2023-2024 Winter Maintenance Summary

ISSUE

This report is a summary of the winter maintenance operations for the 2023-2024 winter season.

BACKGROUND

Snow and ice management of roads, bridges, pathways, cycle tracks and bike lanes focuses on public safety and mobility during the winter months. A typical winter season extends from November to April. The Service Level for Snow and Ice Management was approved by City Council in 2017. This service level includes all the activities undertaken for snow and ice management including regular maintenance and targeted response strategies to snow and weather events.

Snow events are snowfalls with an accumulation of more than 5 centimetres, triggering the initiation of snow grading on all priority streets. Contractor assistance is required to meet the service level commitments and grade all priority streets within 72 hours of the end of the snowfall.

Weather events include snowfalls with accumulation of less than or equal to 5 centimetres, freezing rain, drifting snow or other adverse winter weather that triggers targeted response strategies to road conditions. These events do not require contractor assistance for snow grading on all priority streets.

In addition to the approved Service Level for Snow and Ice Management for typical snow and weather events, City Council approved the Roadways Emergency Response Plan for Extreme or Unusual Snow Events (Roadways ERP) at its September 27, 2021 regular meeting. The Roadways ERP consists of an immediate and planned response to extreme or unusual snow events, including a phased approach for winter maintenance activities required to restore mobility and safety on Saskatoon's streets and sidewalks.

Highlights of the Roadways ERP are included in Appendix 1. A video describing the plan is available at https://youtu.be/-fDoEmlF0KQ.

The criteria for activation of the Roadways ERP are:

- Major snowfall with snow accumulation greater than 25 centimetres and/or combination of snow, freezing rain and wind; and
- Reduced mobility to the point that light vehicles cannot travel on city streets; mobility across the city is severely impacted and the regular winter maintenance level of service applicable to typical winter snow events can not be met.

CURRENT STATUS

Winter Preparedness Event

On October 10, 2023, the City's Emergency Management Organization (EMO) and Roadways, Fleet and Support (RFS) department held a virtual "Winter Preparedness" event with Environment Canada, critical infrastructure partners and representatives from other civic departments. The purpose of the event was to receive a mock general winter forecast from Environment Canada, review the Roadways ERP and remind critical infrastructure partners of the importance of developing their own winter emergency response plans. The event helped all attendees gain a better understanding of the sequence and priorities of the Roadways ERP and emphasized building a one-city approach to responding to winter emergency events. It provided an opportunity for the EMO and RFS to continue communicating with critical infrastructure partners and building community resiliency. The "Winter Preparedness" event was well received by all participants, helping to develop collaborative relationships between partners and improve emergency preparedness.

Snow Events and Roadways ERP Activation

In the winter of 2023-2024, there were five snow events in total, all of which occurred after January 1, 2024. Four snow events occurred prior to the major snowfall that triggered the activation of the Roadways ERP on March 3, 2024.

The overall winter maintenance effort was less than typical from November to January due to mild conditions, and higher than typical in the remainder of the winter season. In a typical winter season, there are two to three snow events on average from November to January, and two to three from January to April.

The Service Level for Snow and Ice Management timelines for the first four snow events that occurred prior to the major snowfall in March were met for completion of:

- Priority 1 and 3 street snow grading;
- Snow removal along streets with paid parking within 13 days; and
- Snow clearing along multi-use pathways, cycling infrastructure and sidewalks adjacent to City facilities within 48 hours.

Service level timelines for completion of snow grading on Priority 2 streets were not consistently met.

Service level timelines for completion of the Roadways ERP response were met for all phases of the ERP.

DISCUSSION/ANALYSIS

Service Level Commitments – Priority Street Snow Grading

Due to the challenges with consistently meeting the service level commitments for Priority 2 street snow grading, a detailed analysis of the priority street network has been initiated. The analysis will determine if the network reflects the criteria described in the approved Service Level for Snow and Ice Management, and if any resource level

changes are required. Updates to the priority street classification may be required due to changes including new streets, traffic volumes, new emergency facilities and changes to transit routes. Once the detailed analysis is completed, key findings and recommendations will be presented to the Standing Policy Committee on Transportation in a separate report.

Roadways ERP Activation

The Roadways ERP was activated on March 3, 2024, after a total of approximately 53 centimetres of snow fell on February 26 (18 centimetres) and March 3 (35 centimetres).

The Administration provided a comprehensive verbal update on the City's response to this major snowfall and execution of the Roadways ERP at the March 13, 2024, Governance and Priorities Committee public meeting.

Roadways ERP - Completion Timelines and Key Accomplishments

A timeline of the Roadways ERP phases comparing actual to targeted completion times is included in Appendix 2.

