



Subject:	Proposed Expanded Sidewalk Winter Maintenance Program
To:	Committee of the Whole – Community Services & Infrastructure
From:	Public Works Department

Report Number:	PW-30-21
Wards Affected:	All
Date to Committee:	October 18, 2021
Date to Council:	October 25, 2021

Recommendation:

Receive and file, Report PW-30-21 regarding the Proposed Expanded Sidewalk Winter Maintenance Program; and

Approve the Proposed Expanded Sidewalk Winter Maintenance Program to include all municipal sidewalks as outlined in report PW-30-21; and

Endorse Appendix A: Proposed Expanded Sidewalk Winter Maintenance Plan; and

Refer the estimated financial costs as outlined in report PW-30-21 to the 2022 Budget deliberations.

Purpose:

The purpose of this report is to provide council with a proposed service level increase to expand the Town's Sidewalk Winter Maintenance Program to include all municipality owned sidewalks across the community.

Background:

In March 2021 Council was provided a report advising that a review of the Town's current Sidewalk Winter Maintenance Program was planned to examine the feasibility of expanding the program to include winter maintenance services for the entire municipal sidewalk network. Furthermore, it was recommended that a working group be created with representatives from the Active Transportation and the Age Friendly Citizen Advisory Committees to provide input into the review process.

Currently the Town's Sidewalk Winter Maintenance Program includes the following components for winter maintenance:

- Town facility sidewalks
- Sidewalks adjacent to Town owned properties i.e., parks, cemeteries, etc.
- Sidewalks adjacent to Regional roads
- High use Sidewalks i.e., School Zones, Senior's areas, Downtown areas
- Municipal walkways i.e., between streets or linking key sidewalk connections
- By-Law Exempt sidewalks, open to homeowners who have applied for exemption under the terms of the Sidewalk Clearing By-Law

Based on the above components, the Town's current program provides winter maintenance on approximately 27 km or 37% of the total municipal sidewalk network.

Report:

Introduction

Sidewalks within the Town provide vital active transportation links for many of our residents and help promote a healthy and safe community. Currently the Town relies on residents to clear the sidewalks that are adjacent to their property through a snow removal by-law that was passed in the 1970's.

When considering Council's Strategic Priorities with a strong focus on connected communities and promoting active transportation, ensuring that the Town's sidewalks are adequately maintained for Lincoln residents during the winter season needs to be a higher priority to work towards. In addition, to reduce the Town's exposure to potential liability claims related to winter sidewalk conditions, staff are also recommending this is another important risk management driver to consider for expanding the Town's Winter Maintenance Program to include all municipal owned sidewalk infrastructure across the community.

Sidewalk Network Composition

The municipal sidewalk network within the Town is made up of three main categories being: sidewalks, walkways, and multi-use trails. How these assets are defined is important when considering winter maintenance.

- **Sidewalk:** Located within the road right of way and separated from vehicles.
- **Walkway:** Walkways are technically sidewalks however they are not located within a road right of way, rather they are often used to provide links to other sidewalks. Walkways may also be referred to cat walks, pathways, etc.
- **Multi-Use Trails:** Multi-Use trails or trails are typically considered a recreation asset which allow all types of non-motorized forms of transportation. When considering winter maintenance, multi-use trails or trails can be considered

redundant when there are other nearby alternate sidewalk or walkway routes available for the user.

At this time staff recommend that multi-use trails not be maintained in the winter season for the following reasons outlined below.

- When another nearby alternate sidewalk/walkway route option exists for the user
- Environmental impacts to sensitive areas from salt/sand material
- Often older trails are constructed without winter maintenance in mind (narrow widths, tight corners, steep hills, poor drainage, etc.)
- To help reduce overall program costs

It is important to note that this approach is also consistent with other municipalities in terms of considering winter maintenance on most multi-use trails or trails. However, staff advise it will be important that the Proposed Expanded Sidewalk Winter Maintenance Plan remain flexible on a go forward basis to adapt to community needs.

Table 1.0 below summarizes the current makeup of the Towns sidewalk infrastructure.

