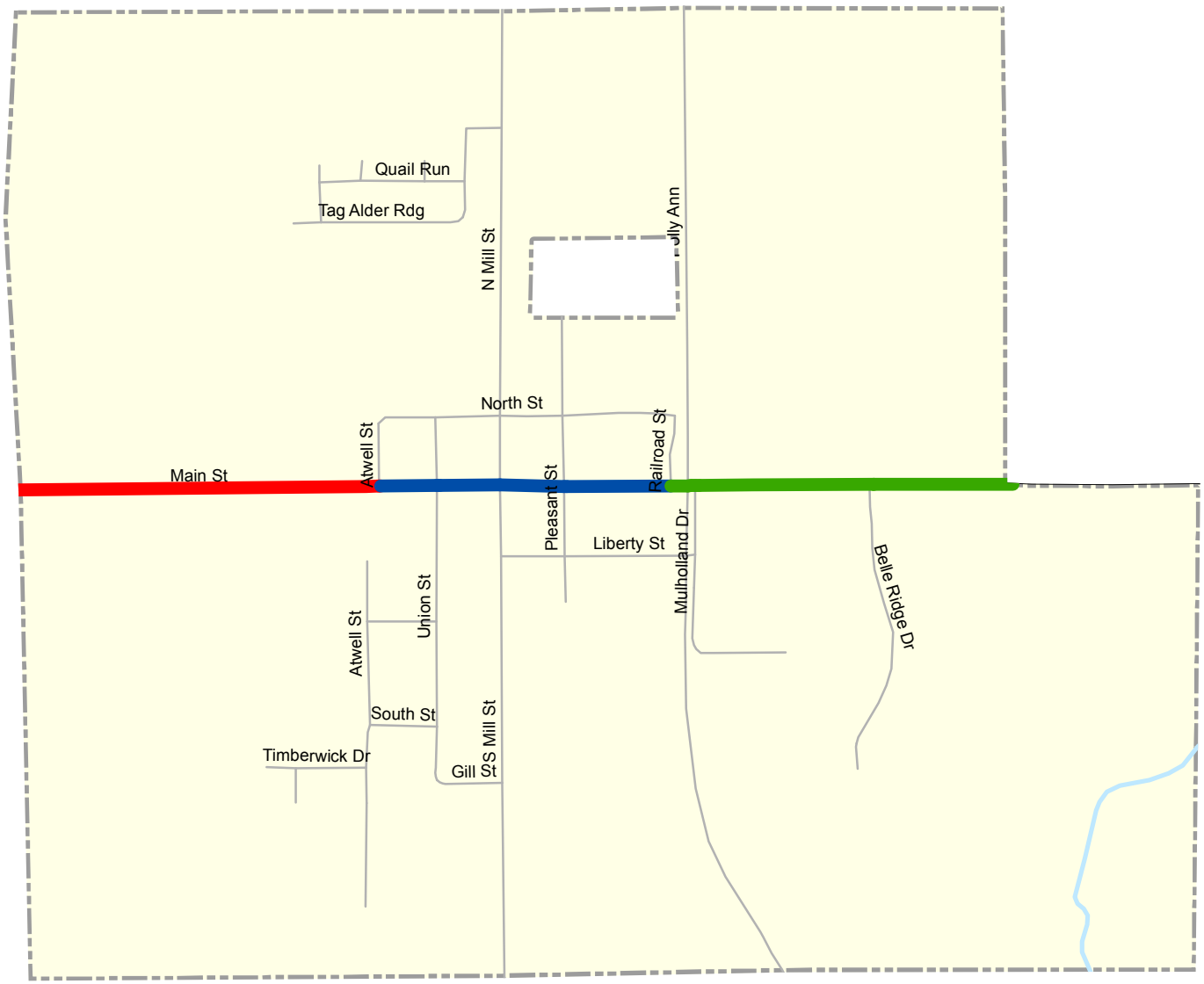
GLS REGION V PLANNING & DEVELOPMENT COMMISSION



Village of Dryden

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

0.1 0.05 0 0.1
Miles

2012 PASER Survey

- Rating 8-10 (Routine Maintenance, 0.704 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.726 lane miles)
- Rating 1-4 (Structural Improvements, 0.746 lane miles)