Phase V of the Roadways ERP includes city-wide snow removal. This phase was partially implemented due to the late-season ERP activation and eight-week timeline to complete snow removal on all city streets. The partial implementation included a targeted snow removal on Priority 1 streets to restore lane width and improve intersection sight lines and traffic flow after Phases I through IV were completed. The snow removal was executed overnight to reduce impacts on traffic and pedestrians and increase the overall safety and effectiveness of the operations. The snow removal began on March 6 and ran until March 19, 2024.

The partial Roadways ERP activation was considered completed on March 19, 2024. Normal winter maintenance efforts including targeted snow removal for safety and drainage concerns, back lane clearing for collections routes and salt/sand applications continued until the end of the winter season.

Roadways ERP – Improvement Opportunities Identified

Upon completion of the ERP response, and to continuously improve Emergency Response Plan activations, the response team debriefed on all processes and activities and gathered feedback on the 2024 response and opportunities for improvements from key stakeholder groups. This included internal customer service, communications staff, and City and contractor crews. Some of these noted improvements include working with City crews and staff to improve the communication between Roadways and other internal groups such as Waste Collections and Saskatoon Transit and working with snow clearing and removal contractors and updating existing contractor guidelines for the completion of ERP work, as required. The improvements will also include snow management facility operation such as investigating options for improved traffic control and customer service. Also considered are improvements to external communication including highlighting information on the City of Saskatoon website for what citizens can

expect for parking restrictions and impact on driveway crossings during a significant snowfall clean-up effort.

Road Salt Storage – Risk Mitigation

The use of road salt is critical for traction in Saskatoon streets during periods of freeze/thaw and freezing rain. The storage space for road salt in the City's downtown City Yard is at its limit and has not increased in alignment with the expansion of the road network.

Options to increase the current storage capacity are continuously being investigated and a capital expenditure budget option will be resubmitted for City Council's consideration as part of the 2025 Business Planning and Budget process, Capital Options for the Reserve for Capital Expenditures (RCE) funding.

This business plan option includes construction of new sand and salt bins for storing winter maintenance materials. The plan is to double the current storage capacity, from around 10% of the annual usage to approximately 20%. The new sand and salt bins would be located within the downtown City Yards. The scope of the option includes site preparation and construction of new bins with an impermeable ground surface and cover, in accordance with best management practices.

The City uses approximately 5,000 tonnes of salt and 20,000 tonnes of sand annually. The current storage capacity is about 450 tonnes of salt and 2,000 tonnes of sand. This requires the storage bins to be frequently replenished.

The risk of running out of salt and sand during a snow or weather event increases every year as new streets are constructed. The current storage capacity has been the same since 2005. In this timeframe, the City's paved street network has increased by approximately 25%.

Improved Lighting Standards to Increase Visibility of Snow-Plow Trucks

The Administration has completed preliminary work for a trial to assess the effectiveness of additional lighting on the City's snow-plow trucks to increase their visibility for motorists on high-speed roadways. The Administration plans to upfit the City's snow-plow trucks with improved lighting in accordance with Transport Canada's guidelines. The photos in Appendix 3 illustrate a prototype of the lighting changes. The procurement and installation of additional lighting equipment for the trial will be funded from the Snow and Ice Equipment Acquisition project that currently has funding available for this upfit.

FINANCIAL IMPLICATIONS

The total 2023 Snow and Ice Management costs were $9.1 million. These costs exclude expenditures associated with the 2023 activation of the Roadways Emergency Response Plan (ERP) for Extreme or Unusual Snow Events resulting from snowfalls in late December 2022.

The total 2023 Snow and Ice Management costs were under budget by $5.7 million due to the absence of snow events in 2023. On March 27, 2024, City Council approved transferring this $5.7 million surplus to the Snow and Ice Management Contingency Reserve, increasing the total reserve balance to $6.9 million.

The Roadways ERP activation on March 3, 2024 resulted in additional costs of $5.5 million which are forecasted to exceed the 2024 budget for the Snow and Ice Management program. However, a portion of these costs is expected to be offset by various expense savings, bringing the forecasted deficit to $5.3 million. This deficit is expected to be covered by the Snow and Ice Management Contingency Reserve.

OTHER IMPLICATIONS

There are no privacy, legal, social, or environmental implications identified.

NEXT STEPS

Unless otherwise directed, the Administration will proceed with the Roadways ERP improvement opportunities identified in this report and completion of the following continuous improvement initiatives:

- Priority street network analysis; and
- A trial of improved lighting standards to increase visibility of the City's snow-plow trucks during snow plowing on high-speed roadways.

APPENDICES

1. Highlights of Roadways ERP
2. Timeline of March 2024 ERP Activation
3. Prototype of Visibility Lighting Changes

Report Approval

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