

10.0 Maintenance and Rehabilitation

Although sometimes overshadowed by the implementation of new pedestrian facilities, the importance of a comprehensive approach to rehabilitation and maintenance of facilities can not be overlooked. In Ottawa, rehabilitation and maintenance of the pedestrian infrastructure is a significant commitment. With a population of nearly 900,000 (877,300) and covering a total land area of over 2700 square kilometres, Ottawa is the second largest city in the province and the fourth largest city in the country. The area occupied by the city is greater than that of Toronto, Montreal, Vancouver, Calgary and Edmonton combined. With an annual winter control budget of \$65M (2007), Ottawa maintains one of the largest municipal transportation networks in the country that includes over 5400km of roadway, 60km of transitway, 1580km of sidewalk, and approximately 330km of pathways. In addition, city staff provides winter maintenance for over 6300 bus stops. By way of comparison, the City of Montreal maintains 4,700 km of roads and 6,400 km of sidewalks, the City of Toronto maintains approximately 5,200 km of roads and 7,100 km of sidewalks and the City of Edmonton maintains 2,841 km of roads and 829 km of sidewalks.

The citizens of Ottawa clearly place value and importance in the maintenance of roadways and sidewalks. In the 2001 Service Level Harmonization public opinion survey by Decima Research, 76% of respondents indicated that the maintenance of road and sidewalks was very important. Furthermore, in the 2004 City of Ottawa Citizen Satisfaction Survey (as reported in City of Ottawa Financial Profile, 2006), residents ranked road and sidewalk maintenance ranked 6th overall in terms of importance. Specifically, 54% indicated that maintenance should remain as is, 2% suggested that maintenance levels should decrease and 44% indicated that maintenance levels should be increased. Sidewalk and pathway maintenance needs to be carefully aligned with the overriding goal to promote walkability. In many situations this may be counter to the desire or need to focus so heavily on fiscal demands and constraints. In keeping with the vision of the Ottawa Pedestrian Plan to get more people walking more often, staff should be directed to determine where resources do not meet the need and make the appropriate requests.

This chapter provides a discussion of current maintenance practices for pedestrian facilities, some information regarding practices undertaken by other municipalities and recommended enhancements to the current system.

10.1 Maintenance Quality Standards

Maintenance of sidewalks by the municipality is required under the provisions of the Municipal Act, therefore the decision to maintain sidewalks is not optional, it is more the case of determining the standard of maintenance and a system for organizing priorities. To satisfy this requirement (and to harmonize the policies and practices of the former area municipalities), Council directed staff to develop the Maintenance Quality Standards (MQS).

The objectives of the Maintenance Quality Standards are to:

- Provide safe, dependable and affordable service levels.
- Preserve the infrastructure assets.
- Protect the natural environment.
- Enhance the appearance and health of the community.
- Provide a reference framework to measure performance.

*“Refurbish and repaint and fix the signage on the pedestrian/cyclist bridge over the Queensway at Harmer. This is an important link for children to get to school and an important access point over the Queensway”
Ottawa Resident*

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- Provide a basis for “peer review” with other comparable cities.

Following extensive research, collecting and documenting all of the policies and practices of the former area municipalities and review of best practices from other jurisdictions a comprehensive set of standards were prepared, providing Council and citizens with a reference for expectations regarding maintenance. Each standard:

- Identifies the main outcome of the maintenance activity from the user’s perspective.
- Describes the intent and scope of the standard.
- Defines the outcome of the standard.
- Defines the response time to achieve the desired standard.
- Provides a cross reference to other standards that provide related information.

The Maintenance Quality Standards for Roads and Sidewalks/Pathways were approved by Council in June 2003.

10.1.1 Monitoring of Sidewalks and Pathways

According to the MQS, all sidewalks and pathways are to be inspected annually prior to June 15th and deficiencies or distortions (e.g. bumps or depressions, ponding of water, potholes, cracking or vertical discontinuities) that could pose a risk to pedestrians, cyclists or other users and/or conditions that may contribute to an acceleration of the deterioration of the element/infrastructure are documented. Staff determine an appropriate course of action depending on the extent or severity of the condition, prevailing weather conditions and any scheduled infrastructure rehabilitation programs that may influence the subject area. Where operations can not be completed between November 15th and April 15th interim measures may be applied.

Extent/severity is prioritized as follows:

Priority A - condition presents a public hazard/liability (e.g. vertical discontinuities or cracks greater than 3cm).

Priority B - condition impairs the function but is not a hazard (e.g. vertical discontinuities of 1.5 to 3cm).

Priority C - condition that contributes to the long term decline of the asset (e.g. cracks less than 1.5cm, spalling of the surface).

Table 10.1 outlines the required action and response time according to maintenance priority.