Infrastructure Type	Length (km)
Sidewalk within Town Road Right of Way	50.7
Sidewalk Within Region Road Right of Way	18.7
Walkways	2.2
Total	71.6

Table 1.0 - Network Make-up

It is important to note that the Town's sidewalk network is expected to grow moving forward as the Town continues to invest in active transportation through future road reconstruction projects and as new sidewalk infrastructure is also being implemented through development.

Level of Service Review – Proposed Expanded Program

As part of the Sidewalk Winter Maintenance Program review, the working group also assessed and formalized the Town's current level of service. The objective with prioritized levels of service allows the Town to focus resources on areas of the community that have the most need, reduce environmental impacts caused by the overuse of dicing chemicals, and control costs. The working group considered the following guiding principles when reviewing the level of service prioritization for the Proposed Expanded Sidewalk Winter Maintenance Program.

- Community Importance

Understanding how the community is using the network is the most important part of prioritizing the level of service. For example, high traffic sidewalks around commercial districts, schools, seniors' centers, etc., need to receive a higher level of service in comparison to other lower volume sidewalk locations.

- Environmental Stewardship

It is important that the program does not establish service levels that are damaging to the community long term. For example, implementing a high service level where it is not necessarily required can have environmental impacts, shorten the life of our infrastructure, and be cost prohibitive as our network expands.

- Reduce Risk

The basic function of winter maintenance is to ensure that the sidewalk infrastructure is safe for all users and limit the municipality's exposure to personal injury claims. The lowest level of service must provide the basic requirements to meet Provincial Minimum Maintenance Standards (MMS) Regulations.

Expanded Program Levels of Service

The expanded program classifies the sidewalk network into Primary and Secondary priority sidewalks. The level of service controls the timing of the service as well as the finished state of the sidewalk.

The two levels of service differ mainly in the time to complete, and the criteria for dispatch response (service trigger). Provincial MMS regulations allow for up to 48 hours for a municipality to reduce the accumulated snow on their sidewalks to below 7cm with a minimum width of 1m. It is important to note that the levels of service provided by the Town's current program which is planned to be maintained for the proposed expanded program are above the provincial minimum standard. However, during an extreme winter event secondary route completion time may need to be extended to the provincial minimum standard as a worst-case scenario still allowing the Town to be in compliance.

Primary Sidewalk Classification

This class is reserved for the highest priority sidewalk locations within the Town. For example; downtown commercial areas where businesses depend on the sidewalk as the only means of access, sidewalks adjacent to high volume roads, and where there are a large proportion of vulnerable users, such as school walking routes, senior developments, etc. Primary sidewalks are cleared first and throughout the event and have a higher finished standard.

- Service Trigger
 - Accumulation exceeds 5cm
 - Observed ice formation
 - Conditions present for ice formation
- Service Provided
 - Plowing throughout the event
 - First pass completed within 12hrs of service trigger
 - Application of sand and/or de-icing chemicals to achieve required finished surface
 - Full width of sidewalk cleared

Secondary Sidewalk Classification

Secondary sidewalks are consider a lower priority in comparison to primary sidewalks and are typically located on lower volume local roads.

- Service Trigger
 - End of an event that has resulted in accumulation exceeding 7cm
 - End of a series of events that has resulted in an accumulation exceeding 7cm
 - Observed ice formation
- Service Provided
 - Plowing starts when the event has ended, and primary routes have been completed.
 - First pass on all routes completed within 24hrs of the end of the event, can be extended to 48hrs after a large event (>15cm of accumulation)
 - Application of sand as required
 - 1m minimum width on first pass, work to widen to full width continues after the end of an event

Weather Patterns and Data Trending

Winter weather in our region is variable and as such, to create an effective sidewalk winter maintenance plan it is necessary to estimate the average snowfall/precipitation for a given winter season based on historical weather data trending.

The equipment used in sidewalk winter maintenance can be limited by the fact that it needs to be compact enough to fit on the sidewalk, but still powerful enough to push/clear snow. Therefore, the equipment's operating speed is more affected by the depth and type of snow that is being cleared. In order to effectively estimate the time it will take to

complete an assigned route, it first becomes necessary to estimate the size and number of winter events that the Town could potentially experience.

