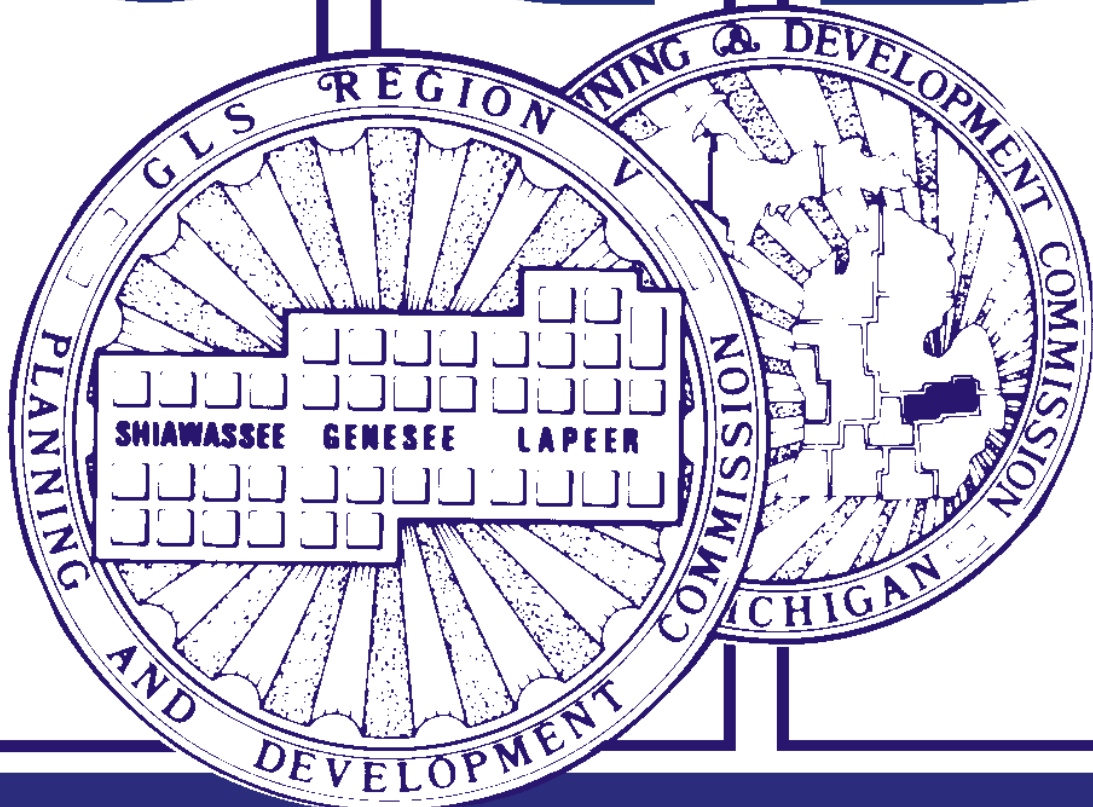


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**REGION V**  
**PLANNING & DEVELOPMENT COMMISSION**

**The State of Michigan  
Transportation Asset Management Council  
2003 PASER Survey  
Of  
Shiawassee County**

**The State of Michigan  
Transportation Asset Management Council  
2003 PASER Road Survey  
Shiawassee County**

**Project overview:**

On August 18<sup>th</sup>, 19<sup>th</sup>, and 20<sup>th</sup>, 2003, GLS Region V staff along with representatives of the Shiawassee County Road Commission (SCRC) and the Michigan Department of Transportation (MDOT) assessed the condition of Shiawassee 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 use as the State of Wisconsin's standard road rating system. PASER is a "windshield" road rating system that uses a 1 to 10 rating scale, with a value of 10 representing a new road and a value of 1 representing a failed road. Condition ratings are assigned by monitoring the type and amount of visual defects along a road segment while driving the segment. The PASER system interprets these observations into a condition rating. PASER rating charts for asphalt, concrete, and gravel roads have been included with this report.

The State of Michigan Asset Management Council has requested that the information gathered in this survey be reported using the following categories:

- **Roads with PASER ratings of 8-10 require Routine Maintenance.** Routine maintenance is the day-to-day maintenance activities that are scheduled, such as street sweeping, drainage clearing, 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 1-4 require Structural Improvements.** This category includes work identified as rehabilitation and reconstruction which address the structural integrity of a road.

**Computer Equipment and Software:**

Staff collected data using a laptop computer with the RoadSoft GIS Laptop Data Collector 1.3.2 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:**

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 Shiawassee County road rating project there was always one Region V representative, one SCRC representative, and one MDOT representative present. Several Shiawassee County cities also participated in the project, so at times there were a total of 4 people. It took 19 hours to rate approximately 497.94 miles of road.

**Training:**

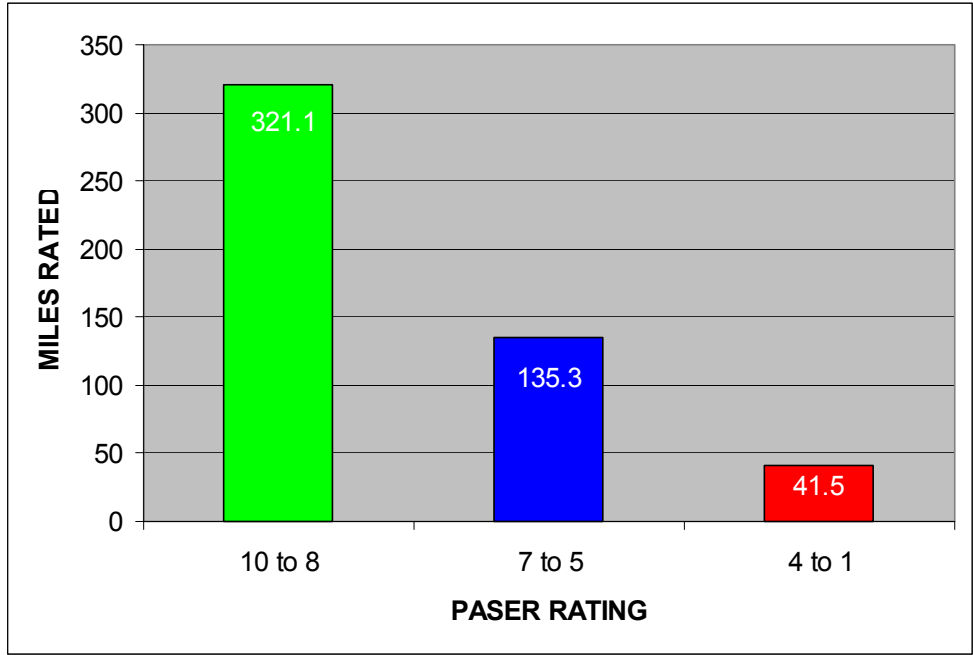
All participants in the survey were required to attend a daylong training session at the Mass Transportation Authority in Flint, Michigan on August 13<sup>th</sup>, 2003. Participants received an overview of the project and were given instruction on how to use the RoadSoft software and the PASER road 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.