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Table 10.1 Repairs to sidewalks, pathways and bus pads		
Priority	Action	Response Time/Time
A	Clearly identify location as a hazard	Within 8 hours
	Make safe by repairing hazardous conditions	Within 7 days
B	Schedule into planned maintenance	As practicable prioritized based on severity
C	Identify as part of infrastructure rehabilitation programs	Prioritized based on condition assessment

Source: City of Ottawa Maintenance Quality Standards, 2003

10.2 Who Maintains and Rehabilitates Ottawa's Sidewalks?

Rehabilitation and maintenance of Ottawa's sidewalks is the responsibility of 2 different city branches, depending on the nature of the work to be completed. These are the:

- **Infrastructure Services (IS)**, which is responsible for lifecycle management of roads, sidewalks and curb ramps once they reach the end of their normal lifespan. Sidewalks and curbs are replaced through the Renewal of City Assets - Sidewalk & Curb Rehabilitation Program. Funding is allocated through the capital budget and long range funding requirements are identified in the Long Range Financial Plan. Infrastructure Services also maintain an inventory and GIS database of existing sidewalks.
- **Surface Operations**, which is responsible for delivering operational surface maintenance and emergency activities required for the road network, park spaces, urban trees and forest cover through 3 divisions, Roads, Parks and Forestry. They conduct regular monitoring and maintenance programs (including minor repairs) that extend the service life of the assets and deliver winter maintenance services. This is supported by the Technical Support Services Division which monitors the quality of service delivered and remains abreast of current best practice techniques, standards and equipment as part of their effort to ensure that sidewalk maintenance services are delivered to Ottawa's citizens as efficiently and cost effectively as possible.
- Key areas of responsibility related to roads and sidewalks/pathways are the provision of:
 - Snow and Ice Control Services (salting, gritting, plowing, snow removal).
 - Hard Surface Maintenance (asphalt repairs, sweeping, iron works adjustments, shoulder maintenance).
 - Right-of-Way Maintenance (grass cutting, graffiti removal, litter baskets, drainage and culvert repairs, guide rails).
 - Sidewalk/Pathway Maintenance (sweeping, concrete repairs, bus pad repairs, decorative brick repairs).

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- Some amenities such as trash receptacles and some benches (note that the majority of benches are now the responsibility of local BIA's in which they are located and those that include advertising are maintained through third party contracts with private contractors who derive income from the advertising).

Ottawa's Ontario Municipal Benchmarking Initiative (OMBI) 2005 Performance Report indicates that at \$4,224 per lane kilometer, Ottawa's operating costs for winter maintenance of roadways (includes sidewalks) is above the median of \$2,652.

Key Challenges

Some of the most significant challenges facing Surface Operations in their efforts to maintain Ottawa's sidewalks and pathways to an appropriate level of care include:

- Climate change with severe and rapid sequence winter events and its effect on winter maintenance.
- Extreme weather fluctuations, freeze-thaw cycles and freezing rain and its effects on both winter maintenance and infrastructure lifespan.
- Increasing costs and demand for service.
- Establishing and balancing priorities to meet demands and requests.
- Obstructions in the sidewalk area which make winter maintenance more difficult (i.e. difficult for machinery to manoeuvre, resulting in and increased need for hand shoveling and sweeping in some locations).

"Plough the NCC bike paths in winter so we can use them (the roads are ploughed)."
Ottawa Resident

10.3 Consideration for Sidewalk Maintenance During Design

An important part of the design of the pedestrian circulation system along or through a site is the consideration of maintenance once the project has been completed and accepted by the City. This includes maintenance and upkeep of the materials and features selected for the design, and in Ottawa's case in particular, how effectively it can be maintained during the winter. Important winter maintenance considerations include:

- Adequate snow storage area.
- Sufficient clearance and manoeuvring room for maintenance equipment.
- Minimizing the need for hand shoveling.
- Effects of maintenance equipment on the materials selected in the design (i.e. plows chipping corners off pavers, concrete planter boxes etc.).

Figure 10.1 illustrates two contrasting situations for winter maintenance, one which facilitates relatively easy maintenance and one that is more difficult due to the placement of site features and furnishings.

Figure 10.1

Examples of contrasting streetscape layouts for ease of winter maintenance.



(a) Facilitates easy winter maintenance
(Location: Guelph, ON Source: MMM Group)



(b) Hampers efficiency of winter maintenance
(Location: Guelph, ON Source: MMM Group)

As part of the current development review process plans are circulated to Surface Operations staff to provide an opportunity for comments on maintenance requirements or concerns, and this process appears to be functioning well.

10.4 Winter Sidewalk Maintenance

Currently, a significant investment is made in winter sidewalk maintenance and it is expected that this need will only increase over time as a result of climate change in Ottawa. The city receives an annual average of approximately 235 cm of snowfall, which is the most of any Canadian city of comparable size and the frequency of freezing rain and freeze-thaw events has been tending toward an increase in recent years. For example, Ottawa received 120 hours of freezing rain during the winter of 2007-2008(106). Extreme temperature fluctuations with warm temperatures followed by freezing rain, followed by severe cold, all of contribute to a challenging winter maintenance climate.

