

# Sidewalk Winter Maintenance Report

## Recommendation

For information only

## Background

The City of Greater Sudbury is committed to building and maintaining a pedestrian friendly community. 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.

At the December 14, 2016 meeting of the Finance and Administration Committee Meeting Council moved forward on expanding winter maintenance operations for sidewalks when they approved resolution FA2016-43-A10 which read;

“Whereas Council was presented with four options for enhanced winter sidewalk maintenance and whereas the preferred option (option C) maintains active transportation networks.

THEREFORE be it resolved that the Finance and Administration Committee approves option C and;

THAT the \$240,000 operating cost be included in the 2017 Operating Budget with the residual operating costs be included in the 2018 Operating Budget and;

THAT the additional capital expenditure of \$310,000 be funded from the Tax Rate Stabilization Reserve Fund and;

THAT staff be directed to investigate the lease vs. buy option for this equipment and;

THAT if the lease option provides the best financial result that the lease payments for 2017 be funded from the Tax Rate Stabilization Reserve Fund with the 2018 lease expenses be included in the 2018 Operating Budget.”

Option C proposes to maintain sidewalks adjacent to Arterial and Collector Roads, sidewalks located on priority routes (i.e. adjacent to schools) and all sidewalks located on one-side of all two-sided sidewalk streets that create a reasonably connected loop. This change accounts for approximately 26 Km's of additional sidewalk requiring winter maintenance throughout the City (refer to maps in the appendices for details). The

majority of these sidewalks are found in the Donovan, Flour Mill, West End, Copper Cliff, Levack, Falconbridge and Lively. Of the approximately 440 kilometres (Km's) of sidewalks found within the City of Greater Sudbury nearly 350 km's or 80% will receive winter maintenance commencing on November 1, 2017 which reflects an increase of approximately 5% from the previous total.

Furthermore, this report will provide Council our plan as it relates to the Sidewalk Priority Index (SPI), quality standards for sidewalk plowing, lease versus owning equipment as well as contracting in versus contracting out the plowing services. It should be noted, the report containing information about the Sidewalk Priority Index will be tabled at the August 21<sup>st</sup>, 2017 Operations Committee meeting and even though it is being discussed in this report it is yet to be approved.

## **Sidewalk Priority Index (SPI)**

The Sidewalk Priority Index ('SPI') is a recommended policy initiative of the recently-approved Transportation Master Plan. The intent of the SPI is to provide staff with an objective tool to determine where to construct sidewalks to fill gaps within the existing sidewalk network. The SPI is being jointly developed between the Roads and Transportation Services and Planning Services Divisions

As it relates to winter sidewalk maintenance, staff proposes to continue to use the sidewalk connectivity to existing sidewalk to determine which will receive winter plowing services on a go forward basis. In other words, the SPI will determine if the sidewalk will be built and if the new sidewalk is connected to an existing maintained sidewalk it will be added to the list for winter maintenance. This approach will ensure that the additional sidewalk is selected properly and include the appropriate principles of an Active Transportation Network.

Prior to finalizing the SPI tool, staff successfully ran the model against the sidewalks contained within "Option C" to ensure that the tool would rank sidewalks adjacent to arterial and collector roadways and priority areas (schools, transit routes, etc....) properly. The results of this exercise determined that sidewalk adjacent to arterial and collector roadways and priority areas had an average SPI 56.6, while the balance of the sidewalks (sidewalks on one side of roadways with sidewalk on both sides) yielded a result of 38.5 priority.

## Winter Sidewalk Maintenance Quality Standard

### Current Winter Sidewalk Maintenance Quality Standard

Winter sidewalk maintenance involves plowing and sanding sidewalks to reduce slip hazards and provide safe passage for pedestrians during the winter months.

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 depending on weather conditions. MT's are capable of maintaining a maximum sidewalk width of 5-feet.

Snow plowing of sidewalks with a straight blade provides the maximum 5-foot width, in a single pass. However, when plowing with a straight blade, snow is inevitably directed either towards the road or residential property. Snow blowing is required when the weather event is so significant that the snow cannot be pushed with a blade or when there is limited snow storage available.

