

**Environment, Infrastructure & Transportation Policies Committee
Report to Council**

October 10, 2019

To the Mayor and Members of Council:

The Environment, Infrastructure & Transportation Policies Committee Reports and Recommends as follows:

1. Winter Maintenance Policy

That Council adopt the revised Public Works Winter Maintenance Policy as presented in Exhibit A of Report Number EITP-19-010.

(Exhibit A to Report Number EITP-19-010 is attached to the agenda as schedule pages 35-43)

Public Works Winter Maintenance Policy

PURPOSE: Describe response times, conditions, and result.

1 Objective and Goals

The Public Works Department will strive, as is reasonably practical, to provide safe and passable winter road and sidewalk conditions for pedestrians, cyclists, and motorists within the City of Kingston. Public Works winter operations will be guided by the level of service requirements defined in this policy, utilizing the resources provided by the City of Kingston Council.

The standards set out in this document are based on the current version of Ontario Regulation 239/02, Minimum Maintenance Standards for Municipal Highways, and are supported by procedures outlined in the Public Works Winter Operations Plan.

2 Definitions

Ice: means all kinds of ice however formed.

Representative Roadways: means roadways within the City of Kingston that have been identified as representative of the area's various road weather conditions.

Road Condition: means the condition of the roadway surface before, during, and after a winter storm event:

Condition	Description
Bare and Dry	Most of the road surface is dry
Bare and Wet	Most of the road surface is moist
Partially Snow Covered	Two wheels of a vehicle are on bare surface and the other wheels are likely to be on loose snow
Partially Snow Packed	Two wheels of a vehicle are on bare surface and the other wheels are likely to be on snow bonded to the road
Partially Ice Covered	Two wheels of a vehicle are on bare surface and the other wheels are likely to be on ice
Snow Covered	All wheels of a vehicle are on loose snow
Snow Packed	All wheels of a vehicle are on snow bonded to the road
Ice Covered	All wheels of a vehicle are on ice

Roadway Designation: means the classification or designation assigned to the City of Kingston's various roads, streets or highways. The roadway designation defines the winter operations level of service provision. The City's roadways fall under the four designations, as presented in section 5.1.

Significant Weather Event: means an approaching or occurring weather hazard with the potential to pose a significant danger to sidewalk, bicycle lane, and roadway users.

Snow Accumulation: means the natural accumulation of any of the following that, alone or together, covers more than half a lane width of a roadway:

1. Newly-fallen snow
2. Wind-blown snow
3. Slush

Substantial Probability: means a significant likelihood considerably in excess of 51%.

Weather Hazard: means the weather hazards determined by Environment Canada as meeting the criteria for the issuance of an alert under its Public Weather Alerting Program.

Winter Event: means the weather condition affecting roads such as snowfall, blowing snow, sleet, freezing rain, frost, or ice, to which a winter event response is required.

Winter Event Response: means a series of winter activities performed in response to a winter event.

Winter Patrol: means the field observation of weather and road conditions.

Winter Season: means the season when the Public Works normally performs winter roadway and sidewalk maintenance as identified in the Winter Operations Plan.

3 Patrol & Monitoring

3.1 Weather Monitoring

From October 1 to April 30, the current and forecasted weather will be monitored once every shift or three times per calendar day, whichever is more frequent, at the intervals identified in the Winter Operations Plan.

3.2 Road Patrol

The representative roadways identified in the Winter Operations Plan will be patrolled a minimum of twice per day separated by at least eight hours during weekdays and weekends. When roadways are icy or there is a substantial probability of snow accumulation or ice formation, the patrol frequency may increase.

3.3 Sidewalk Patrol

Where there are icy sidewalks or a substantial probability of snow accumulation or ice formation on sidewalks, the representative sidewalks identified in the Winter Operations Plan will be patrolled a minimum of once per day.

4 Significant Weather Event

4.1 Declaration of a Significant Weather Event

Public Works may declare a significant weather event for an approaching or occurring weather hazard with the potential to pose a significant danger to sidewalk, bicycle lane, and roadway users.

A weather hazard that would warrant the declaration of a significant weather event is determined by Environment Canada as meeting the criteria for the issuance of an alert under its Public Weather Alerting Program.

When a significant weather event is declared, the notice will be announced on the City of Kingston website, on Twitter and Facebook. Similarly, an announcement to declare the end of a significant weather event will also take place through the same social media platforms.

5 Roadways

5.1 Designations

Public Works designates roads, streets or highways into four roadway designations according to their importance in the overall transportation system, average annual daily traffic (ADT) and posted or statutory speed limits.

