

2021-2022 Winter Road Maintenance Summary

ISSUE

This report is a summary of the winter maintenance operations for the 2021-2022 winter season.

BACKGROUND

Snow and ice management of roads, bridges and pathways focuses on public safety and citizen mobility during the winter months. The service level for Snow and Ice Management was approved in 2017. This service level includes all the activities undertaken for snow and ice management including regular maintenance and targeted response strategies to inclement weather.

Snow events are snowfalls where the accumulation of snow is greater than 5 cm and snow grading on all priority streets is initiated. Contractor assistance is required, and all priority streets are graded within 72 hours. Weather events include snowfall, freezing rain, or other adverse winter weather that requires targeted response strategies that do not include snow grading on all priority streets.

Several enhancements to the Snow and Ice Management service level were considered during budget deliberations in 2021. Winter maintenance of raised cycle tracks and protected bike lanes is now included in the approved level of service for Snow and Ice Management. The new service level commitment requires that snow grading on protected bike lanes be completed within 24 hours, and on raised cycle tracks within 48 hours of snowfall ending. This service level was approved without any additional funding. Other options for enhancing service levels including snow removal on priority streets, snow grading on streets designated as bike boulevards, and snow grading and removal on local streets were not adopted.

The updated service level document is available at saskatoon.ca/snow.

CURRENT STATUS

There were six snow events and 13 weather events in the winter of 2021-2022. The overall winter maintenance effort was higher than in a typical winter season due to an above average total snowfall accumulation and the severity of some of the winter events.

Total snowfall accumulation was about 120 cm and typical is about 95 cm. Examples of severe winter events include:

- the snow event on November 17, 2021, that had rain followed by a large drop in temperatures and heavy snowfall creating very icy conditions;
- heavy drifting with the snow event on February 1, 2022, that had major impacts on mobility in areas susceptible to drifting; and

- an unusual melting event on February 10, 2022, that caused the creation of ice ruts on local streets.

Due to the above average total snowfall accumulation and frequent snowfalls, there were larger than normal snow piles in the later winter on medians, parking lanes and boulevards that resulted in narrowing of lanes and obstruction of sight lines.

Service level commitments were met for completion of:

- Priority 1 street snow grading within 12 hours;
- Priority 3 street snow grading within 72 hours; and
- Snow removal along streets with paid parking within 13 days of the end of snowfall.

Service level commitments were not always met for completion of:

- Snow clearing along sidewalks, multi-use pathways, and cycle tracks within 48 hours of the end of snowfall;
- Priority 2 street snow grading, including streets with transit routes, within 36 hours of the end of snowfall; and
- Removal of snow piles from school zones within 72 hours, when they reach 0.6 m in height.

DISCUSSION/ANALYSIS

Local Street Snow Grading

The unusual melting event on February 10, 2022, that included temperatures above freezing, high winds, and sunshine followed by a rapid drop in temperatures below freezing, created ice ruts in the existing snowpack and very challenging driving conditions on local streets. These conditions created the need to grade all local streets to maintain mobility and safety. The snow grading was a large undertaking that required graders to travel approximately 18,500 km in total to complete this work. Snow grading of local streets due to snowpack depth and severe rutting had not been initiated city-wide since 2011. The experience from the November 2020 snowstorm helped the project team organize and execute this work.

Snow grading of all local streets started the evening of February 10, the same day as the melting. By February 15, snow grading on local streets was substantially completed. Some streets were graded later because they could not initially be completed as they were too narrow or had too many parked cars for crews to do their work.

Back lanes were completed on February 22.

Snow piles were left on the streets. The Snow and Ice Management service level does not include removal of snow piles after the grading of local streets.

Appendix 1 provides various photos of the above noted conditions experienced over the 2021-2022 winter season.

Service Level Commitments

There were some challenges with meeting service level commitments for sidewalk and pathway clearing due to contractor performance issues. Plans are in place for the upcoming winter to address this issue and this problem is not expected to continue.

Snow grading on Priority 2 streets within 36 hours after the end of snowfall was not achieved. On average, snow grading on Priority 2 streets was completed within 48 hours. Current resources were not sufficient to meet the 36 hours service level objective.

The Administration is looking into options for meeting the service level requirements for snow grading on Priority 2 streets as well as snow removal from school zones.

Snow Management Facilities

At the end of the winter, approximately 800,000 cubic meters of snow was piled at snow management facilities. This is more than double the average of 370,000 cubic meters for the winters from 2018 to 2020. This increase in volume is due to the above average snowfall accumulation.

Priority Street Snow Removal

Snow piles along priority streets were unusually large by February due to the combination of above average snowfalls and frequent snow events interrupting plans for snow removal. A contractor was hired to assist with snow removal along priority streets which is not normally done. All Priority 1 streets had snow removal at least once, and approximately 60% of Priority 2 and 3 streets had snow removal completed before the end of winter. A total of about 30,000 truck loads of snow were removed from streets and hauled to snow management facilities.

Winter Maintenance Program Improvement Initiatives

1. GPS devices were installed on contractor equipment used for snow grading on streets and sidewalks. This technology is used to better track personnel and equipment and was very helpful to confirm work accomplishments, especially for the rut levelling completed in February.
2. A plan has been developed to better manage the use of salt for improving winter driving conditions by researching best management practices and surveying other jurisdictions with similar winter weather.
3. Planning work for the installation of Environmental Sensor Stations to support decision making on ice management strategies is nearing completion.
4. New plans for traffic control have been developed to ensure safety of crews and motorists while crews remove snow ramping along the Senator Sid Buckwold Bridge. These plans will help crews address snow build up along this bridge in a safe and timely manner.
5. "Return to Snow-normal" education campaign to help residents understand services currently provided.

COMMUNICATIONS

The City launched a city-wide mailing and broad advertising campaign called Back to Snow'rmal (Appendix 2) in November with a summary of the normal winter road services residents can expect in a normal year. It was meant to reset expectations and remind residents that the neighbourhood street grading and snow removal from the Big One (November 2020 major storm) was not typical. Results of a March 2022 survey reveal that most residents are familiar with the City's winter road maintenance services and satisfied with the way it is communicated:

- 81% of residents surveyed were familiar or very familiar with the priority of streets that were graded first;
- 67% were familiar or very familiar with when streets are graded after a snowfall;
- 71% of respondents correctly answered no when asked if residential streets were part of the snow grading after a typical snowfall;
- 71% of people were somewhat or very satisfied with the winter road maintenance information they receive.

FINANCIAL IMPLICATIONS

The total 2021 Snow and Ice Management costs were \$16.39 million. These costs include some expenditures from the November 2020 snowstorm that were incurred in the first part of 2021.

The total costs resulted in a deficit of \$2.65 million in the Snow and Ice Management service line. The Administration used \$488,500 from the Snow and Ice Management Contingency Reserve to offset a portion of this deficit, which left the reserve fully depleted at the end of 2021 and reduced the service line deficit to \$2.16 million.

OTHER IMPLICATIONS

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

NEXT STEPS

Planned continuous improvement initiatives include:

- Further enhancement of reporting and work progress tracking using data from GPS;
- Planning for installation of Environmental Sensor Stations to monitor weather and road conditions; and
- Development of measures to prevent situations where Claypool Drive is impassable due to heavy drifting.

APPENDICES

- 1 Photos – 2021-2022 Winter Road Maintenance Summary
- 2 City-wide postcard mailer for “Return to Snow'rmal”

Report Approval

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