



**The State of Michigan
Transportation Asset Management Council
2006 PASER Survey
Of
Lapeer County**

Prepared by the Genesee County Metropolitan Planning Commission Staff

**The State of Michigan
Transportation Asset Management Council
2006 PASER Road Survey
Lapeer County**

Project overview:

On August 7, 8 and 9, 2006, 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 6.3.9 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:

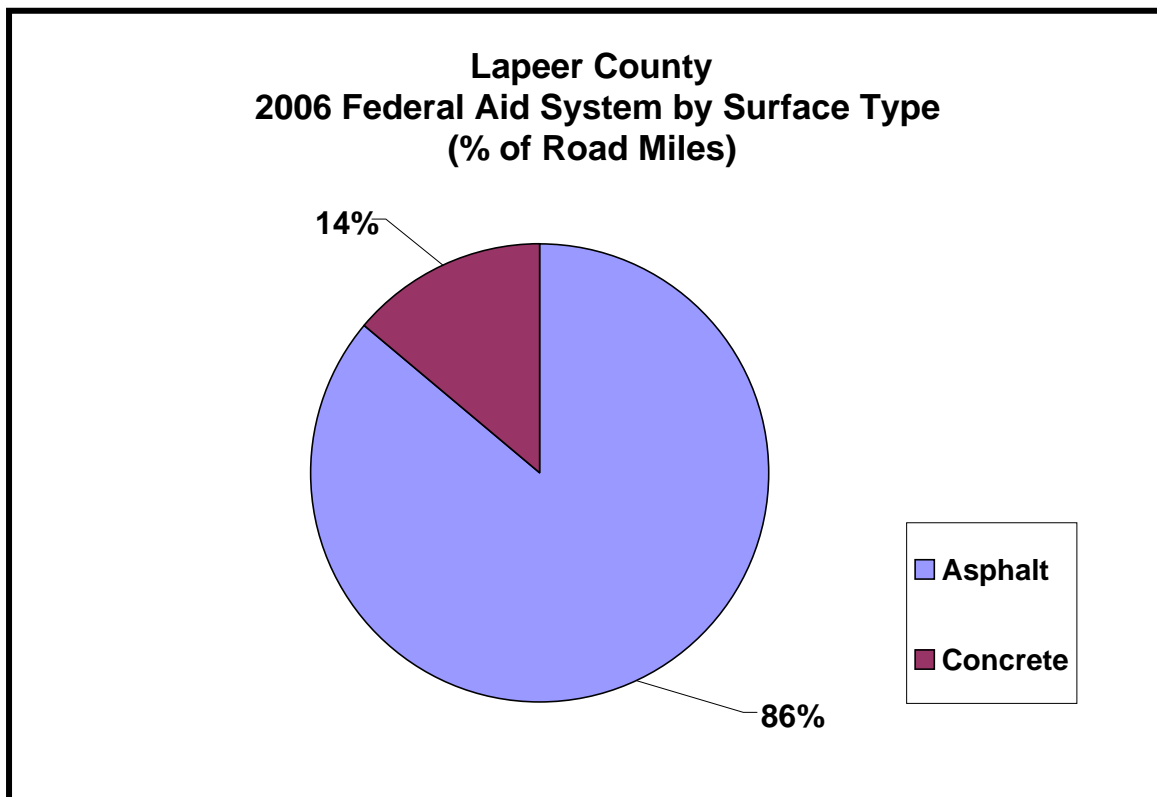
3 staff members is the optimal amount to use for collecting PASER data. One drives, one navigates and rates the roads, and the third staff member enters information into the computer. For the Lapeer County road rating project there was always one Region V representative, one LCRC representative, and one MDOT representative present. It took 20.5 hours to rate approximately 464.03 miles of road.

Training:

All participants in the survey were required to attend a daylong training session at the Hannah Community Center in East Lansing, Michigan, on June 29, 2006. 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 464.03 road miles. Of the total miles, 306.5 road miles are within Townships, which are under the jurisdiction of the Lapeer County Road Commission (LCRC). Of the total roads surveyed, 400.3.1 miles (86%) were Asphalt, 63.7 miles (14%). Local Road agencies with the greatest amount of federal aid miles within their jurisdiction are the LCRC with 306.5 miles, MDOT with 136.0 miles and the City of Lapeer with 10.3 miles of federal aid roads.



| Description | 0 to 4 | 5 to 7 | 8 to 10 | Total Miles | % of PASER Miles in Jurisdiction |
|-------------------------|---------------|---------------|----------------|--------------------|---|
| Almont | 0.19 | 0.61 | 0.21 | 1.01 | 0.22% |
| Almont Twp | 1.05 | 12.67 | 7.73 | 21.45 | 4.62% |
| Arcadia Twp | 1.70 | 14.45 | 0.00 | 16.15 | 3.48% |
| Attica Twp | 14.35 | 21.94 | 2.01 | 38.29 | 8.25% |
| Burlington Twp | 5.59 | 10.73 | 2.59 | 18.92 | 4.08% |
| Burnside Twp | 4.97 | 7.01 | 15.04 | 27.01 | 5.82% |
| Clifford | 0.00 | 2.68 | 0.00 | 2.68 | 0.58% |
| Columbiaville | 0.00 | 1.66 | 0.58 | 2.24 | 0.48% |
| Deerfield Twp | 9.40 | 4.90 | 10.37 | 24.66 | 5.32% |
| Dryden | 1.02 | 0.00 | 0.00 | 1.02 | 0.22% |
| Dryden Twp | 1.33 | 10.57 | 2.00 | 13.90 | 3.00% |
| Elba Twp | 20.61 | 15.84 | 3.16 | 39.61 | 8.54% |
| Goodland Twp | 0.49 | 13.14 | 6.05 | 19.68 | 4.24% |
| Hadley Twp | 0.69 | 9.02 | 5.92 | 15.62 | 3.37% |
| Imlay City | 3.22 | 4.89 | 0.14 | 8.25 | 1.78% |
| Imlay Twp | 7.30 | 23.58 | 2.40 | 33.28 | 7.17% |
| Lapeer | 5.14 | 6.34 | 0.87 | 12.35 | 2.66% |
| Lapeer Twp | 17.34 | 19.82 | 10.13 | 47.29 | 10.19% |
| Marathon Twp | 5.82 | 6.76 | 5.96 | 18.53 | 3.99% |
| Mayfield Twp | 5.84 | 7.48 | 11.59 | 24.91 | 5.37% |
| Metamora | 0.43 | 0.84 | 0.00 | 1.28 | 0.27% |
| Metamora Twp | 2.36 | 10.41 | 2.33 | 15.09 | 3.25% |
| North Branch | 0.00 | 0.50 | 0.00 | 0.50 | 0.11% |
| North Branch Twp | 3.10 | 9.46 | 4.94 | 17.49 | 3.77% |
| Oregon Twp | 9.17 | 8.55 | 4.92 | 22.64 | 4.88% |
| Otter Lake | 0.08 | 0.00 | 0.89 | 0.97 | 0.21% |
| Rich Twp | 5.32 | 7.87 | 6.05 | 19.24 | 4.15% |
| Total | 126.49 | 231.70 | 105.84 | 464.03 | 100% |

