

Municipality of Lakeshore – Report to Council

Operations

Public Works



To: Mayor & Members of Council

From: Krystal Kalbol, P. Eng., Corporate Leader – Operations
Jeff Wilson, Division Leader – Public Works

Date: November 30, 2023

Subject: 2024 Reconstruction, Rehabilitation and Gravel Road Conversion Program Direction

Recommendation

Continue to support the completion of an updated Roads Needs Study to be undertaken in 2024;

Approve the budget of \$1,900,000 for the Asphalt Road Rehabilitation (asphalt life cycling) in 2024 to complete the rehabilitation of asphalt roadways;

Approve the budget of \$845,200 for the placement of maintenance lifts and life cycling of current surface treated roadways that require rehabilitation in 2024, foregoing the gravel road conversion plan in 2024; and

Proceed with Option 4) Rehabilitate Patillo Road with no enclosure or widening (cost to be determined), allocating the remaining reserves to complete asphalt road rehabilitation and the required reconstruction projects in 2024, as presented at the December 12, 2023 Council meeting.

Background

Lakeshore undertook a Roads Needs Study in 2008. This study recommended the following Road Program:

- \$1.9 million annually to address all the improvements needed to address deficiencies in the road system;
- \$300,000 in conversion of gravel roads to surface treatment;
- \$500,000 to reconstruct semi urban to urban;
- \$2.8 million for special projects annually; and
- \$170,000 annually railway crossing improvements.

The Road Program recommended a total of \$5.7 million be spent annually over the next 10 years (from 2008 to 2018).

It was further identified that failure to budget this level of funding annually will result in future annual costs rising.

In 2013, Lakeshore updated the above noted Roads Needs Study, however only roadway conditions were reassessed, and the condition tables were updated, the contribution recommendations related to the Road Program remained the same.

In 2018, Lakeshore undertook a roadway condition assessment study. The Road Needs Study was not updated at this time; however, a street scan was completed providing updated information on the condition of the roadways, specifically the pavement condition (no base condition was undertaken).

Since then, modifications to the contributions have been made and currently Council is directing \$7,033,500 annually into the Roads Reserve. \$6,185,249.00 directed to asphalt roads and \$845,200.00 directed to the conversion of gravel roads.

In order to better understand and develop a plan related to Road Reconstruction, Rehabilitation and Gravel Road Conversion, it was recommended in the 2023 budget that a full Roads Needs Study be undertaken in 2023. Based on the above, a full study has not been completed since 2008 and subsequent updates did not include an updated recommendation related to a Roads Program and/or updated financial contributions required to maintain the plan/roads.

The Roads Needs Study will provide a plan for moving forward related to roadway reconstruction, rehabilitation, and conversion of gravel roadways, clearly outlining the financial commitment and long-term impact of the program to the reserve contribution.

In 2023 Council approved the budget to complete a Roads Needs Study. This is currently being prepared and will go through the Request for Proposal (RFP) process for procurement of services to undertake this study. It is expected to be awarded early next year and complete by the end of 2024.

Comments

Table A (attached) shows the requested budget amounts since 2020, annually, for the Roads Program, including road reconstruction projects.

As mentioned above, the current Roads Program is broken down into two distinct areas, Asphalt roadways (which includes rehabilitation and reconstruction) and Gravel converted/surface treated roads with the relative annual contribution to reserves for each area as noted above and identified in Table A.

As you can see, the requested budget amounts are exceeding the annual contribution to the roads reserves, specifically the introduction of the rehabilitation of surface treated roads (gravel converted roadways).

Lakeshore currently has approximately a total of 545 kilometers of roadways. A further breakdown has been provided in each of the below sections.

Asphalt Roadways

Asphalt Road Rehabilitation (Lifecycle Asphalt Resurfacing)

Lakeshore currently has approximately 160 kilometers of asphalt roadways. These roadways consist of rural, semi urban and full urban cross sections.

The below table is a summary of the pavement condition index (PCI) based on the 2018 updated condition assessment:

PCI Condition	PCI Rating	km's of roadway	Percentage
Fair to excellent	above 55	120	75%
Poor Condition	40 to 55	24	15%
Very Poor to Failed	below 40	15	9%
Total		159	100%

As shown in the above table, approximately 15% of the roadways (24 kilometers) are within the critical time for rehabilitation (poor condition) and 9% of Lakeshore's roadways now require reconstruction (very poor to failed condition). Every year, the PCI condition reduction has the ability to modify the plan.

Attached is a figure outlining the Pavement Life Cycle criteria. This measures the Pavement Condition to Time. The importance of existing Asphalt Rehabilitation is linked to timing of degradation and impacts project costs. Resurfacing asphalt roadways at a critical time is paramount to extend the life-cycling of the asphalt roadways and avoids full reconstruction costs.