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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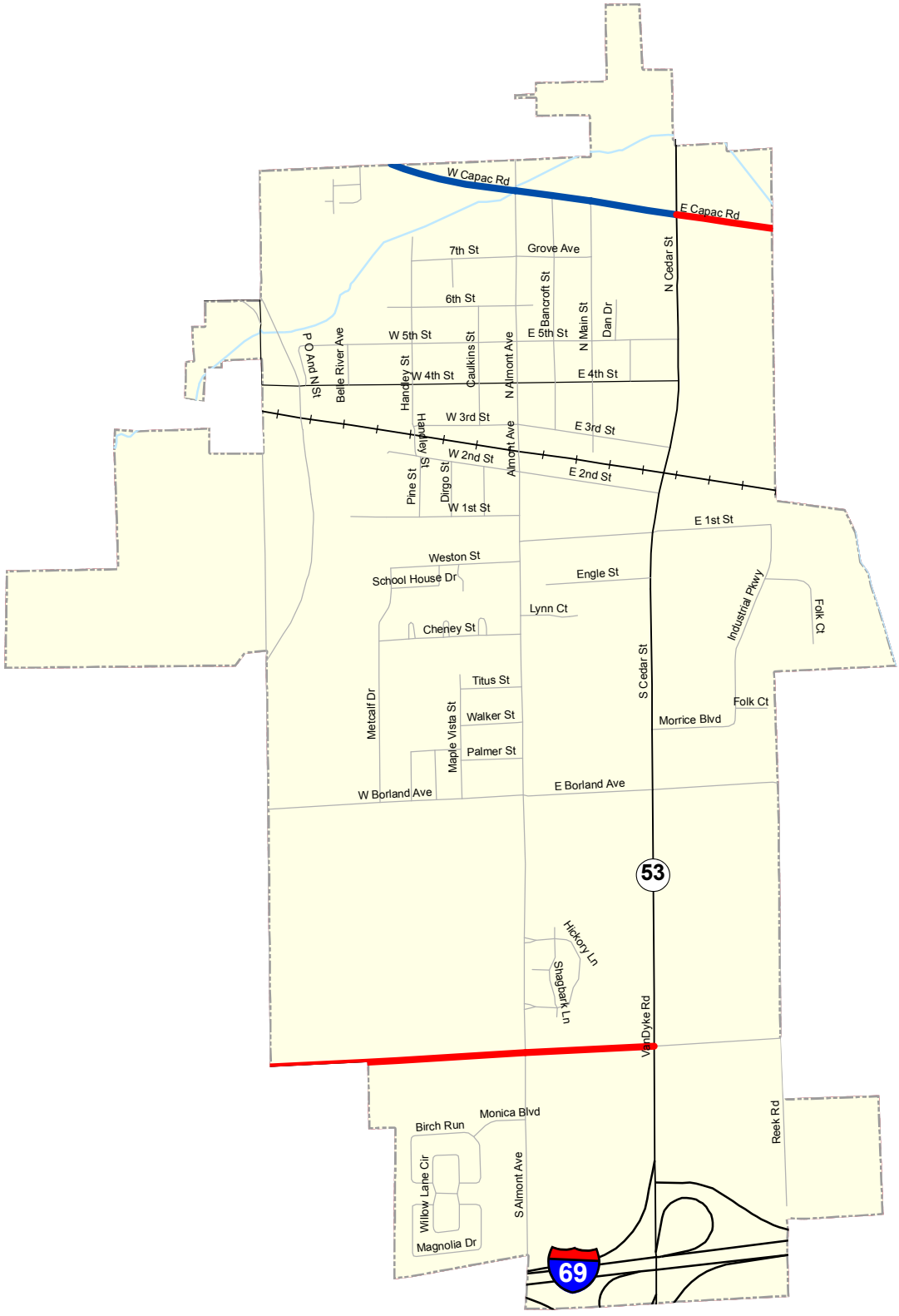
GLS REGION V PLANNING & DEVELOPMENT COMMISSION



Imlay City

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 0.0 lane miles)
Rating 5-7 (Capital Preventative Maintenance, 1.772 miles)
Rating 1-4 (Structural Improvements, 3.392 lane miles)