Recent and current research being undertaken by Environment Canada indicates that the following climate changes are being predicted for the Ottawa area(107):

- Variability will continue to increase.
- The Ottawa area is getting warmer.

“Keep stairs open and cleared during winter (to and from Ottawa all bus terminus, to and from Laurier, from pedestrian way beside canal, etc.)”

Ottawa Resident

106 http://ottawa.ca/residents/onthemove/driving/road_sidewalk/plowing_salting/index_en.html).

107 Ibid

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- Increased number of accumulative small events.
- Increased freeze/thaw cycles with accompanying moisture.
- The Ottawa area will experience more precipitation.
- Drought conditions are on the rise.
- High intensity rain events are becoming more frequent, even in winter.
- Average conditions are no longer average.
- The freezing rain “belt” is moving to the north and may shift into the Ottawa Valley and Ottawa area.

Figure 10.2

Typical winter sidewalk conditions during a freeze-thaw cycle .



Location: Ottawa, ON. Source: City of Ottawa

*“Better snow removal
all around the bus
stops.”
Ottawa Resident*

10.4.1 Winter Maintenance Treatment Standards

For the purpose of organizing the maintenance schedule in a logical, consistent and effective manner, roads, sidewalks and pathways with similar characteristics and function are grouped together in classes. These classes are then used to prioritize the delivery of maintenance, including a threshold for the accumulation of snow/ice prior to deployment of resources, frequency of snow plowing, and response time for deployment, and standard for ice control and snow removal.

When a snowstorm begins, City crews focus efforts to **clear** snow on high priority roads such as Ottawa Road 174, transitways, main arterials and collectors to achieve bare pavement conditions. Unless designated as a bus route, the standard for residential streets is snow packed throughout the winter. Crews aim to clean up bus stops within 24 hours from the end of snow accumulation.

If snow removal is necessary, crews will begin **removal** after the snowfall ends and on-street snow storage space will be used to the maximum. Crews will cast snow on to the boulevard area where storage capacity permits. Icy conditions such as frozen, ponded water on sidewalks and pathways are treated (e.g. by gritting and sanding) as they occur.

Ottawa’s standard for winter maintenance is based on snow accumulation for each sidewalk class and maximum duration time to clear. This is reasonably

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consistent with Toronto and Montreal, however jurisdictions such as Hamilton for example require homeowners to clear public sidewalks in front of their homes.

Table 10.2 provides the details of the City's sidewalk Maintenance Quality Standards according to sidewalk type/location.

Contrary to requirements in a number of other jurisdictions (refer to **Table 10.3**), clearing of sidewalks on public property is the responsibility of the City of Ottawa; there are no regulations that require landowners to clear the public sidewalk(s) abutting their property. Ottawa has several by-laws that stipulate the expectation for clearing of walkways on private property and the disposal of snow and ice collected on private property. These are briefly described below.

10.4.1.1 Property Maintenance By-law (2005-208)

Snow and ice removal on **private property** is regulated under the **Property Maintenance By-law No. 2005-208** whereby owners/occupants are responsible for the removal of snow and ice from all walkways on their own property and on roofs of buildings that may cause a safety hazard. If accumulated ice can't be removed through clearing, the application of grit, gravel, salt or sand is required.

Section 5 Snow and Ice

“Every owner or occupant of a building shall keep the roofs of the building and the surrounding lands free of accumulations of snow or ice that might create an accident hazard.”

10.4.1.2 Use and Care of Roads By-Law (2003-498)

This by-law prohibits the disposal of snow or ice on roadways by the owner/occupant or contractor hired by the owner/occupant.

Section 3.1(b):

“No person shall, unless otherwise authorized by the provisions of this or any other by-law of the City, throw, push, plow, dump or otherwise deposit snow or ice on a highway.”

10.4.1.3 Parks and Facilities By-Law (2004-276)

This by-law prohibits the disposal of snow or ice in any city park or public open space by the owner/occupant or contractor hired by the owner/occupant.

Section 6

“No person shall discharge, dump or leave any construction material, earth, dirt, rock, snow, stone or any other materials in a park, or in any ravine, slope, or other land access way to a park, except with the written consent of the Director of Surface Operations in the Public Works and Services Department.”