*** Township Federal Aid roads are under the Jurisdiction of the Lapeer County Road Commission

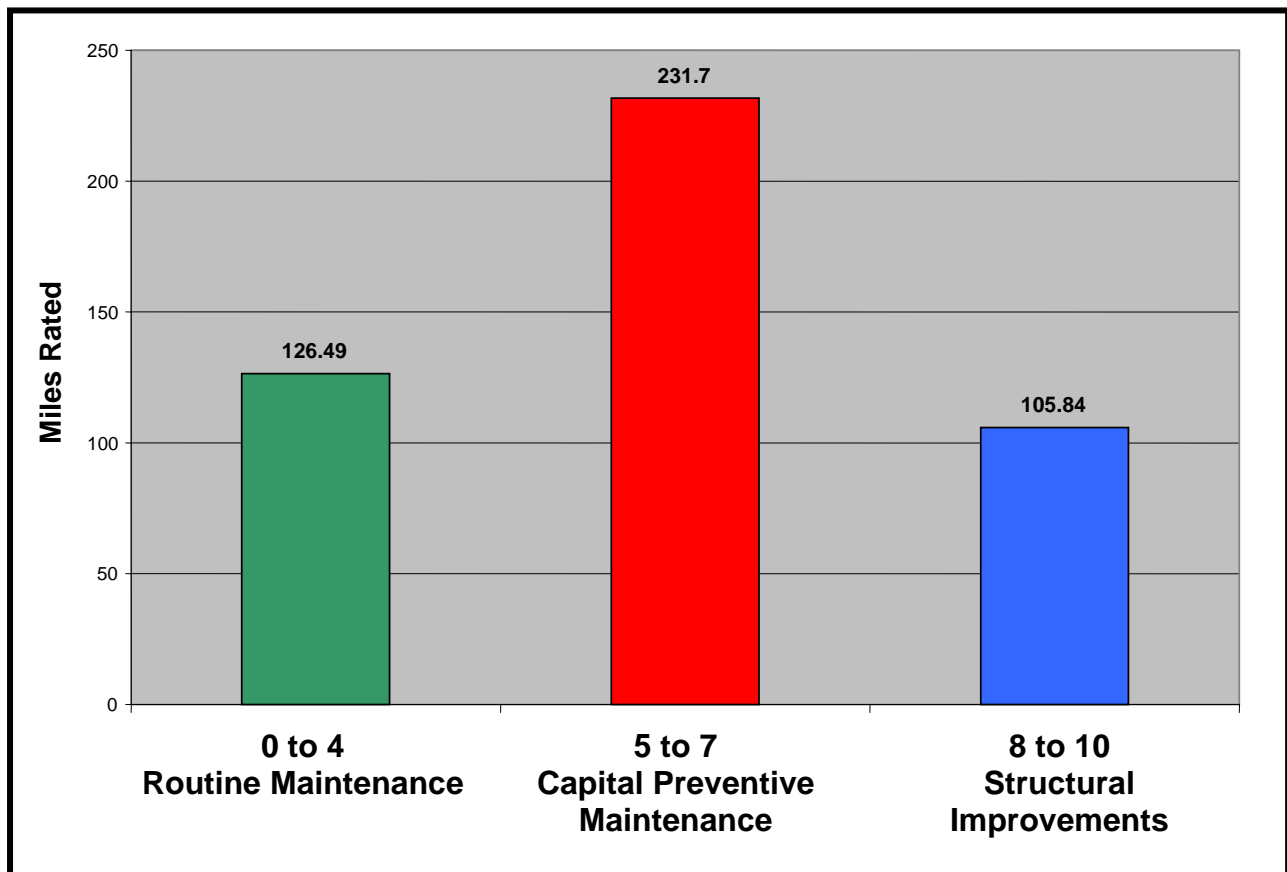
Results:

Approximately 463.03 lane miles of federal aid eligible roads were rated for this project. The project was completed in 20.5 hours with an average rating speed of 23 miles per hour. 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. Twenty three percent (23%) of the roads rated received a rating of 8 or better, Fifty percent (50%) of the roads rated received a rating of 5, 6 or 7 and twenty seven percent (27%) received a rating less than or equal to 4. The Asset Management Council has prescribed a fix for each of the PASER rating categories:

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

| PASER Rating | Prescribed Fix | Miles | Percent of Total Miles Rated |
|---------------|--------------------------------|--------|------------------------------|
| 10 – 8 | Routine Maintenance | 105.84 | 23% |
| 7 – 5 | Capital Preventive Maintenance | 231.70 | 50% |
| 4 – 1 | Structural Improvements | 126.49 | 27% |

The following charts summarize the distribution of ratings by mileage for all roads rated in the project.



The following tables provide a summary of the 2006 PASER survey rating by surface type by Jurisdiction.

| 2006 PASER Surface Rating by Surface Type | | | | |
|---|------------------------|------------------------|-------------------------|---------------------|
| Description | 0 to 4 PASER Rating | 5 to 7 PASER Rating | 8 to 10 PASER Rating | Total Road Miles |
| Asphalt | 107.98 | 187.13 | 105.25 | 400.35 |
| Concrete | 18.52 | 44.58 | 0.59 | 63.68 |
| Total | 126.49 | 231.70 | 105.84 | 464.03 |
| Percentage | 27% | 50% | 23% | 100% |

| 2006 PASER Surface Rating by Jurisdiction | | | | |
|---|-----------------------------|-----------------------------|------------------------------|------------------|
| Jurisdictions | 0 to 4 PASER Rating (miles) | 5 to 7 PASER Rating (miles) | 8 to 10 PASER Rating (Miles) | Total Road Miles |
| Almont | 0.19 | 0.61 | 0.21 | 1.01 |
| Clifford | 0.00 | 2.68 | 0.00 | 2.68 |
| Columbiaville | 0.00 | 1.66 | 0.58 | 2.24 |
| Dryden | 1.02 | 0.00 | 0.00 | 1.02 |
| Imlay City | 1.74 | 0.75 | 0.00 | 2.49 |
| Lapeer | 4.62 | 4.83 | 0.87 | 10.31 |
| Metamora | 0.43 | 0.84 | 0.00 | 1.28 |
| North Branch | 0.00 | 0.50 | 0.00 | 0.50 |
| Otter Lake | 0.08 | 0.00 | 0.89 | 0.97 |
| LCRC | 99.90 | 158.68 | 46.92 | 305.49 |
| MDOT | 18.52 | 61.15 | 56.38 | 136.05 |
| Total | 126.49 | 231.70 | 105.84 | 464.03 |
| Percentage | 27% | 50% | 23% | 100% |

| 2006 LCRC Surface Rating by Township | | | | |
|--------------------------------------|-----------------------------|-----------------------------|------------------------------|------------------|
| Jurisdiction | 0 to 4 PASER Rating (miles) | 5 to 7 PASER Rating (miles) | 8 to 10 PASER Rating (Miles) | Total Road Miles |
| Almont Twp | 1.05 | 7.95 | 6.12 | 15.13 |
| Arcadia Twp | 1.70 | 14.45 | 0.00 | 16.15 |
| Attica Twp | 14.35 | 7.61 | 2.01 | 23.96 |
| Burlington Twp | 5.59 | 10.73 | 2.59 | 18.92 |
| Burnside Twp | 4.97 | 7.01 | 0.00 | 11.98 |
| Deerfield Twp | 9.40 | 4.90 | 0.00 | 14.30 |
| Dryden Twp | 1.33 | 10.57 | 2.00 | 13.90 |
| Elba Twp | 7.57 | 13.67 | 3.16 | 24.40 |
| Goodland Twp | 0.49 | 13.14 | 0.00 | 13.63 |
| Hadley Twp | 0.69 | 9.02 | 5.92 | 15.62 |
| Imlay Twp | 6.44 | 11.79 | 0.07 | 18.30 |
| Lapeer Twp | 14.73 | 5.13 | 6.52 | 26.38 |
| Marathon Twp | 5.82 | 6.76 | 5.96 | 18.53 |
| Mayfield Twp | 5.84 | 6.96 | 6.37 | 19.17 |
| Metamora Twp | 2.36 | 4.11 | 1.29 | 7.76 |
| North Branch Twp | 3.10 | 8.47 | 0.00 | 11.56 |
| Oregon Twp | 9.17 | 8.55 | 4.92 | 22.64 |
| Rich Twp | 5.32 | 7.87 | 0.00 | 13.19 |
| Total Townships | 99.90 | 158.68 | 46.92 | 305.49 |

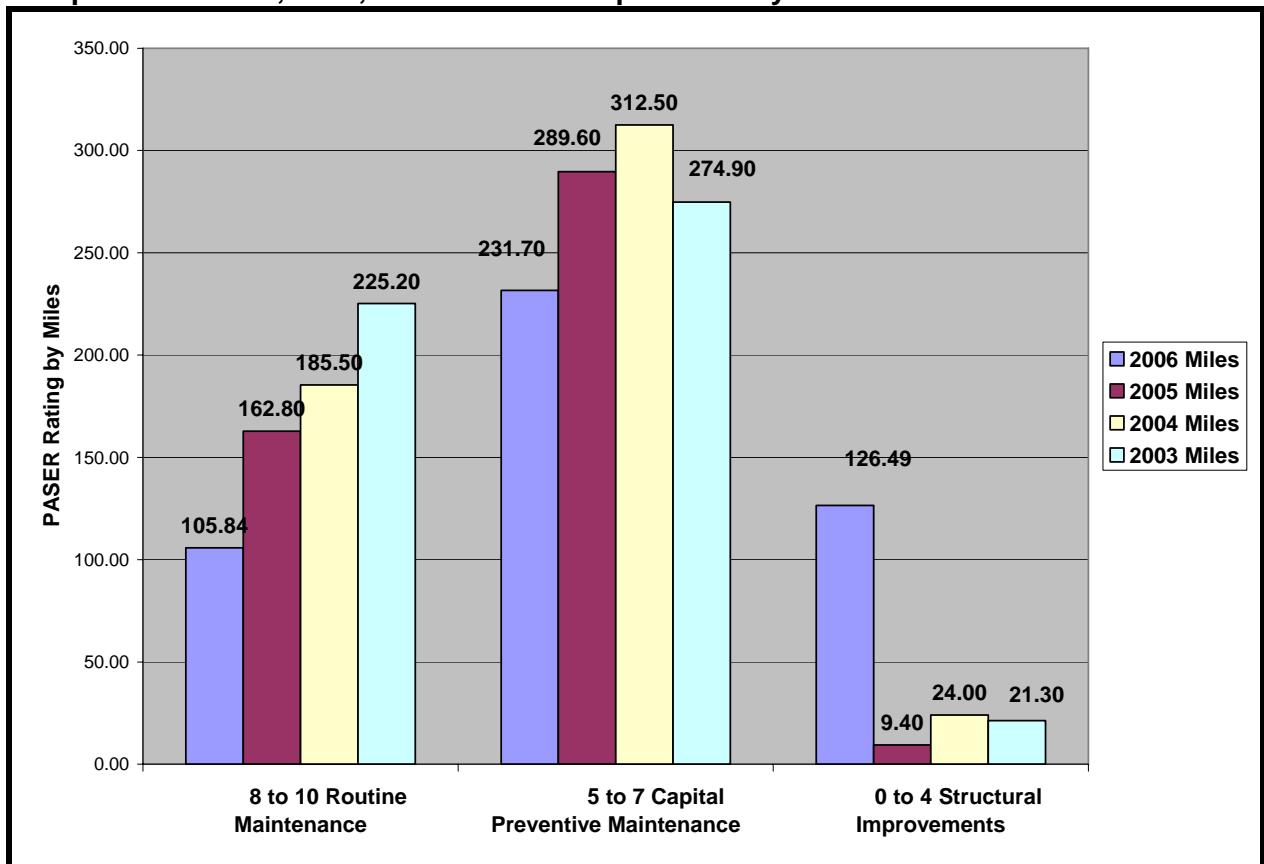
To obtain a digital copy of the data collected in this study each Local Road Agency must submit a written request to GLS Region V staff. The data will be distributed as a RoadSoft GIS file, so each LRA must also obtain a copy of the latest Roadsoft GIS program from Michigan Tech prior to using the data.