0.2 0.1 0 0.2
Miles

Sources: Michigan Geographic Framework Vs5A
Date: September 2012
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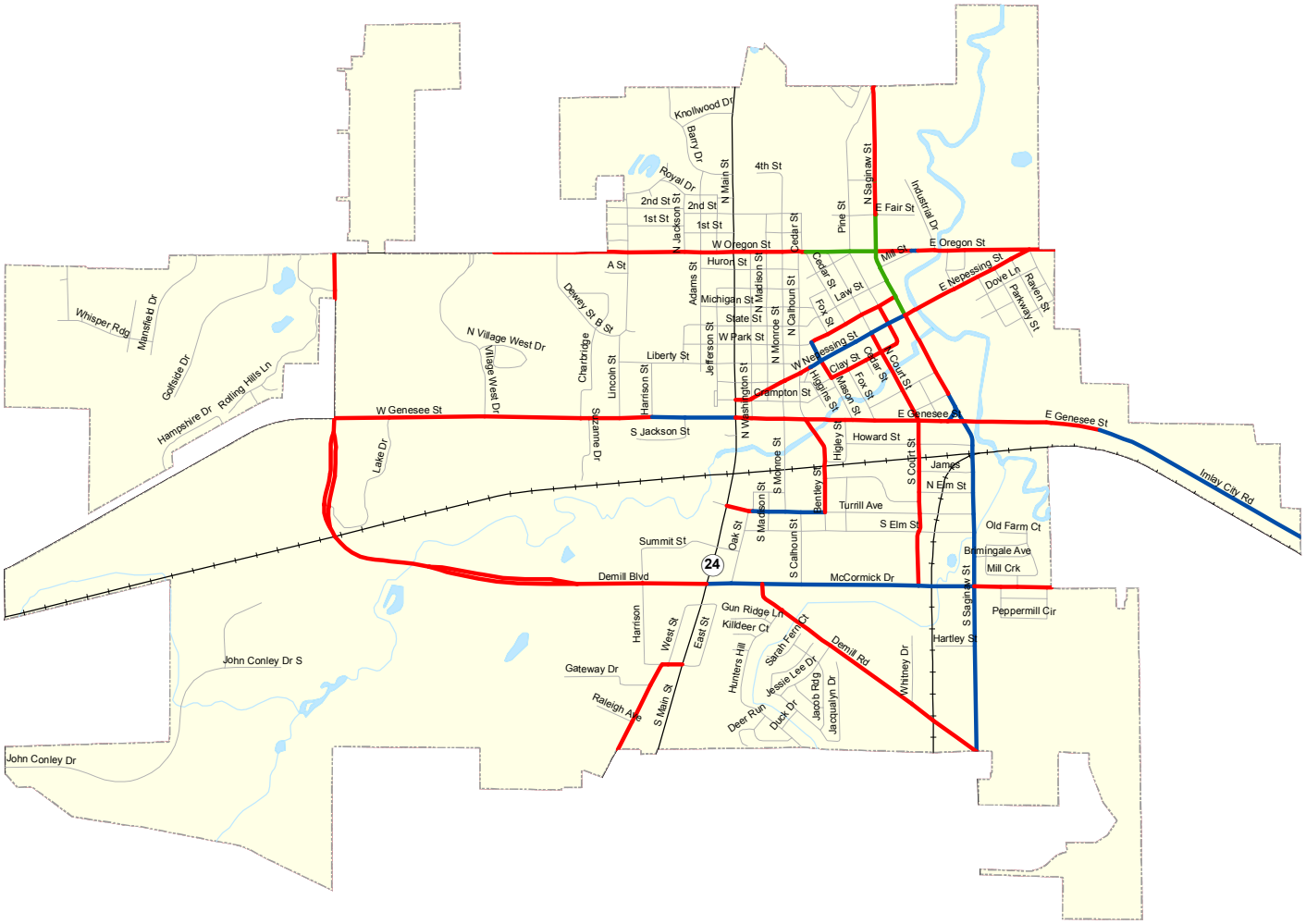
GLS REGION V PLANNING & DEVELOPMENT COMMISSION



City of Lapeer

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

0.3 0.15 0 0.3
Miles

2012 PASER Survey

- Rating 8-10 (Routine Maintenance, 2.084 lane miles)
- Rating 5-7 (Capital Preventative Maintenance, 10.026 lane miles)
- Rating 1-4 (Structural Improvements, 29.234 lane miles)

