

Elk Rapids Township
Suggested Five Year Pavement Maintenance Priorities
January 25, 2017

This report is provided for information on the current status of the local county paved roads in the township. For some townships, it is a useful tool when looking at potential road projects. It is by no means meant as a final determination of road projects. The Antrim County Road Commission has a cost share policy which allows it to share in a portion of the cost of most local road improvements that a township may decide to accomplish.

The included priorities are based on Asset Management principals. Asset Management is a systematic approach to selecting the best investment at the right time to maximize the life of the asset being measured, in this case, road pavements. The goal is to maintain a pavement in a good condition, making periodic investments in the pavement that keep it in a good condition, rather than letting it deteriorate to a level that requires a major investment to bring it back to a good condition. The periodic investments typically total less than the major investment required to rebuild a pavement.

This report uses the PASER pavement condition rating system. PASER stands for Pavement Surface Evaluation and Rating. PASER ratings range from 1, failed condition, to 10, brand new pavement. A pavement will only be a 10 the first year of its life, the second year automatically becoming a 9. Any condition of 8 or greater is considered to be a good condition, 7 through 5 is fair, with 4 and below poor.

Table 1 shows the typical pavement treatments for each PASER rating and the estimated costs per mile of roadway for each option.

Table 1

| PASER Road Rating | Typical Treatment | Estimated cost per mile |
|-------------------------|--|----------------------------|
| 10 | No maintenance - new road first year only | \$ 0 |
| 9 | No maintenance - like new | \$ 0 |
| 8 | Minimal routine maintenance | \$ 0 |
| 7 | Crack filling - minor maintenance | \$ 4,500 |
| 6 | Chip seal with crack filling | \$ 33,500 |
| 5 - 6 | Ultra-thin hot mix asphalt (HMA) overlay (road cannot be distorted) | \$ 50,000 |
| 5 | Chip seal with hot mix wedging or 1 ½" HMA overlay | \$ 85,000 |
| 4 | wedge and 1 ½" HMA overlay or 2" HMA overlay | \$ 120,000 |
| 3 | Crush and shape, 2" HMA paving | \$ 145,000 |
| 1-2 | Reconstruction - very poor condition | \$ 290,000 + |

The repairs listed in Table 1 are for general estimating purposes. A specific treatment can only be determined with a close inspection of the actual road. Using the PASER ratings and the listed treatment will give fairly accurate budgeting numbers. Different treatment than those listed in Table 1 for a given PASER rating may be appropriate in certain cases.

A hot mix asphalt (HMA) pavement will typically last from 15 to 20 years. At that point, it is usually beyond a preservation treatment and requires a major investment. Good pavement management would involve less expensive treatments earlier in the life of the pavement in order to extend the useful life. A variety of treatments and repairs are listed in this report. An emphasis is placed on early preventive maintenance treatments as suggested by the principals of asset management.

Table 2 shows the most current PASER ratings for all local county roads in the township along with the termini and length for each segment rated. Also included is the age of the pavement. The column labeled "Last PM" shows the latest year that a preventive maintenance treatment was applied. This is typically something less than two inches of HMA and other treatments such as a chip seal.

Table 2

| PASER Rating | Road Name | From | To | Length (miles) | Age | Last PM |
|--------------|----------------------|-------------------|------------------|----------------|-----|---------|
| 8 | Birch Lake Rd * | Winters Rd | Cairn Hwy | 1.239 | 6 | |
| | Winters Rd * | MacKenzie Dr | US 31 | 0.298 | 12 | |
| | Timberlake Dr | Williams Dr | end of road | 0.600 | 17 | |
| | W Harbor Dr | US 31 | end of road | 0.376 | 18 | |
| 7 | North Bayshore | ER Village limits | West Harbor Dr | 2.083 | 11 | |
| | Clearwater Point Rd | Elk Lake Rd | Shore Dr | 0.507 | 18 | |
| | E Harbor Dr | W Harbor Dr | end of road | 0.580 | 18 | |
| | Inwood Cr | E Harbor Dr | end of road | 0.060 | 18 | |
| 6 | Townline Rd * | US 31 | Munro | 0.701 | 10 | |
| | Winters Rd * | US 31 | Birch Lake | 0.467 | 11 | |
| | Lakeshore Rd | end of road | seasonal section | 0.571 | 20 | |
| | Sunset Shore Dr | US 31 | Lakeshore | 0.286 | 20 | |
| | Herman Rd | Cairn Hwy | end of road | 0.610 | 30 | |
| 5 | Lakeview Rd | Clearwater Point | end of road | 0.060 | 18 | |
| | Shore Dr | Clearwater Point | end of road | 0.664 | 18 | |
| 3 | Oakwood Dr | Cairn Hwy | Terrace Ave | 0.053 | 42 | |
| | Terrace Ave | Cairn Hwy | Oakwood | 0.136 | 42 | |
| | Wahboos Tr | Cairn Hwy | Terrace Ave | 0.070 | 42 | |
| | * Township line road | | Total | 9.361 | | |

