



Asset Management Plan for Primary and Local Roads

June 2015



Table of Contents

	Foreword.....	3
1	Current Assets.....	4
1.1	Asset Inventory	4
1.2	Componentized Asset Inventory.....	7
1.3	Current Data and Software Tools.....	8
1.4	Data Management & Accessibility	9
2	Finances	10
2.1	Current Asset Investment	10
2.2	Income.....	10
2.3	Expenses and Expenditures.....	11
2.4	Unfunded Projects	11
2.5	Optimized Capital Plan	11
3	Managing Lifecycles	12
3.1	Current Conditions	12
3.2	Level of Service.....	16
3.3	Assess Treatment Alternatives.....	17
3.4	Mix-of-Fixes Analysis.....	19
3.5	Optimized Treatment Selection	20
3.6	Optimized Level of Service	22
4	Make and Know the Rules	23
4.1	Strategic Goals	23
4.2	Legislation, Policy, and Standards	24
4.3	Reporting.....	25
4.4	Evaluation of Goals and Performance Targets.....	25
4.5	Reviewing of Goals	25
5	Decision Making.....	26
5.1	Evaluate Decision Process.....	26
5.2	Basic Process Improvement Plan	27
6	Establishing Sustainability.....	28
6.1	Sustainability Assessment.....	28
6.2	Program Coordination.....	30

Appendix

- A. PASER Ratings – “Current Surface Rating Report”
- B. 5-20 Year Projection Chart
- C. 20 Year Strategy

Foreword

The Grand Traverse County Road Commission (GTCRC) has been struggling for several years to maintain our primary and local roads due to a history of underfunding. Increased costs, reduced funding and improved fuel efficiencies have affected both the condition of our roads and the strategic direction of the GTCRC to manage them.

Our roads are aging and deteriorating with continually increasing traffic using them. Three severe winters (2013, 2014 & 2015) have sped up deterioration significantly. Our challenge as the stewards of our road system is to maintain the public safety and the quality of our roads. With an Asset Management Plan, we can select the right treatment at the right time, plan within available funding limits and maximize the life of our roads. It has been well documented that taking care of our roads with properly timed preservation treatments are more effective and efficient than being in a reactive repair mode of maintenance or reconstruction.

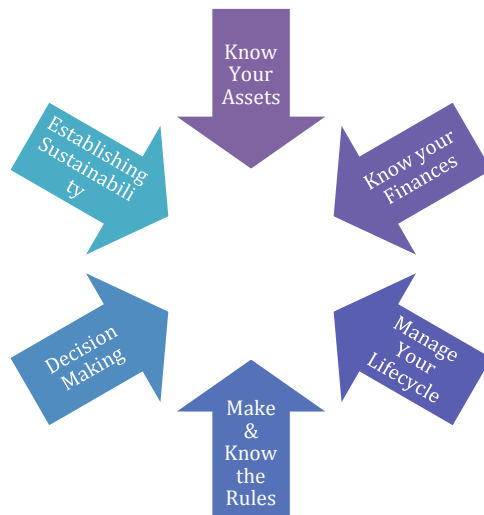
Constantly rising construction costs and the reduction of available funding has forced us to adjust our road management strategy by regularly evaluating and prioritizing our needs.

By implementing this Asset Management Plan we have been able to improve the number of road miles from less than 35% being rated fair to good to approximately 54% rated fair to good in just two years.

Overview of Asset Management

The State of Michigan has been actively pursuing Asset Management since 1998 when the Michigan Legislature established the ACT 51 Transportation Funding Committee. Continued support of Asset Management has occurred as the Legislature established the Transportation Asset Management Council in Act 499 of 2002. This Act encouraged the use of Asset Management in decision processes through Act 338 of 2006 which continued to refine Asset Management in Michigan through Act 199 of 2007. Asset Management, according to Public Act 199 of 2007, means an “ongoing process of maintaining, upgrading and operating physical assets cost-effectively, based on a continuous physical inventory and condition assessment.”

The implementation of an asset management decision process allows an agency to make the best decisions for their transportation network with the best information they can collect. The process enables good stewardship, transparent decision processes, and measureable performance. The following figure provides an overview of the asset management process.



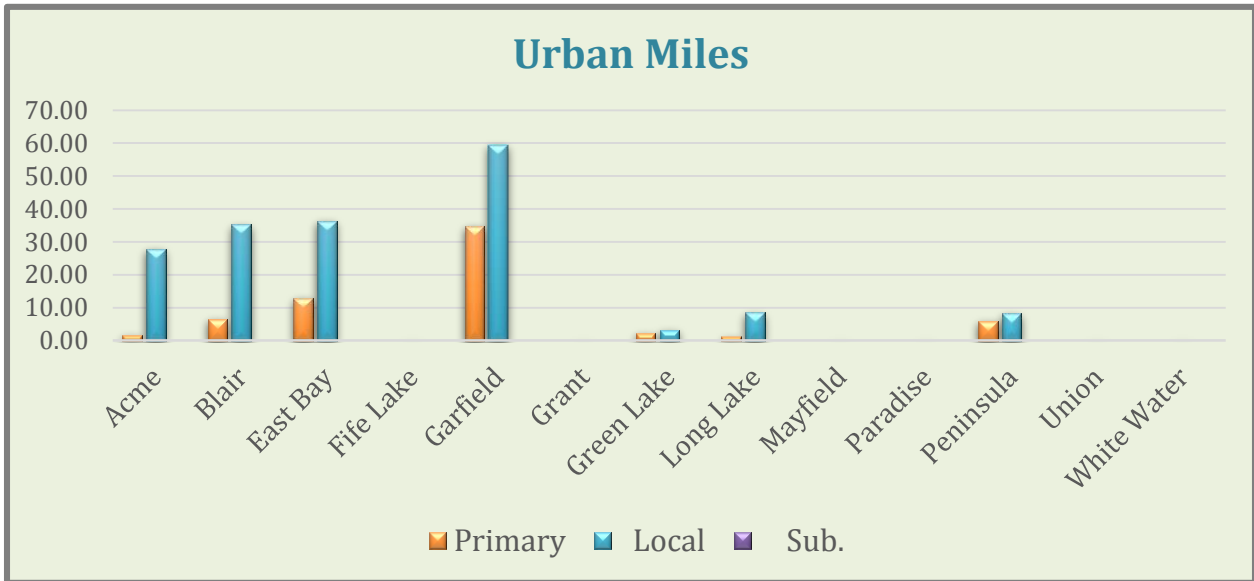
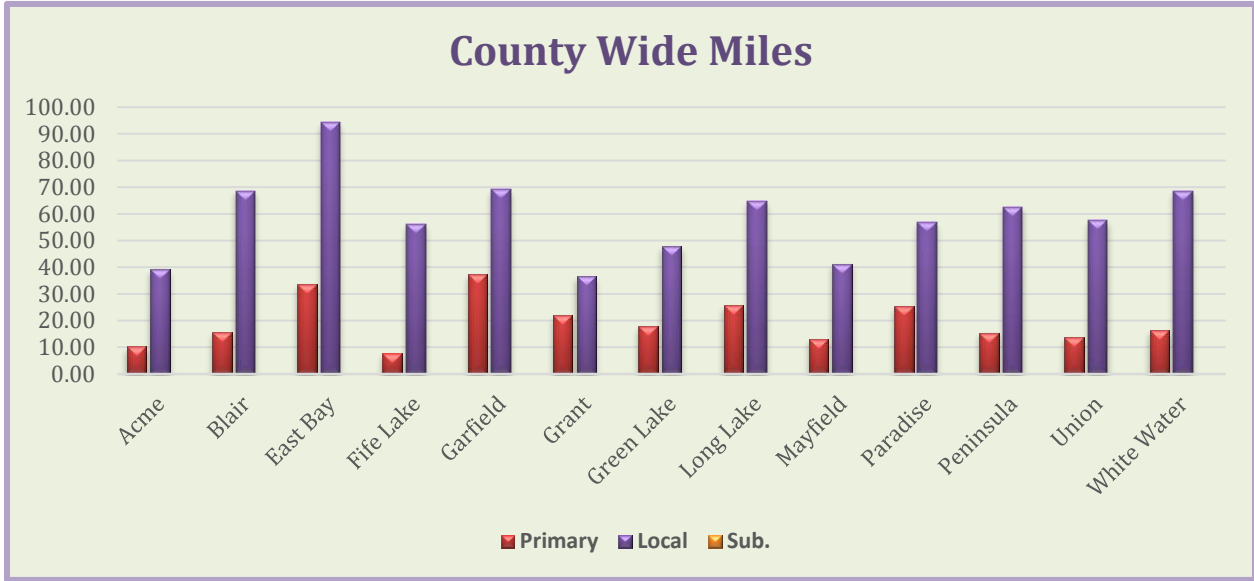
1 Current Assets