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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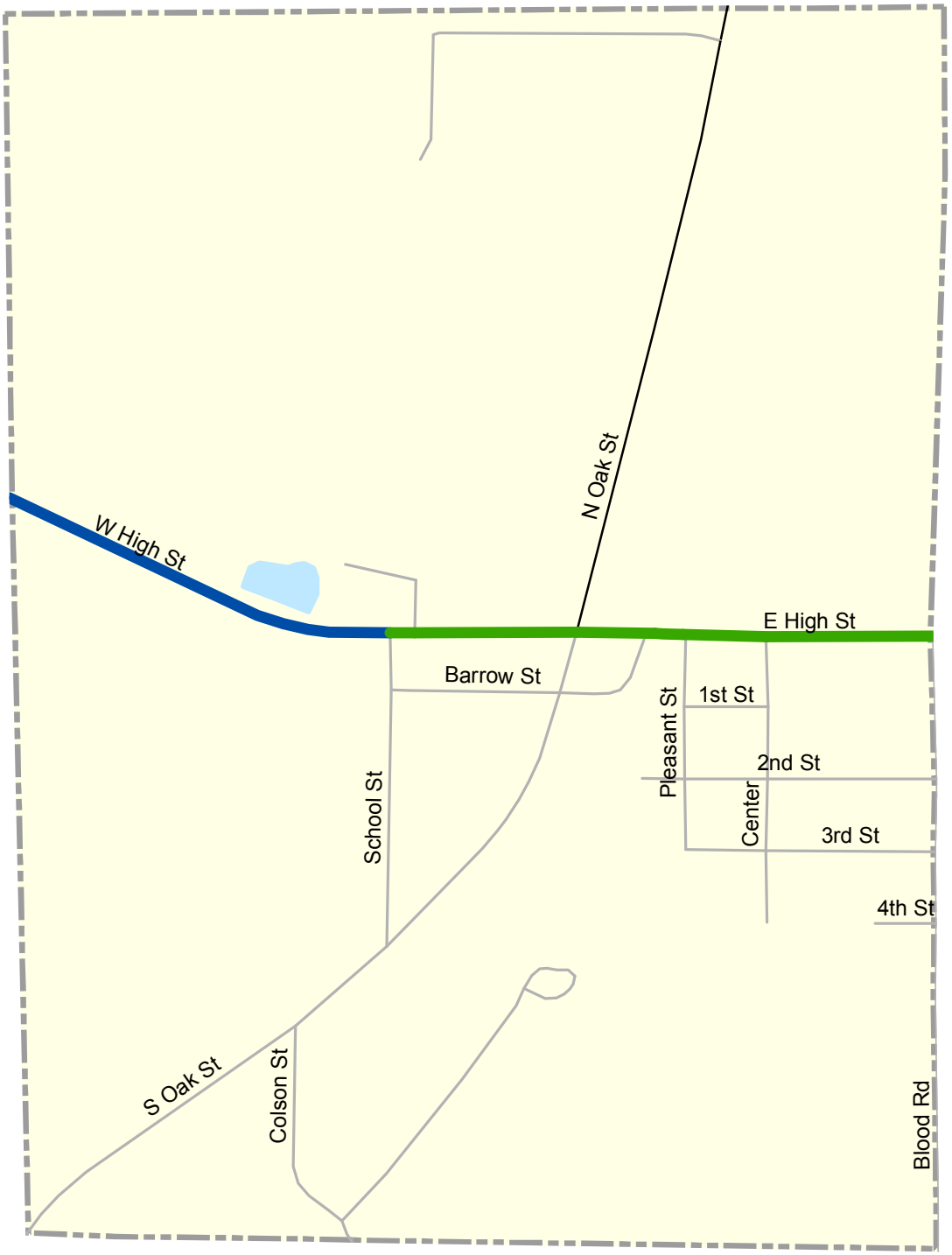
GLS REGION V PLANNING & DEVELOPMENT COMMISSION



Village of Metamora

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

0.1 0.05 0 0.1
Miles

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 0.865 lane miles)

Rating 5-7 (Capital Preventative Maintenance, 0.654 lane miles)

Rating 1-4 (Structural Improvements, 0.0 lane miles)