A set of color thematic maps depicting the 464.30 miles of federal aid eligible roads rated for this project are provided in the back of this report.

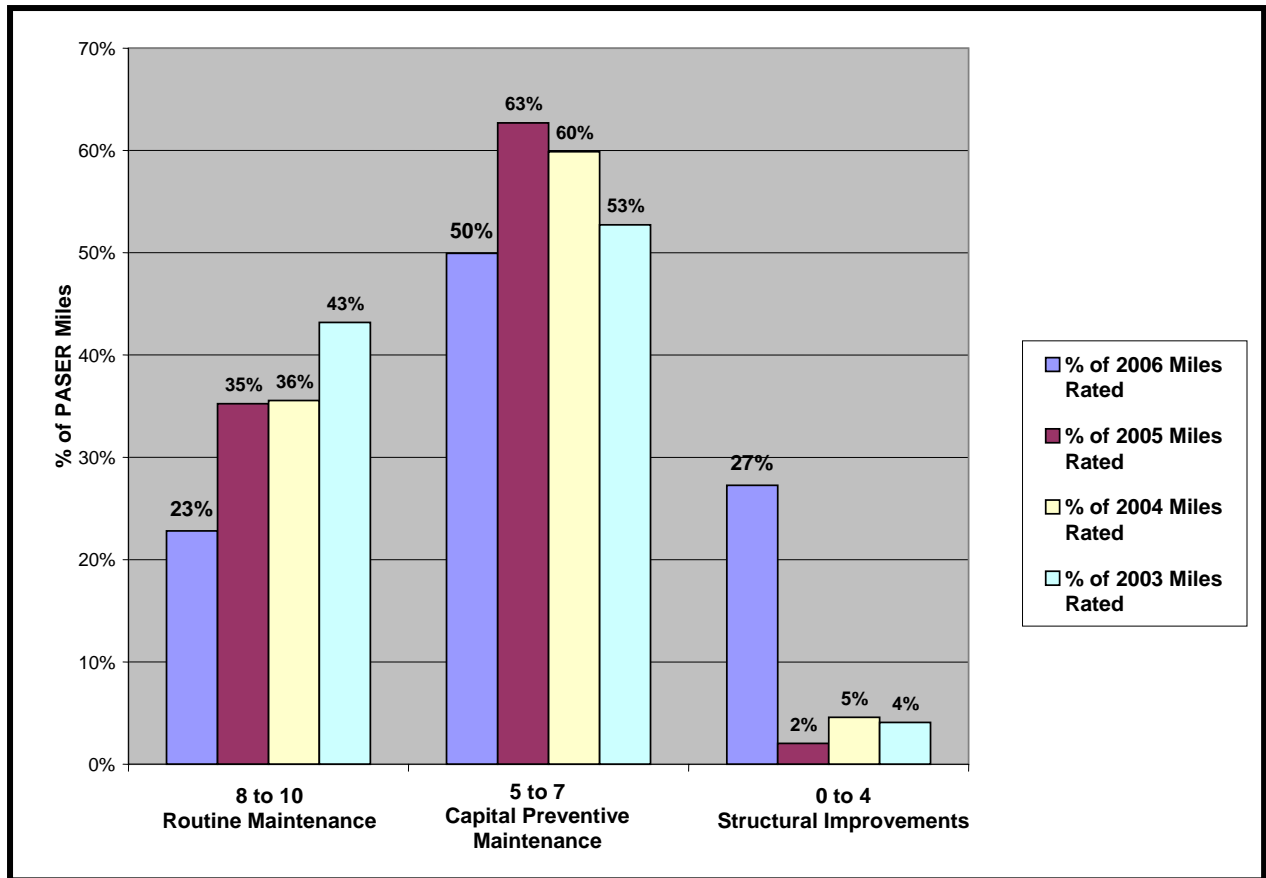
Updating the ratings:

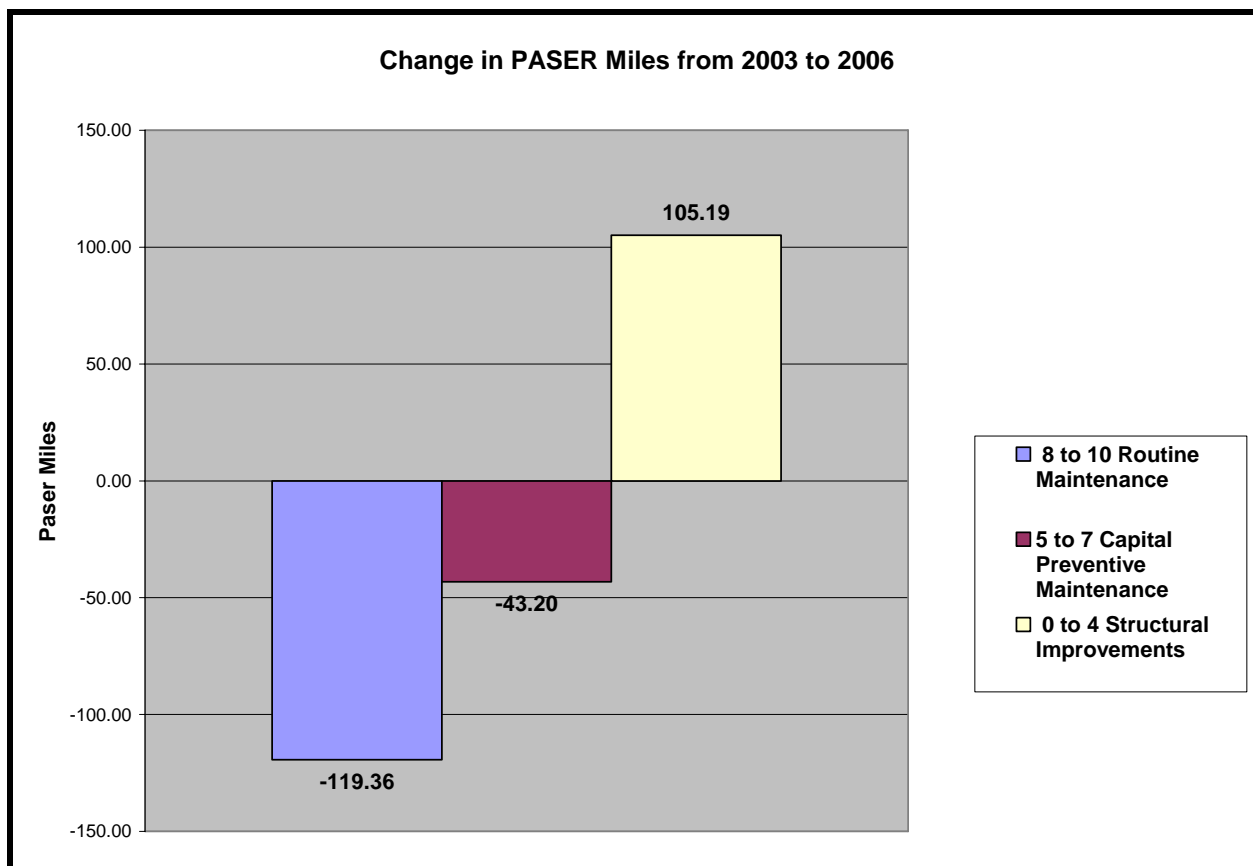
According to the new Governmental Accounting Standards Board Statement 34 (GASB 34), governmental units receiving, or applying for federal money must assess the condition of their roads at least once every three years. This project continues to provide the foundation to meet the requirements of GASB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

Comparisons: 2003, 2004, 2005 and 2006 Lapeer County PASER Evaluation:



*** 2005 and 2006 data does not include gravel roads





The change in miles from 2003 to 2006 indicated a significant amount of miles decreased in the Routine Maintenance and Capital Preventive Maintenance and an increase in miles under the Structural Improvement category.