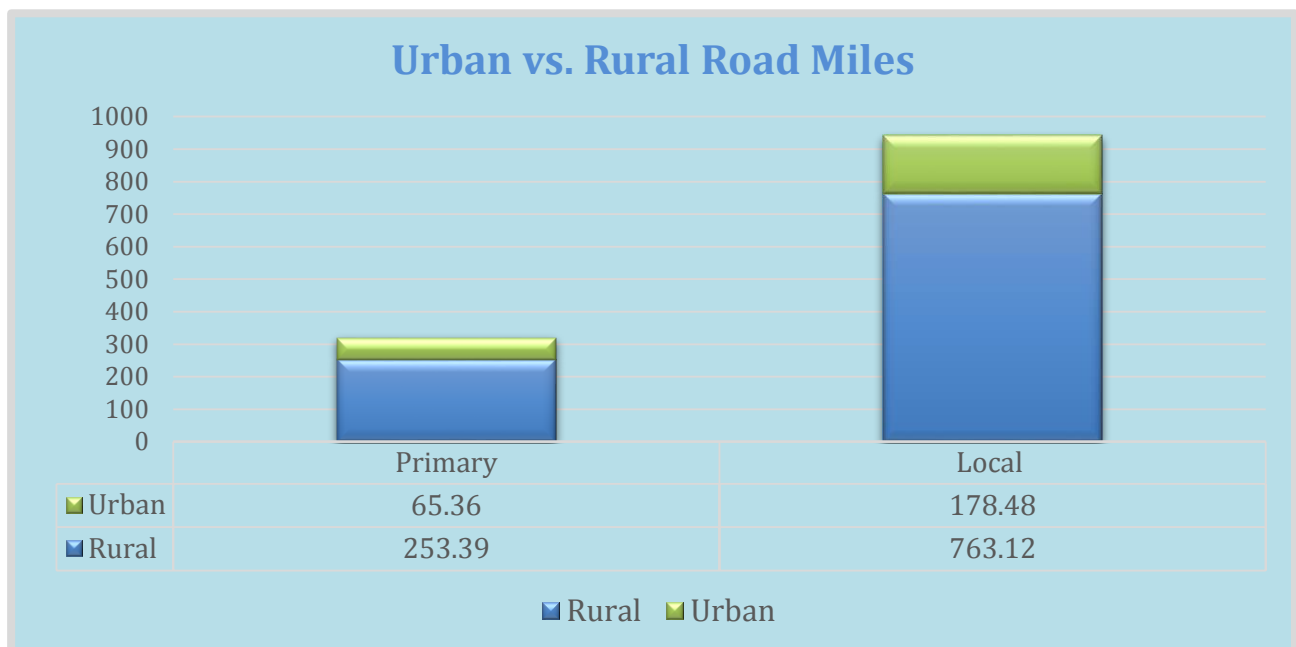
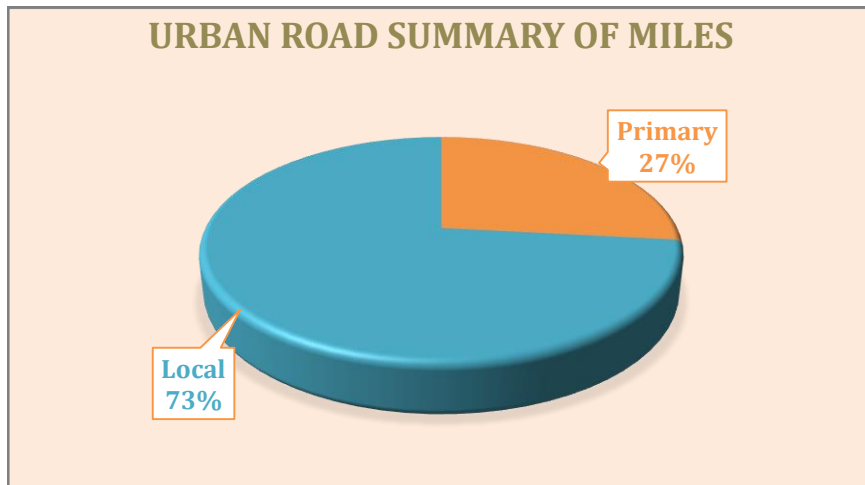
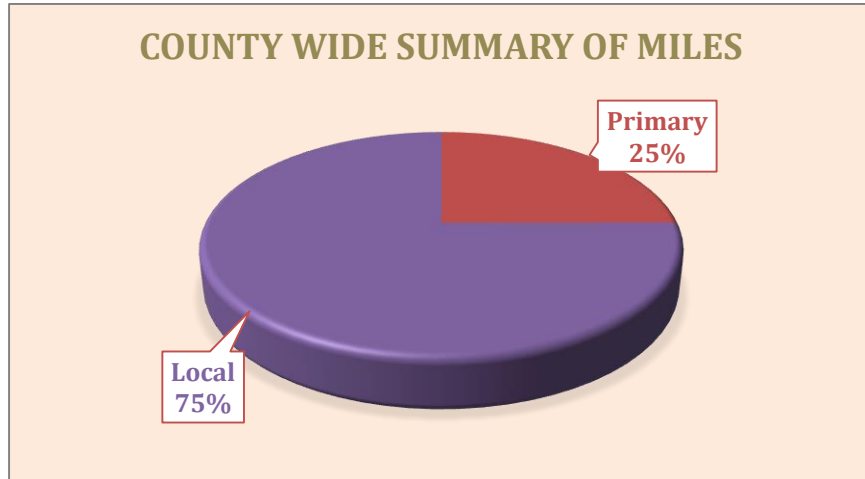
The Grand Traverse County Road Commission is the jurisdictional authority over all public roads lying outside the incorporated cities and villages within Grand Traverse County, exclusive of any state trunk line highways. At the end of 2014, the GTCRC certified approximately 253 center-line miles of county primary roads and 763 center-line miles of county local roads. Approximately 309 certified center-lines miles are unsealed, i.e. gravel, road. This section provides documentation of the assets contained on the paved roads.

1.1 Asset Inventory

MDOT annually certifies all public roads within the State of Michigan. Certification maps are maintained by the GTCRC and are the basis for determining the amount of money received from the Michigan Transportation Fund. The GTCRC receives a higher level of reimbursement for primary roads than local roads. Further information on public road miles can be found in the following public road mileage charts and graphs. Additional information can be found on the GTCRC maps.

Certification Mileage Chart										
County Wide					Urban					
Townships	Primary	Local		Total	Townships	Primary	Local		Total	
Acme	10.18	39.12		49.30	Acme	1.72	27.76		29.48	
Blair	15.52	68.60		84.12	Blair	6.53	35.21		41.74	
East Bay	33.58	94.23		127.81	East Bay	12.92	36.27		49.19	
Fife Lake	7.67	56.05		63.72	Fife Lake		0.00		0.00	
Garfield	37.24	69.23		106.47	Garfield	34.73	59.44		94.17	
Grant	21.93	36.54		58.47	Grant		0.00		0.00	
Green Lake	17.90	47.86		65.76	Green Lake	2.25	3.19		5.44	
Long Lake	25.64	64.67		90.31	Long Lake	1.25	8.47		9.72	
Mayfield	13.08	41.20		54.28	Mayfield		0.00		0.00	
Paradise	25.36	56.82		82.18	Paradise		0.00		0.00	
Peninsula	15.45	62.62		78.07	Peninsula	5.96	8.14		14.10	
Union	13.59	57.50		71.09	Union		0.00		0.00	
Whitewater	16.25	68.67		84.92	Whitewater		0.00		0.00	
Totals	253.39	763.12		1016.51		65.36	178.48		243.84	
Totals										
Total Primary County Wide				253.39		Total Primary Urban				65.36
Total Local County Wide				763.12		Total Local Urban				178.48
Grand Total County Wide				1016.51		Grand Total Urban				243.84





1.2 Componentized Asset Inventory

Knowledge of the number of miles under the jurisdiction of the GTCRC is an important basis for understanding the current public investment. In order to gain in depth knowledge about the public investment, we need as much information as possible about the assets. In particular, it is important to understand the types of road surfaces currently maintained. The following table lists the number of miles in each surface classification, as Queried from RoadSoft & established through Certification Maps.

<i>Surface Type (miles)</i>	<i>Distance (miles)</i>
Total County Primary & Local	1016.51 (certified)
Lane miles maintained under MDOT Contract	227.00
Asphalt	529.30
Sealcoat	210.88
Gravel	276.33

In the future, the GTCRC will be able to gain a better understanding of the value of pavement assets by improving the quality of the road surface asset information they have. The basic road surface inventory must be updated. Once this information is updated, it can be expanded to document individual pavement layers.

1.3 Current Data and Software Tools

Data about the pavement and road surface assets under GTCRC's jurisdiction are maintained by the three departments at the GTCRC. These departments are Administration, Engineering, and Operations. The roles of these departments are as follows:

Administration

The five sections that fall under Administration include Board of County Road Commissioners, Finance, Human Resources, Public Information/Community Relations, and Information Technology. These sections oversee the business functions of policy-making, budget, accounts receivable/payables, employment, bargaining units, workers compensation and safety, employee benefits, community relations and technology.

Engineering

The Engineering Department is responsible for providing engineering and technical services for road operations, preventative maintenance project, and improvement projects on the county road system, is comprised of four sections; Project Management/Development, Construction Testing & Inspection, Traffic, Safety and Permitting.

Operations

The Operations Department oversees the maintenance and upkeep of all county roads, as well as Michigan Department of Transportation's state trunk lines under a contract. In addition, Operations is responsible for two maintenance garages and approximately 125 pieces of road equipment. Operations consist of District Crews, the Heavy Equipment Crew, the Tree Crew, the Equipment/Maintenance Crew, the Grounds & Facilities Crew and the State Trunk line Crew.