These are the latest pavement condition ratings and will change over time as the pavement ages and deteriorates. A suggested fix may not be the appropriate fix the following year depending on the rate of deterioration. Repair costs are current estimates and will increase with inflation every year.

The township spent an average of \$22,918 per year over the last five years. The township has indicated that about \$45,000 would be available every year for road projects. Based on these amounts, a five year suggested road improvement / pavement maintenance strategy is presented on the following page.

The repair costs listed below have been adjusted for inflation for more accurate planning.

2017 Suggested Priorities

| Cost per Mile | Number of Miles | Total Cost | Township Share | Selected Roads (miles) | Suggested Repair |
|------------------------|-----------------|------------|----------------|------------------------|--------------------------|
| \$ 45,000 | 0.286 | \$ 12,870 | \$ 11,583 | Sunset Shore * | crack fill and chip seal |
| \$ 33,500 | 0.571 | \$ 19,129 | \$ 17,216 | Lakeshore | crack fill and chip seal |
| \$ 33,500 | 0.610 | \$ 20,435 | \$ 18,392 | Herman | crack fill and chip seal |
| Total township share = | | | \$ 47,190 | | |

2018 Suggested Priorities

| Cost per Mile | Number of Miles | Total Cost | Township Share | Selected Roads (miles) | Suggested Repair |
|------------------------|-----------------|------------|----------------|------------------------------------|--------------------------|
| \$ 34,000 | 1.231 | \$ 41,854 | \$ 37,669 | Clearwater Pt, Shore Dr & Lakeview | crack fill and chip seal |
| Total township share = | | | \$ 37,669 | | |

2019 Suggested Priorities

| Cost per Mile | Number of Miles | Total Cost | Township Share | Selected Roads (miles) | Suggested Repair |
|------------------------|-----------------|------------|----------------|---------------------------------------|--------------------------|
| \$ 35,000 | 0.701 | \$ 24,535 | \$ 22,082 | Townline | crack fill and chip seal |
| \$ 35,000 | 1.016 | \$ 35,560 | \$ 32,004 | West & East Harbor Drives & Inwood Cr | crack fill and chip seal |
| Total township share = | | | \$ 54,086 | | |

2020 Suggested Priorities

| Cost per Mile | Number of Miles | Total Cost | Township Share | Selected Roads (miles) | Suggested Repair |
|------------------------|-----------------|------------|----------------|------------------------|------------------|
| | | \$ 0 | \$ 0 | | |
| Total township share = | | | \$ 0 | | |

2021 Suggested Priorities

| Cost per Mile | Number of Miles | Total Cost | Township Share | Selected Roads (miles) | Suggested Repair |
|------------------------|-----------------|------------|----------------|------------------------|--------------------------|
| \$ 36,000 | 2.083 | \$ 74,988 | \$ 67,489 | N Bayshore | crack fill and chip seal |
| Total township share = | | | \$ 67,489 | | |

| | | |
|---------------------|------------|-----------|
| 5 year cost summary | | |
| Township | | |
| | Cost | Annual |
| Year | Share | Average |
| 2017 | \$ 47,190 | |
| 2018 | \$ 37,669 | \$ 42,429 |
| 2019 | \$ 54,086 | \$ 46,315 |
| 2020 | \$ 0 | \$ 34,736 |
| 2021 | \$ 67,489 | \$ 41,287 |
| Total | \$ 206,433 | |

* Sunset Shore cost per mile is more since it is wider pavement.

The graph on page 5 shows pavement condition trends from 2010 to 2016. The numbers represent centerline miles. Note that a significant number of miles has deteriorated from good to fair and a small number of miles has deteriorated to poor.