It should be noted that in 2021 geotechnical assessments were implemented in advance of recommendations on road rehabilitation projects to get a better understanding of the required level of rehabilitation. Geotechnical information is now being obtained in advance of the budget to understand the amount of rehabilitation required and to provide a more accurate budget of the project to avoid budget over runs.

The following outlines past relative costs for rehabilitation of asphalt roadways:

- 2020 - 1.45 km of resurfacing completed @ \$435,000.00/km

- 2021 - 2.36 km of resurfacing completed @ \$450,000/km
- 2022 - 4 km of resurfacing completed @ \$320,000/km
- 2023 - 1.78 km of resurfacing completed @ \$500,000/km

Thus, making the average cost of rehabilitation (resurfacing and base repairs as required) approximately \$426,000.00/km. The total cost to rehab the required PCI condition segments (those in poor condition) is \$10,224,000.00. Based on the recommended \$1,900,000 annually, this would take approximately 5 years, with additional roadways deteriorating during this time.

It is recommended that until the completion of the Roads Needs Study that Council increase the spend in 2024 to the annual contribution amount of \$1,900,000 (as recommended in the 2008 Roads Needs Study) and resurface roadways that are required to be resurfaced prior to degradation to reconstruction (portion of the 24 km’s that have been identified to be in poor condition, those with a PCI between 40 – 55).

In order to avoid further costs related to full reconstruction, it is expected that the total costs for road rehabilitation will increase in the updated Roads Needs Study as a recommendation based on the current PCI of asphalt roadways and standard practice for rehabilitation.

Asphalt Road Reconstruction

The attached Table A – Roads Reserve Contributions & Budgets identifies the required contribution annually to maintain the reconstruction program.

Further, it was identified that Patillo Road required widening and upgrades associated with the traffic and demand for the area. This was on the 5-year plan and was expected to be constructed in 2024/2025.

The following is the breakdown of the required funds to widen and upgrade Patillo Road:

Year	Budget
2019 (Design & Property)	\$480,000.00
2021 (Grant Received)	\$4,166,500.00
2022 (Design & Property)	\$308,000.00
2023 (Construction Phase 1)	\$9,314,000.00
2024 (Construction Phase 2)	\$15,433,480.00
Total	\$29,701,980.00

The following options are available related to the Asphalt Road reconstruction program for 2024:

- Option 1) Defer the Patillo Road Widening and Reconstruction Project and investigate further funding opportunities and create an annual reserve amount for when the project could be undertaken. This option would forego the \$4,166,500 ICIP grant received in 2021 (if not agreed to be extended by the province). Further, Administration could investigate the potential of long-term debenture borrowing for this project.

- Option 2) Continue to move forward with the Patillo Road Widening and Reconstruction Project and **defer** Wallace Line Reconstruction and St. Charles Street Design. This would put the 5-year road reconstruction plan further behind, drawing down the reserves to -(\$2,176,359). This will defer the project plan by a year and impact the asphalt roadway plan, including rehabilitation.

- Option 3) Continue to move forward with the Patillo Road Widening and Reconstruction Project **and** Wallace Line Reconstruction and St. Charles Street Design in 2024. This would result in a significant negative reserve (as noted in the financial impact section) and will have an impact on the 2025 rehabilitation/reconstruction works, leaving little remaining for any work to be undertaken in 2025, including rehabilitation.

- Option 4) **Recommended** - Rehabilitate Patillo Road with no enclosure or widening (cost to be determined). This option would forego the \$4,166,500 ICIP grant received in 2021. The remaining reserves should be reallocated for the completion of asphalt road rehabilitation/reconstruction projects, as required.

It is expected that the total costs for road reconstruction projects will also increase in the updated Roads Needs Study based on the current needs and past demand for projects (and associated inflationary costs) as shown in Table A.

Surface Treated/Gravel Conversion Roadways

Lakeshore consists of 270 kilometers of surface treated roadways and 115 kilometers of gravel roadways.

Currently, Council approved a contribution of \$845,200.00 annually to convert gravel roadways. However, this did not include life cycling or application of maintenance course lifts to extend the life of the converted roadways and only accommodated the 10-year plan to convert gravel roadways. These converted roadways are not being maintained and the original 10-year conversion program plan continues to be implemented, thus increasing the costs being applied to the surface treated/gravel roads (see attached Table A) to almost \$2,000,000.00 annually, thus exceeding the annual reserve contribution.

The below is a summary of the current applicable costs to complete and maintain the Gravel Road Conversion Plan (and maintain it) including life expectancy:

Item	*Cost per m ²	Life Expectancy of Roadway
Gravel Conversion Cost	\$ 20.00	12 - 15 years, this includes a 3 rd lift the following year.
Maintenance Lift Cost	\$ 6.00	If maintenance lift (4 th lift) is applied, life expectancy is increased to 20 + years.
Rehabilitation Cost	\$ 24.00	12 - 15 <u>or</u> 20 + years (pending placement of maintenance lift (4 th lift)).