Climate data for the last 40 years was collected from an Environment Canada weather station in Grimsby, a sample of that data was used to create the data contained in Chart 1.0 below.

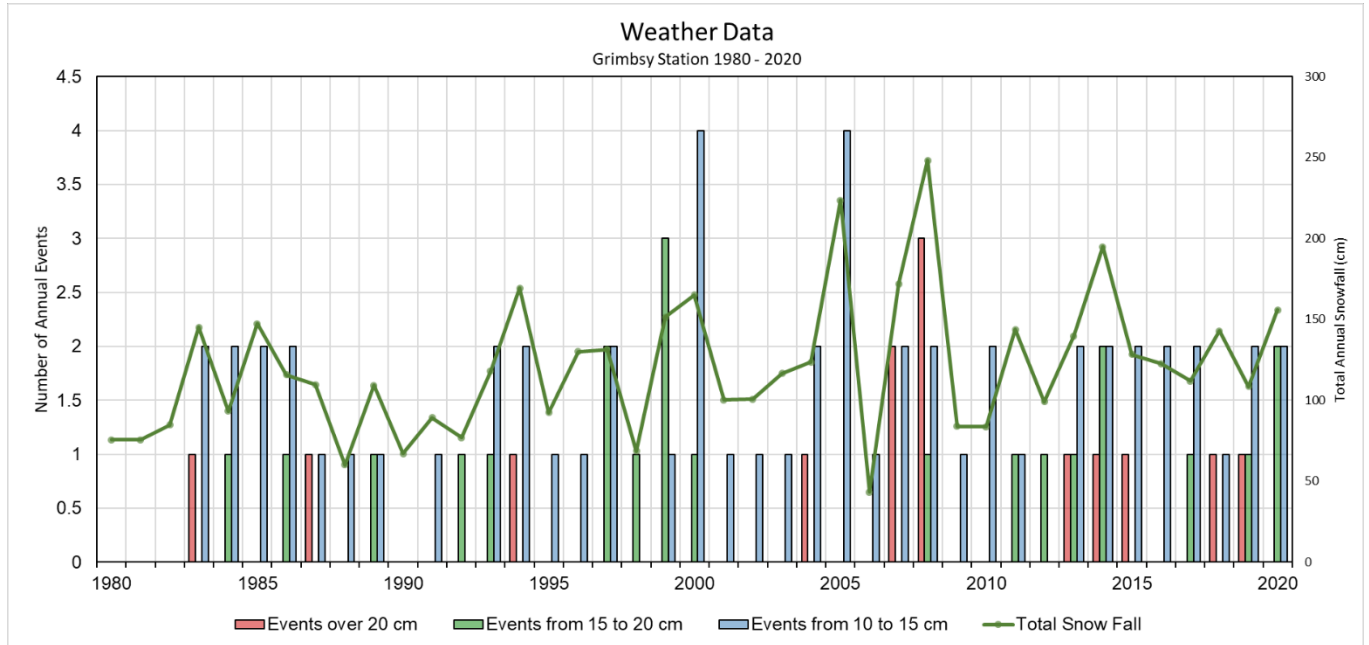


Chart 1.0 - Weather Data

Some key trends from the chart above:

- More recent data trends showing an increase in number of larger snowfall events.
- An increase in average annual snowfall totals, especially in the last 15 to 20 years.
- Increase in the variability year to year in the total snow accumulation.

It is important to incorporate the above noted weather data trends into routing planning for the Proposed Expanded Winter Maintenance Program. Essentially sidewalk clearing equipment moves slower in response to larger snowfall events and as such it is important to plan for these situations with the route planning to ensure that the Town can still provide the desired service level targets for the program for Lincoln's residents.

As a result weather data from the last 20 years was incorporated into the development of the Proposed Expanded Winter Maintenance Sidewalk Plan.

Table 2.0 shows a summary of this data.