**Picture 1 - Sidewalk Snow Blowing**



**Picture 2 - Sidewalk Plowing**



The City currently employs a single Operator shift for every one of its sidewalk routes. Winter maintenance of sidewalks has been designed to the following thresholds;

- Time to plow and sand after an 8 cm accumulation of snow = 8 hours
- Time to snow blow and sand after an 8 cm accumulation of snow = 12 hours

It is important to note, the route design is based on a typical winter event (snow storms less than 15 centimeters). When we experience more significant events, service times to complete sidewalk routes increase because of the additional effort required to clear increased snow depth. In significant events, efforts are focused on sidewalks that are adjacent to Class 1 to 3 (Class A sidewalks) roads prior to maintaining sidewalks adjacent to Class 4 – 6 (Class B sidewalks) roads. For the purpose of this report, sidewalks are categorized as Class A sidewalks for sidewalks adjacent to Class 1 – 3 (arterial and most collector) roads and Class B sidewalks for sidewalks adjacent to Class 4 – 6 (local / residential) roads.

#### Forthcoming Provincial Winter Sidewalk Maintenance Standards

*Ontario Regulation 239/02 Minimum Maintenance Standards for Municipal Highways* ('Regulation') is being updated to include standards for the maintenance of sidewalks in snow and ice conditions. Previously the Regulation was silent on sidewalk maintenance. The updated Regulation is anticipated to be in force later this year or early next year.

Within the latest draft of the Regulation, the proposed standard for addressing snow accumulation on sidewalks is to reduce the depth of the snow accumulation to a depth less than or equal to 8 centimeters within 48 hours after the end of the snow accumulation event. Municipalities may choose to address snow accumulation by plowing, salting, sanding, applying other chemical or organic or any combination of these methods. Similarly for icy conditions, the proposed standard is to treat the icy sidewalk within 48 hours of the municipality becoming aware of the fact that a sidewalk is icy.

In addition, if at any time a municipality declares a significant weather event under this same Regulation, then all sidewalks within the municipality are deemed to be in a state of repair, until 48 hours following the end of the declared significant weather event. This provides municipalities with some flexibility in delivering winter maintenance services to meet proposed standards, in circumstances where snow accumulation and icy conditions are exceptional.

The City's existing standard for winter sidewalk maintenance exceeds the proposed standards as it relates to the amount of time allotted to clear the sidewalks. Once the standards contained within the regulation have been approved, staff will return to

Council with a report highlighting all changes in the new standards with a budget impact if there are any.

## **Community Feedback**

The Coalition for a Liveable Sudbury (CLS) collected informal feedback from residents on their experiences as pedestrians throughout the 2016/2017 winter season. CLS collected approximately 87 comments from 78 individuals. A summary of findings was shared with City staff for consideration in the development of this report. Top priorities identified by individuals who provided feedback included:

- Providing safe routes to school and to get on/off school buses for children;
- Prioritizing the removal of snow at bus stops, bus shelters and on bus routes; and
- Ensuring better quality sidewalk winter maintenance on arterial roads and at busy intersections.

Consistent with the City's sidewalk winter maintenance objectives, further feedback from the group indicates that safety is a significant priority among residents.

In addition to the survey completed by the Coalition for a Liveable Sudbury, the Seniors advisory panel has also expressed concerns about the quality standards in place for sidewalk maintenance. This group would like Council to consider enhanced winter sidewalk maintenance in areas likely to be used by seniors.

## **Changing the Quality Standard for Winter Sidewalk Maintenance**

Over the past couple of years changes to our weather patterns has caused significant issues with the maintenance of our snow packed sidewalk and roadway surfaces. It isn't uncommon to experience one or more melting periods during our winter season. These extreme temperatures cause problems with our sidewalks and roadways 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) we manage the issue by performing additional plowing / sanding to ensure the surface is adequately sanded and is as smooth as possible thereby ensuring compliance with the requirements of our current service level policy. There are two main differences when we look at roadway versus sidewalk plowing; type of equipment and type of services we provide. In the case of roadways, we are able to manage this problem by using alternate equipment such as graders which have 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 our sidewalks, the equipment we use is able to scrape the sidewalks but not to the same degree as a grader and our current system design allows for plowing services once a day rather than continuously.

Staff looked at the following options as it relates to changing the quality standard for winter sidewalk maintenance;

- Maintaining sidewalks to a “bare” surface condition (similar to class 1 to 3 roadways)
- Commencing sidewalk plowing at 5 centimeters
- Providing “continuous” plowing / sanding service to sidewalks
- Prioritizing sidewalks and providing continuous service to those routes

