



Staff Report

Report Title: Road Maintenance Costs

Prepared By: John Yungblut

Department: Public Works

Date: Feb. 26, 2021

Report Number: PW-2021-02-17

File Number: T06 GRA21

Attachments:

Recommendation:

That the Township of Huron-Kinloss Council hereby receives for information Report Number PW2021-02-17 prepared by John Yungblut, Director of Public Works.

Background:

At the Feb. 3, 2020 Committee of the Whole meeting, Township staff were directed to bring back a report comparing gravel road maintenance to paved road maintenance costs.

Discussion:

Township staff have analyzed the costs to maintain gravel and paved roads in 2020 and 2019 based on the priority level and classification of the roadways. We have used these figures to estimate the average annual cost to maintain gravel roads over a ten year period. Paved roads require a longer-term analysis because a typical asphalt road is expected to last twenty years with routine maintenance.

When comparing the maintenance costs of a roadway, staff prefer to use lane kilometres as the unit of measurement. This is a more equitable method of comparing two lane roads with single land width roads. In the Township's asset management plan, any road that is less than 5m (16.5 feet) in width is considered a one lane road.

"Table A" is a summary of the average annual cost to maintain 318 lane km of gravel roads. Roads with the highest priority are listed as "Priority 1" and they generally have the highest traffic volume. These roads are generally graded several times per year, they received the heaviest concentration of dust control product and they are

generally resurfaced with fresh gravel every 3-5 years. Roads included in "Priority 4" are narrow with very low traffic volume and are often not winter-maintained. These roads are usually only graded once or twice per year, they receive the lightest concentration of dust control product and they are typically resurfaced every 10 years or more. The other priority levels will fall somewhere in between these two extremes.

Table A

| Maintenance Description | Priority 1 | Priority 2 | Priority 3 | Priority 4 |
|----------------------------------|-------------------|-------------------|-------------------|-------------------|
| Grading/Scarifying | \$666 | \$477 | \$379 | \$145 |
| Gravel Resurfacing | \$789 | \$564 | \$449 | \$171 |
| Dust Control | \$364 | \$260 | \$207 | \$79 |
| Annual Cost (per lane km) | \$1,819 | \$1,301 | \$1,035 | \$395 |

"Table B" is a summary of the average annual cost to maintain 446 lane km of paved roads. The capital cost to repave a road amortized over a twenty year period (without adjusting for inflation) is included to provide a fair comparison with the maintenance a gravel road. The costs have been calculated based on road the classification specified in the Minimum Maintenance Standards. Class 4 roads are the highest class of Township roads based on the traffic count data collected so far. Most paved concession roads are considered Class 4 roads. Class 5 and 6 roads are generally local roads will speed limits of 50 km/hr or less.

Table B

| Maintenance Description | Class 4 Roads | Class 5 Roads | Class 6 Roads |
|----------------------------------|----------------------|----------------------|----------------------|
| Spray Patching, Crack Sealing | \$135 | \$135 | \$135 |
| Road Patching, Pothole filling | \$23 | \$23 | \$23 |
| Amortized Paving Cost | \$2,084 | \$2,489 | \$2,912 |
| Annual Cost (per lane km) | \$2,242 | \$2,647 | \$3,070 |

It should be noted that the price of asphalt paving will vary depending on several factors, such as the length of road and access the road provides to equipment. For example, Class 6 roads are generally very narrow and are often dead-end roads, so the paving operation is more challenging and therefore, more expensive.

"Table B" does not consider other pavement preservation methods beyond spray patching and crack sealing because these are the only asphalt maintenance activities that have been undertaken by the Township thus far. Township staff are exploring the potential of other methods such as fog sealing, micro-surfacing and cold-in-place recycling that may extend the life of our asphalt roads.

Conclusion

Based on these figures, it is unlikely that paving roads that are currently gravel will be most economical over the life of the roadway based on maintenance and paving costs alone. There are several other factors that should be considered, however:

- Social: Most ratepayers prefer to live on a paved road. A paved road in poor condition is generally considered a more desirable road to travel on compared to a gravel road in good condition.
- Other Financial Factors: A decrease in the amount of gravel roads will result in a reduction in the number of working hours required for a road grader. If we continue to pave gravel concession roads in the former Kinloss Township, then Public Works may be able to maintain our gravel roads with one less grader in our fleet. The current price of a new grader is \$500,000 to \$600,000.
- Risk Management: Gravel roads that are winter maintained are generally more hazardous to drive on because treated sand is applied sparingly and only on sharp curves, steep grades and stop signs. If treated sand is applied to a gravel road at the same rate as a paved road, the gravel road would become extremely soft during mild temperatures and potentially more dangerous.
- Sustainability: Gravel deposits are becoming depleted in our area. Even if we are able to start extracting more aggregate from our gravel pits, it is unlikely that we could produce enough gravel to maintain all our roads over the next twenty years without a reduction in gravel road inventory.

Financial Impacts:

The proposed 2021 Capital Budget includes \$463,500 for the paving of the remaining 5.3km gravel portion of Kairshea Ave. The average annual maintenance cost for that section of road if it remained gravel would be approximately \$19,280.

Strategic Alignment / Link:

We are a prosperous community that continues to grow in a sustainable manner by investing in infrastructure.

Action item: A4.2 Pave Concessions.

Respectfully Submitted By:

John Yungblut, Director of Public Works

Approved By:

Mary Rose Walden, Chief Administrative Officer