

The Corporation of the City of Kawartha Lakes

Council Report

Report Number CA2020-002

Meeting Date: September 15, 2020

Title: Gravel Resurfacing Plan for 2021-2030

Description: This report recommends an updated Gravel Resurfacing Plan, extending the horizon of the 10-year plan from 2021 to 2030 and enhancing gravel application to maintain the level of service for gravel roads in the presence of increasingly strenuous winters.

Ward Number: All Wards

Author and Title: Adam Found, Manager of Corporate Assets

Recommendation(s):

That Report CA2020-002, **Gravel Resurfacing Plan for 2021-2030**, be received; and

That the Gravel Resurfacing Plan 2021-2030, attached as Appendix A to Report CA2020-002, be adopted for the purpose of complementing the 5-Year Roads Capital Plan and informing future capital budgets.

Department Head:_____

Financial/Legal/HR/Other:_____

Chief Administrative Officer:_____

Background:

Through a reorganization that took effect January 1st, 2016, the Corporate Assets Division was transferred from the Department of Corporate Services to the newly formed Department of Engineering and Corporate Assets. As a result, the Corporate Assets Division assumed various new responsibilities. One of these is direct capital planning for gravel roads as the 5-Year Roads Capital Plan managed by the Technical Services Division currently meets this need for paved roads only.

Over time, gravel road surfaces weaken and deplete due to weather, traffic and winter maintenance operations. As a capital investment in gravel roads, gravel resurfacing involves the application of fresh granular “A” gravel, historically at an average thickness of 10cm, to restore gravel road surfaces. As part of this treatment, the new road surface is compacted, graded, crowned and treated with calcium chloride, and private entrance ways are blended with the elevated road platform as needed.

In 2017, staff recommended and Council approved the City’s first 10-year Gravel Resurfacing Plan (2018-2027). Given the importance of keeping such plans current respecting capital works completed to date and changing road conditions and circumstances, this report presents Council with an updated Gravel Resurfacing Plan (2021-2030) for consideration and approval.

Rationale:

The proposed Gravel Resurfacing Plan, attached hereto as Appendix A, is based on the following:

1. Level of Service: The plan is designed to achieve an expected lifecycle of 10 years for gravel surfaces through a uniform application of fresh gravel.
2. Efficiency: The plan is designed to minimize capital costs and promote resurfacing continuity and efficiency through strategic grouping of proximate and adjoining road sections where reasonably possible.
3. Maintenance: The plan is based on the assumption that gravel roads receive adequate annual maintenance provided through roads operations programs so as to ensure gravel road surfaces attain their expected lifecycle:
 - a. Calcium chloride: Average application rate of 1.35 L/m² per year.
 - b. Grading: 2-4 treatments per year.
 - c. Gravel patching: As needed.
 - d. Ditching and brushing: As needed.
 - e. Culvert replacement: As needed.

4. **Capital Program Delivery:** The plan is based on continuance of the current method of capital program delivery for gravel resurfacing, which has proven effective in terms of cost and workmanship:
 - a. The supply and placement of fresh gravel and calcium chloride are outsourced.
 - b. All other capital services (e.g. grading, watering etc.) are provided in-house by Roads Operations Division.

Over recent years, keeping the City's gravel roads on a 10-year lifecycle has proven increasingly challenging, primarily because winter seasons, especially winter thaws, have become significantly more strenuous. Under such conditions, staff are finding the effective lifecycle of gravel roads to be around 8 years instead of the target of 10 years. Symptoms of this problem include proliferation of potholes, excessive pooling of rainwater on road surfaces and insufficient surface gravel for the formation of a proper crown atop the road.

In order to maintain the desired level of service for gravel roads, the City can either maintain the application rate at 10cm and reduce the target lifecycle to 8 years, or it can increase the application rate to 12.5cm and maintain the target lifecycle at 10 years. In formulating the updated Gravel Resurfacing Plan, staff took the latter approach so that annual coverage of the City's gravel road inventory remains manageable (i.e. 85 Km per year on average), recognizing that the two approaches equally increase annualized capital costs.

The table below provides a summary of the updated Gravel Resurfacing Plan, attached hereto as Appendix A:

| Summary of Gravel Resurfacing Plan 2021-2030 | | | |
|---|----------------|----------------------|------------------|
| Year | Length (Km) | Quantity (Tonnes) | Cost (2021\$) |
| 2021 | 86.84 | 110,690 | 1,703,519 |
| 2022 | 85.11 | 111,630 | 1,717,986 |
| 2023 | 87.29 | 113,010 | 1,739,224 |
| 2024 | 78.73 | 111,190 | 1,711,214 |
| 2025 | 85.32 | 112,880 | 1,737,223 |
| 2026 | 93.43 | 120,550 | 1,855,265 |
| 2027 | 87.12 | 118,510 | 1,823,869 |
| 2028 | 89.24 | 115,620 | 1,779,392 |
| 2029 | 78.61 | 111,490 | 1,715,831 |
| 2030 | 86.75 | 114,890 | 1,768,157 |
| Average | 85.84 | 114,046 | 1,755,168 |

Other Alternatives Considered:

In formulating the updated Gravel Resurfacing Plan to maintain the expected level of service for gravel roads, staff accounted for various factors such as resurfacing history, road conditions and input provided by Roads Operations Division. Accordingly, the updated Gravel Resurfacing Plan represents the best capital forecast developable by staff at this time. The alternative to the staff recommendation in this report is for Council to refer the Gravel Resurfacing Plan back to staff to be reformulated as may be directed by Council.

Financial/Operation Impacts:

Given increased severity of winter seasons, the City faces a choice regarding gravel resurfacing. One option is to increase the gravel application rate from 10cm to 12.5cm as recommended in this report, in which case annualized capital costs are likewise increased by 25%, from \$1.40M/year to \$1.76M/year on average. The second option is for the City to carry on as it is under the current Gravel Resurfacing Plan, in which case gravel road users will continue to experience a materially declined level of service. Staff recommends the existing level of service be maintained through an increase in the gravel application rate from 10cm to 12.5cm, as reflected in the updated Gravel Resurfacing Plan.

Relationship of Recommendation(s) To The 2016-2019 Strategic Plan:

The recommendations of this report align with the following strategic enablers: (i) Responsible Fiscal Resource Management and (ii) Efficient Infrastructure and Asset Management.

Consultations:

Manager of Roads Operations – West
Manager of Roads Operations – East
Supervisor of Technical Services

Attachments:

Appendix A: Gravel Resurfacing Plan 2021-2030



Gravel Resurfacing
Plan 2021-2030.pdf

Department Head E-Mail: jrojas@kawarthalakes.ca

Department Head: Juan Rojas, Director of Engineering and Corporate Assets