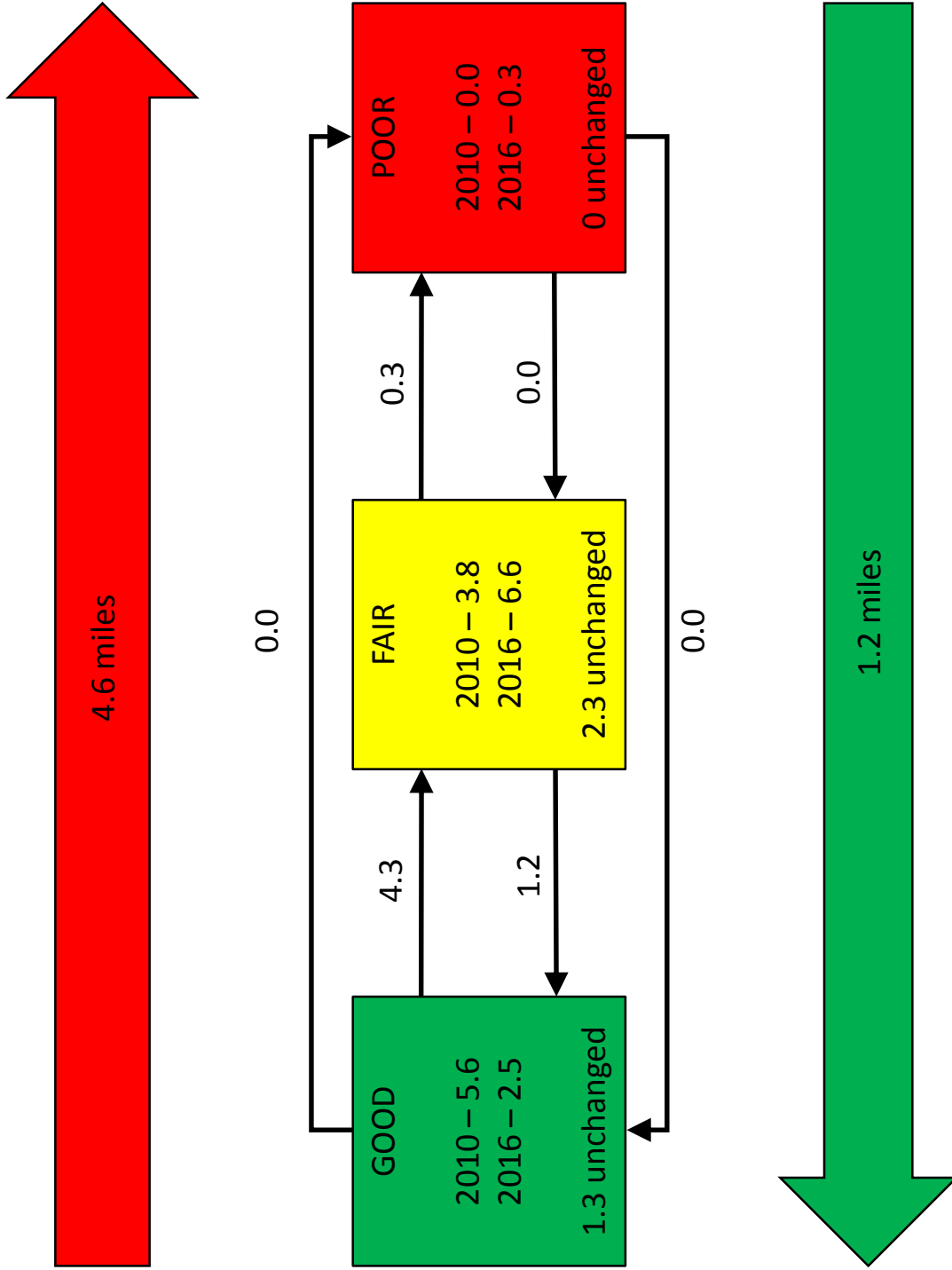
The graph on page 6 shows the change between good, fair and poor from 2010 to 2016. This shows more detail on the deterioration of the pavement and the repairs made.

Page 7 is a map of all roads in the township, including county primary and state trunkline roads. The condition of all paved roads is indicated by the red, yellow and green which is poor, fair and good respectively. All federal aid eligible roads have been rated and the pavement condition is color coded. This includes those roads within the villages that are federal aid eligible.

Pavement Condition Trend






Pavement Condition Flow



Elk Rapids Township – 2016 Paved Road Ratings

Legend

-  • Poor – 1 thru 4
-  • Fair – 5 thru 7
-  • Good – 8 thru 10