**Results:**

Approximately 497.94 lane miles of federal aid eligible roads were rated for this project. The project was completed in 19 hours with an average rating speed of 26.21 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. 64.5 percent of the roads rated received a rating of 8 or better, 27.2 percent of the roads rated received a rating of 5, 6 or 7, and 8.3 percent 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 Preventative Maintenance
- Roads receiving a rating less than or equal to 4 require Structural Improvements

PASER Rating	Prescribed Fix	Miles	Percent of Total Miles Rated
1-4	Structural Improvements	41.5	8.3%
5-7	Capital Preventative Maintenance	135.3	27.2%
8-10	Routine Maintenance	321.1	64.5%



The following table summarizes the PASER ratings and amount of miles rated for each of the municipalities represented in the Shiawassee County PASER road rating project.

Municipality	Paser Rating			Total Miles Rated
	10 to 8	7 to 5	4 to 1	
Bancroft	1.521	0	0	1.521
Byron	1.332	0.147	0.24	1.719
Corunna	2.409	0.929	0.345	3.683
Durand	0.52	0.321	1.176	2.017
Laingsburg	0.704	1.353	0.68	2.737
Lennon	0.56	0.1	0	0.66
Morrice	0.779	1.19	0.515	2.484
New Lothrop	0.524	0.221	0	0.745
Owosso	5.315	11.592	1.218	18.125
Vernon	0	1.096	0	1.096
SCRC	245.038	55.311	25.487	325.836
MDOT	62.411	63.063	11.843	137.317

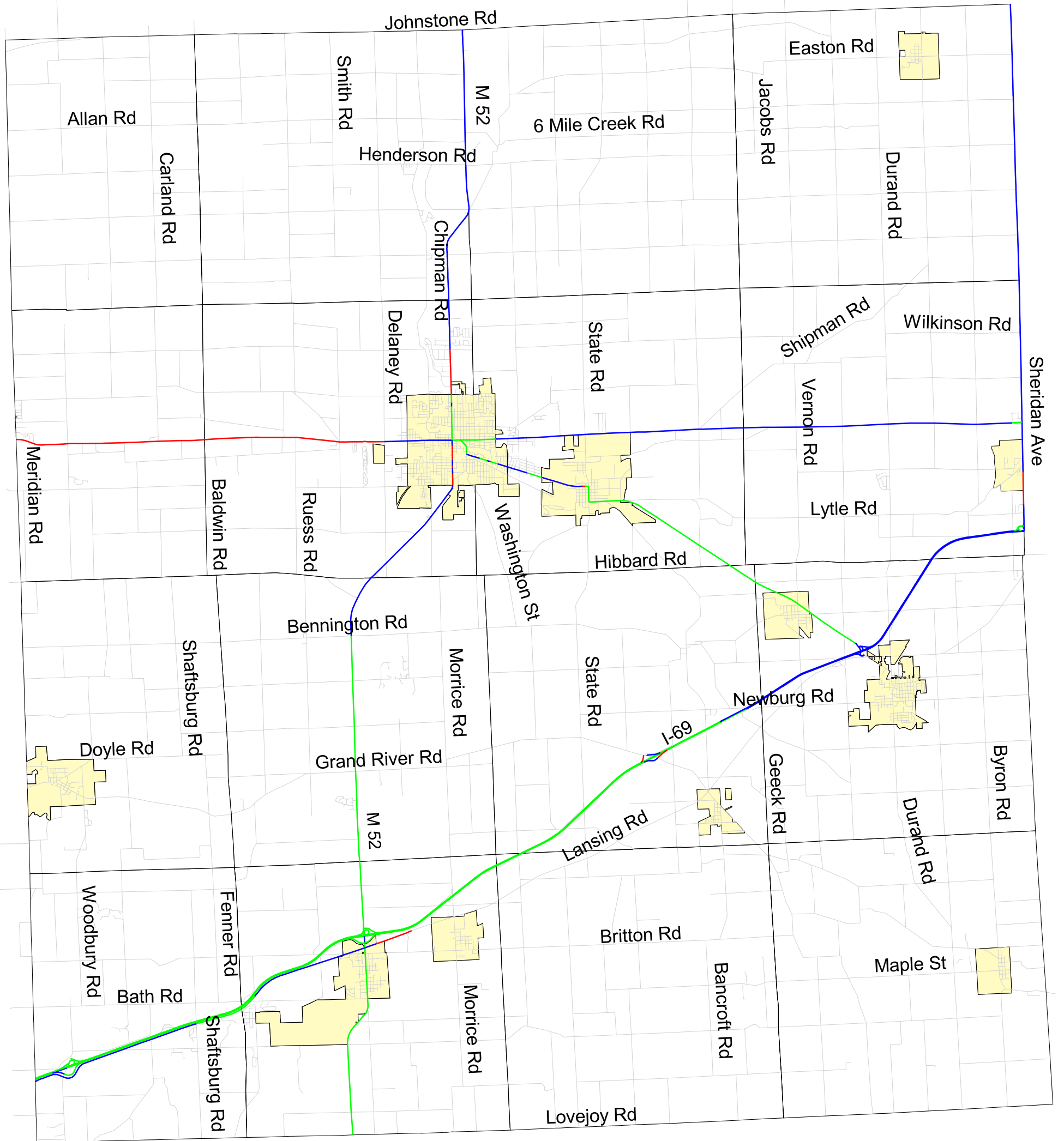
To obtain a digital copy of the data collected in this study each Local Road Agency must submit a written request to Region V staff. The data will be distributed as a RoadSoft GIS file, so each LRA must also obtain a copy of the latest Roadsoft GIS program from Michigan Tech prior to using the data.