The GTCRC currently uses various types of software to manage current asset data and cost information. The following table lists specific software packages utilized by the GTCRC and descriptions of the functions these software packages perform.

Name	Function/Purpose/Data	Location
RoadSoft	Roadway Asset Management System	Server
	Asset Inventory	
	Asset Condition Data	
	Asset Deterioration Modeling	
	Strategy Evaluation	
MS Excel	Asset cost and depreciation	Server
Precision	Accounting software	Server
	Income and Expenditure	
Hardcopy	Asset cost records	Vault

1.4 Data Management & Accessibility

Road Soft - Program, updates and software support is issued by LTAP (Michigan Local Technical Assistance Program). User rights are established to control input procedures and minimized corruption of data.

Excel - Spreadsheets are individually maintained. Worksheets supporting amounts in financial statements are subject to annual audit.

Precision Accounting Software - This software is written specifically for road commissions. Annual updates and software support provided by Precision Computer Solutions. Access is restricted to the finance department personnel.

All data files maintained on the server. Server is backed up nightly.

Outside professionals assist with maintaining the integrity and security of our IT system.

2 Finances

The GTCRC is an independent financial entity. The Board of County Road Commissioners adopts an annual budget and approves all expenditures in accordance with accepted accounting principles for government agencies. Annually, an amendment to the budget will be drafted to reflect actual winter maintenance expenses. This is typically presented by staff and approved by the Board of Road Commissioners in early April each year. An independent audit is performed annually on the Road Commission accounts, and the results are provided to the Michigan Department of Treasury.

The following sections document the financial status of the GTCRC. This data was compiled for the year end of December 31, 2014, and is provided here for the purposes of asset management considerations. The most recent financial information available can be obtained through the GTCRC.

2.1 Current Asset Investment

The GTCRC currently invests in 1016.51 miles of road surface assets. The investments include three main surface types: Hot Mix Asphalt (HMA), concrete, and unsealed roads. Unsealed roads fall into two main subcategories: Natural aggregate and sand/dirt.

The GTCRC currently estimates the road surface asset investment to be:

- a) Current Investment \$108,409,000
- b) Depreciated Value \$41,995,000
- c) Net Value \$66,414,000

2.2 Income

The GTCRC's principal source of funding is the Michigan Transportation Fund (MTF). This fund is supported by vehicle registration fees and the Michigan state gas tax. The Road Commission's allocation is based on a formula including such factors as population, miles of certified roads and county-wide vehicle registration fees.

In addition to Michigan Transportation Fund, the Road Commission is contracted by the Michigan Department of Transportation to maintain the state trunk lines within Grand Traverse County. GTCRC also receives federal and state grants for individual projects and may receive contributions from Townships, private developers and other governmental entities for specific improvements. The Road Commission also receives revenues from permits and other fees, special assessment districts and interest from invested funds. The following table lists the anticipated revenues for the 2015 Fiscal Year.

Revenue Source	Budget (\$)
Millage, voted	3,546,000
Michigan Transportation Fund (MTF)	7,250,000
Federal/State Funds	3,289,000
State Trunkline Maintenance	1,114,000
Township Contributions	772,650
Other Contributions	370,000
Other Revenue	1,154,268
Total	\$17,895,918

2.3 Expenses and Expenditures

Typical annual expenditure are as follows:

	Cost
Construction/ Heavy Maintenance	\$ 10,000,000 +/-
Routine Maintenance	\$ 5,250,000 +/-
State Trunk line Maintenance	\$ 1,150,000 +/-
Administrative Expense	\$ 700,000 +/-
Debt Service	\$ 650,000 +/-

Construction/Heavy Maintenance is comprised of available funding through Federal, State, Special Assessment Districts (SAD), General, and Township Contributions. A projection of these funding sources are as follows:

Year	Rural		Urban	Local
	STP	State D		
2015	\$965,000.00	\$150,000.00	\$375,000.00	\$540,000.00*
2016	\$554,770.00	\$74,500.00	\$0	\$350,000.00*
2017	\$520,000.00	\$20,000.00	\$0	\$410,000.00*
2018	\$624,000.00	\$75,000.00	\$0	\$381,000.00*
2019	\$576,960.00	\$74,473.00	\$375,000.00	\$300,000.00*
2020	\$580,000.00	\$75,000.00	\$0	\$300,000.00*

*Pending available funding from SAD, General and Township contributions.

Routine maintenance is inclusive of County Primary and County Local Maintenance.

2.4 Unfunded Projects

Based on GTCRC's goal of having 80% of all roads in fair or good condition, we estimate there is \$130 million in Unfunded Projects.

2.5 Optimized Capital Plan

Due to the overall condition of the Grand Traverse County Road System and lack of funding, we will possibly establish an Optimized Capital Plan in 2016.

3 Managing Lifecycles

3.1 Current Conditions

The GTCRC is committed to continually reevaluating the current conditions of the transportation system. Part of this effort goes into evaluating the current road surface conditions with the Pavement Surface Evaluation Rating (PASER) system. The PASER system is the preferred method for Michigan agencies to rate their road pavements. PASER ratings for HMA or concrete surfaces are defined in the following tables.

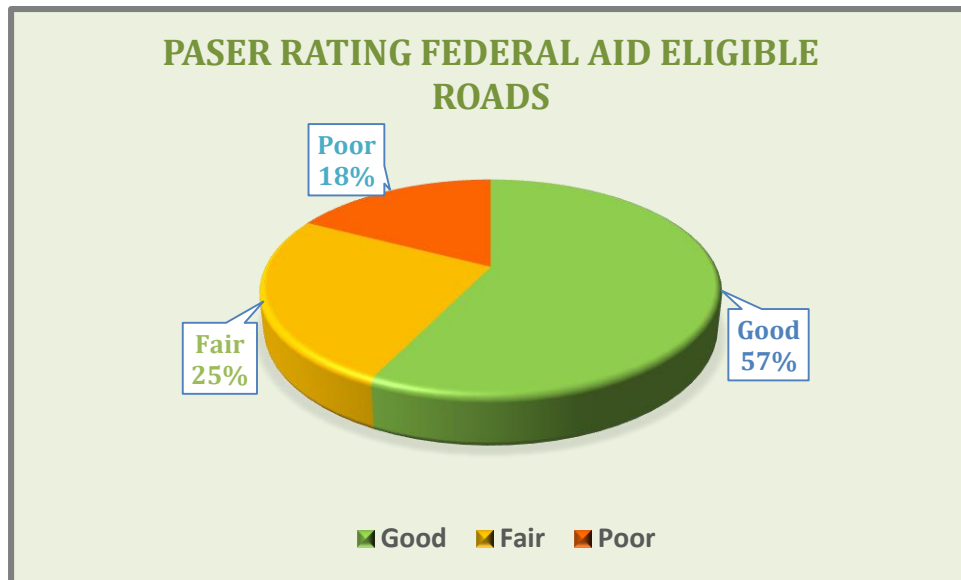
Asphalt PASER Ratings		
PASER Rating	Condition	Treatment
9 & 10	Excellent	No maintenance required
8	Very Good	Little or no maintenance
6 & 7	Good	Maintain with crack seal
4 & 5	Fair	Maintain with sealcoat or thin overlay
3	Poor	Milling prior to overlay (structural)
1 & 2	Very Poor-Failed	Reconstruction

Concrete PASER Ratings		
PASER Rating	Condition	Treatment
9 & 10	Excellent	No maintenance required
8	Very Good	Little or no maintenance
6 & 7	Good	Seal open joints & cracks
4 & 5	Fair	Extensive slab or joint rehabilitation
3	Poor	Extensive full depth repairs
1 & 2	Very Poor- Failed	Reconstruction

Prior to treatment consideration, the Grand Traverse County Road Commission will evaluate the current condition of the Roadway System. PASER treatments listed are considered a recommendation.

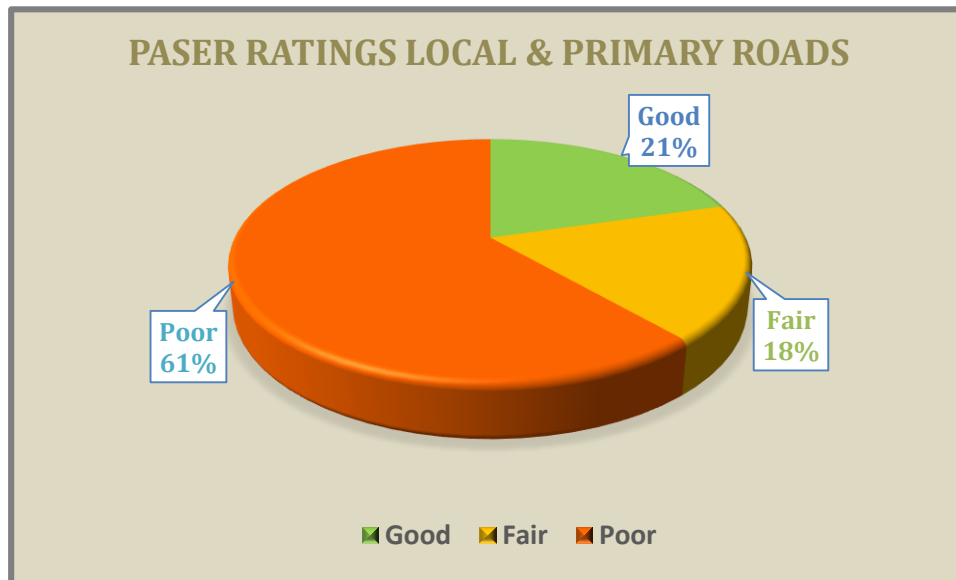
The following table provides the PASER ratings for all federal aid roadways under GTCRC jurisdiction. Federal aid roads, 253.39 miles, make up 25% of the system under GTCRC’s jurisdiction.