*“Would like to see encouragement of property owners to take better care of sidewalk in front of their building –snow, ice, leaves, garbage etc.”
Ottawa Resident*

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Table 10.2

Ottawa's winter sidewalk maintenance standards

Sidewalk/Pathway Maintenance Class	Description/Location	Minimum depth of accumulation prior to deployment	Time to clear following end of snowfall event	Treatment Standard: Bare	Treatment Standard: Snow packed
1	<ul style="list-style-type: none"> • Downtown business district • Byward Market • Large employment centres • Special tourism areas 	2.5cm	4 hours	Bare	n/a
2	<ul style="list-style-type: none"> • Downtown/urban residential neighbourhoods where sidewalks are only safe place to walk • Sidewalks in villages • Pathways that serve as main community links or to access transit services • Sidewalks along roads with transit service, emergency facilities, public facilities or retail/commercial frontages • Pathways designated as part of City cycling routes 	5cm	12hours	Sidewalks directly adjacent to arterial roads	All other locations
3	<ul style="list-style-type: none"> • Sidewalks along rural and suburban collector and residential roads • Paved pathways in rural and suburban neighbourhoods (pathways that are winter maintained) 	5 cm	16 hours	n/a	Snow packed
3	<ul style="list-style-type: none"> • Cleanup most intersections, pedestrian crossings and bus stops 	n/a	16-24hours	n/a	n/a
4	<ul style="list-style-type: none"> • Unpaved pathways and paved pathways that are not winter maintained 	n/a	n/a	n/a	n/a
Source: City of Ottawa Maintenance Quality Standards, 2004					

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Recommendation 10.1

It is recommended that the City:

Review road and sidewalk maintenance standards, as an initiative under the City Strategic Plan, with a specific focus on levels of service and maintenance classifications based on the sidewalk's transportation role.

10.4.1.4 Snow Removal

Removal of snow banks is undertaken when snow banks restrict sightlines, pedestrian travel or to relieve trapped water on the roadway or sidewalk. Snow banks restricting sightlines that create safety hazards at intersections, pedestrian, school and railway crossings are removed within 24 hours after staff becomes aware of the conditions. In the event that the number of locations exceeds available resources, locations are addressed on a priority basis subject to the extent of the hazard.

Notwithstanding the Snow Removal Standard in the Maintenance Quality Standards approved in 2003, the City, through additional monitoring and assessment of the effectiveness of the standards, determined that supplemental snow removal measures were necessary to restore sidewalk conditions and address the progressively more common extremes in weather conditions. For example, high snow banks on either side of sidewalks tend to trap rainwater or meltwater in the sidewalk bed, only to freeze again when temperatures fall. It was determined that these kind of icy sidewalk conditions could improved through an increase in the effort to remove snow, thus allowing water to drain away from the sidewalk bed, and into nearby catch basins. In 2006, the City commenced additional snow removal activities in select areas to assist in improving winter sidewalk conditions. As part of this additional level of service specialized winter maintenance attachments for sidewalk maintenance units were purchased. This additional level of service may not be captured in the current Maintenance Quality Standards program, and should be considered at the time the MQS is updated.

10.4.1.5 Yellow Grit Box Program

To assist pedestrians during the winter months, the City of Ottawa launched the **Yellow Grit Box Program** in 1997. It is a partnership among Public Works and Services (Surface Operations Branch), and Public Health and Long-Term Care. To date approximately 40 "do-it-yourself" Yellow Grit Boxes have been placed at various locations for residents to use. Grit boxes contain the same material as Surface Operations staff. Yellow Grit Boxes are located close to steep hills, in areas with pedestrian traffic volumes and in areas with a high density of senior citizens. Residents are encouraged to scoop and spread the grit on slippery spots on the sidewalk and other problem locations.

Various senior's committees and community groups assist in determining appropriate locations according to a number of criteria:

- Road maintenance classification.
- Number of slips and falls claims.
- Number of Call Centre requests/notifications.
- Proximity to a high volume of senior's traffic; proximity to senior's housing and activity centres; and other site specific considerations.



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The program is promoted by Public Health and Long-Term Care through their **WinterActive WinterSmart** campaign to encourage safe physical activity during the winter months. Promotion methods consist of:

- A '**Spread it around and Avoid a Fall**' poster distributed to senior serving agencies.
- A **Winter Active Winter Smart** Fact Sheet also destined to seniors regarding safety and keeping active in the winter.
- Sample grit bags are distributed to seniors groups.
- Presentations to seniors groups by Public Health Nurses, senior volunteers and community workers.

The campaign has proven to be very popular with seniors groups and is viewed as successful in improving winter walking conditions.

10.4.1.6 Assistance for Seniors and the Disabled

Snow-Go was a program established by the former City of Ottawa, but terminated during the 2004 budget cycle, in part because it did not service the entire amalgamated City of Ottawa. Following a consultation program in 2006 Council approved a new program designed to help seniors and persons with disabilities with snow clearing at their homes.

The **Snow-Go Program** is based on the former City of Ottawa program. It is an agency coordination program whereby seniors or persons with disabilities are linked with a snow clearing contractor to remove windrows along private driveways and walkways left behind street and sidewalk snow plows, and/or to provide assistance with the clearing of walkways on private property. Residents using the program make payments directly to the individual or contractor who removes snow, \$60,000 was approved for use by the coordinating agencies and the program provides no direct financial subsidy to residents.

The **Snow Go Assist Pilot Program** has been created which provides qualifying seniors and persons with disabilities with financial assistance to remove snow windrows left by plows. The financial assistance currently has an annual total cap of \$60,000 for the entire city. Residents who qualify are eligible for an annual total of \$250.00 and make their own choices as to how the subsidy will be allocated (i.e. as needed or scheduled, windrow only, walkway to sidewalk etc).