A set of color thematic maps depicting the 497.94 miles of federal aid eligible road 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 has laid the foundation to meet the requirements of GASB 34 and has shown that it can be accomplished with minimal staff in a relatively short period of time.

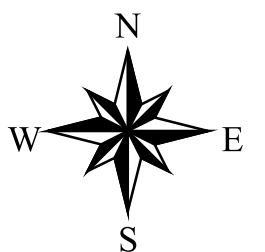
# **PASER COLOR THEMATIC MAPS**

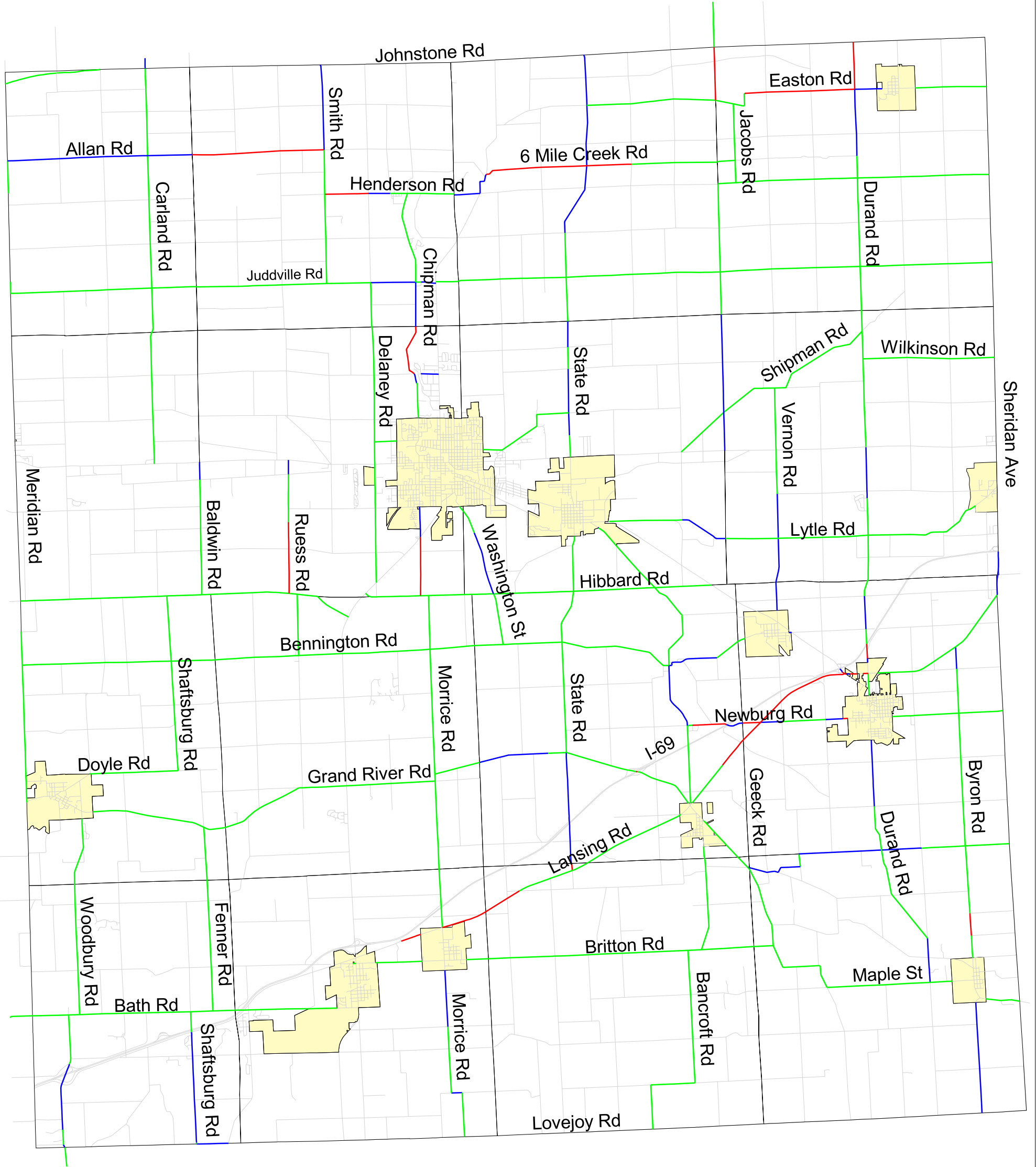


## Shiawassee County MDOT Roads

Asset Management Council  
2003 Paser Survey

- Rating 8-10 (Routine Maintenance, 62.411 miles)
- Rating 5-7 (Capital Preventative Maintenance, 63.063 miles)
- Rating 1-4 (Structural Improvements, 11.843 miles)