Designation	Abbreviation	Description
Arterial	ART	Arterial and major collector roads, streets within the Business Improvement Area (BIA), and Express bus routes
Collector & Bus Route	C&B	Collector roads and local transit routes
Local	LOC	Local residential, commercial, minor hard surfaced roads, parks and one-tonne routes
Unmaintained	UN	Roads that are unmaintained during the winter season

5.2 Level of Service Standards

5.2.1 Snow Accumulation

When snow begins to accumulate, resources to clear snow from roadways should be deployed as soon as practicable after becoming aware of the snow accumulation and in accordance with the snow depth defined in the following table.

Designation	Snow Depth for Accumulation Response	Treatment Used	Objective During Storm	*Objective After Storm	Timeframe to Achieve Objective <u>After End of Winter Event</u>
ART	≤ 2.5cm	Plow Sand/De-ice as required	Safe and passable	Bare and wet	4 hours
C&B	≤ 5cm	Plow Sand/De-ice as required	Safe and passable	Bare and wet	6 hours
LOC	≤ 8cm	Plow Sand/De-ice as required	N/A	Partially snow packed	16 hours
UN	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter

* The after storm objective is to be reached as soon as possible and normally within the timeframe indicated in the table, weather conditions permitting.

It is inevitable that the City's snowplows will create a windrow of snow across driveways in the normal course of plowing operations. The resident, business owner or property owner is responsible for clearing driveway snow that accumulates as a result of roadway or sidewalk snow plowing operations.

When a significant weather event is declared related to snow accumulation, weather forecasts will be monitored and when deemed practicable, resources will be deployed to address the snow accumulation on roadways. When the end of the significant weather event is declared, the winter event response will continue until the snow accumulation objectives in the above table are met.

5.2.2 Ice Formation Prevention and Treatment

Resources to prevent or treat ice formation should be deployed as soon as practicable after:

- Weather monitoring or patrolling indicates a substantial probability of ice forming on a roadway, due to a pending winter weather event.
- Becoming aware that a roadway is icy

Designation	Preventative Treatment Used	Reactive Treatment Used	Road Objective During and After Storm	Timeframe to Achieve Objective <u>After End of Winter Event</u>
ART	De-ice / Anti-ice	Sand / De-ice / Plow as required	Safe and passable	4 hours
C&B	De-ice / Anti-ice	Sand / De-ice / Plow as required	Safe and passable	6 hours
LOC	De-ice	Sand / De-ice / Plow as required	Safe and passable	12 hours
UN	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter

This section applies to treating ice formation on bicycle lanes on a roadway, but does not apply to other types of bicycle facilities.

When a significant weather event is declared relating to ice, weather forecasts will be monitored and, when deemed practicable, resources will be deployed to treat icy roadways. When the end of the significant weather event is declared, the winter event response will continue until objectives in the above table are met.

6 Bicycle Lanes

6.1 Designations

Winter priority bicycle routes have been established for winter maintenance during a winter event. Priority bicycle routes may include a portion of the roadway designated as a bicycle lane or roadways without designated bicycle lanes or a combination of both. These routes are maintained as part of the roadway.

All other on-road bicycle lanes are maintained in the winter in conjunction with the priority of the adjacent roadway. Level of service for on-road bicycle lanes follows the roadway designation.

Designation	Abbreviation	Description
Arterial	ART	Bicycle lanes on arterial roadways
Collector & Bus Route	C&B	Bicycle lanes on collector roadways and bus routes
Local	LOC	Bicycle lanes on residential roadways
Un-Maintained	UN	Bicycle lanes that are un-maintained during the winter season

6.2 Level of Service Standards

6.2.1 Snow accumulation

When snow begins to accumulate, resources to clear snow from bicycle lanes should be deployed as soon as practicable after becoming aware of the snow accumulation and in accordance with the snow depth defined in the following table.

Designation	Snow Depth for Accumulation Response	Treatment Used	*Objective After Storm	Timeframe to Achieve Objective <u>After End of Winter Event</u>
ART	≤ 2.5 cm	Plow / Sand / De-ice as required	Bare and wet	8 hours
C&B	≤ 5 cm	Plow / Sand / De-ice as required	Bare and wet	12 hours
LOC	≤ 8cm	Plow / Sand / De-ice as required	Partially snow packed	24 hours
UN	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter

* The after storm condition is the objective to be reached to at least 1 metre width, as soon as possible and normally within the timeframe indicated in the table, weather condition permitting.

When a significant weather event is declared relating to snow accumulation, weather forecasts will be monitored and when deemed practicable, resources will be deployed to address the snow accumulation on roadways. When the end of the significant weather event is declared the winter event response will continue until the snow accumulation objectives in the above table are met.

7 Sidewalks and Walkways

7.1 Designations

Public Works designates sidewalks and walkways into four sidewalk designations according to their associated pedestrian traffic and proximity to high volume roadways, in addition to the ease with which they can be cleared.