*The above are based on 2023 tender costs.

The above identifies that the current contribution for gravel converted roadways and the surface treatment life cycling/rehabilitation is not enough to continue to implement the program and maintain the surface treated roadways in a responsible manner.

It is recommended that until the completion of the Roads Needs Study that Council reduce the spend in 2024 to the annual contribution amount of \$845,200.00 (as approved by Council) and apply these funds to extend the life of the existing previously converted roadways by the application of an additional maintenance lift (as should be applied within 5-7 years of conversion to extend the life of the surface treated roadways) on those roadways which have already been converted. Thus, allowing the roadways from reaching rehabilitation by the placement of a maintenance lift. There will be no gravel converted roadways proposed to be completed in 2024.

Those roadways that did not receive a maintenance lift and exceed 7 years, will require rehabilitation (pulverizing, additional stone and reapplication of tar and chip) over the next several years (failure is expected at 15 years). There is currently no mechanism in place to fund this.

It is expected that the Roads Needs Study will include additional funds be allocated to maintain the surface treated roadways (maintenance lifts) and rehabilitation of these roadways. Associated plans for this will need to be developed to maintain long term longevity of the surface treated roadways.

It is recommended that the reserve amount be held to ensure the level of rehabilitation can be met before continuing to implement the conversion plan.

Financial Impacts

The following is a breakdown of both the Roads Reserves and Roads Development Charges Reserves, should Lakeshore proceed with the proposed budget for 2024, including the funding to complete the Patillo Road Widening Project:

Roads Reserves

Roads Reserve	Opening	Contributions (2024)	Withdrawals (2024 Budget Requests)	Closing Balance
Existing Reserve	\$8,839,149			
Base 2024 Budget Transfer		\$6,185,249		
Asset Management 3% of Tax Rate (proposed in 2024 Budget)		\$1,163,790		
Patillo Road (tax funded) Total is \$23,766,480 for 2024			\$(16,364,547)	
2024 Life Cycle Asphalt			\$(1,900,000)	
2024 Roadside Trails Life Cycle			\$(100,000)	
Wallace Line Reconstruction <i>(recommending deferral for 2024)</i>			\$(3,154,379)	
St Charles Street (design) <i>(recommending deferral for 2024)</i>			\$(500,000)	
Totals	\$8,839,149	\$7,349,039	\$(20,802,610)	\$(5,830,738)

Roads Development Charges Reserves

Roads Development Charges Reserve	Opening Balance	Contributions (2024)	Withdrawals (2024)	Closing
Existing Reserve	\$6,047,642			
Estimated Contributions		\$1,200,000		
Patillo Road DC potion			\$(7,401,932)	
Totals	\$6,047,642	\$1,200,000	\$(7,401,932)	\$(154,289)

The following is a breakdown of the Gravel Roads Conversion Reserve, should Lakeshore proceed with the proposed budget for 2024:

Surface Treated/Gravel Conversion Reserves

Gravel Roads Conversion Reserve	Opening Balance	Contributions (2024)	Withdrawals (2024 Budget Requests)	Closing
Existing Reserve	\$1,153,252			
Annual Contributions		\$845,200		
Lifecycle Surface Treatment (including maintenance lifts)			\$(845,200)	
Gravel Road Conversion			\$0	
Totals	\$1,153,252	\$845,200	\$(845,200)	\$1,153,252

After the 2024 contributions, the balance for roads reserves and roads development charges reserves will have a total balance of \$23,435,830.

Should the recommended 2024 roads plan (Wallace Line and St. Charles Street) and Patillo Road Widening be completed in 2024 it is estimated that all the reserves that fund roads rehabilitation and growth will be in a negative position of \$(5,830,738).

After the 2024 contributions, the balance for gravel conversion reserves will be \$1,998,452. Should the recommended 2024 surface treated roads/gravel conversion be completed in 2024 (as recommended) it is estimated that the reserves that fund the gravel conversion will be in a positive position of \$1,153,252. As noted in the report, this is recommended to be held in reserves until a formal updated plan is determined to continue to convert roadways in a responsible manner while balancing maintenance of previously converted roadways.

Attachments

Attachment 1: Table A – Roads Reserve Contributions and Budgets

Attachment 2: Pavement Life Cycle and Condition

Report Approval Details

Document Title:	2024 Reconstruction, Rehabilitation and Gravel Conversion Program Direction.docx
Attachments:	- Attachment 1 - Table A Roads Reserve Contributions and Budget.pdf - Attachment 2 Pavement Life Cycle and Condition.pdf
Final Approval Date:	Dec 7, 2023

This report and all of its attachments were approved and signed as outlined below:

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Approved by Justin Rousseau and Truper McBride