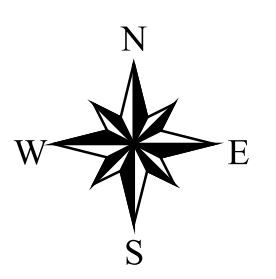


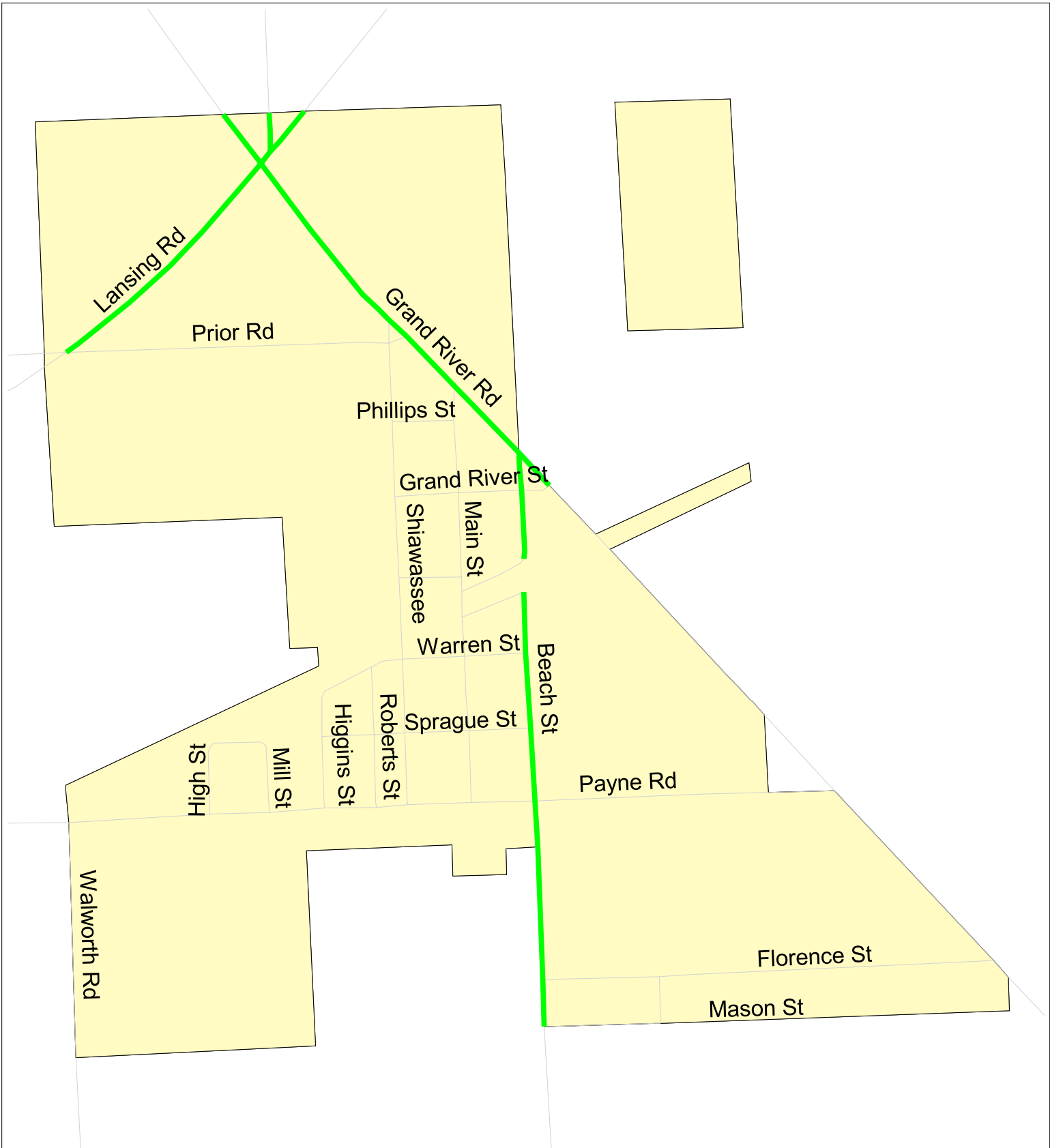


# Shiawassee County Road Commission

Asset Management Council  
2003 Paser Survey

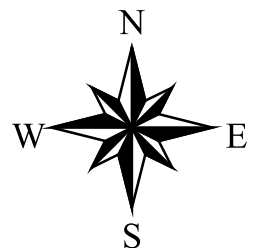
- Rating 8-10 (Routine Maintenance, 245.038 miles)
- Rating 5-7 (Capital Preventative Maintenance, 55.311 miles)
- Rating 1-4 (Structural Improvements, 25.487 miles)





## Village of Bancroft Asset Management Council 2003 Paser Survey

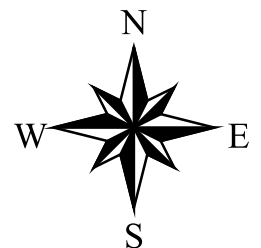
- Rating 8-10 (Routine Maintenance, 1.521 miles)
- Rating 5-7 (Capital Preventative Maintenance, 0 miles)
- Rating 1-4 (Structural Improvements, 0 miles)