- In 2006, 27% or 126.49 miles of the Federal Aid Road system are in the PASER Rating Category of 4 to 0. Roads with 0 to 4 ratings require structural improvements that include full depth repairs, major overlay or reconstruction. This is an increase of 105.19 miles (566%) as compared to the 2003 rating distribution in the same category.
- In 2006, 50% or 231.7 miles of the Federal Aid Road system are in the PASER Rating Category of 5 to 7. Roads with 5 to 7 ratings require some partial depth joint repairs, seal coat or crack filling. This is a decrease of 105.84 miles (5%) as compared to the 2003 rating distribution in the same category.
- In 2006, 23% or 105.84 miles of the Federal Aid Road system are in the PASER Rating Category of 8 to 10. Roads with 8 to 10 ratings require little or no maintenance. This is a decrease of 119.35 miles (47%) as compared to the 2003 rating distribution in the same category.

In general, this comparison indicates an increased need for Structural Improvements and Capital/Preventive Maintenance improvements in Lapeer County, as a whole. The difference in the significant increase and decrease is partly due to the more detailed rating process. In 2006, rutting was given greater consideration compared to previous years and the surveyors slowed the vehicles speed down and took a closer look at the

distresses. Rutting is located in the wheel path and is considered to be functional and structural types of distress. In 2006, rutting severity of .5 to 1.0 inch was automatically starts at a 4 rating.

The following tables compare PASER Rating Categories, miles rated, and Percentage of miles from 2003, 2004, 2005 and 2006 PASER survey for each Lapeer County jurisdiction and the Lapeer County as a whole.

| ALMONT | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|---------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.21 | 0.14 | 0.52 | 0.06 | 0.15 |
| 7 to 5 | 0.61 | 0.84 | 0.50 | 0.95 | -0.34 |
| 4 to 1 | 0.19 | 0.00 | 0.00 | 0.00 | 0.19 |
| Total | 1.01 | 0.99 | 1.02 | 1.01 | 0.00 |

| CLIFFORD | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|-----------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.00 | 0.00 | 1.47 | 1.91 | -1.91 |
| 7 to 5 | 2.68 | 2.68 | 1.21 | 0.77 | 1.92 |
| 4 to 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | 2.68 | 2.68 | 2.68 | 2.68 | 0.01 |

| COLUMBIAVILLE | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|----------------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.58 | 0.92 | 0.92 | 1.69 | -1.11 |
| 7 to 5 | 1.66 | 1.24 | 1.24 | 0.48 | 1.18 |
| 4 to 1 | 0.00 | 0.08 | 0.08 | 0.08 | -0.08 |
| Total | 2.24 | 2.24 | 2.24 | 2.24 | 0.00 |

| DRYDEN | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|---------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 to 5 | 0.00 | 1.02 | 1.02 | 1.02 | -1.02 |
| 4 to 1 | 1.02 | 0.00 | 0.00 | 0.00 | 1.02 |
| Total | 1.02 | 1.02 | 1.02 | 1.02 | 0.00 |

| IMLAY CITY | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|-------------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.00 | 0.07 | 0.25 | 0.00 | 0.00 |
| 7 to 5 | 0.75 | 2.42 | 1.99 | 2.41 | -1.66 |
| 4 to 1 | 1.74 | 0.00 | 0.09 | 0.09 | 1.65 |
| Total | 2.49 | 2.49 | 2.32 | 2.49 | 0.00 |

| LAPEER | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|---------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.87 | 1.83 | 4.27 | 3.53 | -2.66 |
| 7 to 5 | 4.83 | 8.34 | 5.96 | 5.05 | -0.22 |
| 4 to 1 | 4.62 | 0.13 | 0.00 | 1.65 | 2.97 |
| Total | 10.32 | 10.31 | 10.23 | 10.23 | 0.09 |

| METAMORA | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|-----------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.00 | 0.00 | 0.33 | 0.33 | -0.33 |
| 7 to 5 | 0.84 | 1.28 | 0.95 | 0.95 | -0.11 |
| 4 to 1 | 0.43 | 0.00 | 0.00 | 0.00 | 0.43 |
| Total | 1.27 | 1.28 | 1.28 | 1.28 | -0.01 |

| NORTH BRANCH | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|---------------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 to 5 | 0.50 | 0.50 | 0.44 | 0.50 | 0.00 |
| 4 to 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | 0.50 | 0.50 | 0.44 | 0.50 | 0.00 |

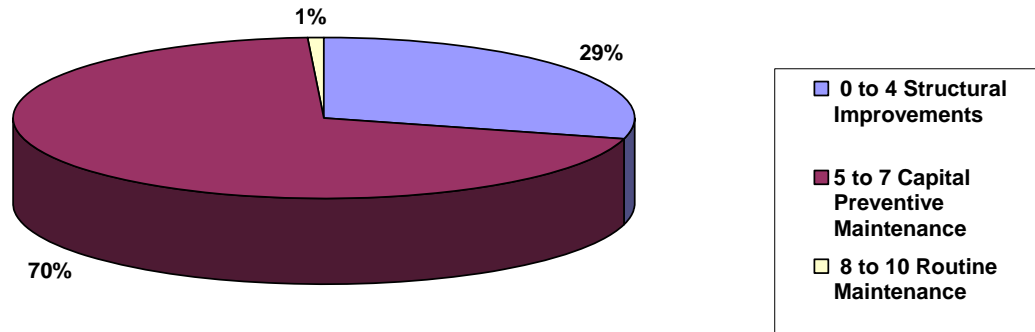
| OTTER LAKE | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|-------------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 0.89 | 0.95 | 0.23 | 0.23 | 0.66 |
| 7 to 5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 to 1 | 0.08 | 0.19 | 0.75 | 0.66 | -0.58 |
| Total | 0.97 | 1.13 | 0.97 | 0.89 | 0.08 |

| LCRC | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|-------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 47.81 | 75.48 | 98.10 | 144.37 | -96.56 |
| 7 to 5 | 158.68 | 218.72 | 242.64 | 200.16 | -41.48 |
| 4 to 1 | 99.98 | 8.98 | 23.05 | 18.51 | 81.47 |
| Total | 306.47 | 303.18 | 363.79 | 363.03 | -56.56 |

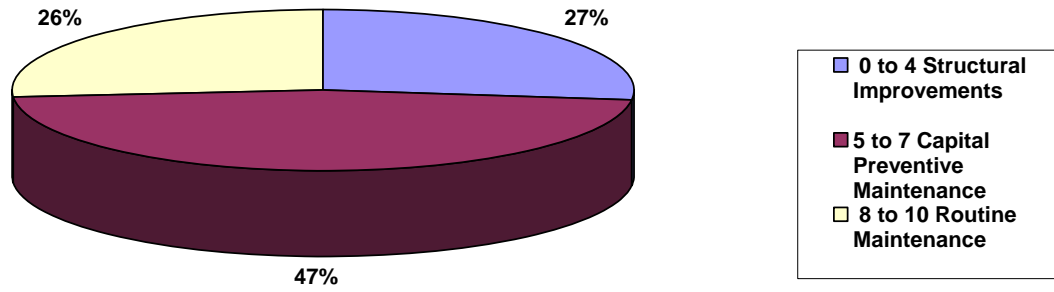
| MDOT | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|-------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 56.38 | 83.41 | 79.42 | 73.08 | -16.70 |
| 7 to 5 | 61.15 | 52.60 | 56.51 | 62.61 | -1.46 |
| 4 to 1 | 18.52 | 0.00 | 0.00 | 0.36 | 18.16 |
| Total | 136.05 | 136.01 | 135.93 | 136.05 | 0.00 |

| LAPEER COUNTY | 2006 Miles | 2005 Miles | 2004 Miles | 2003 Miles | Change in Miles from 2003 to 2006 |
|----------------------|-------------------|-------------------|-------------------|-------------------|--|
| 10 to 8 | 105.84 | 162.81 | 185.49 | 225.19 | -119.35 |
| 7 to 5 | 231.70 | 289.64 | 312.45 | 274.88 | -43.18 |
| 4 to 1 | 126.49 | 9.37 | 23.96 | 21.34 | 105.15 |
| Total | 464.03 | 461.82 | 521.90 | 521.41 | -57.38 |

