Grader Fleet Options Business Case.September 16 2021.docx

Grader Fleet Options

2022 Budget

Public Works
Grader Fleet Options

Executive Summary

Staff completed a high-level review to provide Council with potential options in moving forward to reduce the grader fleet to a single unit. Maintaining the 1997 motor grader as a secondary unit is the most cost-effective approach in the short term and during the transition phase.

In order to reach the objective of one grader, the current 65km of gravel roads would need to be reduced to at least 40km.

Next steps would include the completion of a more detailed evaluation of the gravel road network to develop a solid 5-year plan including Class “D” estimates on options to convert approximately 25km of gravel road to a combination of surface and/or asphalt treatment.

Business Need

On May 10, 2021, Municipal Council amended the 2021 budget and authorized staff to proceed with the purchase of the 2020 856C AWD Case Motor Grader through J.R. Brisson Equipment at a total cost of $300,192.00 including non-rebated HST. Staff was directed at this meeting to return with a report in September outlining options on reducing the grader fleet to a single unit. Prior to this purchase, the Township has maintained the gravel road network using a 1989 model 740 Champion Motor Grader and 1997 model 740 Champion Motor Grader.

An essential element in the fleet composition decision is to review the current management and maintenance of gravel roads, level of service and desired outcomes of the loose top maintenance program.

Spring program activities include re-establishing the road crown from the wear and tear sustained over winter control operations. All gravel roads are prepared for the application of a suppressant additive to manage dust and improve driving conditions. In addition, selected gravel roads receive a maintenance layer of gravel on a rotational

basis (approximately every 3 years). The spring activities are the most time and labour committed portion of the program.

It takes approximately 130 operating hours for a single grader to complete one round of grading on 65 km of road. This is based on 6 passes per road at 3km per hour.

Grading is performed periodically throughout the summer and fall months to remove potholes, ruts and to maintain the road shape in preparation for winter control operations.

Another function of the grader is ice blading that is performed in the winter to reduce ice buildup and improve traction on the road.

Options or Solutions Analysis

Status Quo: Maintain two motorized graders in the municipal fleet until at least 85% of the municipal road network is paved (R2019-268).

Contract Supported Operation: Adjustment to the request for tender to require the successful bidder of the annual maintenance gravel contract to supply coarse grading of the gravel roads after application. An additional contract to cover stand-by grading activities (ice blading) during the winter months.

Municipal Partnership: Enter into a mutual aid service type agreement with neighbouring municipalities.

Reduction of Gravel Roads: Reduce the number of gravel road to a level that is manageable for one grader. It is estimated that approximately 25km of gravel road would need to be changed to surface treatment and/or asphalt.

Financial and/or Non-Financial Benefits

Status Quo: The 5 year (2016-2020) average repair and maintenance cost for the 1997 model 740 Champion Motor Grader is $11,929.00. The annual insurance cost for this piece of equipment is $250.00. This unit has been cared for and is in relatively good condition. It is estimated that the 1997 model 740 Champion Motor Grader would need to be replaced in the 5 year horizon (2025) at an estimated cost of $350,000.00 to $400,000.00. A minimum annual budget transfer of $87,500.00 would be required to replace the 1997 grader in 2025.

Advantages: maintains current level of service; reinforces satisfaction in job/task performance; ability to train and develop future operators; relatively low cost of maintaining the asset in the short-term

Disadvantages: asset remains on the books; ongoing repair, maintenance and fuel costs; replacement parts may be difficult to source, large capital cost in mid-term horizon;

Contract Supported Operation: Utilizing a contractor supplied grader c/w operator to assist with the annual gravel maintenance contract is estimated at $6,000.00 and $8,000.00. This is based on 40 hours at $150-$200 per hour. Additional hours would be required to maintain roads when the grader is out of service and to supplement winter operations. Monthly standby rates during the winter can range between $2,000 to $2,500 to have a unit onsite.

Advantages: maintains current level of service; removal of an asset from the books; eliminates the future replacement cost of a grader in 5 years.

Disadvantages: increased reliance on external operations; reduced flexibility in response; increase to the annual operating budget: potential increased cost of gravel program due to loss of competition by providers either unwilling or unable to provide a grader as part of the tender.

Municipal Partnership: Municipal partnerships are encouraged where possible but can be difficult to arrange. Each municipality's needs are similar in scope and timing which means that the equipment may not be available at the time it is required to meet the current service levels. The costs could potentially be the same as contracted supported operation.