Designation	Description
1	Sidewalks / walkways with high pedestrian volumes and / or sidewalks adjacent to high volume roadways
2	Balance of sidewalks / walkways that can be cleared with mechanized plow equipment
3	Sidewalks / walkways that require a blower or hand shoveling to clear
4	Sidewalks / walkways that will not be cleared due to the destination or otherwise restrict or limit the access of a sidewalk plow

7.2 Level of Service Standards

When snow begins to accumulate, resources to clear snow from sidewalks and walkways should be deployed as soon as practicable after becoming aware of the snow accumulation and in accordance with the snow defined in the following table.

7.2.1 Sidewalk/Walkway- Snow Treatment

Designation	Snow Depth for Accumulation Response	Treatment Used	Objective After Winter Event	Timeframe to Achieve Objective <u>After End of Winter Event</u>
1	≤ 2.5cm	Plow / Sand / De-ice as required	Safe and passable for pedestrians	24 hours
2	≤ 5cm	Plow / Sand / De-ice as required	Safe and passable for pedestrians	48 hours
3	≤ 5cm	Plow / Sand / De-ice as required	Safe and passable for pedestrians	72 hours
4	N/A	Unmaintained in the Winter	N/A	N/A

7.2.1 Sidewalk/Walkway - Ice Formation and Treatment

Resources to prevent or treat ice formation should be deployed as soon as practicable after:

- Weather monitoring or patrolling indicates a substantial probability of ice forming on a roadway, due to a pending winter weather event.
- Becoming aware that a sidewalk/walkway is icy.

Designation	Preventative Treatment Used	Reactive Treatment Used	Sidewalk Objection During and After Storm	Timeframe to Achieve Objective <u>After End of Winter Event</u>
1	Sand / De-ice	Sand / De-ice / Plow as required	Safe and passable	48 hours
2	Sand / De-ice	Sand / De-ice / Plow as required	Safe and passable	48 hours
3	Sand / De-ice	Sand / De-ice / Plow as required	Safe and passable	48 hours
4	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter	Unmaintained in the Winter

8 Bus Shelters and Stops

8.1 Designations

Public Works classifies bus stops into two designations based on the level of transit service.

Designation	Description
Express	Bus shelters and stops on express bus routes.
Local	Bus shelters and stops on local bus routes.

8.2 Level of Service Standards

When snow begins to accumulate, resources to clear snow from bus shelters and stops should be deployed as soon as practicable after becoming aware of the snow accumulation and in accordance with the snow depth defined in the following table.

Designation	Snow Depth for Accumulation Response	Treatment Used	Objective After Winter Event	Timeframe to Achieve Objective <u>After End of Winter Event</u>
Express	≤ 5cm	Plow / Sand / De-ice as required	Safe and passable for pedestrians	24 hours
Local	≤ 5cm	Plow / Sand / De-ice as required	Safe and passable for pedestrians	48 hours

9 Snow Removal

9.1 Areas

Snow removal areas are classified based on public safety, snow storage capacity, on street parking requirements, as well as vehicle and pedestrian volumes.

Area	Description
1	Central business area
2	Streets or bicycle lanes with limited or no snow storage capacity
3	Cul-de-sacs and dead-ends with short turning radii
4	Other roads

9.2 Level of Service Standards

Snow removal resources will be deployed for each area once the snow removal trigger has been met and within the deployment timeframe set out in the following table, as availability of resources permits. Snow removal operations typically are carried out on weekday night shifts.

When requested by emergency services due to access concerns, resources will be deployed as soon as practicable.

Area	Snow Removal Trigger	Deployment Timeframe
1	Following any significant curbside windrow accumulation and/or after snow windrow reaches an approximate height of 45cm and a base width of 60cm	On the first subsequent weekday night shift following the end of an event, as time and as availability of resources permit
2	When the traveled width of a road becomes less than 6 metres or the traveled width of a bicycle lane becomes less than 1 metre	In conjunction with or following snow removal in Area 1, depending on identified need, and as time and as availability of resources permit.
3	As may be required for vehicular access, following significant accumulations.	As availability of resources permit.
4	When the traveled width becomes less than 6 metres and/or as may be required for vehicular access, following significant accumulations.	As availability of resources permit

10 Annual Monitoring

Winter storm analysis will be undertaken at the end of each winter season to provide a basis for continuous improvement of the winter operations practices and procedures as outlined in the current Winter Operations Plan.

11 Record Keeping

Record keeping will follow the procedures outlined in the Public Works Winter Operations Plan and be retained for the timeframe specified in *The City of Kingston By-Law No. 2008-182, A By-Law to Adopt the Recorded Information Management policy and Records Retention Schedule for the City of Kingston (Schedule 'B', File Plan Ref. T06)*. Document retention will be the responsibility of the Director of Public Works.