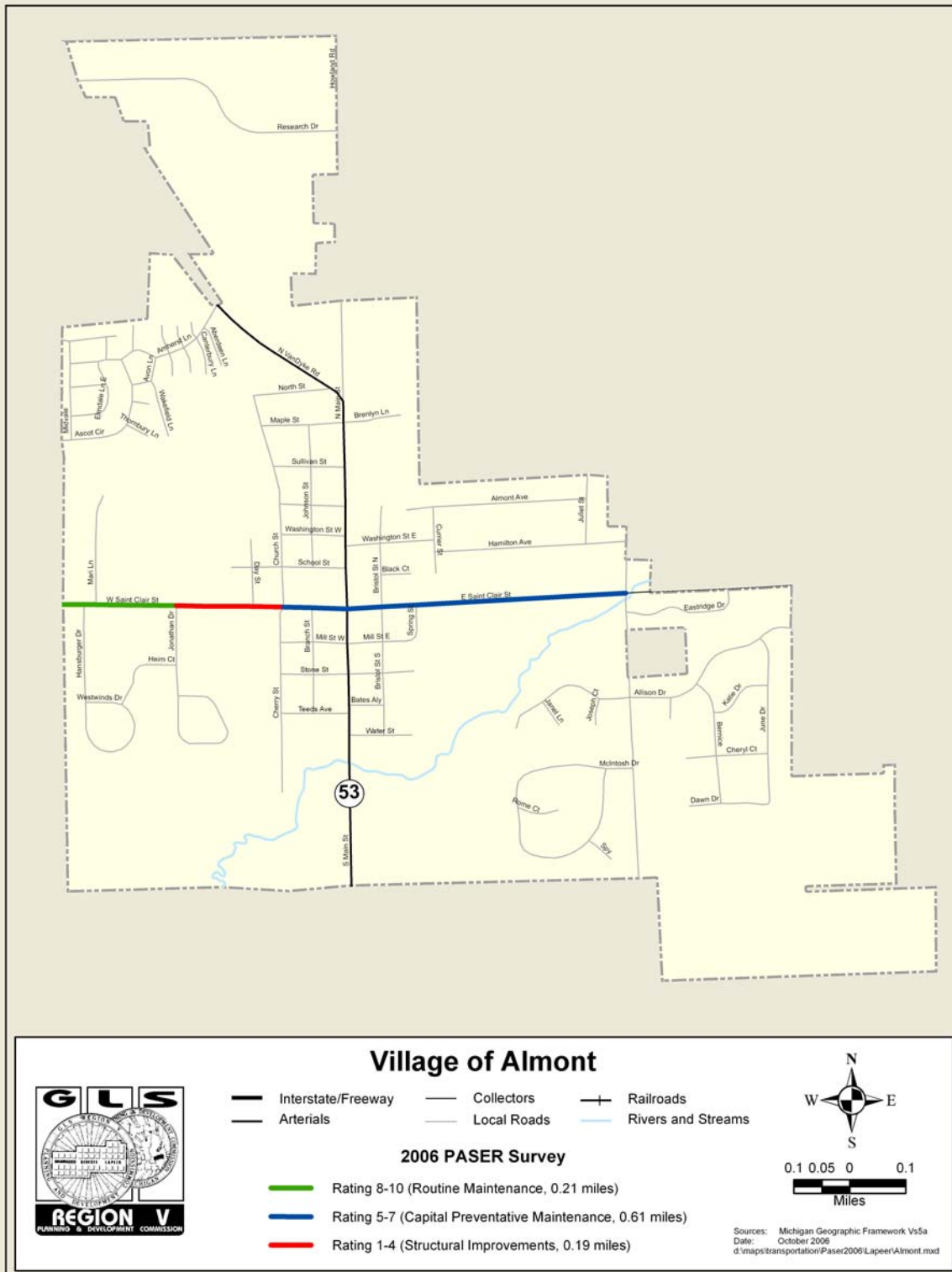
**Lapeer County
2006 Concrete Rating (% of Road Miles)**

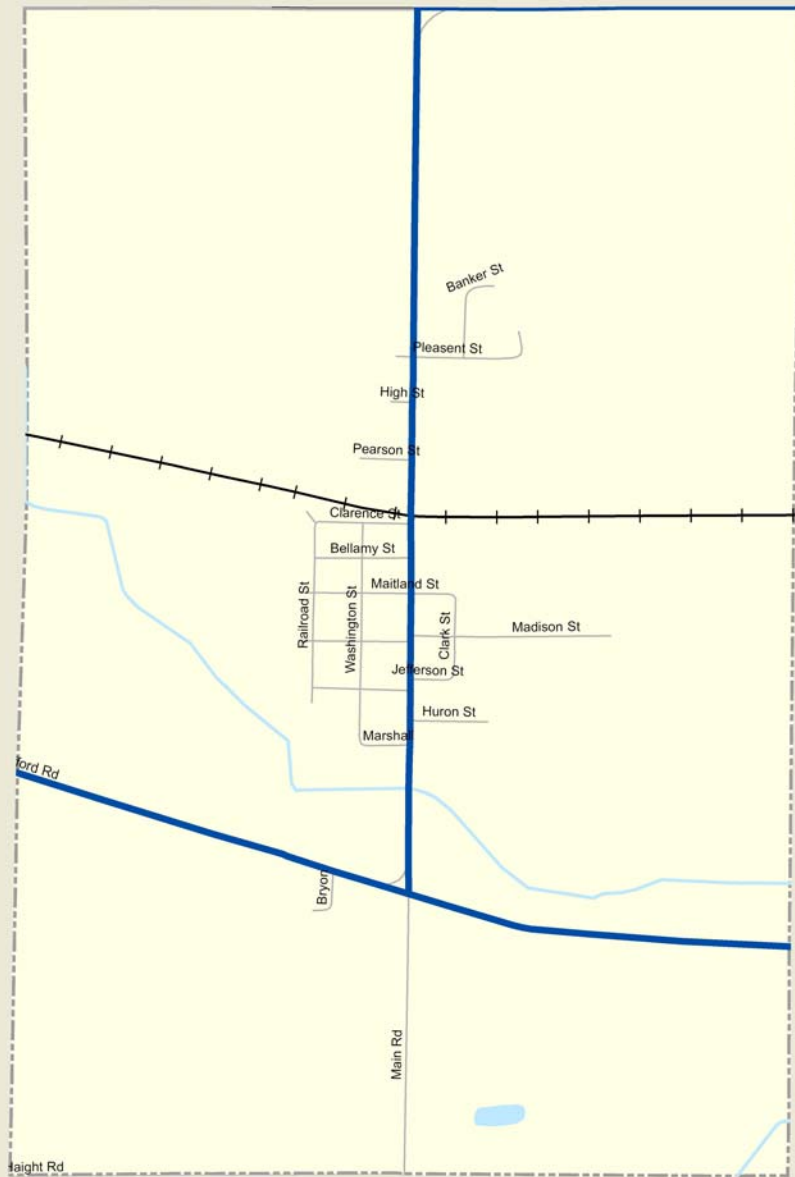


**Lapeer County
2006 Asphalt Rating (% of Road Miles)**



PASER THEMATIC MAPS





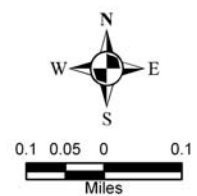
Village of Clifford



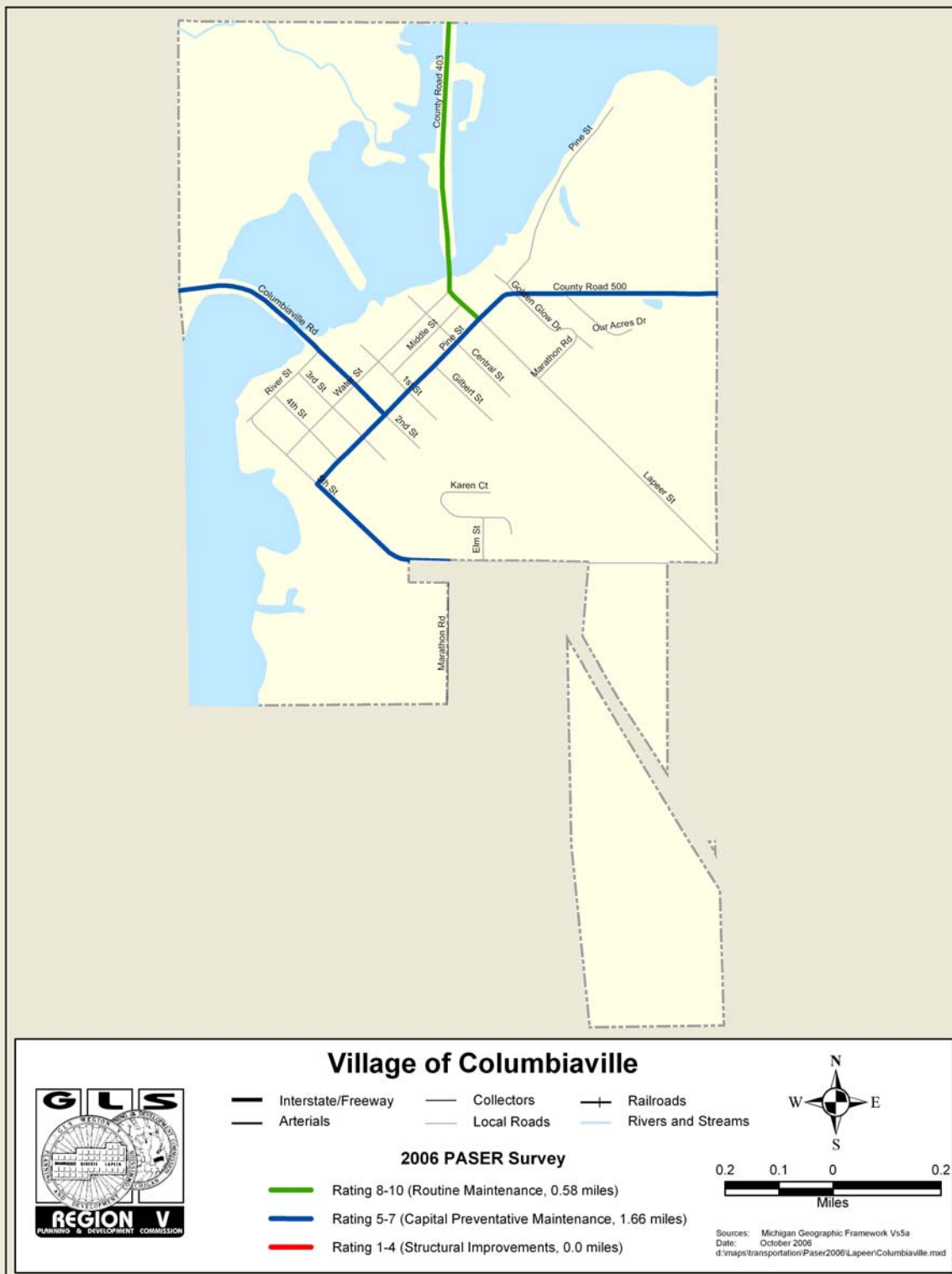
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|----------------------|---------------|----------------------|
| — Interstate/Freeway | — Collectors | — Railroads |
| — Arterials | — Local Roads | — Rivers and Streams |