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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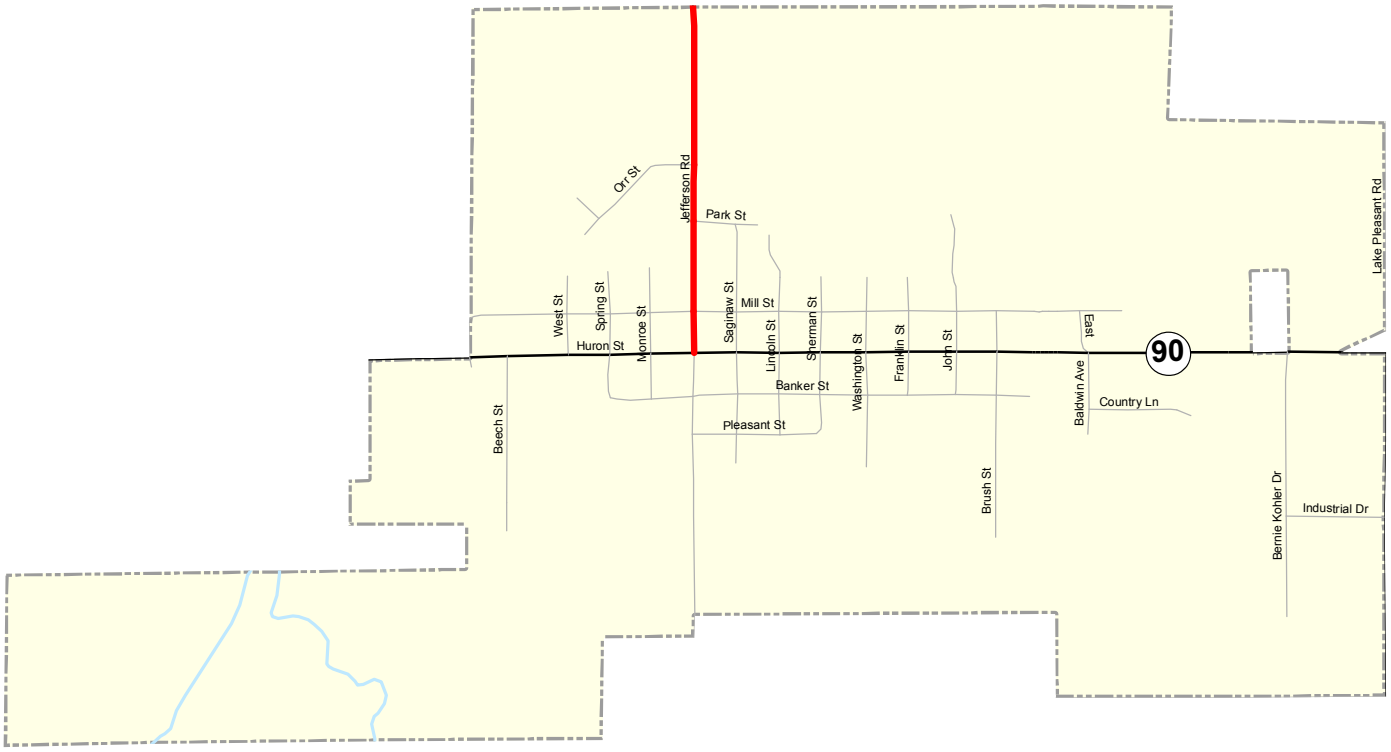
GLS REGION V PLANNING & DEVELOPMENT COMMISSION



Village of North Branch

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

0.15 0.075 0 0.15
Miles

2012 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, 1.456 lane miles)

