



MEMO

To: Wanda Bloomquist, Township Supervisor
From: Aaron C Hacker, P.E.
CC: Williamstown Township Trustees
William M. Conklin, PE, Managing Director Ingham County Road Department (ICRD)
Date: October 16, 2019

Project #: W2580004

Re: **Amendment to the August 2019 Roadway Improvement Plan**

Purpose of Memorandum

In 2019, Williamstown Township developed a report documenting local road conditions through the use of PASER ratings as described in the August 2019 Roadway Improvement Plan. The results of the plan determined the Township would require an annual 6.0 mill, or \$1,512,000, over ten (10) years which would result in all local roads having a minimum PASER rating of 7.

The requirements of the original plan were based on roadway treatments that are preferred to ensure the best return for the cost. This is based on providing the largest increase in useful life per cost of treatment. In other words, the treatments used were selected to provide the most economical return of useful life, however they were not necessarily the lowest cost options. Specifically, treatments that are lower in cost will also provide a lesser increase in useful life. For example, a \$450,000 fix for the road would improve the road for the next 20 to 25 years, while a \$100,000 fix for the same road may only improve the road for 7-10 years.

In order to provide maintenance to the local road system while also keeping the required costs down, alternative treatments were evaluated for a 10-year span. This was done to investigate whether the Township could lower the required millage to a number that would allow for an acceptable level of maintenance for the local roadway network. The following is a Capital Improvement Plan (CIP) project discussion.

Goals of the Plan

The goal of this amended roadway improvement plan is simple, improve roads that are in dire need of repair while also maintaining existing roads that are in good condition to prevent them from slipping to a lower rating. This was done by developing a spreadsheet that includes as much information as possible to determine what roadways would be fixed in a certain year.

According to the Roadsoft data, the Township has 47.2 miles of local and subdivision roads under their purview, with 2.2 miles of gravel. The gravel roads were removed from the analysis with no money allocated to maintain them. Additionally, a tentative goal for the Township's is to improve five (5) miles of local roads per year. This includes both improvement of roads in disrepair (PASER rated 1 and 2), and maintenance of roads that are in decent to good shape (PASER rated 3 and above). Should the Township use bonding, this may increase depending on fund availability.

Opportunities for Cost Savings

MSG has identified a significant cost savings that will provide the Township with a way to decrease their costs while maintaining the goal of the plan. The Ingham County Road Commission (ICRD) has agreed to overlay 2" of asphalt on local roadways at a cost of \$70,000 per mile (based on a 22-foot wide roadway) with a maximum capacity of 5 miles per year. This represents a savings of almost \$100,000 per mile when compared to the average construction costs of this work. In order to leverage this savings, the Township should plan on milling existing roads in disrepair with the County placing back a 2" overlay of asphalt where existing structural conditions will allow it. We are estimating this cost to be \$100,000 a mile with the milling included. This fix would not be possible on every PASER rated 1 and 2, and would be used after careful consideration.

For roadways that are in the worst conditions, we suggest the Township consider Full-Depth Recycling (FDR) and a 2" overlay performed by the County. We estimate the cost for this to be \$200,000 per mile for a 22-foot wide roadway. This treatment provides a much better end product and a much better cost benefit to the Township. We would plan on using this on roadways that are rated 1 and 2 and in the worst conditions.

Assumptions and Limitations

The conceptual plan can only be as good as the current available information. MSG has been some assumptions in the development of this plan, which may cause some changes to the work that can be constructed in a given year. We feel that this plan mitigates these risks and is more than sufficient at this time for the Township to determine what millage would provide the best value to their residents. The following is a list of assumptions to take into consideration:

- The County is unable to perform the work discussed previously on curbed subdivision roads
- The width of all curbed roads is assumed to be 28-feet wide
- The width of all non-curbed roads is assumed to be 22-feet wide
- A inflation rate of 3% was assumed for the total project cost each year
- It is assumed that 8% of the roadways with PASER ratings 3 and above will be maintained each year using a \$25,000 treatment. This represents 1.93 miles a year, or approximately \$49,250 a year.
- The Township will continue to allocate \$45,000 per year with the County matching for a total of \$90,000 a year for local roadways
- Design and Construction Engineering and Inspection is included in these cost at 8% of the construction cost.
- RSL is not included in this spreadsheet at this time and is not included in roadway selections
- The spreadsheet ignores adjacent roads and does not select roads based on any geographical information
- The Township will be able to interchange some treatments during detailed design work
- The County will be able to provide overlay of 2" for \$70,000 per mile
- The first year of implementation/construction will be 2021
- An reset of useful life to 6-10 years is acceptable for PASER rated 1 and 2 roadways

Additional to these assumptions, Table 1 show the treatments that were used during the CIP development:

PASER Rating	Uncurbed - 22' Wide		Curbed - 28' Wide	
	Description	Cost/mile	Description	Cost/mile
1	FDR w/ County Overlay	\$200,000	3" Mill & Fill w/Overlay	\$315,000
2	FDR w/ County Overlay	\$200,000	3" Mill & Fill w/Overlay	\$315,000
3	2" M/F w/ County Overlay	\$100,000	2" M/F w/ Overlay	\$225,000
4	2" M/F w/ County Overlay	\$100,000	2" M/F w/ Overlay	\$225,000
5	Microsurfacing	\$45,000	Microsurfacing	\$60,000
6	Microsurfacing	\$45,000	Microsurfacing	\$60,000
7	OBC	\$6,500	OBC	\$10,000
8	OBC	\$6,500	OBC	\$10,000
9	Slurry Seal	\$25,000	Single Seal	\$32,000
10	Single Seal	\$25,000	Single Seal	\$32,000

Table 1: Treatment Selection Table

Updated Project Plan and Schedule

MSG has developed a Conceptual Level Capital Improvement Plan (CIP) for the Township to use to verify the required millage with these new savings in mind. Each roadway was selected for improvements during a specific year. In addition to the roadway improvements, an amount for maintaining the network each year was selected at \$25,000 per mile. We used an 8% value of the mileage of roadways that are PASER rated 3 and above. This allows for just under 2 miles of roadway per year to be maintained outside of the major work allocated in the plan. It is the Township's hope that this helps to slow down the degradation of the roadways that are nearing the end of their useful life.

The results of the project selection from 2021 to 2030 shows that the Township can perform an acceptable level of maintenance on the local roadway network using a 2.97 millage. This is a total of \$742,500 per year, with a total budget of \$832,500.

Conclusions

We recommend the Township employ the 2.97 millage over ten years in order to maintain the local roadway system. As discussed, this will provide the Township with the ability to improve every road in the system over the course of ten (10) years. Additionally, we recommend the Township maintain the current level of funding of \$45,000 with the hope the County will also maintain the matching funds for a total of \$90,000. This would provide the budgets needed for survey, design and construction oversight of the roadway projects each year. Should the County cease this funding, the Township would require a 3.33 millage to make up the difference.

Once passed, we recommend the Township build a more detailed version of this plan by visiting each roadway and using the conceptual CIP to rank each roadway. We recommend this occurring in the months leading up to the funding from the millage in order to get good prices for Spring 2021 construction by bidding in Winter of 2020.