Presented To:	Operations Committee
Presented:	Monday, Sep 14, 2020
Report Date	Friday, Aug 28, 2020
Type:	Managers' Reports

Request for Decision

Mechanical Ice Breaker for Sidewalk Winter Maintenance - Pilot Project

Resolution

THAT the City of Greater Sudbury directs staff to purchase the equipment with funding from the Capital General Holding Account Reserve up to $27,500, and hire the staff necessary to deliver a pilot project for mechanical ice breaking on winter sidewalks as outlined in the report entitled “Mechanical Ice Breaker for Sidewalk Winter Maintenance – Pilot Project”, from the General Manager of Growth and Infrastructure, presented at the Operations Committee meeting on September 14, 2020.

Relationship to the Strategic Plan / Health Impact Assessment

A pillar of the Strategic Plan 2019 – 2027 is the Asset Management and Service Excellence strategic initiative. One of the key principles of this initiative is to continually look for innovative and cost-effective approaches for the operational services staff deliver each day. Utilizing this continuous improvement approach ensures Linear Infrastructure Services provides efficient, high quality operational activities that meet the needs of residents and supports how they work, live and play in Greater Sudbury.

Report Summary

The City of Greater Sudbury is committed to building and maintaining an active transportation network. The City recognizes the importance of clearing sidewalks and enabling residents to maintain healthy, active lifestyles and in providing safe access to destinations such as school, work and commercial areas. City staff strive, insofar as reasonably practicable, to provide safe winter road and sidewalk conditions for vehicular and pedestrian traffic as set out in the appropriate level of service.

This report recommends that staff commence a pilot program to test an attachment for our sidewalk plows (on one sidewalk route) that will address concerns that have been raised over the past couple of years about winter sidewalk surface condition. As part of the pilot program, staff will monitor the results with

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Health Impact Review
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Division Review
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Financial Implications
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Recommended by the Department
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General Manager of Growth and Infrastructure
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Recommended by the C.A.O.
Ed Archer
Chief Administrative Officer
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utilization of this technology throughout the 2020 - 2021 winter season and return in the second quarter of 2021 with a report detailing our findings. The report will also contain financial information on the potential costs associated with delivering this type of enhanced service to other areas of the City.

Financial Implications

The estimated initial capital cost for the equipment is $27,500. This would be a one-time capital cost and would be funded from the Capital General – Holding Account Reserve in 2020.

Annual operating costs are estimated to be $19,500. For the purpose of the pilot project, approximately $6,900 will be expended in 2020 with these costs forming part of the 2020 year-end position. The remaining estimated costs of $12,850 would be realized in 2021 and would be included as a one-time expenditure in the operating budget should the resolution be accepted. The 2020 expenditures are unbudgeted and could increase the 2020 deficit, if approved. These costs could be offset if favourable weather conditions are realized during the 2020/2021 winter season. As this is a pilot project for an enhanced level of service, the costs are incremental to the organization.

Mechanical Ice Breaker for Winter Sidewalk Maintenance – Pilot Project

Background

Over the past couple of years changes to our weather patterns have caused issues with maintenance of snow packed sidewalk as well as roadway (class 4 to 6) surfaces. It isn't uncommon to experience significant temperature fluctuations that result in melting (freeze-thaw cycles) periods throughout the winter season. These extreme temperature changes have the greatest impact on sidewalk and roadway surfaces that are maintained to a snow packed condition in that they melt during the day and freeze at night. In both cases (sidewalks and roadways) staff manage the issue by performing additional plowing/sanding to ensure the surface is as smooth as possible thereby fulfilling the requirements of the City's current service level policy. The main difference between roadway versus sidewalk plowing is the size and type of equipment that will be deployed to address the surface condition. In the case of roadways, staff are able to manage this problem by using equipment such as graders which has the ability to scrape roads very aggressively (by applying down pressure with the blade) as well as provide continuous service along the roadways (around the clock). With sidewalks, the equipment used is able to scrape the sidewalks but not to the same degree as a grader and the City's current system design allows for sidewalk plowing services once a day rather than continuously.

In August 2017, staff prepared a report entitled "Enhanced Sidewalk Winter Maintenance Plan" that looked at several options for addressing this issue. In the report staff concluded that changes to the service level would require a fairly significant budget increase therefore would not be recommended at this time. Staff also suggested it would be appropriate to continue with our current approach of plow, scrape and sand our sidewalks during these (freeze-thaw) melting periods which has been the approach used to date.