Reduction of Gravel Roads:

Asphalt

Based on 2021 pricing, the cost to convert a gravel road to asphalt is approximately $225,000 per km. This estimate is on the assumption that a solid road base exists, adequate drainage and cross culverts are in satisfactory condition (replacement not required). The road would only require some granular 'A' base preparation and a single 50mm lift of asphalt. The conversion of 25km of road is estimated at $5,625,000. Substantial base repairs, geotextile liners for added structural support, cross culvert replacement, and drainage improvements would be additional costs. The estimated useful life of an asphalt road is 15 years based on our tangible capital asset policy.

Advantages: improved level of service on the roads converted to asphalt; easier maintenance during winter operations; more manageable for one grader to maintain remaining gravel roads; reduced annual maintenance costs.

Disadvantages: high capital cost; a significant tax increase would be required to fund this capital or the Township would need to borrow which increases future operating budgets with the inclusion of debt payments

Surface Treatment

The option of converting gravel roads to surface treatment has a lower initial capital cost. The estimated cost to convert a gravel road to double surface with slurry treatment is $65,000.00 per km. Similar to the asphalt scenario above, this estimate is based on a solid road base existing, adequate drainage and cross culverts being in satisfactory condition (replacement not required). Substantial base repairs, geotextile liners for added structural support, cross culvert replacement and drainage improvements would be additional costs. The conversion of 25km of road is estimated at $1,625,000. The estimated useful life of a surface treatment is between 5 to 7 years before another treatment is required to maintain the same service level.

Advantages: improved level of service on the converted roads; easier maintenance during winter operations; more manageable for one grader to maintain the remaining gravel roads: reduced annual maintenance cost

Disadvantages: high capital cost but less than asphalt; re-application on a more frequent basis; not as robust as HCB surface and could be prone to damage by heavy equipment or farm machinery: a tax increase or debt borrowing would be required to fund this capital. Future operating budgets would be impacted by debt payments

Risk Analysis

The following risks are associated with the options listed above:

- Potential shortage of locally trained operators
- Response time to unplanned events
- Staff morale negatively affected
- Increased extreme weather events could demand increased frequency and duration for a grader
- Large tax rate increase/impact to future budgets
- Impact on future borrowing to replace existing assets if capital cost to convert gravel roads is borrowed.
- Coordination/Logistics with partner municipalities
- Increased repairs and maintenance to single grader due to higher usage

Recommendation

That committee recommends that Council:

1. Maintain the 1997 Champion Grader as a secondary unit during the transition phase; and
2. Direct staff to hire a consultant to evaluate the gravel road network and develop a 5-year plan with Class “D” estimates including options to convert 25km of gravel road to a combination of surface and/or asphalt; and
3. Direct staff to include grader pricing as an optional item in the 2022 annual maintenance gravel request for tender.

Implementation Plan

Fall 2021

Hire consultant to complete evaluation of gravel roads and provide report for 2022 budget discussions.

2022

Include capital costs for year 1 of the reduction of gravel roads plan for Council consideration. If Council elects not to proceed with the program in 2022, a minimum of a $100,000.00 should be placed into reserves to either proceed with the program in 2023 or work towards eventual replacement of the second grader.

Documentation

Bylaw 2015-45 – Tangible Capital Asset Policy

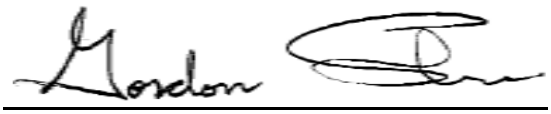
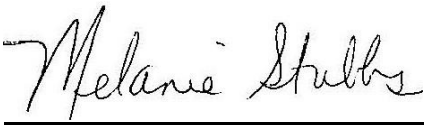
Action Item – Grader Report Follow up – July 15, 2019

Council Resolution 2019-268 – July 22, 2019

Financial Comparison Chart of Options

Acceptance Sign-off

Lead Department

Prepared By:	Gord Shaw, Director of Operations	**Date:**	September 16, 2021
Signature:			
Approved By:	Melanie Stubbs, Treasurer	**Date:**	September 16, 2021
Signature:			
Approved By:	Dave Grant, CAO	**Date:**	September 16, 2021
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