PASER Ratings on Federal Aid Eligible Road in miles and %												
2014	Ratings										Total Mileage	
	10	9	8	7	6	5	4	3	2	1		Not Rated
Acme	0.041	0.000	3.070	0.000	1.408	1.587	1.181	2.891	0.000	0.000		10.180
Blair	1.348	0.000	4.720	5.269	1.560	0.000	0.000	2.622	0.000	0.000		15.520
East Bay	0.000	3.519	6.436	4.139	3.389	3.571	5.819	3.932	2.775	0.000		33.580
Fife Lake	0.000	1.110	2.565	0.272	0.910	0.724	0.000	1.393	0.696	0.000		7.670
Garfield	0.000	6.455	7.469	5.895	7.648	0.620	3.406	5.746	0.002	0.000		37.240
Grant	0.000	1.407	5.847	4.897	4.141	0.424	3.099	2.115	0.000	0.000		21.930
Green Lake	0.000	1.378	2.046	1.360	2.464	0.000	6.738	2.976	0.937	0.000		17.900
Long Lake	0.000	4.853	0.473	7.022	2.970	3.004	0.484	6.834	0.000	0.000		25.640
Mayfield	0.000	0.000	1.022	7.979	0.000	3.521	0.518	0.040	0.000	0.000		13.080
Paradise	0.000	0.000	2.743	5.521	2.321	8.167	4.397	0.197	2.014	0.000		25.360
Peninsula	0.000	0.000	0.000	3.013	0.657	0.213	8.398	3.169	0.000	0.000		15.450
Union	0.000	4.540	4.578	0.000	0.000	0.461	0.000	0.000	4.011	0.000		13.590
Whitewater	0.000	2.761	0.000	3.849	0.000	0.481	7.426	0.451	0.037	1.244		16.250
2014 Totals	1.39	26.02	40.97	49.22	27.47	22.77	41.47	32.37	10.47	1.24		253.390
Percentage	0.55%	10.27%	16.17%	19.42%	10.84%	8.99%	16.37%	12.77%	4.13%	0.49%		100.00%

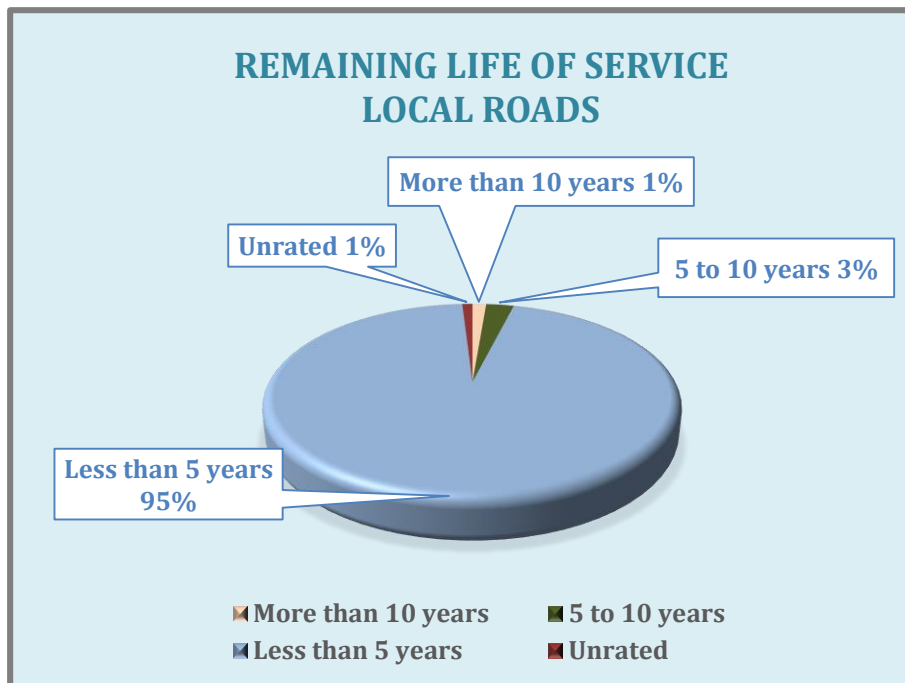
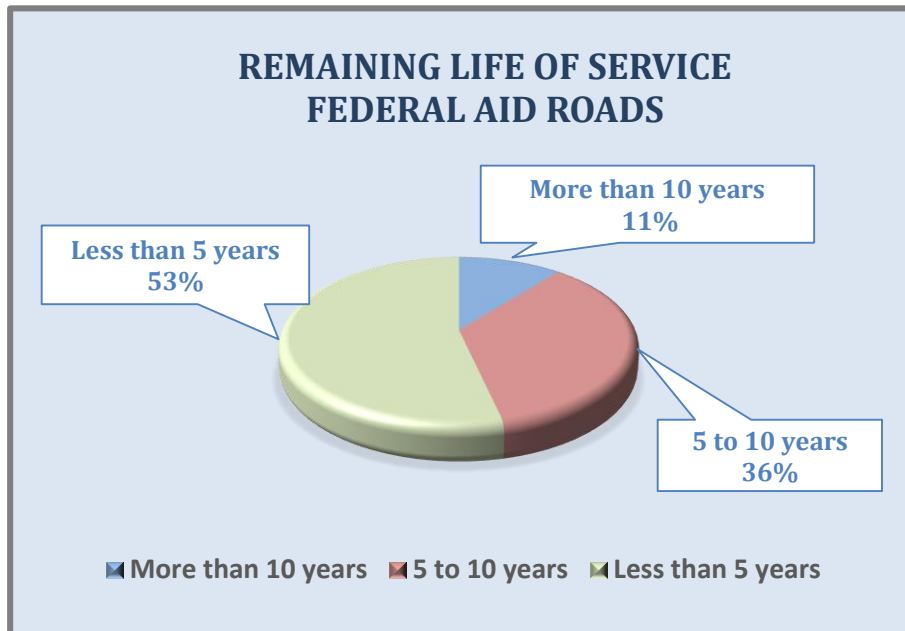


The following table provides the PASER ratings for all Asphalt & Sealcoat local roadways under GTCRC jurisdiction. Local roads, 763.12 miles, make up 75% of the system under GTCRC's jurisdiction.

PASER Ratings on Local & Primary Roads in miles and %												
2014	Ratings											Total
	10	9	8	7	6	5	4	3	2	1	Not Rated	
Acme	0.041	0.772	3.132	1.690	3.229	3.516	4.686	10.814	17.932	3.451	0.038	49.30
Blair	1.384	2.192	4.893	7.156	10.013	4.371	2.617	17.359	33.463	0.546	0.124	84.12
East Bay	0.000	4.740	6.842	5.960	7.440	12.508	13.952	17.094	49.429	9.274	0.555	127.81
Fife Lake	0.000	1.442	3.332	0.354	1.182	0.978	0.000	1.809	50.982	1.531	2.325	63.72
Garfield	0.000	9.898	9.453	6.688	24.934	15.835	10.088	8.190	14.508	6.328	0.834	106.47
Grant	0.000	1.615	6.713	5.618	6.079	2.585	5.077	5.085	25.329	0.000	0.415	58.47
Green Lake	0.000	1.261	2.042	3.126	8.609	10.684	8.568	9.348	20.054	1.772	0.279	65.76
Long Lake	0.000	7.150	2.273	10.536	7.211	10.753	4.997	12.033	30.048	5.311	0.002	90.31
Mayfield	0.000	0.000	0.919	7.421	0.510	11.768	4.767	3.527	25.372	0.000	0	54.28
Paradise	0.000	0.000	3.239	7.913	5.301	10.431	5.812	0.552	47.287	0.283	1.454	82.18
Peninsula	0.000	0.072	0.167	3.922	1.758	6.911	20.336	13.084	27.771	3.769	0.28	78.07
Union	0.000	4.656	4.695	0.000	0.000	0.473	0.332	0.145	60.258	0.528	0	71.09
White Water	0.000	2.894	0.000	4.288	2.137	3.910	9.680	7.197	49.322	4.001	1.483	84.92
2014 Totals	1.42	30.25	27.86	48.26	99.66	85.36	97.60	124.94	438.51	55.03	7.79	1016.51
Percentage	0%	3%	3%	5%	10%	8%	10%	12%	43%	5%	1%	100.00%



The current known ratings provide important information regarding the estimated remaining life for the pavements owned by the GTCRC. The estimation of remaining life of service was based on the standard degradation models included in the PASER rating system. The following chart provides a breakdown of the expected remaining service life, with a PASER rating of 10 or 9 having more than 10 years of remaining service life, a rating of 8 or 7 having an RSL of 5 to 10 years, and a rating of 6 or below equating to less than 5 years RSL. The PASER rating is a reflection of the surface quality of the roadway, not an absolute indicator of quality. A roadway with a low or PASER rating or one past its Remaining Service Life is still a usable road.