Recommendation 10.2

It is recommended that the City:

Support programs, with the assistance of partners, such as the Yellow Grit Box Program and the Snow-Go Program including the development and introduction of new programs to meet specific needs.

10.4.1.7 Street and Sidewalk Sweeping

After each winter and spring thaw, the City sweeps streets and sidewalks to remove debris, dust and sand that has accumulated over the winter months. Sweeping is done to improve safety and the environment. Apart from affecting the appearance of city streets, debris can also pose dangers to traffic and clog catch basins. Generally spring sweeping is completed by May 31st each year with ongoing cleaning, based on priority of location, taking place between June and October inclusively.

10.4.2 Sidewalk and Pathway Winter Maintenance Practices in Other Jurisdictions

An environmental scan of other Canadian cities was conducted to better understand the variety of winter maintenance practices that are being used by other major cities in Canada. Though not intended to be inclusive, the purpose of the research was to understand where Ottawa sits relative to other jurisdictions of a similar size or winter climate and to offer some ideas for potential enhancements to the existing standards. Based on the results of this scan it was concluded that Ottawa's winter sidewalk maintenance practices and standards are quite comprehensive. **Table 10.3** provides a comparative summary of the results.

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Table 10.3
Winter sidewalk maintenance in other jurisdictions

Location	Bylaw Y/N (for removal of snow on public sidewalk)	Details (time to clear, details etc.)	Support for Seniors and Disabled	Additional Comments
Calgary AB	Yes	Under Street Bylaw 20M88, the owner or occupant of any private property is required to remove any snow or ice from any sidewalk adjacent to their property within 24 hours of it being deposited. Snow and ice control on sidewalks not adjacent to private property is also subject to a City Council-approved priority system. All others are responsibility of the abutting property owner (bylaw). http://www.calgary.ca/portal/server.pt/gateway/PTARGS_0_0_104_0_0_35/http%3B/content.calgary.ca/CCA/City+Hall/Business+Units/Roads/Road+Maintenance/Snow+and+Ice+Control/Snow+and+Ice+Control.htm	Snow Angels is a program whereby residents are encouraged to help neighbours in need, especially seniors with snow removal.	City has a list of sidewalks they winter maintain and those that they don't maintain. Those that they do maintain are organized into a priority system which changes based on operations staff input and recommendations. If a landowner places an obstruction (e.g. fence hedge) that is unapproved that section of sidewalk is dropped from the city priority rating and becomes responsibility of abutting property owner.
Cambridge ON	Yes	The Sidewalk Snow Clearing By-law 273-05 requires property owners to clear all abutting sidewalks within 24 hours of the end of a snow fall. The City only maintains walkways in certain areas such as those used by small school children or senior citizens for direct access to specific destinations. http://cambridge.ca/article.php?ssid=153		
Edmonton AB	Yes	Property owners are responsible for removing all snow and ice from City sidewalks adjacent to their property within 48 hours of the snow being deposited (Traffic Bylaw 5590) http://edmonton.ca/portal/server.pt/gateway/PTARGS_0_2_2582169_0_0_18/	Several organizations available to provide assistance (non-city) such as the Seniors Association of Greater Edmonton (SAGE)	
Toronto ON	Yes with some exceptions	Every owner or occupant of any building must within twelve (12) hours after any fall of snow, rain or hail has ceased, clear away and remove snow from the sidewalk along any highway in front of, beside or behind that building. Where sidewalks become slippery, sand, salt or some other suitable material is to be applied so as to completely cover the slippery surface as required. http://www.toronto.ca/legdocs/municode/1184_719.pdf		The city provides a map of areas where the city can and cannot clear ice and snow (i.e. cant do it in downtown)
Waterloo, ON	Yes	ByLaw 82-12. Within 24hrs of a snowfall the owner of every occupied and unoccupied building must remove snow from the sidewalks along highways in front of, along side of, or at the rear of their building (applies to the months of October to March). http://waterloo.ca/Portals/57ad7180-c5e7-49f5-b282-c6475cdb7ee7/LIBRARY_BYLAWS_documents/1982_012SNW.doc	For residents over 65 years of age or with a physical disability the city provides a call in number for assistance with snow removal	"Clear Walks" is a program designed to increase the mobility of elderly and disabled persons and children throughout the winter months and encourages neighbours to help neighbours keep sidewalks cleared of ice and snow.

