Mechanical Ice Breaker for Winter Sidewalk Maintenance Pilot Project – Supplemental Report

Background

In September 2020, staff prepared a report entitled "Mechanical Ice Breaker for Winter Sidewalk Maintenance – Pilot Project" that requested approval to purchase a mechanical ice breaker to support a pilot project. Operations Committee supported the request and passed the Resolution #OP2020-22. At the time this report was published, the resolution has not been ratified but is scheduled to be reviewed by Council at the October 6, 2020 meeting. At the September 14, 2020 Operation Committee Meeting the members of committee asked staff to return with a supplemental report to the "Mechanical Ice Breaker for Winter Sidewalk Maintenance – Pilot Project" report that would consider options to expand the use of the ice breaker technology to some additional sidewalks. This report has been prepared to address this request.

The "Mechanical Ice Breaker for Winter Sidewalk Maintenance – Pilot Project" report may be read in its entirety at:

https://agendasonline.greatersudbury.ca/?pg=agenda&action=navigator&lang=en&id=1490&itemid=19279

Analysis

The goals of the proposed pilot project is to assess the effectiveness of a mechanical ice breaker for clearing ice and snow pack from sidewalk surfaces and also validate the operational cost estimate to provide this service. The pilot project will allow staff to determine whether the operational costs estimate is reasonable and provide a basis to provide a more accurate cost estimate in order to review the purchase of additional mechanical ice breakers in the future. The original operational estimate was based on an assumption that the ice breaker attachment will be required 25% (on one sidewalk route) of the time over the course of a winter season.

In order for the pilot to be effective, it is important that there be a clear test area where the ice breaker attachment is used and a comparable control section where the icebreaker attachment is not used. This is critical to assess and determine whether the ice breaker attachment is effective. If the test area is not clearly separated from the control area, it will be difficult to ascertain what factors contributed to the condition of the sidewalks. This could lead to an incorrect conclusion that improved sidewalk conditions were a result solely of the ice breaker attachment.

As part of the pilot program, staff will monitor the results with utilization of this technology throughout the 2020 - 2021 winter season and return in the second quarter of 2021 with a report detailing the 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.

At the September 14, 2020 meeting, Operations Committee asked staff to review options to expand the use of the mechanical ice breaker beyond one sidewalk maintenance route for the 2020/2021 winter season and report back at the next committee meeting in October.

Staff have reviewed two options described herein.

Option #1 – Expand the use of the Mechanical Ice Breaker Attachment to include two sidewalk routes in the downtown core.

The first would be to continue the pilot project with one ice breaker unit and increase the planned utilization of the unit over the course of the winter. With this scenario, staff would fully utilize the ice breaker unit when conditions warrant over two downtown sidewalk routes rather than single route indentified in the original pilot project report. Appendix A (Option 1) contains a drawing highlighting the limits of the routes that would be included if this option is accepted. This would result in no increase to the capital cost to purchase the ice breaker unit. An increase to the operating budget for labour requirements and additional fuel would be needed to account for the full utilization of the ice breaker attachment this winter. The total cost (operating and

capital) for this pilot project option is $64,206 with $47,250 previously approved through resolution OP2020-22.
It is estimated that total incremental operating costs would be $16,956 for this additional sidewalk route. The incremental operating costs for the period of November and December 2020 are $5,934. 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 for this additional sidewalk route are $11,021 and would be included in the 2021 operating budget if approved by subsequent resolution.

Option #2 - Expand the use of the Mechanical Ice Breaker Attachment to include two sidewalk routes and purchase an additional Mechanical Ice Breaker Attachment to complete two additional routes.

With this option, staff reviewed the potential to expand the pilot project to include a second ice breaker attachment and two additional routes. Appendix A (Option 2) contains a drawing highlighting the limits of the routes that would be included if this option is accepted. This would allow the pilot project to extend to multiple sidewalk routes within the City. Once again this option is based on the utilization of one of our spare sidewalk plows (MT) to complete the work. One of the significant differences of applying mechanical ice breaking treatment to sidewalk routes outside the downtown core is the winter sidewalk plowing service level. The approved winter sidewalk plowing service level for the two routes within the former City downtown core allows for plowing/cleanup each day, five days a week. The winter sidewalk plowing service level for all other sidewalks in the City allows for plowing when 8 centimeters of snow has accumulated or icy conditions are detected. The mechanical ice breaker treatment may have to include additional snow plowing (with a separate sidewalk plow) for any sidewalk route outside of the two downtown routes which could increase the costs. The pilot project will assist staff in determining the level and cost of additional snowplowing that may be required to support the use of the mechanical ice breaker outside of the

downtown core. The total cost for this option would be double the costs of option one. The total cost for this option would be $128,411, with $47,250 previously approved through resolution OP2020-22.

After careful review and consideration, staff recommend option one, which will address the concerns raised by Operations Committee at the meeting on September 14, 2020 and still allows staff the opportunity to ensure the pilot project provides sufficient information to compile a report on the total cost to offer this enhanced service across the entire City in the event Council chooses to do so

Financials

Option #1 allows for the addition of one additional sidewalk route in the downtown area. Option #2 allows for the purchase an additional mechanical ice breaker and delivery of the enhanced service to a total of four routes.

	Option 1	Option 2
Total Capital Cost	**$ 27,500**	**$ 55,000**
Previously Approved Capital (OP2020-22)	$ 27,500	$ 27,500
New Purchase (Approval Required)	**$ -**	**$ 27,500**
Incremental Operating		
Labour	$ 32,458	$ 64,915
Maintenance	$ 2,750	$ 5,500
Fuel	$ 1,498	$ 2,996
Estimated Annual Operating Costs	**$ 36,706**	**$ 73,411**
Previously Approved Operating Costs (OP2020-22)	$ 19,750	$ 19,750
Incremental Operating Costs (Approval Required)	**$ 16,956**	**$ 53,661**
Total Pilot Program Cost	**$ 64,206**	**$ 128,411**

It is estimated that incremental operating costs for the period of November and December, 2020 are 35% of total operating costs and for the period of January to April, 2021 are 65% of total operating costs.

Conclusion and Next Steps

It was evident during our demonstration in the winter of 2019 - 2020, 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.

Resources

-- Operations Committee Report dated September 14, 2020 titled "Mechanical Ice Breaker for Sidewalk Winter Maintenance – Pilot Project"
https://agendasonline.greatersudbury.ca/?pg=agenda&action=navigator&lang=en&id=1490&itemid=19279

- 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/