3.2 Level of Service

The GTCRC is responsible for maintaining a road system that is reasonably safe and convenient for the traveling public. This charge for good stewardship requires the GTCRC to establish level of service goals for the operations and maintenance of the roads. The GTCRC has currently published goals for winter weather operations, new developments, land divisions and driveway permits.

Winter Operations

GTCRC policy has established five priority rankings for plowing and winter operations activities. These priority rankings are:

- Priority 1 – State trunk-line routes
- Priority 2 – High volume paved roads (Primary)
- Priority 3 – Medium volume paved roads (Secondary)
- Priority 4 – Subdivision roads
- Priority 5 – Unpaved roads

Driveway Permits

The *Procedures and Regulations for Permit Activities* (2006) policy established the GTCRC's level of service requirements for all new developments requesting access to the county road system. The policy addresses the need for traffic impact studies, maintenance of current operational level of service and requirements.

Road Surfaces

The GTCRC has established service goals for the maintenance of pavements under their jurisdiction. The service goals have not been formally adopted at this time. However, the GTCRC Engineering Department has selected the goal of achieving that 80% of all paved surfaces will be in good or fair condition according to PASER ratings.

Road Maintenance and projects are generally prioritized as follows with safety issues being addressed as quickly as possible regardless of location:

- Priority 1 – State trunk-line routes
- Priority 2 – High volume paved roads (Primary)
- Priority 3 – Medium volume paved roads (Secondary)
- Priority 4 – Subdivision roads
- Priority 5 – Unpaved roads

In addition to PASER ratings and priorities referenced above, the following criteria are used when considering projects:

- Safety
- Average Daily Traffic
- Impact to community
 - Residents
 - Economy
 - Tourists/Visitors
 - First Responders
 - Schools/Students

3.3 Assess Treatment Alternatives

GTCRC in the past has used remedy/action criteria as defined within the TAMC PASER Program. This approach has limited the GTCRC to provide corrective measures due to lack of funding.

GTCRC is currently working to establish a broader approach. The new approach will allow the GTCRC to have more flexibility in choosing treatment options and will provide better solutions. The hope is to develop a plan that will include better, more flexible fixes and optimize service life.

Many transportation agencies are using pavement preservation programs to manage their pavement assets more cost-effectively. Pavement preservation procedures have been in use for many years, but often agencies use the same pavement preservation terminology in different manners. Therefore, the Federal Highway Administration (FHWA) Office of Asset Management provided the following guidance regarding the definition of pavement preservation in a memorandum dated September 12, 2005:

Pavement preservation represents a proactive approach in maintaining our existing highways. It enables State transportation agencies (STAs) to reduce costly, time consuming rehabilitation and reconstruction projects and the associated traffic disruptions. With timely preservation, we can provide the traveling public with improved safety and mobility, reduced congestion, and smoother, longer lasting pavements. This is the true goal of pavement preservation, a goal in which the FHWA, through its partnership with the States, local agencies, industry organizations, and other interested stakeholders, is committed to achieve.

The memorandum also defined several pavement preservation related terms including:

- pavement preservation,
- preventive maintenance,
- minor rehabilitation (non-structural), and
- routine maintenance

These terms are described in more detail in the following sections.

Pavement Preservation

Pavement preservation is a program employing a network level, long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement service life, improve safety and meet motorist expectations. Pavement preservation includes work conducted on a pavement prior to major rehabilitation, restoration or reconstruction. Pavements with significant structural deterioration are not candidates for pavement preservation treatments.

Preventive Maintenance

The main component of pavement preservation is preventive maintenance. As defined by FHWA, preventive maintenance is a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration and maintains or improves the functional condition of the system (without significantly increasing the structural capacity). The general philosophy of the use of preventive maintenance treatments is to “apply the right treatment, to the right pavement, at the right time.” These practices result in an outcome of “keeping good roads in good condition.”

When activities (e.g., crack sealing, filling, and application of seal coats) are placed on the pavement at the right time, they are examples of preventive maintenance treatments.

Minor Rehabilitation

Minor rehabilitation consists of non-structural enhancements made to the existing pavement section to eliminate age-related, top-down surface cracking that develops in flexible pavements due to environmental exposure or to restore functionality of concrete pavements. Because of the non-structural nature of minor rehabilitation techniques, these types of rehabilitation techniques are placed in the category of pavement preservation.

The placement of wedging and thin overlays or the application of recycling techniques (i.e., hot in-place or cold in-place recycling) to correct significant surface cracking in flexible pavements can be considered minor rehabilitation activities.

Routine Maintenance

Certain routine maintenance activities are considered part of the pavement preservation program based upon the type of activity, the nature of the distress and the timing of the application. Routine maintenance has been defined as planned work that is performed on a routine basis to maintain and preserve the condition of the highway system or respond to specific conditions and events that restore the highway system to an adequate level of service. Crack filling and sealing are preservation activities that can be classified as routine maintenance.

3.4 Mix-of-Fixes Analysis

Paved Roads

The intended purpose of a pavement preservation program is to maintain or restore the surface characteristics of a pavement and to extend the service life of the pavement assets being managed. However, the improvements are such that there is no increase in capacity or strength, but they can have a positive impact on the structural capacity by slowing deterioration. As a means of improving the functional condition of the network and reducing the overall rate of deterioration of the pavement asset, preventive maintenance treatments are used in the pavement preservation program. Because they are relatively inexpensive in comparison to resurfacing or reconstruction projects, the preventive maintenance treatments are an effective means to preserve the investment in the pavement asset.

An effective pavement preservation program has three main objectives:

1. Preserve the Pavement Investment. This objective involves minimizing the structural failures and
2. Extending the structural life of the pavement to preserve the investment the Road Commission has made in the pavement asset.
3. Maintain High Level of Service (LOS). This objective involves maintaining acceptable smoothness and surface friction in order to provide a high LOS for the roadway customers.

The implementation of a pavement preservation program is good practice as it focuses on maximizing the condition and life of a network of pavements while minimizing the network's lifecycle cost. The noted benefits of using a pavement preservation program include the following:

1. Improved Pavement Performance. Preservation activities extend the performance of the pavement and help to improve the overall condition of the network.
2. Higher Customer Satisfaction. Use of preservation activities can lead to smoother roads and fewer customer delays.
3. Cost Savings. Less expensive treatments and the extension of service lives of pavements help to lower or stabilize operating costs.
4. Increased Safety. Preventive maintenance treatments are designed to provide safer surfaces in terms of improved pavement texture and correction of safety related defects (e.g., ruts, improving surface drainage).
5. Lower Cost Over Time. Studies show every additional dollar spent on preventative maintenance treatments saves up to \$15 in future rehabilitation costs.
6. Fewer Premature Pavement Failures. Many premature pavement failures are caused by pavement damage that goes untreated, such as water seeping into cracks.

A pavement preservation program relies on proper treatment selection and timing of the treatment to be successful. In order to select the right treatment for the right pavement at the right time, gather the following information:

- structure and condition of the existing pavement
- expected performance of the pavement
- how different treatments affect their performance
- other factors that may affect the treatment performance

These items can often be determined by finding optimum strategies for providing, evaluating and maintaining pavements in serviceable condition over a period of time. Pavement management, in the broad sense, includes all the activities involved in the planning, programming, design, construction, maintenance and rehabilitation of the pavement portion of a public works program.

Gravel Roads

Gravel roads generally receive the lowest service provided to the traveling public and are usually considered greatly inferior to paved roads. Yet, in many rural regions, the volume of traffic is so low that paving and maintaining a paved road is not economically feasible. In many cases, gravel roads exist to provide a means of getting agricultural products in and out of farm fields, timber out of forests or as access to remote areas such as campgrounds and lakes. Many gravel roads serve rural residents as well. Many of these roads will remain unpaved due to very low traffic volume and/or lack of funds to adequately improve the subgrade and base before applying pavement layer(s).

Good gravel road maintenance or rehabilitation depends on two basic principles: proper use of a motor grader (or other grading device) and use of good surface gravel. The use of the grader to properly shape the road is obvious to almost everyone, but the quality and volume of gravel needed is not as well understood. It seems that most gravel maintenance/rehabilitation problems are blamed on the grader operator when the actual problem is often material related. This is particularly true when dealing with the problem of corrugation or “wash-boarding.”

Another important matter to consider is the dramatic change in the vehicles and equipment using low-volume roads. Trucks and agricultural equipment are increasing in size and horsepower. The trend is toward even larger machinery. The effect of larger and heavier vehicles on our paved roads is well understood. There is a definite need to build stronger bases and pavements. But the effect on gravel roads is just as serious and often is not recognized. The strength of the subgrade and depth of the material needed to carry today’s heavy loads must be considered. Proper drainage is also important.