WINTER EVENT TYPES	NUMBER OF EVENTS		
	SEVERE WINTER	LIGHT WINTER	AVERAGE WINTER
FREEZE THAW CYCLES	23	8	16.1
LESS THAN 2CM ACCUMULATION	13	10	7.0
2CM TO 7CM ACCUMULATION	8	4	5.0
7CM TO 10CM ACCUMULATION	3	1	2.0
10CM TO 15CM ACCUMULATION	2	1	1.9
15CM TO 20CM ACCUMULATION	0	0	0.9
20CM TO 30CM ACCUMULATION	3	0	0.8
TOTAL ACCUMULATION (cm)	179	48	114.8
TOTAL NUMBER OF EVENTS	52	24	33.7

Table 2.0 - 20 year Weather Summary

The complete data set from the last 20 year was used to create a statistical projection of potential winter events for the next 10 years, as displayed in Table 3.0

Winter Event Types	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Freeze Thaw Cycles	12	17	9	22	11	6	16	11	23	13
Less Than 2cm Accumulation	5	7	8	10	2	4	7	5	8	6
2cm – 7cm Accumulation	7	5	4	4	7	1	5	5	2	6
7cm – 10cm Accumulation	1	2	3	2	6	4	2	1	2	0
10cm – 15cm Accumulation	1	1	1	4	1	2	2	0	1	2
15cm – 20cm Accumulation	0	3	0	0	0	1	1	1	2	0
Greater Than 20cm	0	1	1	2	1	0	1	1	0	1
Total	26	36	26	44	28	18	34	24	38	28

Table 3.0 - Weather Projection

Understanding the types of events that the region is likely to receive is necessary information for route planning and budgeting projections when developing the Proposed Expanded Sidewalk Winter Maintenance Plan and as well for future planning as the sidewalk network grows.

Route Planning – Expanded Program

Efficient route planning plays the largest role in development of a successful winter maintenance plan. Factors such as level of service, equipment and labour needs, weather patterns, and community growth are all considered when establishing routes.

As mentioned above, weather plays a large role in route planning. Larger more prolonged snowfall events slow clearing efforts and make it more challenging to achieve the finished product. Therefore, the program looks to achieve the established level of service in all events, but in a worst-case scenario of an extreme storms, the program must still achieve

the minimum level of service set out by the province from a compliance perspective. Using the derived weather data, and estimated machine speed for each type of event, Table 4.0 was created to display the program with maps in Appendix 'A'.

Route		Length (km)	Meeting Town LOS	Meeting Provincial LOS	Average Route Time (hrs)	Maximum Route Time (hrs)	Snowfall When Town LOS Not Achieved
1	Primary	26.3	94%	100%	10.5	34	>15cm
	Secondary	12.1					
2	Secondary	13.6	100%	100%	3	25	>20cm
3	Primary	10.5	97%	100%	8.2	26.5	>20cm
	Secondary	9.1					

Table 4 - Route Summary

When predicting new sidewalk infrastructure growth based on the capital forecast for road upgrades and development, it is anticipated that an additional third route in Beamsville will be triggered in 2024 timeframe to ensure that the program is continuing to meet the Town's level of service. Also, it is estimated that in 3 – 5 years it will be necessary to add an addition route in East Lincoln to accommodate the proposed Prudhomme's development. It is important to note that future growth has also been considered as part of the Expanded Sidewalk Winter Maintenance Plan to ensure that Town is prepared.

Formalized Sidewalk Winter Maintenance Plan

As part of the sidewalk winter maintenance review, staff have also formalized a Sidewalk Winter Maintenance Plan document to support the Proposed Expanded Program. The intent of this plan is to provide policy and procedural framework for ensuring that the Town continuously improves on the safe and sustainable delivery of sidewalk winter maintenance throughout the community. Please refer to Appendix A for more detail.

