GRAVEL ROADS ASSESSMENT REPORT

EXECUTIVE SUMMARY

This report examines the City of Calgary's (The City) gravel road inventory and presents cost benefit analysis of paving gravel roads older than 10 years.

ADMINISTRATION RECOMMENDATION(S)

That the SPC on Transportation and Transit recommend that Council direct Administration to:
1. Proceed with Option 3 in Attachment 2;
2. Prioritize funding within the Asphalt Surface Overlay Program over 5 years;
3. Use Fuel Tax revenue if in excess of projections as a priority need to a maximum of $1 million per year for 2015 to 2018; and
4. Add the remainder of The City's gravel roads to Transportation's capital projects plan (Investing in Mobility) as unfunded paving projects until future funding is secured.

PREVIOUS COUNCIL DIRECTION / POLICY

On 2014 January 27, at a Regular meeting of Council, it was resolved that Administration would:

- Identify the current inventory of gravel roads in residential, commercial and industrial districts which are older than 10 years.
- Provide a cost benefit analysis versus current maintenance costs, and options for payment, financing and/or cost recovery on a multi-year work plan to pave public gravel roads in residential and commercial areas.
- Provide a similar program to pave public industrial roads.
- Bring this report to the Standing Policy Committee on Transportation and Transit by 2014 September 19, to ensure inclusion in the 2015-2018 Business Plan and Budget Debate.

BACKGROUND

The City owns about 290 lane kilometres (kms) of residential, commercial and industrial gravel roads of which 87 lane kms are older than 10 years (Attachment 3). The current cost to maintain the 87 lane kms of gravel roads is estimated at $7.7 million over 30 years. There are two other options to consider. The cost of paving all 87 lane kms is estimated at $29.9 million over 30 years. The remaining 203 lane kms are rural roads or, residential, commercial and industrial roads less than 10 years within The City's inventory. Table 1 below is a summary of the City's gravel roads inventory.

Table 1: Gravel Road Inventory

	Lane Km			
Classification	> 10 years	< 10 years	Total	Locations
a. Residential	43.21	2	45.21	98
b. Commercial	1.33	-	1.33	2
c. Industrial	42.61	3	45.61	59
SUB TOTAL (a+b+c)	87.15	5	92.15	159
d. Rural	189.16	9	198.16	56
TOTAL (a+b+c+d)	276.31	14	290.31	215

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Administration has also identified 12.4 lane kms of gravel roads older than 10 years that on average require 5 times the cost of maintenance than a typical gravel road (Attachment 3). These are designated as residential (6.6 lane kms), commercial (1.3 lane kms) or industrial (4.5 lane kms) and it is estimated that paving this subset will result in an approximate capital cost of $4.1 million and $2.3 million in operating budget over 30 years. Net savings in option 3 is $1.3 million over 30 years in operating funds.

INVESTIGATION: ALTERNATIVES AND ANALYSIS

Cost estimates contained in this report are determined as a function of roadway classification and maintenance costs. Further, paving implies basic paving costs including sub-grade preparation, granular base preparation and asphalt. Actual costs will vary by lane width and the road right of way design (i.e. shoulders) resulting in the total asphalt width. Attachment 1 provides a basic overview of the typical pavement structure for various road classifications.

Cost estimates can vary considerably with the addition of street features like: curbs and gutters, drainage, deep and shallow utilities, sidewalks, lighting, and signage. These additional costs have not been accounted for in this report since detailed assessments of each location have not been prepared. These additional features can lead to a doubling or quadrupling of costs.

Maintenance costs for paved streets include cold mix patching, hot mix patching and general surface maintenance. Surface maintenance includes pothole repairs, crack sealing, spray patching, micro surfacing and slurry seal. Gravel road maintenance costs include dust suppression, loose top grading and gravelling, addition of asphalt planning chips, spot base repair and wash-out repair. Attachment 2 offers a summary of maintenance costs for gravel and paved roads older than 10 years.

Following analysis, Administration identified three options to treat The City's public gravel roads:

Option 1. Continue to maintain The City's gravel roads until future funding is secured for resurfacing within The City's long term capital investment plan. The maintenance costs are approximately $7.7 million over a 30 year life cycle.

Option 2. Pave all 87 lane km of residential, commercial or industrial gravel roads older than 10 years. The base estimate for this option is approximately $29.1 million in capital funding with an additional $793,000 operating costs for an overall cost of $29.9 million over 30 years (Attachment 2).

Option 3. Pave 12.4 lane km of residential, commercial and industrial gravel roads that are older than 10 years identified as having 5 times the maintenance costs compared to a typical gravel road. The remaining gravel roads would be included within The City's long term capital investment plan (Investing in Mobility) as unfunded projects until future funding is secured. The base estimate for this option is approximately $4.1 million in capital funding with an additional $2.3 million in operating costs for an overall estimated cost of $6.4 million over 30 years. This option will provide a net savings of $1.3 million over 30 years when compared to Option 1.

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Administration's recommendation is Option 3 as it has addresses the gravel roads that require above normal maintenance costs. Benefit cost information is shown in Table 2 below.