2006 PASER Survey

- | | |
|--------------------------------------|---|
| — | Rating 8-10 (Routine Maintenance, 0.0 miles) |
| — | Rating 5-7 (Capital Preventative Maintenance, 2.68 miles) |
| — | Rating 1-4 (Structural Improvements, 0.0 miles) |



Sources: Michigan Geographic Framework V5a
 Date: October 2006
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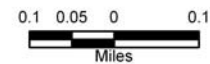
Village of Dryden



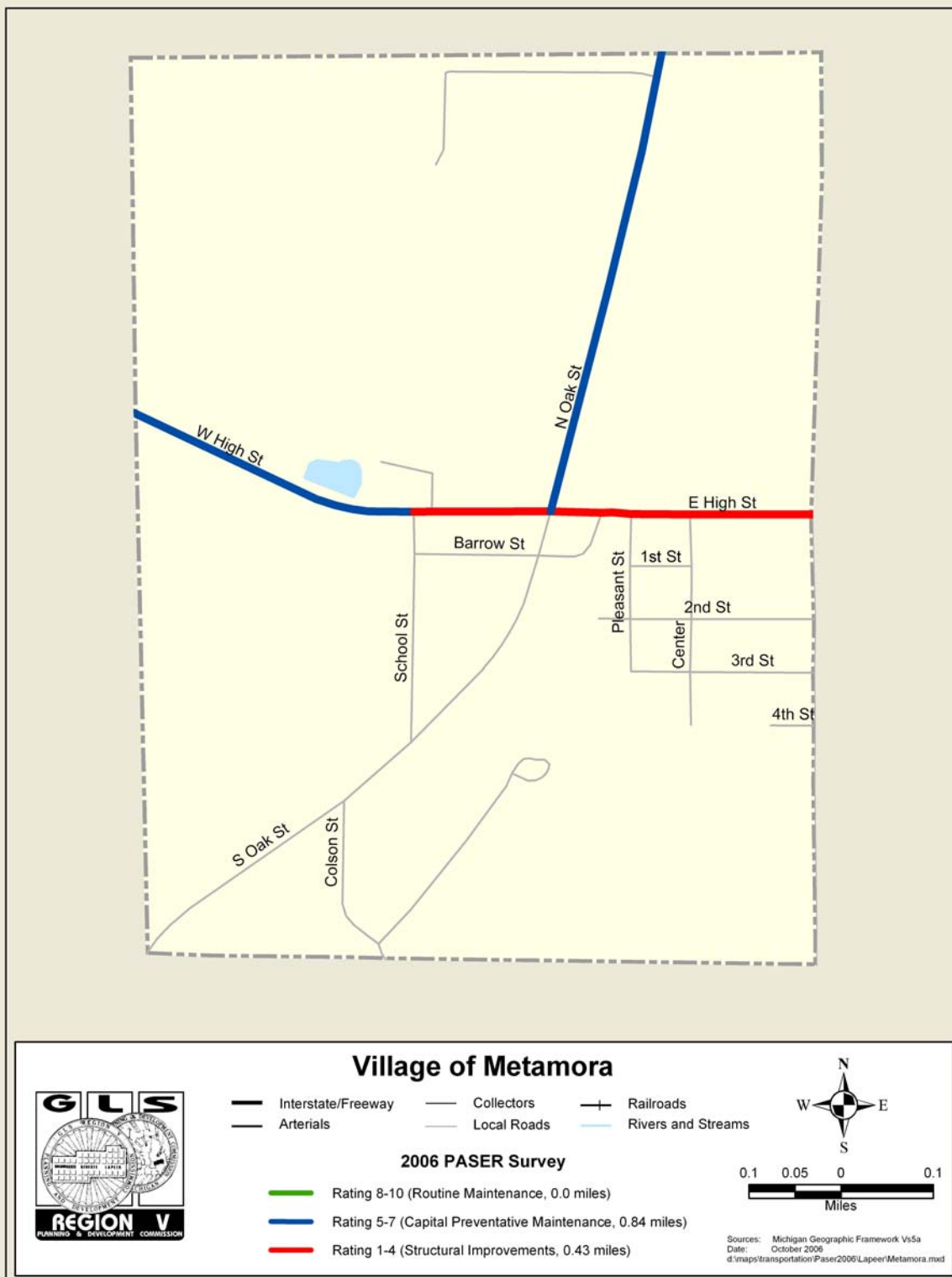
- | | | |
|----------------------|---------------|----------------------|
| — Interstate/Freeway | — Collectors | + Railroads |
| — Arterials | — Local Roads | — Rivers and Streams |

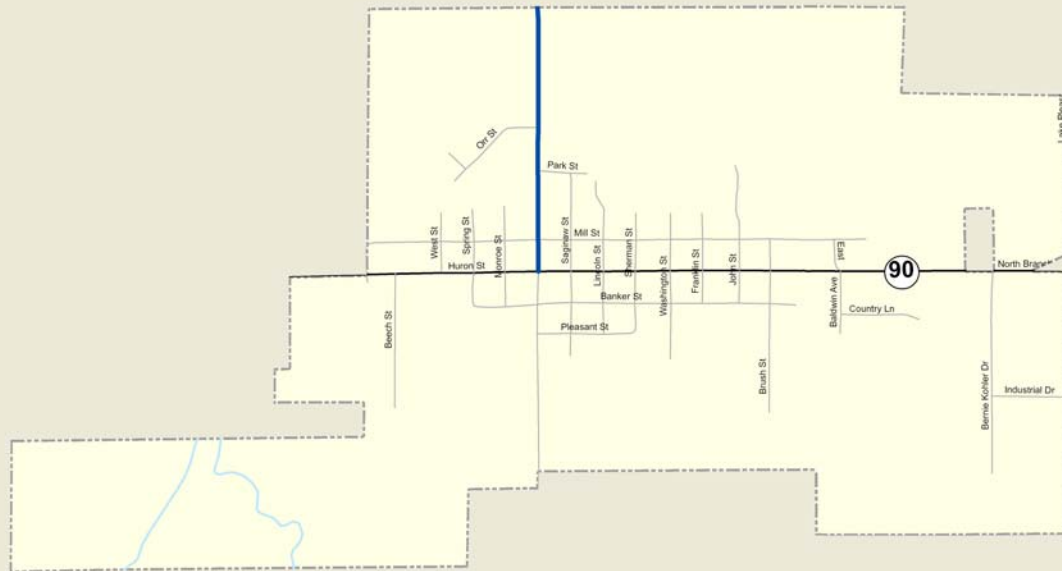
2006 PASER Survey

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



Sources: Michigan Geographic Framework V5a
 Date: October 2006
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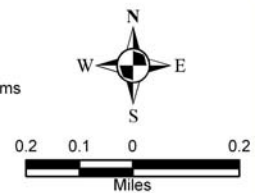
Village of North Branch