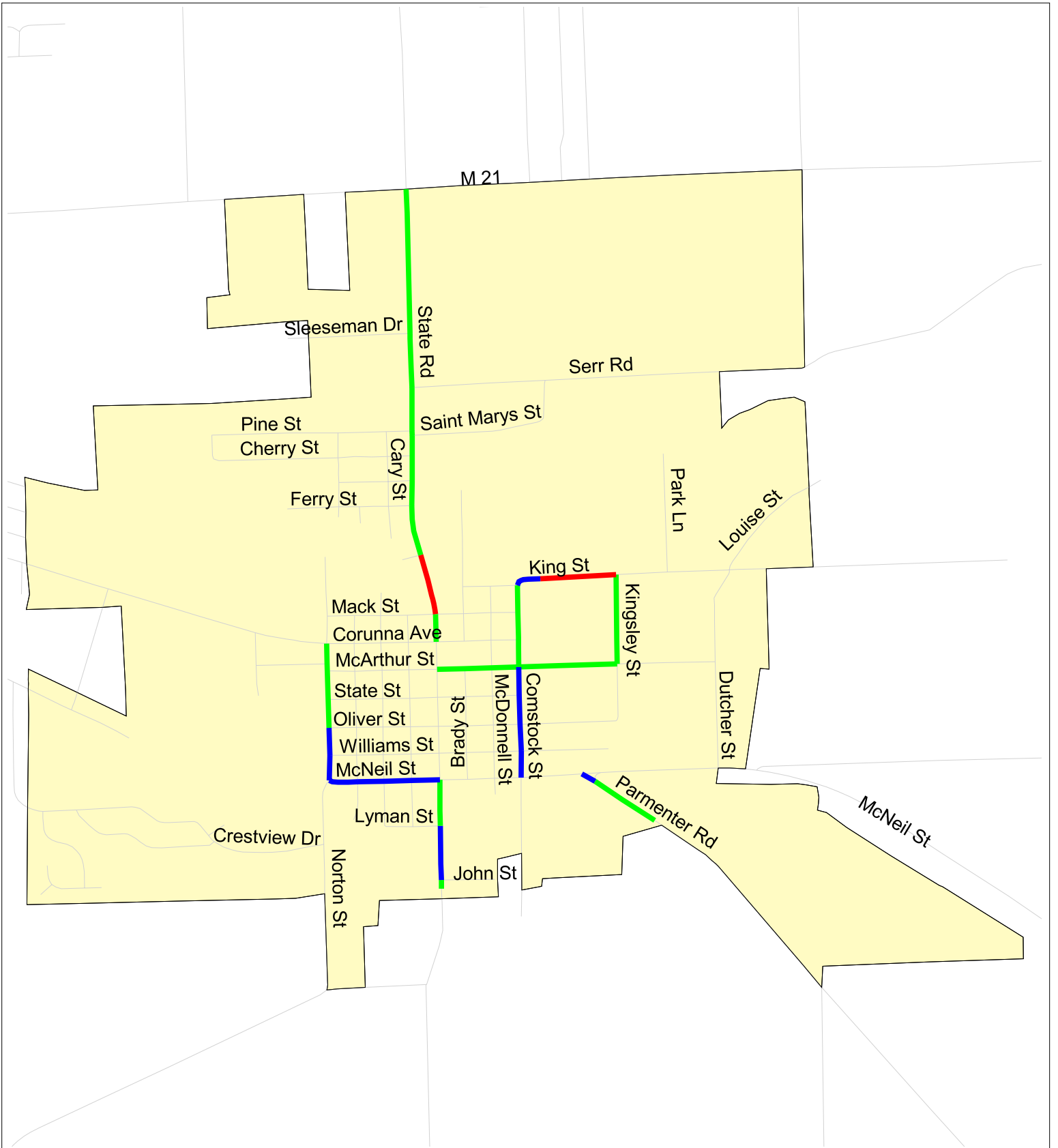




Village of Byron  
 Asset Management Council  
 2003 Paser Survey

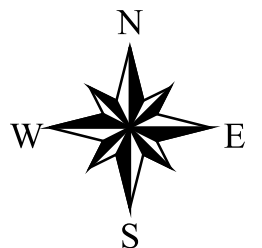
- Rating 8-10 (Routine Maintenance, 1.332 miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.147 miles)
- Rating 1-4 (Structural Improvements, 0.24 miles)

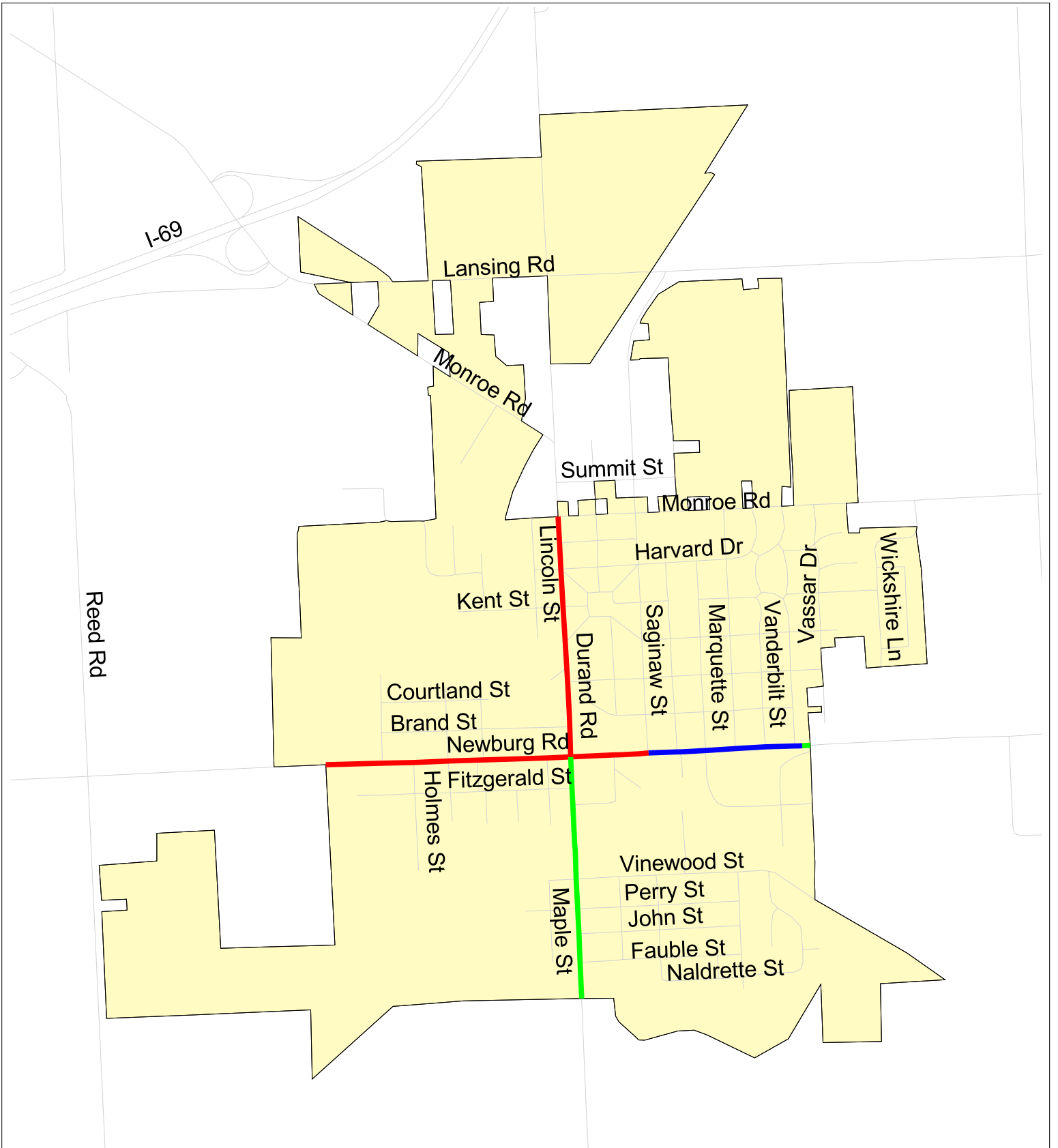




## City of Corunna Asset Management Council 2003 Paser Survey

- Rating 8-10 (Routine Maintenance, 2.409 miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.929 miles)
- Rating 1-4 (Structural Improvements, 0.345 miles)