Gravel roads require much more frequent maintenance than paved roads, especially after wet periods and when with increased traffic. Some of the more common maintenance issues are:

1. Drainage problems are common because many of today’s gravel roads evolved from trails or cattle paths and were not designed by engineers.
2. Wash-boarding is the formation of corrugations across the surface at right angles to the direction of travel. They can become severe enough to cause vibrations in vehicles.

3.5 Optimized Treatment Selection

Paved Roads

In the past, the Grand Traverse County Road Commission concentrated maintenance and resurfacing efforts on the roads in the “poorest” condition and ignored or was unable to fund routine maintenance on other roads. With the increasing costs for construction and the decline in revenues, this approach will lead to the gradual deterioration of the road network and require reconstruction on roads earlier than anticipated.

A more economical way of maintaining the road network is to lengthen the time between construction and reconstruction. The preventative maintenance improvement program was developed to add surface life to the roads in “good” or “fair” condition until the “poor” condition roads could be managed.

With asphalt prices on the rise, other resources and technologies have to be considered to preserve our county roads. The Grand Traverse County Road Commission will incorporate some of the following preventative maintenance treatments for the road system. These treatments can provide roads in “good to fair” shape an extra 5-10 years of life. Prior to any improvement, roads will be evaluated for the proper treatment.

Hard-Surfaced Roads

Seal Coat: A three-step process with a layer of asphalt emulsion, a layer of chip aggregates, and a fog sealant.

Crack Seal: The crack or joint is cleaned and an overband layer of rubberized asphalt is placed to fill the area.

Wedging: An asphalt wedge is applied where quarter crown correction is needed prior to any other treatment is applied.

DuraPatch: A machine applied process that combines asphalt emulsion with stone to provide a seal and filler for deteriorated surfaces.

Gravel Roads

Too often, this critical issue is ignored when building and maintaining local roads. When drainage is poor, the best efforts to rehabilitate or maintain roads will bring disappointing results. When water can be drained off of road surfaces and out of roadbed soils, the road will invariably become easier to maintain.

Shaping/Crown: Problems develop quickly when a gravel road has no crown. Water will quickly collect on the road surface during a rain and will soften the crust. This will lead to rutting which can become severe if the subgrade also begins to soften. Even if the subgrade remains firm, traffic will quickly pound out smaller depressions in the road where water collects and the road will develop potholes. A properly drained gravel road should have a crown.

Gravel Rehabilitation: Gravel is a mixture of three sizes or types of material: stone, sand and fines. This will be discussed further in the next section. Without a good blend of these three sizes, the gravel will perform poorly. Unfortunately, poor performing gravel will often be blamed on the maintenance operator, but the operator cannot make good gravel out of bad gravel. Bad or poorly graded gravel cannot be changed to good gravel without additional costs, but it is often well worth it. One common practice of improving surface gravel is to add new, clean, virgin fine gravel. Good surface gravel needs a percentage of stone which gives strength to support loads — particularly in wet weather. It also needs a percentage of sand-sized particles to fill the voids between the stones and give stability, but a percentage of good, plastic fines are also needed to bind the material together allowing the gravel road to form a crust and shed water. In many regions of the country, this is a natural clay which gives the gravel a strong cohesive characteristic and keeps a reasonably tight surface especially during periods of dry weather. Some of the fine material in surface gravel will be lost under traffic action in the form of dust that rises from the surface and simply blows away. This can be compensated for by specifying a higher percentage of fines in the new gravel. However, no gravel surface will perform like pavement! There will be some loose aggregate or “float “on the surface of virtually all gravel roads, but striving to get as good a material as budgets and local sources allow will improve the performance of a gravel road.

Dust Control and Stabilization: Once a road is stabilized, there are several benefits. On high volume roads, these benefits can make stabilization very cost effective.

When the products are working well, the added benefit of a stabilized surface that controls the loss of fines through dust control is a great economic benefit. When the fines are lost from a gravel surface, the stone and sand-sized particles that remain will tend to remain loose on the surface, leading to some distresses like wash-boarding and reduced skid resistance. It will become very hard to maintain. Fresh gravel with a higher percentage of fines needs to be hauled in, but this is very expensive. GTCRC offers cost sharing with township partners where they pay for new gravel and GTCRC provides labor and equipment to upgrade existing gravel roads.

3.6 Optimized Level of Service

Due to the overall condition of the Grand Traverse County road system and lack of funding, we will establish an Optimized Level of Service in the future.

4 Make and Know the Rules

4.1 Strategic Goals

The Board of County Road Commissioners adopted its Mission Statement on May 20, 1994. On May 24, 2012, the Board updated its “Board Goals and Priorities.” These items form the basis for the development of annual goals and strategies to guide our work with our partners and stakeholders, regularly monitor and report on those efforts and then to review and adjust plans as necessary.

Mission Statement

The following statement was created by a team of employees, management and Board members: “To maintain and upgrade a safe and efficient road system.”

Vision Statement

The Grand Traverse County Road Commission aspires to be a premier road maintenance and planning agency providing a high quality system of roads and bridges through efficient maintenance, fiscal responsibility and innovative planning and improvement strategies. We aspire to provide the highest quality service through an open and fair decision-making process to meet the needs of the traveling public in Grand Traverse County. We strive to enhance the quality of life in urban and rural communities by drawing on the expertise, creativity and commitment of our staff and partners. We recognize that our success is dependent upon the collective talents of our staff and community resources to meet the challenges. We commit to attracting the best and brightest workforce, strengthening their skills and promoting and rewarding excellence, while nurturing diversity and encouraging innovation.

Guiding Principles

Promote openness and transparency in decision-making

Road commission decisions must comply with legal requirements and professional standards. We will ensure the community understands these obligations in the decision process, and to the extent we can, we will exercise flexibility in the application of professional standards to address strongly felt needs of the community. As a public body we also have an obligation to comply with statutory requirements such as the Open Meetings Act and Freedom of Information requirements. We are committed to going beyond those requirements to ensure openness in our decision-making, make appropriate information available in a timely fashion consistent with legal requirements, reach out to the larger community through the media and other ways to ensure that the community is aware of the decisions we make and the basis for those decisions.

Provide ample opportunities for participation by the public and local government

We are committed to providing ample opportunities for public participation and input into decision-making processes. In addition to mandated public hearings, we will make an affirmative effort to notify and engage residents in areas particularly impacted by proposed projects, and we will work to identify community concerns and needs and address those concerns, consistent with statutory obligations and professional standards.

Be conscientious stewards of the public's money

As a public agency, we use public resources from the Michigan Transportation Fund, federal and state grants, as well as township and developer contributions to support our work. We are committed to being effective stewards of these resources, ensuring the long-term fiscal stability of the Road Commission, employing cost-

effective solutions to projects, continuing to explore ways to reduce the costs of operations, continually striving to improve service delivery and productivity and ensuring a high level of customer service in all that we do.

Value diversity

We serve a diverse community, in terms of gender, geography, race and other characteristics. We are committed to serving the entire community and reflecting the diversity of our county in our choice of employees, projects, vendors, and in our partnerships. The Board adopted its Equal Employment Opportunity policy in 1988 and adopted Title VI guidelines in 2011.

Be sensitive to the environment

Consistent with legal obligations and professional standards, we will be sensitive to the impact we have on the natural and built environment, seek to minimize that impact and, to the extent possible within financial and other constraints, seek to enhance and improve the environment. Where possible, consistent with the values of Grand Traverse County residents, we will make decisions and execute activities in a way that is a model of environmental stewardship for other Road Commissions. We will respect historical values reflected in the built environment to the extent we can and will be sensitive to concerns regarding local and county objectives to minimize sprawl and protect open spaces.

Value all employees

We recognize the success of our agency is largely dependent on the talents and skills of employees. We believe every employee has a role to play in making a positive difference for the success of our agency. We are committed to hire and retain the best possible employees, evaluate them regularly, provide opportunities for professional development and advancement, pay them competitively, reward success and innovation and treat them with dignity, fairness and respect.

Provide leadership in transportation planning and road system improvement

While we are responsible to the people of Grand Traverse County through the elected County Board of Commissioners, we also recognize an obligation to share our insights, experience and expertise in transportation and in providing transportation services with others. We support county, regional and state transportation initiatives through active engagement in the Grand Vision Plan implementation, the County Road Association of Michigan, Northern Michigan Association of Road Commission, Paul Bunyan Council and the Northwest Michigan Council of Governments. We strive to be recognized as a source of innovation and cutting edge performance in everything we do.

4.2 Legislation, Policy, and Standards

Our permits are included in the 2014 GTCRC Right of Way Permit Rules, Specifications and Guidelines.