Table 2: Cost Benefit (Taken from Appendix 2: Cost Benefit Analysis Options Summary)

	Option 1	Option 2	Option 3
a. Cost (Operating over 30 years)	($7.7M)	($0.8M)	($2.3M)
b. Cost (Capital over 30 years)	0	($29.1M)	($4.1M)
c. Cost over 30 year life cycle (a+b)	($7.7M)	($29.9M)	($6.4M)
Net Savings	**0**	**($22.2M)**	**$1.3M**

Funding

Potential funding sources include:

1. Acquire funds from the Investing In Mobility Program by reassigning priorities in Pavement Rehabilitation and Asphalt Surface Overlay.
2. Use Fuel Tax revenue if in excess of projections as a priority need to a maximum of $1 million per year in 2015 to 2018.
3. Acquire funds through the imposition of a local improvement tax.
4. Acquire funds through a capital budget increase beginning with the 2015-2018 Action Plan.
5. Acquire funds via financing or loan.

Funding source 1 is possible as Council approved report TT2014-0308 at the 2014 May 26 Regular Meeting of Council which set the funded and unfunded transportation infrastructure lists and directed Administration to use this list to develop a capital budget for Action Plan 2015–2018. The result would be slowing the lifecycle repairs and effectively increasing the unfunded work by $29.1 million.

Funding source 2 is possible as it would simply be prioritizing excess funding. This funding approach preserves necessary lifecycle spending and utilizes unbudgeted surpluses for a limited period of time. This option would only be pursued only in those years when there is Fuel Tax surplus, and such surpluses cannot be predicted.

Funding source 3 is not recommended as this report arose in response to public frustration and resistance to the use of local improvements to upgrade gravel roads. Administration continues to see this as a reasonable approach to back lane paving.

Funding source 4 is possible as it can be prioritized against all other requests for funding. It would require a four year work program of $1 million annually beginning in 2015 associated with Option 3 above.

Funding source 5 is not recommended as the capital costs and interest costs are greater than the potential savings therefore no urgent need or benefit would be realized by accelerating the work.

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Stakeholder Engagement, Research and Communication

Research was conducted internally by The City's Finance team and reviewed by Roads subject matter experts to ensure the accounting scope was appropriately defined to determine the operating costs for gravel and paved roads.

Further consultation would be required with adjacent property owners, internal City departments, utility companies, etc. prior to paving any of the gravel road inventory.

Strategic Alignment

The paving of The City's residential, commercial and industrial roads supports Calgary Transportation Plan goals of: Promote safety for all transportation system users, Provide affordable mobility and universal access for all, advance environmental sustainability, and ensure transportation infrastructure is well managed.

Social, Environmental, Economic (External)

Social

The elimination of dust and other debris (i.e. kicked up gravel) enhances safety by offering pedestrians, cyclists and motorists a solid base on which to travel. Complaints are received each year concerning dust from gravel roads. Improving the quality of life and the public realm for citizens either using, living or conducting business adjacent to gravel roads.

Environmental

The elimination of dust arising from traffic and wind will improve air quality. A smooth asphalt driving surface can result in reduced wear and tear on vehicles and increase fuel efficiency. Introduction of curb and gutter will help to control storm water and snow melt run-off.

Economic

Improved road conditions increase travel efficiency and safety for road users and enables city wide economic activity. Paved roads tend to increase adjacent property values. A cost recovery system exists for local improvement areas that petition for resurfacing.

Financial Capacity

Current and Future Operating Budget:

If Option 3 is pursued, it will provide a reduction in operating costs of $1.0 million dollars over the projected 30 year life cycle.

Current and Future Capital Budget

Depending on how funding is approved, Option 3 would require an approximate increase in capital funding of $1.0 million over 4 years for a total of $4.0 million. Detailed design will evolve costs and does tend to broaden the scope to other elements such as sidewalks, boulevards and street lighting. The work program can be adjusted to fit the available funds.

Risk Assessment

There is risk that citizens who have paid for the paved surface adjacent to their property will object that adjacent property owners are not carrying these costs. Another risk is if funding source 1 is exercised there will be an effective increase of unfunded work of $29.1 million.

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Over the next 30 years The City will continue to spend as much as $7.7 million to maintain the residential, commercial and industrial gravel road inventory older than 10 years. This report demonstrates a capital expenditure can, over the 30 life cycle for a paved surface, reduce the operating costs and has a net savings of $1.3M coupled with improving the quality of life for citizens living and conducting business adjacent to gravel roads.

REASON(S) FOR RECOMMENDATION(S):
Paving gravel roads will result in an operational saving to The City. Option 3 addresses those segments identified by Administration that have on average 5 times the operating costs of a typical gravel road. The remaining gravel roads will be identified as unfunded projects within The City's long term capital investment plan for transportation projects to realize future operational savings.

ATTACHMENT(S)
1. Typical Pavement Structure
2. Cost Benefit Analysis
3. Residential, Commercial and Industrial Gravel Roads Over 10 years Old