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Table 10.3 cont'd

Winter sidewalk maintenance in other jurisdictions

Location	Bylaw Y/N (for removal of snow on public sidewalk)	Details (time to clear, details etc.)	Support for Seniors and Disabled	Additional Comments
Regina SK	Generally no with some exceptions	Businesses in the downtown core are required to remove snow and ice from the sidewalk in front of their premises within 24 hours All apartment blocks and commercial buildings anywhere in the city must remove snow and ice from their sidewalks with 48 hours of the snowfall. Apply sand/grit as required. Clean Property Bylaw 9881. http://www.regina.ca/content/info_services/bylaws/winter.shtml		
Halifax, NS	Yes with some exceptions	Main arterials and capital district are priority, followed by school routes, then residential streets and walkways. The time to clear is based on location. Standards apply only to sidewalks that are area rated and maintained by the Halifax Regional Municipality. In other areas, sidewalks are the responsibility of the abutting property owner, and subject to regulations set out in By-Law S-300. http://www.halifax.ca/legislation/bylaws/hrm/bls300.pdf		
Kingston ON	No	Municipal responsibility with a system which defines snow removal priority based on sidewalk class and accumulation of snow pedestrian traffic, proximity to high volume roadways and the ease in which sidewalks can be cleared. http://www.cityofkingston.ca/residents/transportation/streets/winter/		Sidewalk class is based on class of road along which the sidewalk is situated Sidewalk plowing in the downtown Business Improvement Area is the responsibility of the abutting property owner (By-law 10). However, in the event of heavy snowfalls or extreme ice, an initial pass will be made to allow access.
London ON	No	City responsibility based on priority system over 58 beats (zones) Priorities determined on the basis of road volume high volume within 58 districts of the city, bus routes also in top http://www.london.ca/Cityhall/EnvServices/fag_snow.htm		On average the city receives just over 210 centimetres very similar to Ottawa. The following locations are not part of the City's snow removal services: Park walkways and pathways. New subdivision streets and sidewalks Private walks, driveways and roads (includes things like internal townhouse complexes and malls etc), snow removal services for seniors and individuals with disabilities are not available from City crews. Many local community groups and churches have volunteers.

10.5 Pathway Maintenance and Rehabilitation

10.5.1 Other Jurisdictions

Most jurisdictions have formal programs to plan and construct pathway systems, however, not all have done the same when it comes to the maintenance and rehabilitation of pathways. Although it is a very important part of maintaining the quality and safety of the asset, a number of jurisdictions do not have formal maintenance practices.

In 2004, telephone interviews were conducted with approximately a dozen southern Ontario municipalities to determine the overall scope of their pathway maintenance, to learn about significant issues and priorities and to gain an understanding of basic costs for pathway maintenance(108). The following is a summary of responses.

General

- Very few maintain their pathways in winter. Of those, none reported that they maintain all of their pathways in winter; rather they choose to plow only their asphalt pathways, and only in areas that are heavily used or are main connections for utilitarian purposes (connections to schools, main bicycle/pedestrian commuter routes).
- Several reported having written policies that define how different types of pathways will be maintained (what the maintenance goal/standard is, how that will be achieved etc.). For those that do not have written policies, most are working toward this.
- Most have a call in/hot line for areas requiring emergency repairs, or areas where garbage containers are heavily used (pick up garbage within 48 hours of call in). None of the hot lines are pathway specific, most often included with a parks or even citywide hotline for parks, roads, and infrastructure.
- In most cases, respondents felt that they could do a better job at pathway maintenance, but were limited by resources (staff and time).
- Most conduct an annual safety audit, not necessarily specific to pathways, often covered under the required general annual safety audit for parks, playgrounds and recreation facilities, personal security and safety.
- Preventative or proactive maintenance, especially with regard to pathway surface condition, signing, trash and vandalism (including graffiti) were cited as a key success factor.
- Most use pathway patrols or supervisors (often by district) to review the pathway conditions on a regular basis (as often as weekly) to assess conditions and prioritize maintenance tasks/keep an eye out for problem areas.
- Some have a maintenance logbook to set out a schedule of tasks, priorities, standards to be achieved and method of tracking that the work has been completed. They report that this also helps in being able to predict which pathways require the most maintenance.



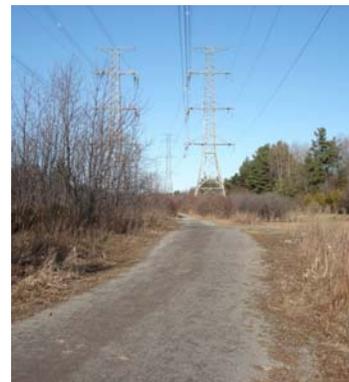
Etobicoke, ON

108 Municipal Trail Maintenance Survey. Telephone interviews conducted by Stantec, 2004

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Maintenance Considerations and Techniques