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

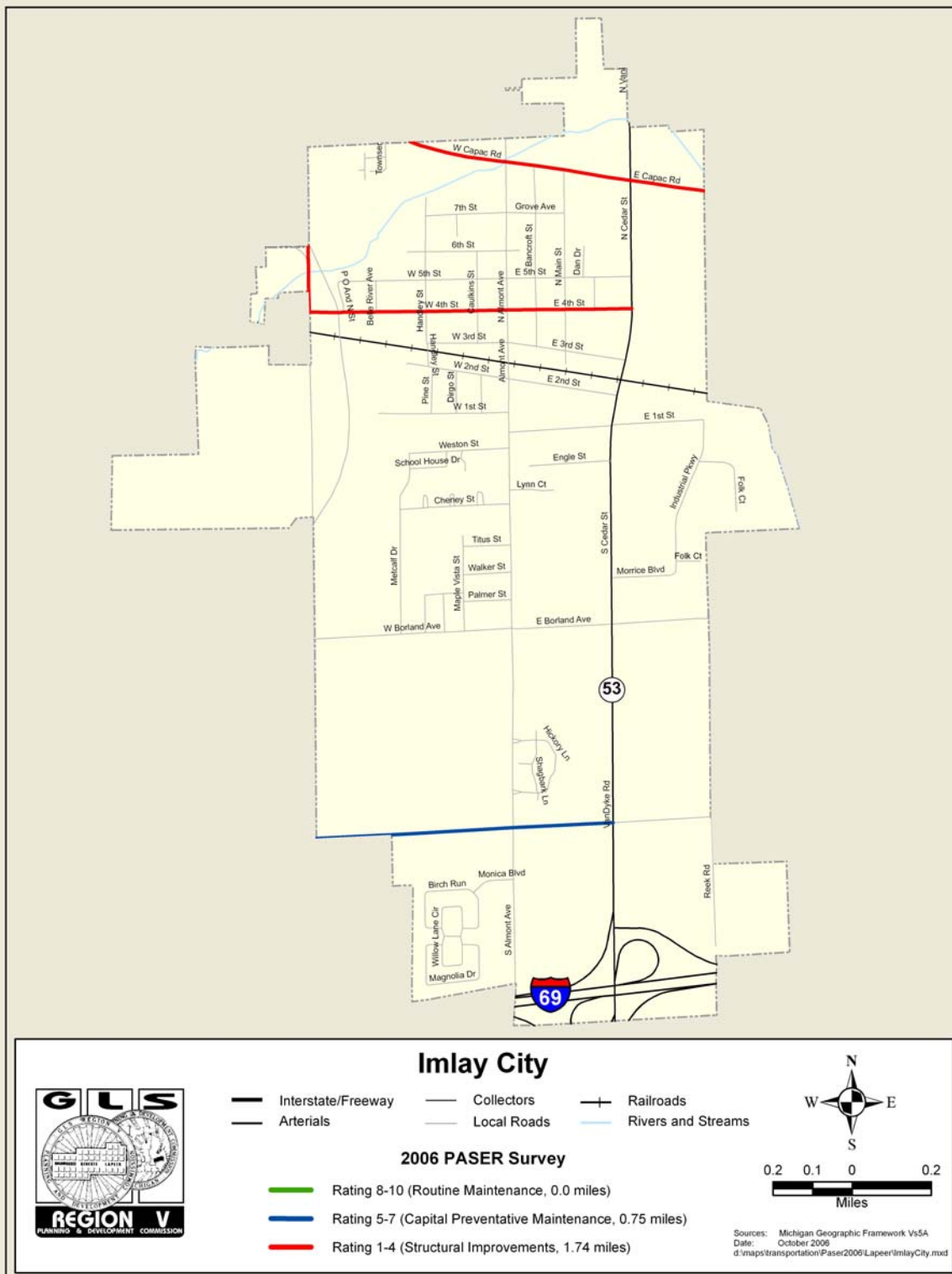
2006 PASER Survey

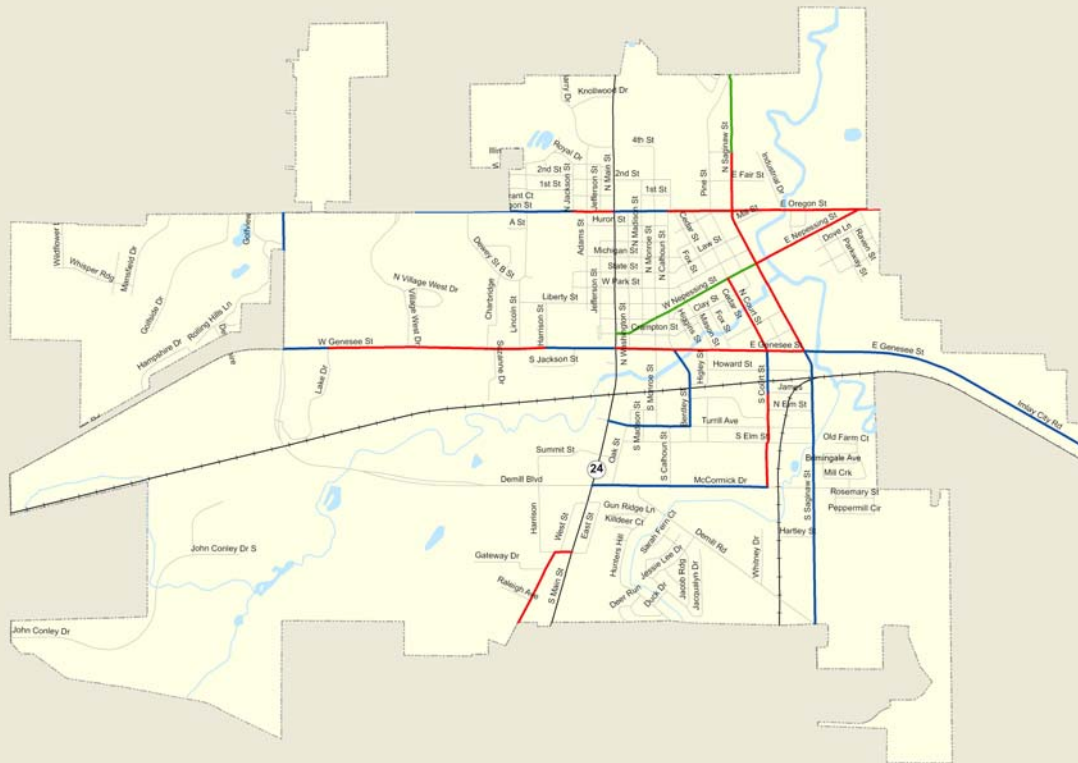
- Rating 8-10 (Routine Maintenance, 0.0 miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.50 miles)
- Rating 1-4 (Structural Improvements, 0.0 miles)



Sources: Michigan Geographic Framework V15a
 Date: October 2006
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City of Lapeer



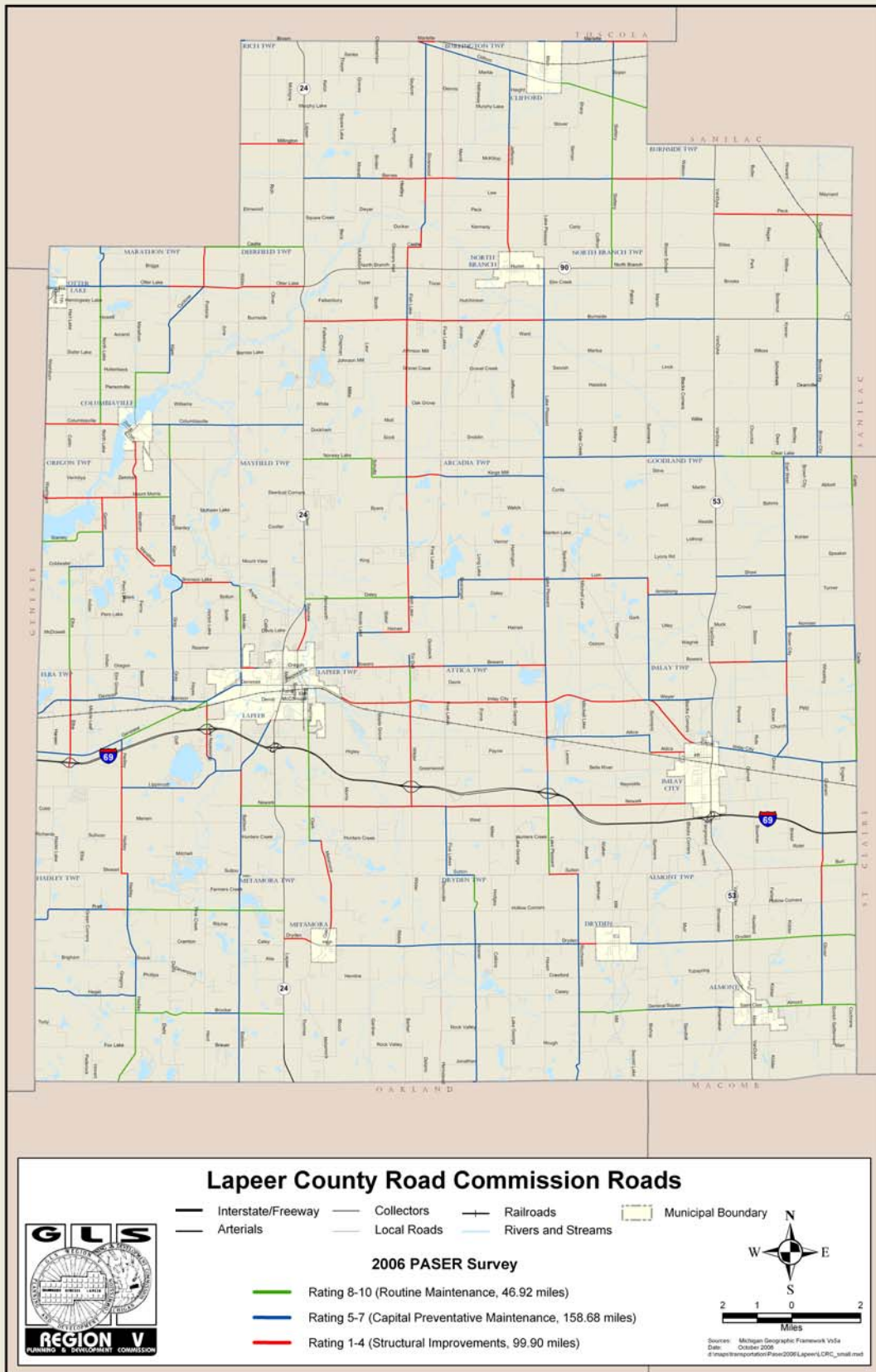
- Interstate/Freeway
- Arterials
- Collectors
- Local Roads
- Railroads
- Rivers and Streams