Financial, Legal, Staff Considerations:

Financial:

The intent of the Proposed Expanded Winter Maintenance Plan is to ensure program funding is targeted where it will provide the most service to the community. However, with all types of winter maintenance, the costs are largely driven by the actual weather experienced. The proposed budget estimations are based on a statical average winter developed using 20 years of locale weather data as discussed earlier in the report. By using the average weather data, a representative trend can be used to establish a budget estimate that it anticipated to be stable moving forward. Staff also recommend using winter maintenance reserve fund that accounts for winter season fluctuations. For example, budget surplus during less harsh winters can be utilized to help offset budget pressures resulting from more extreme winters. Staff advise that the proposed expanded

program costs will be evaluated on a regular basis and provide budget updates to council on the expanded program.

The estimated program costs are detailed in Table 5.0

Item	2021 Existing Service	2022 Expanded Service in Q4 (Nov to Jan)	2023 Expanded Service	2024 Expanded Service (projected growth)
Total Estimated Program Cost	\$140,000	\$262,800	\$385,600	\$436,000
Increase From Previous	---	\$122,800	\$122,800	\$50,400
Effect on Levy	---	+ 0.6%	+ 0.6%	+ 0.3%

Table 5.0 - Budget Summary

Staff suggest phasing in the increased costs over a two-year period to help minimize overall budget impacts to support the Town transitioning to the Proposed Expanded Sidewalk Winter Maintenance Program. Based on phasing in the additional program costs the following program implementation is planned:

- Nov. 2021 to April 2022 -The Town's existing Winter Maintenance Program continues to be in place
- Nov 2022 to April 2023 – The Town transitions to the Proposed Expanded Winter Maintenance Program including all municipal sidewalks
- Nov 2023 to April 2024 – an additional route is anticipated to be added to Beamsville based on projected sidewalk infrastructure growth

Staffing:

The Proposed Expanded Sidewalk Winter Maintenance Program entails the transition of having Town staff responsible for clearing a portion of the sidewalks. This transition has been in development for the last two winter seasons with Town staff being more involved in the clearing operations and management of the service contractor. The implementation of the Proposed Expanded Sidewalk Winter Program will require operations staff dedicated specifically to the sidewalk clearing response requiring the need for one additional staff resource. As per the current program a service contractor is proposed to be retained to provide labour and equipment coverage of two of the three routes. Staff are recommending that the Proposed Expanded Sidewalk Winter Maintenance Program Service Delivery be provided with a balanced approach of both strategically utilizing Town forces and contractor services.

Legal:

The Town's Legal Counsel would provide support on bylaw amendments. The Town's current sidewalk snow clearing bylaw that requires abutting property owners to maintain

municipal sidewalks in the winter season would be repealed once the Proposed Expanded Sidewalk Winter Maintenance Program is in effect.

Public Engagement Matters:

The Proposed Expanded Sidewalk Winter Maintenance Program was developed with engagement and input from the Towns' Citizen Advisory Committees. More specifically a working group was established including representatives from both the Town's Active Transportation and Age Friendly Citizen Advisory Committees along with staff representation from other departments who provided significant input into the proposed expansion plan. Through the working group's input, staff were able to ensure that the community importance portion of the program was a primary focus and well informed. The working group was key in providing valuable community importance input helping to evaluate the sidewalk priority classifications and corresponding levels of service for the expanded sidewalks.

A dedicated Winter Sidewalk Maintenance Speak Up Lincoln page was developed that provided information on the proposed expansion plan allowing residents the opportunity to ask questions and leave comments. Comments and feedback to date from Speak Up Lincoln has also been considered and incorporated into the proposed expansion plan. Staff will continue to promote resident engagement and feedback on the Proposed Sidewalk Winter Maintenance Plan using the dedicated Speak Up Lincoln page.

Conclusion:

Given Council's Strategic Priorities with a strong focus on connected communities and promoting active transportation mobility options for Lincoln's residents, staff recommended that Council expand Sidewalk Winter Maintenance to include all municipal sidewalks across the community.

Respectfully submitted,

Dave Graham
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Appendices:

Appendix A – Proposed Expanded Sidewalk Winter Maintenance Plan
Appendix B – Staff Presentation

Report Approval:

Report has been reviewed and approved by the Director of Director of Finance. Final approval is by the Chief Administrative Officer.