This report may be read in its entirety at:
https://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&id=1145&itemid=13719&lang=en

In February 2020, the Operations Committee was presented with a report/presentation entitled "Winter Control Operations Update". This report/presentation provided the Committee with financial results of the 2019 winter control season up to and including December 2019. In addition to the financial information, members of the Operations Committee were shown

photographs and a brief video of a mechanical ice breaker attachment for the City's sidewalk plows that would ideally enable staff in addressing challenges with ice/snow buildup on sidewalks. The attachment scarifies the sidewalk surface by a mechanical means, reduces the snow/ice buildup and ultimately creates a smoother winter sidewalk surface. It is staff's hope that more accessible winter sidewalks will encourage more people to walk rather than use their cars to get to their destination thereby increasing active transportation which is consistent with the objectives of Greater Sudbury's Community Energy and Emissions Plan (CEEP).

Subsequent to the presentation, the Committee passed resolution OP2020-04, directing staff to prepare a report regarding the use of icebreaker attachments for municipal tractors. The enclosed report fulfills that request.

This report may be read in its entirety at:
https://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&id=1483&itemid=17845&lang=en

Analysis

Roads maintenance staff are responsible for maintaining approximately 350 kilometers of sidewalks across the City each winter season with a target level of service of a snow packed, sanded surface. Winter sidewalk maintenance involves plowing and sanding sidewalks to reduce slip hazards and provide safe passage for pedestrians. Presently, the City plows and/or sands sidewalks once an accumulation of 8 cm of snow or icy conditions are detected. The City has 4 - 24 hours after the storm has ended to complete this service standard during typical winter storms. During the weekdays on non-snow/ice events, sidewalks are patrolled and are spot plowed and/or sanded as necessary to ensure safe pedestrian passage.

Sidewalk maintenance is presently performed by Municipal Tractors (MT's). They operate with a straight plow or snow blower and sander depending on weather conditions. MTs are capable of maintaining a maximum sidewalk width of 5 feet. Snow accumulation on sidewalks is generally cleared with a single pass with a plow blade or snow blower.

This approach works well as long as the winter season has relatively consistent colder temperatures with few if any melting periods. Unfortunately that hasn't been the case in recent winter seasons. It has become increasingly common to experience several "melting periods"

during the winter months which has caused the snow packed road and sidewalk surfaces to become significantly rougher and more difficult to traverse. Staff have been able to address this issue on roadway surfaces by deploying graders with ice blades to scarify the ice/snow pack and level the road surface. Presently the City doesn't have similar technology to use on sidewalks.

To address this issue and as part of the City's continuous improvement approach to the delivery of winter control services, staff arranged to have a demonstration of two different mechanical ice breaker attachments for winter sidewalks. Both MT attachments were able to reduce the ice/snow pack and create a smoother sidewalk surface. The demonstrations were conducted in early January 2020 at a time when the ice/snow pack was fairly thick. It is staff's hope that the introduction of this technology throughout the season will result in minimal ice/snow build up which in turn will result in a less irregular surface during melting periods.

Financials

For the purpose of this pilot project staff has estimated that the ice breaker attachment would be utilized approximately 25% of the time required to complete sidewalk plowing on one sidewalk route throughout a typical winter season. The route that has been chosen for the pilot program is "Sidewalk Route 4A" which includes a large portion of the City's downtown area (see Appendix A for details on the exact area to be included). Staff will use one of the spare MT's to deliver this service enhancement.

Capital Cost	**$**	**27,500**
Incremental Operating		
Labour	$	16,250
Maintenance	$	2,750
Fuel	$	750
Estimated Annual Operating Costs	**$**	**19,750**

It is estimated that incremental operating costs for the period of November and December, 2020 are $6,900. This service enhancement is currently not included within the 2020 budget and any overage as a result of this service enhancement would be included in the year-end position.

The estimated incremental operating costs for the period of January to April, 2021 are $12,850 and would be included in the 2021 operating budget if approved by subsequent resolution.

Conclusion and Next Steps

It was evident during our demonstration that the sidewalks maintained with the mechanical ice breaker had a smoother surface. In addition to the smoother surface, staff noticed that sidewalks were returned to full width and had less ice/snow pack after they were treated with this attachment. The pilot project, if approved, would commence at the beginning of the 2020 - 2021 winter season with staff returning to Council at the end of the winter season with a detailed report on how the technology worked and if warranted, options on how a full program could be delivered. In the event that the pilot project fails to provide the desired results, staff will make arrangements to sell the mechanical ice breaker attachment and return all monies generated from the sale to the Capital General Holding Account Reserve.