#### Maintaining sidewalks to a “bare” surface condition

In Northern Ontario it would be extremely difficult to maintain sidewalks to a “bare” surface condition. The temperature range during a typical winter season can go from a high of +5 degrees Celsius to a low of -25 degrees Celsius. There are major challenges when we look at maintaining sidewalks to a “bare” surface rather than the snow pack condition. Firstly, the only way to achieve “bare” surface conditions is by using chemicals such as sodium chloride (rock salt) to melt the snow and ice. These chemicals, though effective, create melt water that will enter our drainage systems and ultimately our creeks, rivers and lakes. One of the important principals of our Source Water Protection plan is to minimize the use of sodium chloride on our roadways throughout the City. Therefore, using sodium chloride on our sidewalks would only further complicate this requirement. Furthermore, the minimum operating temperature of sodium chloride is -12 degrees Celcius which limits its applicability on sidewalks in the north. One additional item for consideration is snow removal. If the City were to consider using a melting agent on its sidewalks we would be required to keep our drainage systems open which means more snow removal. To manage our sidewalks in this fashion, in the winter would be extremely expensive when considering costs for the material, snow removal, opening drainage structures and additional plowing services along each of our 22 sidewalk routes.

#### Commencing sidewalk plowing at 5 centimeters

Commencing sidewalk plowing at 5 centimeters rather than the current 8 centimeters will do little to change the quality standards. The reason for this is associated with the type of service we provide. Under the current operating model, staff has the ability to provide a single pass on each sidewalk every day assuming the service level targets (8 cm's of snow accumulation and/or icy conditions are detected) are met. The 5 centimeter commencement will only help with winter events that have a snow accumulation less than 8 centimeters unless we introduce continuous snow plowing services.



### Providing "continuous" plowing / sanding service to sidewalks

This is the only technique that if implemented, could have a significant impact to our quality standard. With this approach, we would deploy staff at the appropriate threshold (either 5 cm's or 8 cm's) and staff would provide continuous multiple passes along our sidewalks until the winter event ends similar to the standards we have for our class 4 to 6 roadways. This approach will have the ability to minimize the thickness of the snow pack and in the event of a melt, provide additional passes to ensure the slushy material generated during the melt is plowed off to the side before it has a chance to freeze. This approach will be of limited value when we have a flash freeze event other than the ability to scrape the ice residue more frequently. The cost to deliver this service for the 22 sidewalk routes is approximately \$500,000 which would include the labour, material and fuel costs only. The additional equipment maintenance costs haven't been included.

### Providing continuous service to high priority sidewalks

The last approach staff looked at is prioritizing sidewalks and providing continuous winter sidewalk maintenance to those routes. Prioritizing routes is very difficult in our City because of the number and location of business establishments, schools and other priority locations in each of the communities. Our sidewalk routes have been designed to commence from close proximity to our depots thereby making our sidewalk plowing effort as efficient as possible. If we were to consider providing additional snow plowing services to just the priority areas, you would find that our sidewalk plows would spend the vast majority of their time driving ("dead heading") between each priority area and less time providing actual plowing services. This approach would lend itself to inefficiencies in our operation which would have a direct relationship to the cost associated with sidewalk snow plowing services.

### Lease versus Owned Equipment

To ensure we have the accurate information to make the correct business decision, staff is asking for leasing options as part of the request for proposal (RFP) process for the two sidewalk plows we require to deliver the enhanced sidewalk plowing services. The final decision will be based on a net present value analysis that considers the purchase price versus lease costs for the equipment and the full life cycle maintenance cost.

### Contracting In versus Contracting Out

The final item Council asked us to consider is contracting in versus contracting out the additional winter sidewalk maintenance services outlined in this report. When we compare the costs to offer the service, we found a net savings with Contracting in versus contracting out. In addition to the monetary savings, offering the services with City staff will allow us to optimize the additional areas within our existing routes and maximize efficiencies of the operation.

Regular snow plowing operations involve a mix of City staff operating City-owned equipment, and contract operations with contractor owned equipment. These arrangements work well to manage heavy snowfalls or unusual weather or periods of significant City-owned equipment failure. The operation of winter sidewalk maintenance is more routine even during heavy snowfalls and the equipment is less prone to mechanical failure. Therefore, contracting out does not offer similar benefits as it does to other parts of the operations.

### **Conclusion**

Staff has considered all of the service level inquiries directed by Council at the December 14, 2016 meeting of the Finance and Administration Committee. After careful consideration it has been determined that all of the service level enhancements would require significant budget increases and are therefore not recommended at this time. Having said that, in recent years it has become a routine operation to plow, scrape and supply sand to sidewalks during periods of melting and freeze/thaw. This routine activity will address some of Council's considerations and is included in the operating budget.

### **Attachments:**

Finance Committee Report dated October 4, 2016

Operations Committee Report dated September 9, 2014