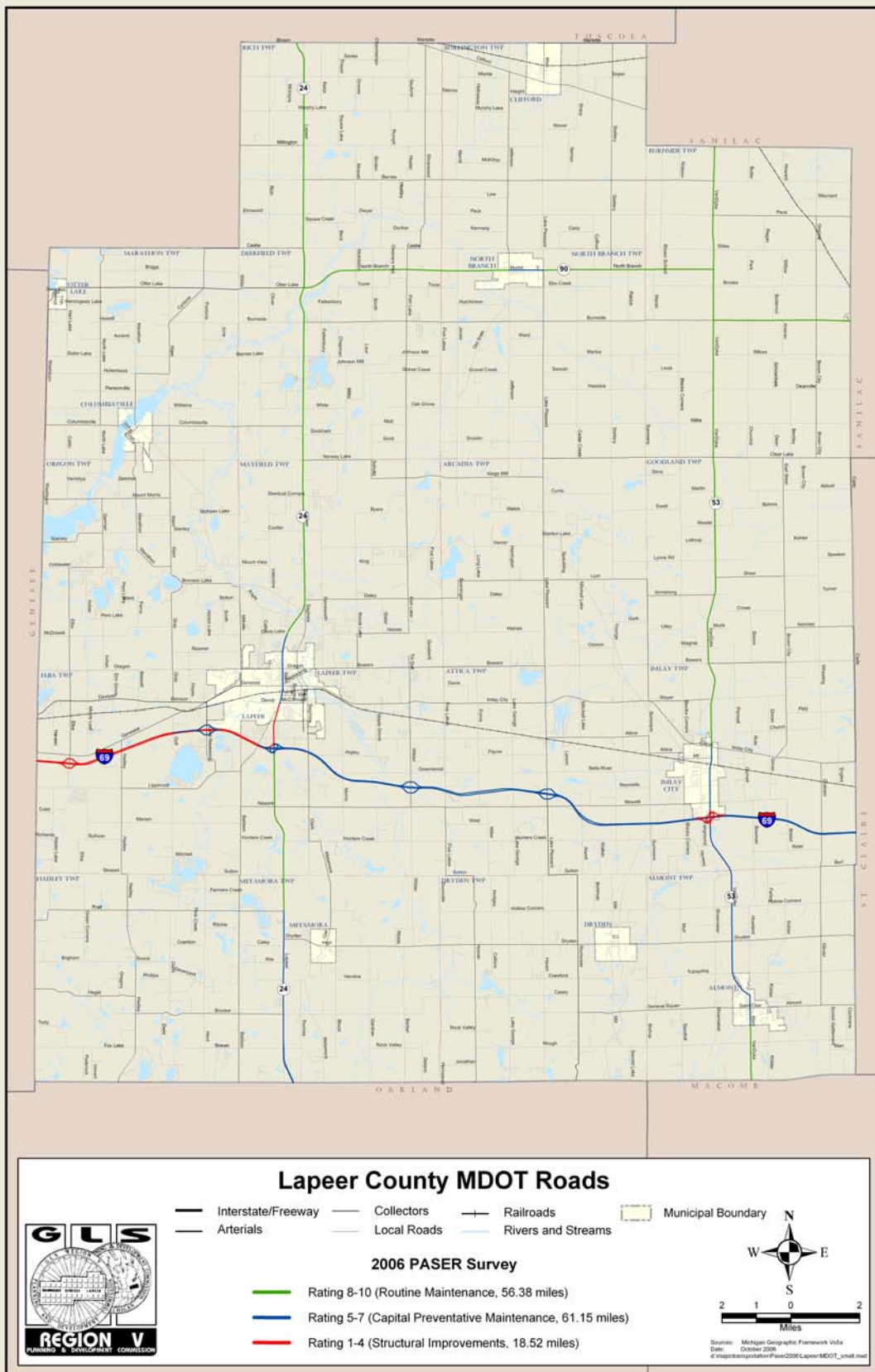
2006 PASER Survey

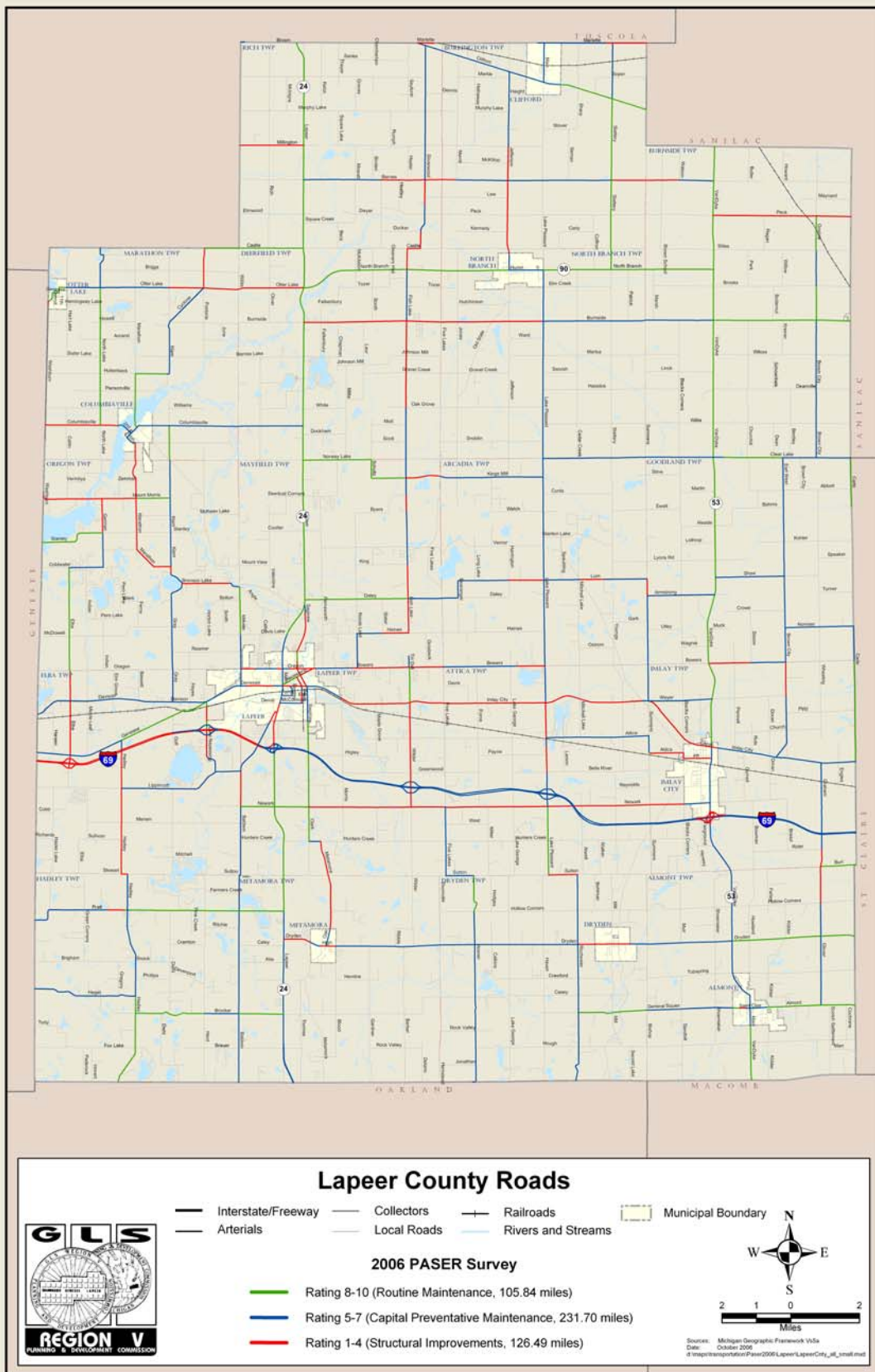
- Rating 8-10 (Routine Maintenance, 0.87 miles)
- Rating 5-7 (Capital Preventative Maintenance, 4.83 miles)
- Rating 1-4 (Structural Improvements, 4.62 miles)



Sources: Michigan Geographic Framework V5a
Date: October 2006
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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> |

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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> |

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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. |

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