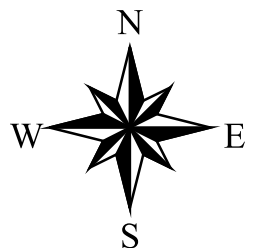


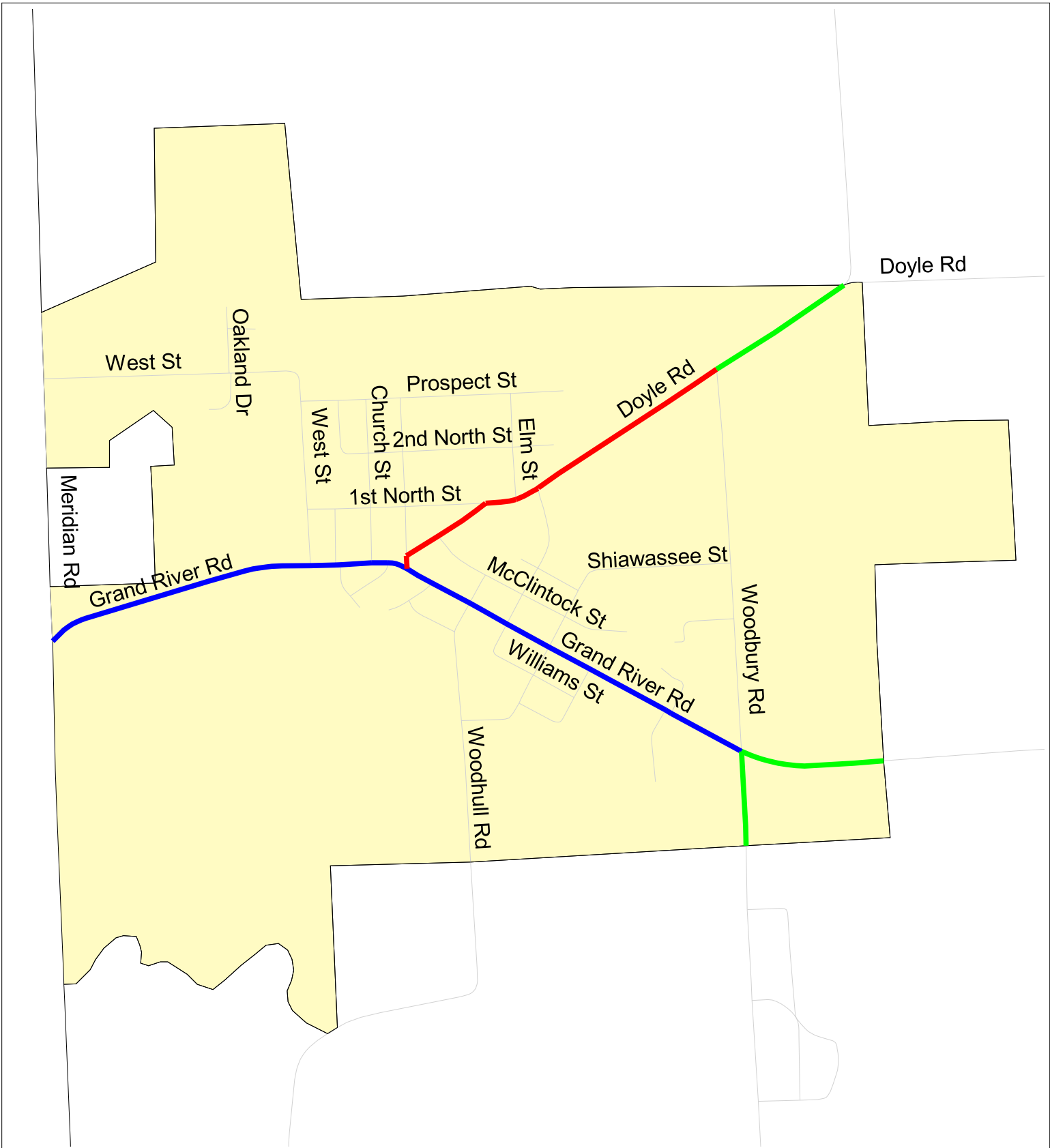


## City of Durand

### Asset Management Council 2003 Paser Survey

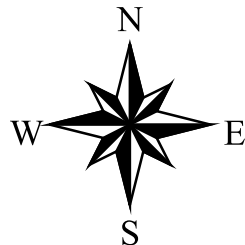
- Rating 8-10 (Routine Maintenance, 0.52 miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.321 miles)
- Rating 1-4 (Structural Improvements, 1.176 miles)





### City of Laingsburg Asset Management Council 2003 Paser Survey

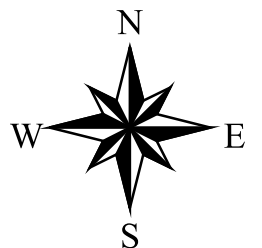
- Rating 8-10 (Routine Maintenance, 0.704 miles)
- Rating 5-7 (Capital Preventative Maintenance, 1.353 miles)
- Rating 1-4 (Structural Improvements, 0.68 miles)





Village of Lennon  
 Asset Management Council  
 2003 Paser Survey

- Rating 8-10 (Routinely Maintained, 0.56 miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.1 miles)
- Rating 1-4 (Structural Improvements, 0 miles)



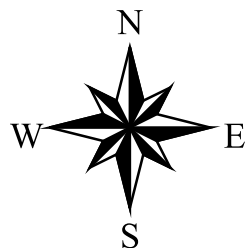


## Village of Morrice

### Asset Management Council

### 2003 Paser Survey

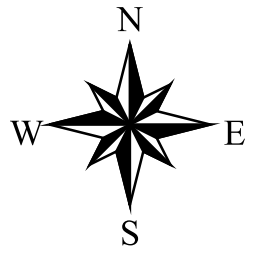
- Rating 8-10 (Routine Maintenance, 0.779 miles)
- Rating 5-7 (Capital Preventative Maintenance, 1.19 miles)
- Rating 1-4 (Structural Improvements, 0.515 miles)