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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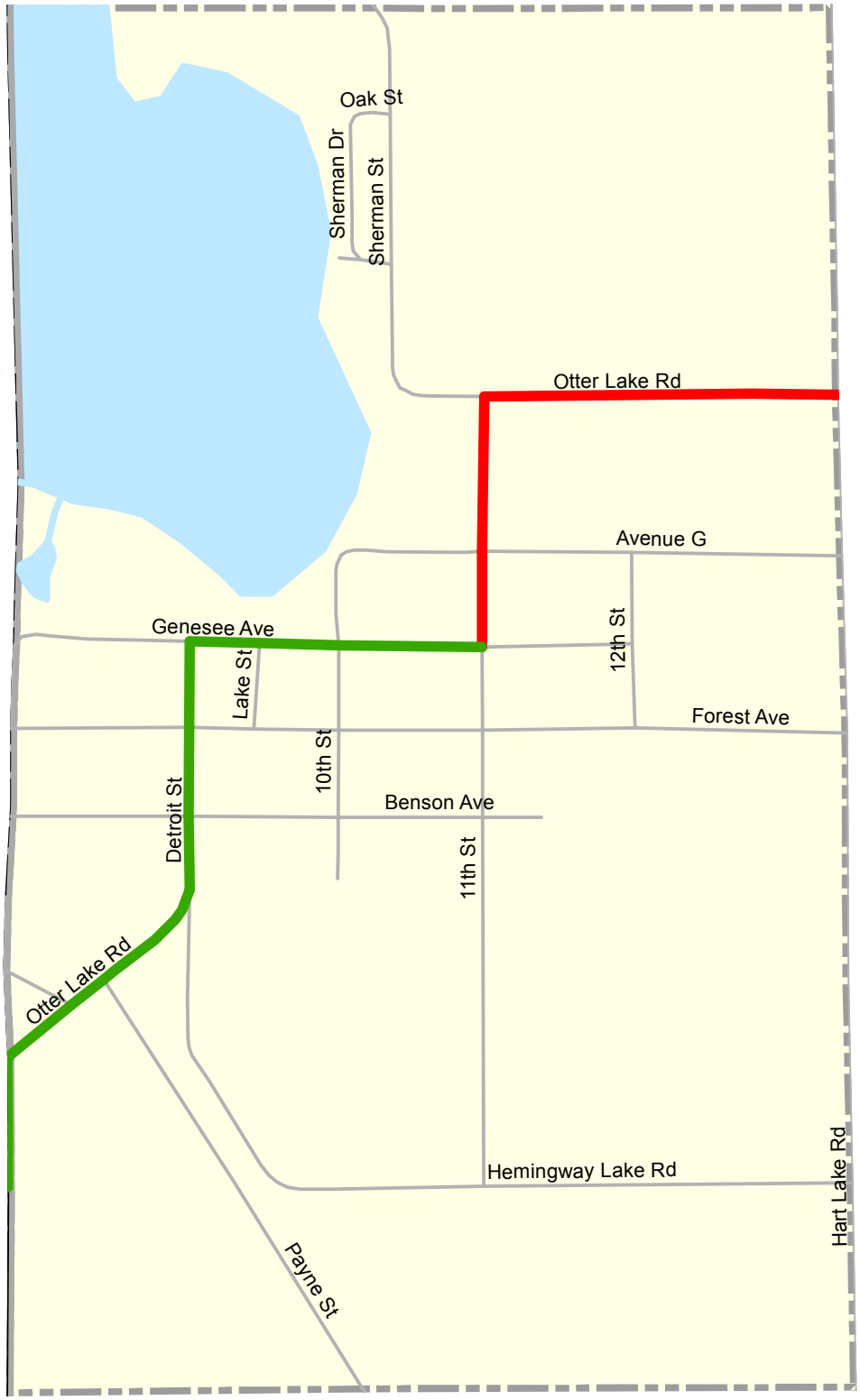
GLS REGION V PLANNING & DEVELOPMENT COMMISSION



Village of Otter Lake

GLS REGION V PLANNING & DEVELOPMENT COMMISSION

Interstate/Freeway
Arterials
Collectors
Local Roads
Railroads
Rivers and Streams

N
W E
S

2012 PASER Survey

Rating 8-10 (Routine Maintenance, 0.172 lane miles)
Rating 5-7 (Capital Preventative Maintenance, 0.0 lane miles)
Rating 1-4 (Structural Improvements, 0.774 lane miles)

0.1 0.05 0 0.1
Miles

Sources: Michigan Geographic Framework Vs5a
Date: September 2012
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Concrete - PASER Manual 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 condition. 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. 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); first 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 (¼" wide) longitudinal or transverse joints and more frequent transverse cracks (some open ¼").	First signs of shallow reinforcement or corner cracking. Needs general joint and crack sealing. Scaled areas could be overlaid.
5 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 (¼"). 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.
4 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 (½") 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.
3 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.
2 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.
1 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 Manual 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 less than 1/4").	Recent sealcoat or new cold mix. Little or no maintenance required.
7 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.
6 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. Sight to moderate flushing or polishing. Occasional patching in good condition.	Shows signs of aging. Sound structural condition. Could extend life with sealcoat.
5 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")
4 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).
3 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.
2 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.
1 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.*