To ensure the success, staff would commence work on the following items immediately if the project is approved;

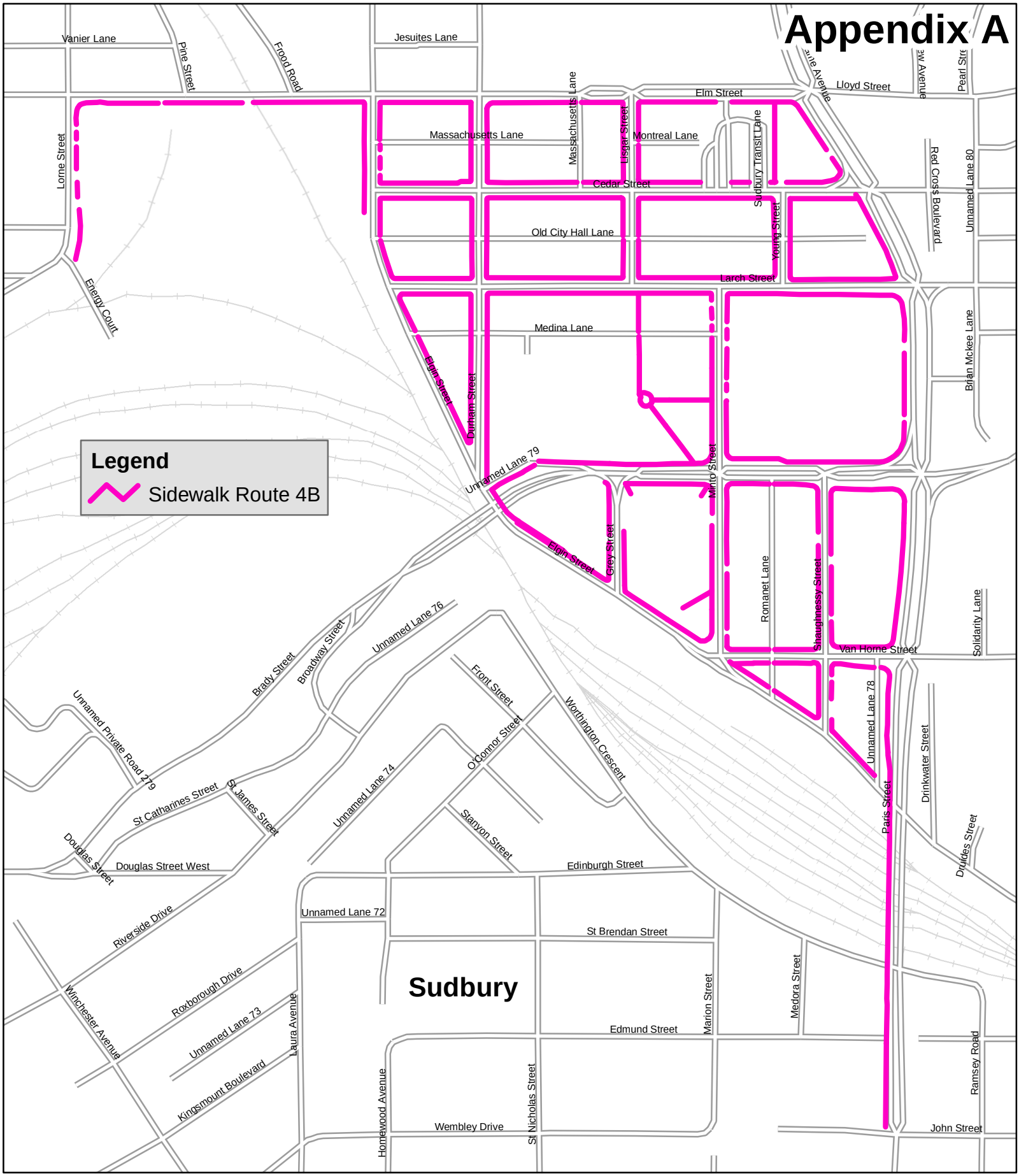
- Purchase the ice breaker attachment and train staff on how to use the equipment.
- Work with Communications staff to develop a plan on how we will introduce this project to the Community.
- Develop a monitoring plan that will ensure we can provide a comprehensive report on the impacts of the enhanced sidewalk services. Some of the key components of the monitoring plan would include routine checks of the physical properties of our sidewalks such as sidewalk width, ice/snow pack thickness and sidewalk smoothness in comparison to areas that aren't receiving the enhanced services. To augment the inspection data, photographic evidence highlighting their findings will also be taken.
- Track the public's perception of the enhanced services through comments/issues provided in our CRM system. Staff will also work with the downtown BIA to solicit feedback from abutting business owners on their impression of the enhanced sidewalk maintenance service.

Resources

- Operations Committee Report dated August 21, 2017 titled “Enhanced Sidewalk Winter Maintenance Plan”
https://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&id=1145&itemid=13719&lang=en
- Operations Committee Report dated February 10, 2020 titled “Winter Control Operations Update”
https://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&id=1483&itemid=17845&lang=en

- Greater Sudbury’s Community Energy and Emissions Plan – Draft
https://www.greatersudbury.ca/live/environment-and-sustainability1/pdf-documents/draft-greater-sudbury-community-and-energy-plan-executive-summary/

Appendix A



SOUTH SECTION 2020-2021

SIDEWALK 4

Date: August 24, 2020
Created by GIS Operations, Growth & Infrastructure, City of Greater Sudbury

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Meters