The GTCRC hereby recognizes reference and incorporates in these procedures and regulations as if fully stated herein the most current editions of the following list of publications:

- AASHTO A Guide For Accommodating Utilities Within Highway Right-Of-Way
- AASHTO A Policy On Geometric Design of Highways and Streets
- AASHTO Roadside Design Guide
- APWA Position Statement, Public Rights-Of-Way Management, September 22, 1999
- ATSSA Quality Standards For Work Zone Traffic Control Devices

- FHWA Roundabouts: An Informational Guide, Publication No. FHWA-RD-00-067
- ITE Trip Generation Handbook
- ITE Trip Generation Manual
- MDOT Design Survey Manual
- MDOT Drainage Manual
- MDOT Geometric Design Guide
- MDOT Maintaining Traffic Typicals, Traffic and Safety Division
- MDOT Road and Bridge Standard Plans
- MDOT Standard Specifications For Construction
- MDOT, Reducing Traffic Congestion and Improving Traffic Safety in Michigan Communities: The Access Management Guidebook, October 2001
- Michigan Manual on Uniform Traffic Control Devices
- TRB, Highway Capacity Manual
- 2009 GTCRC Standards & Procedures
- 2014 GTCRC Right of Way Permit Rules, Specifications & Guidelines

The GTCRC will also comply with Michigan Public Act 199 of 2007, which requires:

“The department, each county road commission, and each city and village of this state shall annually submit a report to the Council. This report shall include a multi-year program developed through the asset management process described in this section. Projects contained in the department’s annual multi-year program shall be consistent with department’s asset management process and shall be reported consistent with categories established by the Council. Projects contained in the annual multi-year program of each local agency shall be consistent with the asset management process of each local road agency and shall be reported consistent with categories established by the Council.”

4.3 Reporting

GTCRC currently relies on annual PASER ratings and inspections to monitor conditions, results and comparisons. (See appendix) Future reporting will include results, bench marking, compliance reporting and resolution procedures.

4.4 Evaluation of Goals and Performance Targets

This section will be used in the future as we implement Level of Service goals.

4.5 Reviewing of Goals

This section will possibly be used in 2016 as it builds off 4.4 above and will be used to evaluate the appropriateness of our asset group and organization goals.

5 Decision Making

5.1 Evaluate Decision Process

The GTCRC takes a multi-disciplinary approach to determining the renewal, replacement, and improvement projects to implement in any given year. This process takes into consideration the condition of a pavement, stakeholder needs and the changing needs of the area around a road. The decision process is focused around the following key areas:

- The general condition of the road, e.g. the pavement, shoulders, culverts, etc.
- The PASER rating of the road.
- The volume of traffic, or number of trips, found on the road.
- The ability to provide, or the need for, safety improvement projects.
- The ability to provide corridor continuity.
- The potential for improved economic development in an area.
- The ability to coordinate with other projects that may be disturbing the roadway, such as utility work, or improving the public right-of-way, such as county D.P.W (utility) projects.
- The ability to partner with other jurisdictions and agencies, such as the city, townships, villages and MDOT in Grand Traverse County or neighboring road commissions, to share the cost burden of a project.

Once the GTCRC establishes the initial potential project list for a fiscal year, the actual field conditions of the project location are verified. The GTCRC reevaluates the project list after completing the field inspections to reprioritize as necessary.

5.2 Basic Process Improvement Plan

The GTCRC has found several areas where the decision making process can improve. This section of the Asset Management Plan documents these areas for improvement and provides insight into how the GTCRC chooses to approach these changes to the decision making process.

The data system used (Roadsoft) to model future preventative maintenance measures to the GTCRC road system is limited to the accuracy of the input data. It was noted over the winter of 2013 that Roadsoft had some base data issues including, but not limited to; incorrect listing of road types, PASER rating and base map variations from other county map sources (ACT 51 maps). It was also recognized that the coding of the roadway segments by past staff did not allow for querying of important aspects of our roadway system such as subdivisions. The GTCRC understands the importance of having accurate data to complete analysis of their roadway system. Based on available staff it will be difficult to fully optimize the data, but staff understands we need to make a good faith effort.

It is recognized that the deterioration curves within Roadsoft are created utilizing standard industry material deterioration properties. It is also recognized that deterioration curves for surface treatments are used as a single determination throughout the entire county. Many roadways within the county have factors/features that can change the deterioration curve for each given roadway segment such as high ridge along the shoulder of the HMA, low shoulder gravel, and trees providing shade over the roadway surface. These considerations will always be a factor in not having perfect modeling output, but the GTCRC will continue to work on these factors/features during our routine maintenance operations.

The GTCRC understands that an Asset Management Plan is more than just the roadway system within the County. We need to also provide solutions to the deteriorating infrastructure such as bridges, culverts, guardrail, signage, road right of way ground between the edge of pavement and the road right of way and signalize traffic light. Once again based on available funding and staff, this task will be difficult but staff understands we need to make a good faith effort.

The amount of time between rating a road and actual construction of a treatment option is considerable. The unfortunate outcome of the delay to construction is the treatment alternative selected may be misaligned to the actual conditions of the pavement when construction begins. The GTCRC is interested in developing strategies to minimize the chance for misalignment.

The ability to fund certain types of treatments limits the GTCRC's ability to choose treatment types. For instance, an overlay of >2 inches of HMA will result in a project being moved into the 3R category. The funding implications of additional work on the shoulders and roadside has the potential to make a project less feasible for the GTCRC. The GTCRC is working towards overcoming these limitations.

The GTCRC also finds the coordination of non-surface concerns to be limiting. The need to upgrade non-motorized facilities to meet current ADA standards, the need to address roadside concerns, and the conditions of drainage/structures are all areas where project coordination is key. The GTCRC needs to further work in this area.

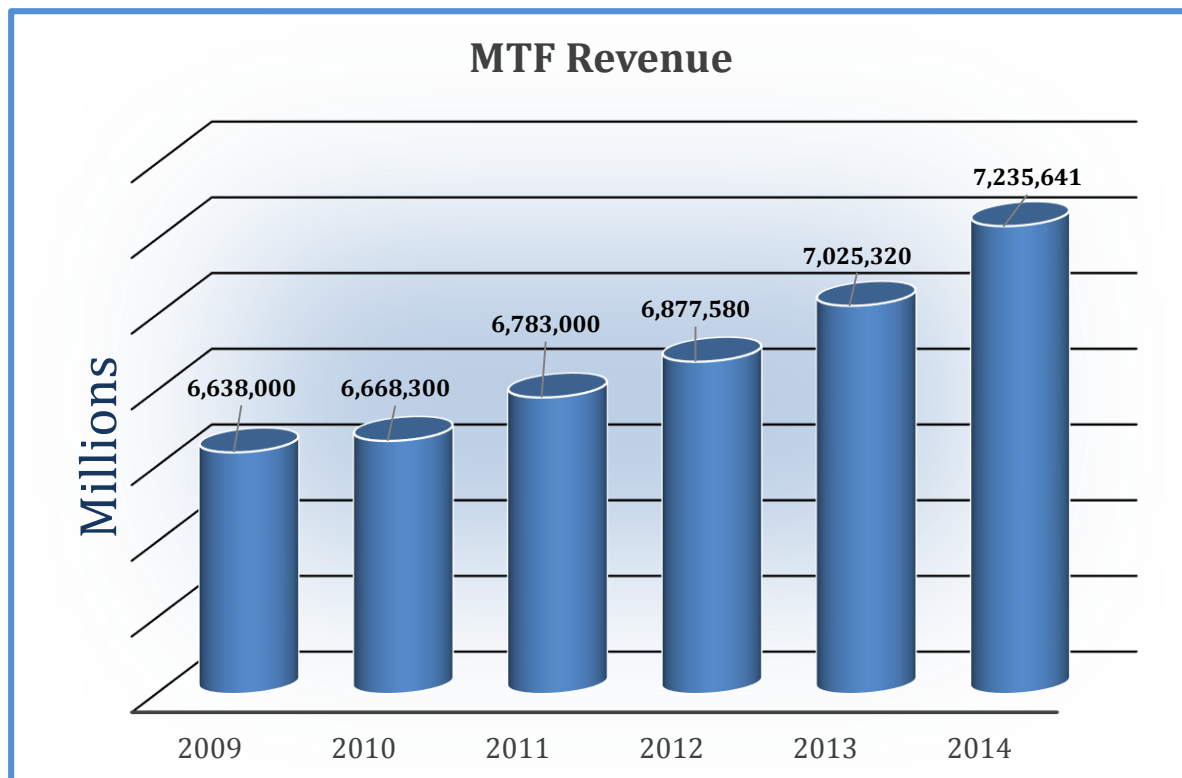
6 Establishing Sustainability

6.1 Sustainability Assessment

The GTCRC continually monitors the needs of the roadway system and the status of income sources to determine the sustainability of near-term and long-term plans and goals. Currently, the GTCRC finds the projected income will not meet the needs of the pavements under their jurisdiction. The GTCRC is unable to perform renewal and replacement work at the necessary levels that work should be performed. Additionally, the GTCRC will not be able to meet its goals for pavement conditions. Pavements under the jurisdiction of the GTCRC are expected to continue to decline.

The following chart provides the historical revenue received from the Michigan Transportation Fund. State transportation funds are the main source of revenue for repair and maintenance of county roads in Grand Traverse County. This revenue decreased steadily between 2004 and 2009 before stabilizing in 2010 and 2011. State transportation funds are based on fuel taxes and vehicle registration fees. Fuel consumption and related fuel taxes have decreased in recent years. Without legislative change to sources and distribution of funds for county road maintenance, it is unlikely that State transportation revenue will increase significantly in future years.

This financial report is designed to provide a general overview of the Road Commission’s finances for all those with an interest in the component unit’s finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Financial Director, Grand Traverse County Road Commission, 1881 LaFranier Rd., Traverse City MI. 49696.