- Asphalt surfaces on pathways have a life span of approximately 15-20 years. Many report that they are now having to go back and reconstruct many of their pathways that were installed in 1970's and 1980's. In the process, they are finding them to be too narrow to meet today's volumes of use, variety of pathway users and high demand for pathways.
- Pathways that were properly constructed in the first place (adequate base, well compacted, properly drained), have the fewest problems from a maintenance point of view.
- Many report that erosion is a big challenge, and that "pathway hardening" with asphalt on the slopes is the best way to prevent further erosion. Some have tried other soil binding compounds for pathways on slopes that are constantly eroded. Mixed success is reported.
- Mowing grass along edges of pathways is performed on a regular basis. Depending on pathway location this may be weekly, biweekly or monthly. The width of the mown swath varies from 0.5m to 2.0m depending on the municipality and location and mowing helps to keep clear zone open. It can also help with weed control and the invasion of weeds into granular pathway surfaces.
- Most do not use chemicals for weed control, occasionally "Round-up" is used under special circumstances or for problem areas. Some have been experimenting with alternatives such as steam and close mowing.
- Several have trained their mower operators to be more observant while mowing to take note of problem areas.
- Garbage pickup is performed on a regular basis (i.e. 10 day cycle), with receptacles located at the ends of pathway segments where they can be easily accessed for service vehicles. Some are experimenting with in-ground garbage receptacles in high use areas where they are finding the need to empty overflowing containers more often than their regularly scheduled pick-up. These are specially designed units that hold more, are set in vaults below grade. They don't blow or get knocked over, look better and don't need to be serviced as regularly.
- Tasks performed on a seasonal basis include culvert cleanout and pathway side pruning.
- Grading/grooming surface of granular pathways is done once per year or as required after heavy storm events in areas prone to erosion.
- Tasks performed on a 3-5 year cycle include refurbishment of signs, cleaning and refurbishment of benches.
- Tasks performed on an as-required basis include moving or marking obvious hazards within 24 hours of their identification, inspection/monitoring of pathway areas prone to damage following heavy storms, repairs to vandalized items, minor repairs to structural elements such as bridges, pathway surfaces, railings, benches, gates and signs.
- Major renovation/replacement of large items such as bridges, kiosks, gates, parking lots, and asphalt pathway surfaces was generally described as a 10-20 year replacement item.
- In most cases, parks crews, as part of their regular park maintenance role performed pathway maintenance. Where extensive maintenance programs were reported, additional seasonal labour was added to the workforce (often summer students). For some cases volunteer "adopt-a-



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pathway” programs were identified as useful for basic pathway cleanup and monitoring.

- Most municipalities do not light their pathways. Lighting can be perceived to be costly to install and maintain, and can be viewed to create the perception of false safety. Some “target light” specific problem areas where there are nearby observers to report inappropriate activities.
- Most do the work with their own forces, only “contracting out” new pathway construction or major pathway upgrades (i.e. asphalt placement where specialized equipment is required).
- Maintenance is generally handled under Parks Operations budgets, sometimes tracked as a separate pathway maintenance budget, most often grouped in with other parks maintenance budgets. Those that track and are generally satisfied with the level of service provided to their citizens report about \$340-\$370/km/year for urban pathways (not including any winter maintenance). This can be as low as \$25/km/year for rural pathways (i.e. pathways on abandoned railway lines). These budgets typically address regular maintenance and upkeep tasks (materials and labour), but not major upgrades. Major upgrades (rebuilding, asphaltting, re-asphaltting, adding parking facilities, signage etc.) are typically carried under Capital budgets.
- The only special equipment noted for pathway maintenance was a pathway grader/groomer to level the trailbed surface, and define pathway edges.

10.5.2 Ottawa

Currently, there is no coordinated integrated approach to the maintenance and rehabilitation/lifecycle replacement of pathways across the city. Generally, responsibility for maintenance of pathways resides with the city branch that is responsible for the property upon which the pathway is situated. Surface Operations Branch often provides the most service on behalf of other Branches.

10.5.2.1 Multi-use Pathways in the Greenbelt

As much of the anticipated population and job growth in the City of Ottawa will take place in the west and south urban communities, outside of the Greenbelt, it is also expected that pedestrian travel within and through the Greenbelt will increase. There are currently 141 kilometers of city roads in the Greenbelt, some of which are currently undergoing infrastructure upgrades such as widening or extensions. In addition to the road system, there are over 100 kilometers of multi-use pathways, many of which are part of the National Capital Commission's comprehensive pathway network.

Pedestrian routes in the Greenbelt may take the form of sidewalk, but in many cases a multi-use pathway. This policy of using multi-use pathways for utilitarian pedestrian routes is expected to continue, based on the supportive measures outlined in the Transportation Master Plan. The TMP states that, where feasible, the City will provide sidewalks or multi-use pathways along at least one side of new or reconstructed arterial roads within, or adjacent to, the Greenbelt. As a result, in some locations, the only pedestrian route along an arterial road may be a multi-use pathway. Maintenance standards for these multi-use pathways should match those of a sidewalk along an arterial road rather than the lesser standard of maintenance for multi-use pathways, which may be seen as a recreational, rather than a critical route.