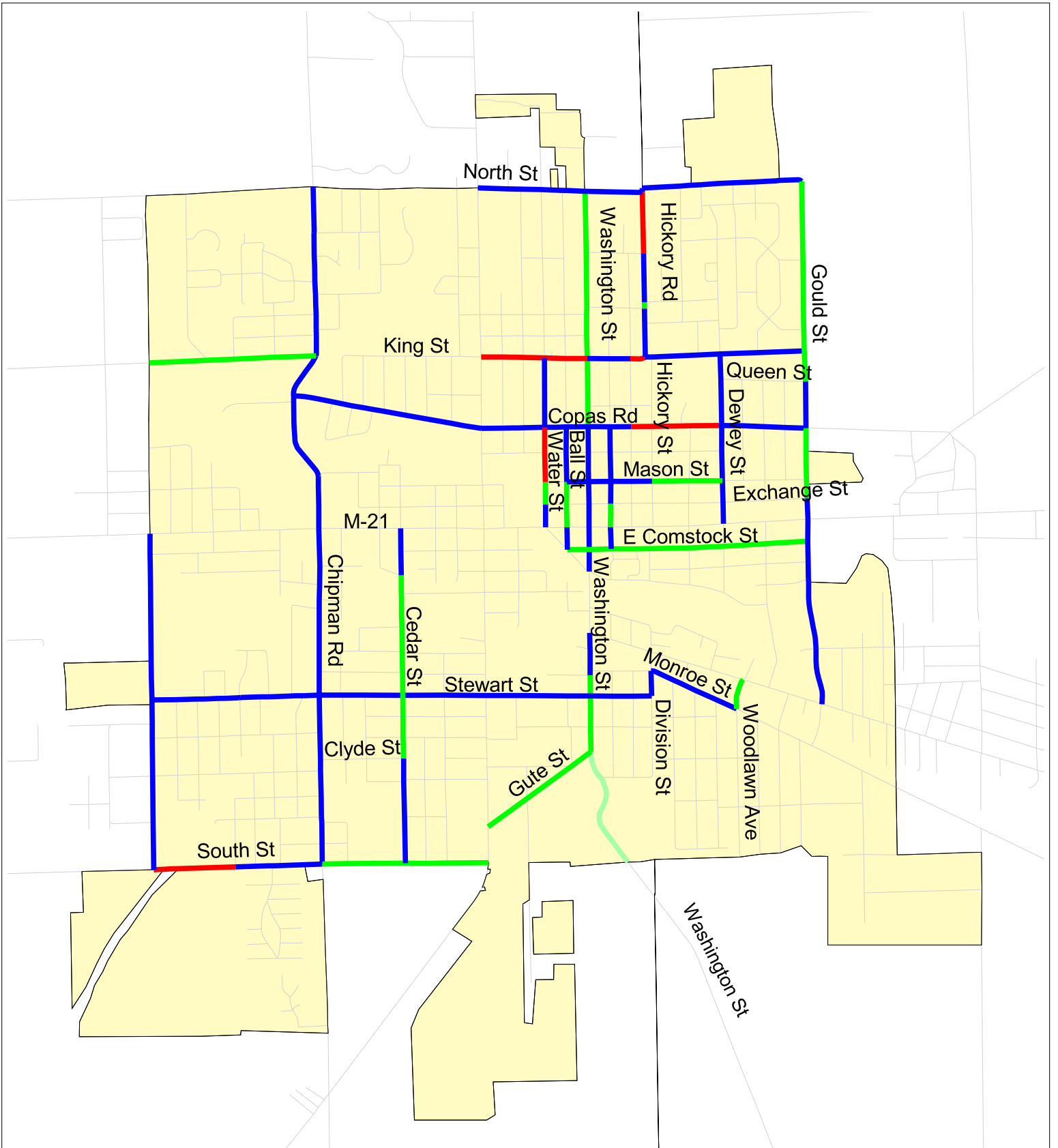




Village of New Lothrop  
 Asset Management Council  
 2003 Paser Survey

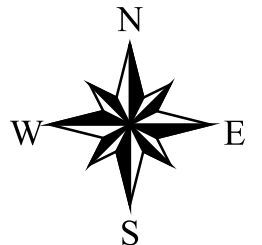
- Rating 8-10 (Routine Maintenance, 0.524 miles)
- Rating 5-7 (Capital Preventative Maintenance, 0.221 miles)
- Rating 1-4 (Structural Improvements, 0 miles)