The GTCRC has developed a goal of having 80% of all Federal Aid paved roads rated as good or fair. However, the projected revenues will fall short of the estimated maintenance funding required. The chart below reflects road improvement expenditures for the last five years. These expenditures include the \$4 million joint County-Road Commission Bond Program in 2008, major federally funded projects and ARRA projects, which significantly skew the amount of expenditures for 2008-2010. Major expenditures in 2012 were also skewed by the Karlin and Garfield Road Projects.



6.2 Program Coordination

The GTCRC currently works to coordinate renewal, replacement, and improvement activities with other Agencies. The GTCRC plans to continue this coordination in the future.

Key stakeholders the GTCRC coordinates with for design input and funding partnerships are:

- ❖ Townships
- ❖ City
- ❖ Villages
- ❖ Counties
- ❖ Utilities
- ❖ The private sector
- ❖ Citizen groups, special interest groups
- ❖ Property owners
- ❖ BIA and Tribe

The GTCRC also seeks funding partnerships for federal and State grant programs, such as the Local Bridge Program, Safe Routes to School Program, Transportation Alternatives Program, Transportation Economic Development, Bureau of Indian Affairs funding, private sector funding opportunities, such as new developments and impact mitigation, and through Special Assessment Districts (SADs).

Below are a few examples of projects through coordination efforts:

Subdivision Roads

Early on and prior to Asset Management Plans being in place, during the mid-1990s, approximately 12 subdivisions located in Garfield Township petitioned for special assessment districts. The proposed treatments included chip sealing which entailed placing emulsion and aggregate over the existing roadway surface. GTCRC partnered financially at 50% and Garfield Township at 25% with the residents picking up the balance including paving the shoulders to save on GTCRC erosion repairs. This improved and maintained road ratings, making sealcoating a viable preservation option for many local roads meeting the criteria for this type of improvement.

Currently, we are setting an annual budget to support special assessments and subdivision road improvements. Acme, Garfield and Green Lake Townships are working to set up districts and work through the approval process for new improvement projects.

Local Paved Roads

We have consistently partnered with Garfield, Mayfield, Grant and Green Lake Townships on road improvement projects such as chip seals, overlays and shoulder improvements. These road projects were completed at no cost to the property owners.

Gravel Road Program

GTCRC offers a program to partner with the townships. The townships will pay for the material costs and GTCRC pays for the labor and equipment to improve gravel roads. We have had many successful partnerships with Garfield, Peninsula Township, Grant, Mayfield and Green Lake Townships.

Safety Improvements

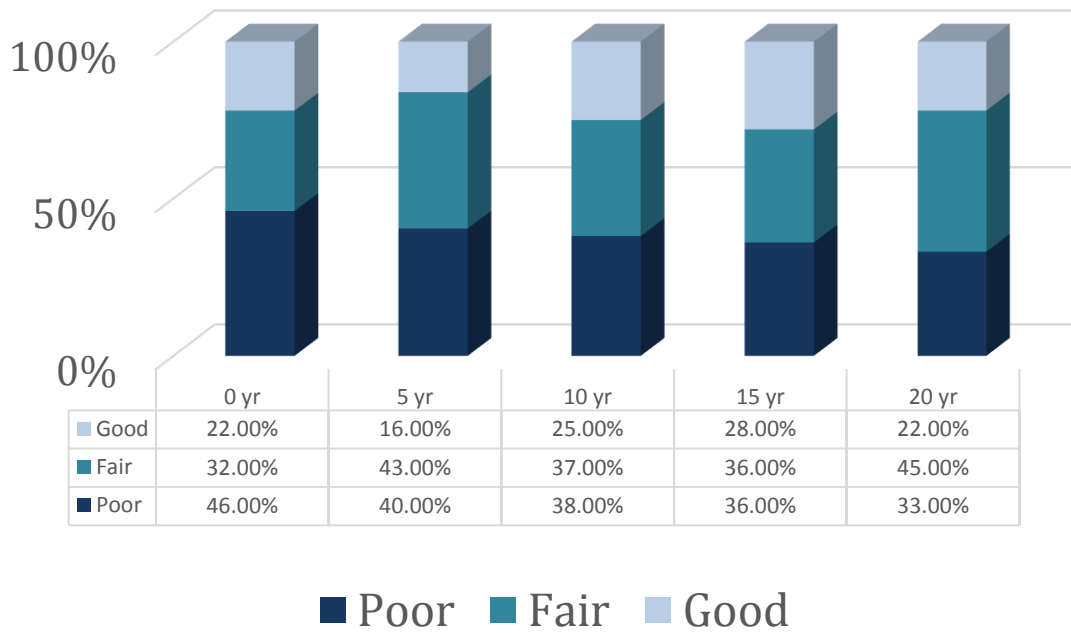
- GTCRC worked with MDOT to conduct a Safety Initiative of intersections and segments of roadways based on crash data. Low cost crash countermeasures were implemented where possible to improve the safety of the County Roads.
- Where road departure crashes were identified as a problem, on Supply Road, Hobbs, High Lake, and Hammond, signage for curves was improved with retro reflective curve signs, chevrons, and arrows.
- Where intersection crash analysis identified specific intersections, improved sight distance by tree and limb clearing, larger retro reflective signs, and improved conspicuity for signage. Specific intersections that were improved were Secor and East Long Lake, Rasho and Supply, High Lake and High View, Church and North Long Lake, and Bates and Brackett.
- Safety was also enhanced on LaFrainer Road with the recent road improvements. A center left lane was added to lessen possible collisions, a steep slope was reduced in grade to reduce winter accidents, and sidewalks were added for pedestrian safety. This project was done in conjunction with the County and Garfield Township.

Stream Crossings

- GTCRC has worked with various agencies to address either failed crossings or initiated stream crossing improvements. Partnerships have included but CRA, Conservation District, BIA & others to assist with grant writing and funding of these improvements.

Appendix B

20 Year Strategy 4.5 Million Per Year



- Inflation Rate not factored
- SEV increase not factored
- Includes STP, BIA and all other outside funding sources for road improvements

Appendix C

20 Year Strategy, 4.5 Mill, starting 2015

From Year	To Year	Fix Description	Lane Miles	Cost per Lane Mile	PASER Triggers	New PASER Ratings
1	1	Chip seal w/ Fog seal	180.0576	\$ 24,992	5,6	8
2	2	Chip seal w/ Fog seal	101.8894	\$ 24,992	5,6	8
3	3	Chip seal w/ Fog seal	180.0576	\$ 24,992	5,6	8
4	4	Crush and Shape	10.2117	\$ 190,010	1,2	10
4	4	Chip seal w/ Fog seal	78.7714	\$ 24,992	5,6	8
5	5	Crush and Shape	21.7745	\$ 190,010	1,2	10
5	5	Chip seal w/ Fog seal	14.51	\$ 24,992	5,6	8
6	6	Crush and Shape	12.6359	\$ 190,010	1,2	10
6	6	Chip seal w/ Fog seal	83.9894	\$ 24,992	5,6	8
7	7	Crush and Shape	2.0038	\$ 190,010	1,2	10
7	7	Chip seal w/ Fog seal	86.6548	\$ 24,992	5,6	8
8	8	Crush and Shape	1.5387	\$ 190,010	1,2	10
8	8	Chip seal w/ Fog seal	168.3592	\$ 24,992	5,6	8
9	9	Crush and Shape	1.3819	\$ 190,010	1,2	10
9	9	Chip seal w/ Fog seal	146.396	\$ 24,992	5,6	8
10	10	Crush and Shape	10.9088	\$ 190,010	1,2	10
10	10	Chip seal w/ Fog seal	96.8731	\$ 24,992	5,6	8
11	11	Crush and Shape	11.9007	\$ 190,010	1,2	10
11	11	Chip seal w/ Fog seal	89.3321	\$ 24,992	5,6	8
12	12	Crush and Shape	4.723	\$ 190,010	1,2	10
12	12	Chip seal w/ Fog seal	65.9814	\$ 24,992	5,6	8
13	13	Crush and Shape	12.0586	\$ 190,010	1,2	10
13	13	Chip seal w/ Fog seal	88.3783	\$ 24,992	5,6	8
14	14	Crush and Shape	4.7087	\$ 190,010	1,2	10
14	14	Chip seal w/ Fog seal	121.3498	\$ 24,992	5,6	8
15	15	Crush and Shape	5.9226	\$ 190,010	1,2	10
15	15	Chip seal w/ Fog seal	134.7824	\$ 24,992	5,6	8
16	16	Crush and Shape	4.3462	\$ 190,010	1,2	10
16	16	Chip seal w/ Fog seal	147.0146	\$ 24,992	5,6	8
17	17	Crush and Shape	8.8605	\$ 190,010	1,2	10
17	17	Chip seal w/ Fog seal	112.2815	\$ 24,992	5,6	8
18	18	Chip seal w/ Fog seal	87.145	\$ 24,992	5,6	8
19	19	Crush and Shape	11.4663	\$ 190,010	1,2	10
19	19	Chip seal w/ Fog seal	92.7991	\$ 24,992	5,6	8
20	20	Crush and Shape	8.9294	\$ 190,010	1,2	10
20	20	Chip seal w/ Fog seal	104.0049	\$ 24,992	5,6	8