*“Plough snow from paths in Commissioners’ Park so we don’t have to walk on Bronson.”
Ottawa Resident*

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10.5.2.2 Winter Maintenance of Pathways

Prior to amalgamation the former City of Ottawa adopted criteria to determine which pathways would receive winter maintenance. The criteria were first introduced in the 1980's and formalized in the late 1990's. Since amalgamation these criteria have generally been used however, have not yet been formally adopted. **Table 10.4** outlines formal/approved criteria, informal criteria and some additional suggestions for consideration.

Applying only the former City of Ottawa approved/formal criteria has proven to be difficult in that the criteria tend to be too restrictive. Under most circumstances additional criteria are being applied by staff, and these are helpful in the decision-making process. Generally, more consideration is given to pathway function in the context of the overall pedestrian network. For example, if a pathway meets **A** and **B** but not **C** (refer to **Table 10.4**), it should become a priority for hard surfacing so that it fulfills all the requirements for winter maintenance.

Formalizing these should assist in improving the ability to recommend pathways for winter maintenance. However, each case should be considered individually and judged on the basis of the criteria but not solely on the criteria alone, and some additional site specific considerations will be necessary.

For the purposes of determining eligibility for winter maintenance, a pathway is:

- an integral part of the City-wide pedestrian network, and
- located on City-owned road allowance or other city property, or other non-city property (i.e. hydro corridor) if a legal agreement exists between the property owners and the city; and
- has an improved surface, such as paving or granular material.

City pathways that will not receive winter maintenance are those that lead directly from the City-wide pedestrian network directly to a private property (e.g. schools, residential, buildings etc.) for the main purpose of the users of those properties.

Figure 10.3
Winter maintained pathway



Source: Facility Bike Club <http://facilitybikeclub.blogspot.com/>

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Table 10.4	
Screening criteria for winter maintenance of pathways	
A. Must satisfy all of the following	
1.	The pathway is situated on City of Ottawa property or if non-city owned, a legal agreement exists between the property owner and the City. .
and;	
2.	The pathway has a paved surface.
and;	
3.	The pathway does not provide an alternate route to an existing City-maintained sidewalk or pathway (400m threshold) .
and	
B. Any of the following	
1.	The pathway is equipped with pathway lighting.
or	
2.	The pathway provides pedestrian access to a community destination/attraction such as:
<ul style="list-style-type: none"> • Rapid Transit (transitway) • Transit Route (bus route) • School • Community Centre • Park (including parkland) • Seniors' residence • Long Term Care (nursing homes) • Library • Church • Other public institution • Retail/Commercial Centres • Business/Industrial Areas • Employment Centres. 	
or	
3.	The pathway connects dead end streets or cul-de-sacs where alternate routes do not exist

10.5.2.3 Pathway Lighting

When used properly, pathway lighting can enhance the character of a park, expand opportunities for use and enjoyment of city lands, and reduce the risks associated with nighttime pathway use. Nevertheless, pathway lighting has been criticized in some municipalities for providing a false sense of security for pathways users. The City of Ottawa park pathway lighting policy (2003) states that *"It is the policy of the City of Ottawa to light park pathway systems where community and program needs require pathway usage at nighttime and pathway users can be assured of a reasonable expectation of safety."* Under this policy, pathway lighting is not intended to replace safer alternative nighttime routes, such as sidewalks, and is not considered to be an adequate security measure, in isolation, in high crime/problem areas. For all parks where pathway lighting is

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proposed, City staff are required to perform a Crime Prevention Through Environmental Design (CPTED) audit to confirm the viability of providing nighttime pathway use. Elements of this standardized audit include availability of supervision of pathway users, availability of safe alternative routes, identification of entrapment points, analysis of crime statistics, and interviews with park neighbours and community law enforcement officers.

Recommendation 10.3

It is recommended that the City:

Undertake a comprehensive review of roles and responsibilities for managing the lifecycle continuum (planning, construction, maintenance, rehabilitation, reconstruction and lighting) of pathways to ensure that responsibility for all aspects of the pedestrian network infrastructure have been accounted for and properly assigned to the appropriate Branch or Department. (Reference recommendation 7.1 and 7.3).

Recommendation 10.5

It is recommended that the City:

Adopt the sidewalk pathway maintenance criteria presented in Table 10.4

10.6 Summary of Recommendations

It is recommended that the City:

10.1 Review road and sidewalk maintenance standards, as an initiative under the City Strategic Plan, with a specific focus on levels of service and maintenance classifications based on the sidewalk's transportation role.

10.2 Support programs, with the assistance of partners, such as the Yellow Grit Box Program and the Snow-Go Program including the development and introduction of new programs to meet specific needs.

10.3 Undertake a comprehensive review of roles and responsibilities for managing the lifecycle continuum (planning, construction, maintenance, rehabilitation, reconstruction and lighting) of pathways to ensure that responsibility for all aspects of the pedestrian network infrastructure have been accounted for and properly assigned to the appropriate Branch or Department. (Reference recommendation 7.1 and 7.3).

10.4 Adopt the winter pathway maintenance criteria presented in Table 10.4.

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