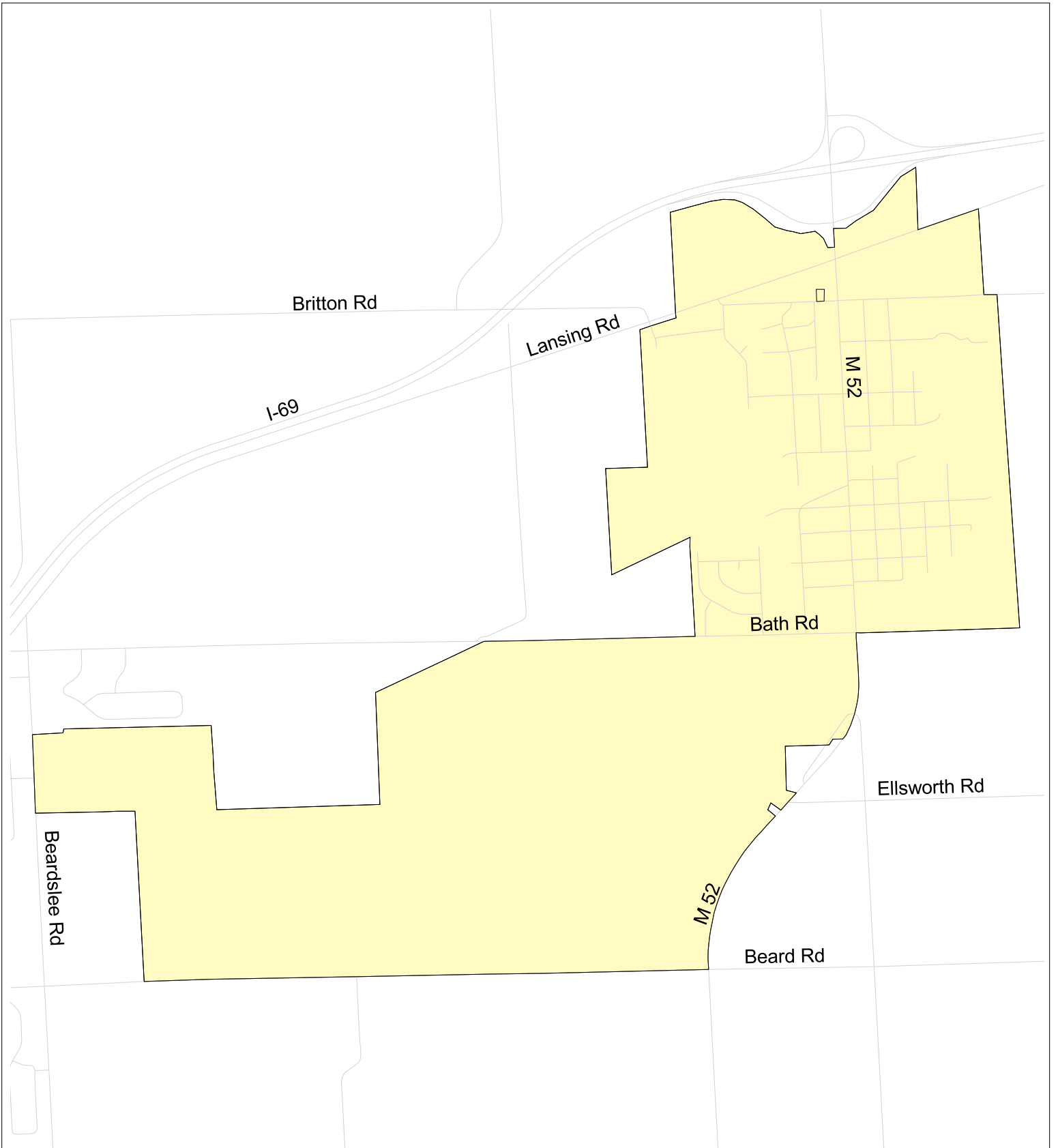




## City of Owosso Asset Management Council 2003 Paser Survey

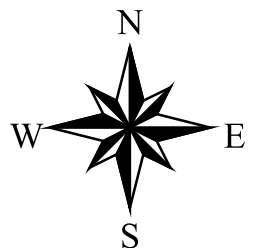
- Rating 8-10 (Routine Maintenance, 5.315 miles)
- Rating 5-7 (Capital Preventative Maintenance, 11.592 miles)
- Rating 1-4 (Structural Improvements, 1.218 miles)





### City of Perry Asset Management Council 2003 Paser Survey

- Rating 8-10 (Routine Maintenance, 0 miles)
- Rating 5-7 (Capital Preventative Maintenance, 0 miles)
- Rating 1-4 (Structural Improvements, 0 miles)



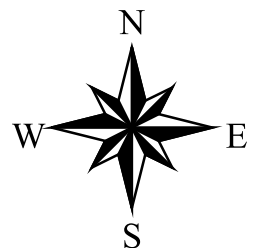


## Village of Vernon

### Asset Management Council

### 2003 Paser Survey

- Rating 8-10 (Routine Maintenance, 0 miles)
- Rating 5-7 (Capital Preventative Maintenance, 1.096 miles)
- Rating 1-4 (Structural Improvements, 0 miles)



# **PASER ASPHALT RATING CHART**

# 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.

# PASER — Rating System

Surface Rating	Visible Distress*	General Condition/ Treatment Measures
<b>5 Fair</b>	<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>
<b>4 Fair</b>	<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>
<b>3 Poor</b>	<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>
<b>2 Very Poor</b>	<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>
<b>1 Failed</b>	<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 CONCRETE RATING CHART**

# PASER — Rating System

## Rating system

Surface rating	Visible distress *	General condition/ Treatment measures
10 <i>Excellent</i>	None	New pavement. No maintenance required.
9 <i>Excellent</i>	Traffic wear in wheelpath. Slight map cracking or pop-outs.	Recent concrete overlay or joint rehabilitation—like new. No maintenance required.
8 <i>Very Good</i>	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 <i>Good</i>	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 <i>Good</i>	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.

## Rating system

Surface rating	Visible distress *	General condition/ Treatment measures
5 <i>Fair</i>	<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 <i>Fair</i>	<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 <i>Poor</i>	<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 <i>Very Poor</i>	<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 <i>Failed</i>	<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.

# **PASER GRAVEL RATING CHART**

# PASER — Rating System

*(Use 2-10 scale)*

## Rating system

Surface rating	Visible distress *	General condition/ Treatment measures
5 (10) <i>Excellent</i>	<p>No distress.</p> <p>Dust controlled.</p> <p>Excellent surface condition and ride.</p>	<p>New construction – or total reconstruction.</p> <p>Excellent drainage.</p> <p>Little or no maintenance needed.</p>
4 (8) <i>Good</i>	<p>Dust under dry conditions.</p> <p>Moderate loose aggregate.</p> <p>Slight washboarding.</p>	<p>Recently regraded.</p> <p>Good crown and drainage throughout. Adequate gravel for traffic.</p> <p>Routine maintenance may be needed.</p>
3 (6) <i>Fair</i>	<p>Good crown (3"–6")</p> <p>Ditches present on more than 50% of roadway.</p> <p>Gravel layer is mostly adequate but additional aggregate may be needed at a few locations to help correct washboarding or isolated potholes and ruts.</p> <p>Some culvert cleaning needed.</p> <p>Moderate washboarding (1"–2" deep), over 10%–25% of the area.</p> <p>Moderate dust, partial obstruction of vision.</p> <p>None or slight rutting (less than 1" deep).</p> <p>An occasional small pothole (less than 2" deep).</p> <p>Some loose aggregate (2" deep).</p>	<p>Shows traffic effects.</p> <p>Regrading (reworking) necessary to maintain.</p> <p>Needs some ditch improvement and culvert maintenance.</p> <p>Some areas may need additional gravel.</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.

## Rating system

Surface rating	Visible distress *	General condition/ Treatment measures
2 (4) <i>Poor</i>	<p>Little or no roadway crown (less than 3").</p> <p>Adequate ditches on less than 50% of roadway. Portions of the ditches may be filled, overgrown and/or show erosion.</p> <p>Some areas (25%) with little or no aggregate.</p> <p>Culverts partially full of debris.</p> <p>Moderate to severe washboarding (over 3" deep) over 25% of area.</p> <p>Moderate rutting (1"-3"), over 10%-25% of area.</p> <p>Moderate potholes (2"-4"), over 10%-25% of area.</p> <p>Severe loose aggregate (over 4").</p>	<p>Travel at slow speeds (less than 25 mph) is required.</p> <p>Needs additional new aggregate.</p> <p>Major ditch construction and culvert maintenance also required.</p>
1 (2) <i>Failed</i>	<p>No roadway crown or road is bowl shaped with extensive ponding.</p> <p>Little if any ditching.</p> <p>Filled or damaged culverts.</p> <p>Severe rutting (over 3" deep), over 25% of the area.</p> <p>Severe potholes (over 4" deep), over 25% of area.</p> <p>Many areas (over 25%) with little or no aggregate.</p>	<p>Travel is difficult and road may be closed at times.</p> <p>Needs complete rebuilding and/or new culverts.</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.