

## Council Policy

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Council Policy Name:	Roadway Level of Service Policy Winter Maintenance
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Related SOP, Management Directive, Council Policy, Forms	n/a

### Policy Statement and Rationale:

It is the objective of the City of Kawartha Lakes, Public Works Department to apply its operational activities in an efficient and effective way, so as to provide safe driving conditions consistent with a low volume in a predominantly rural road system during those times of the year when winter conditions can be expected. The purpose will be to achieve the Levels of Service as defined herein, and in no case shall the Levels of Service provided be allowed to fall below the Minimum Maintenance Standards provided for in the Municipal Act SO 2001 c. 25 and the Minimum Maintenance Standards O. Reg. 239/02 as amended by O. Reg.47/13made thereunder.

### Scope:

This policy shall apply to all roads assumed and maintained as public roads by the City of Kawartha Lakes. Notwithstanding the foregoing, neither the Corporation of the City of Kawartha Lakes nor its officials or employees make any promise, assurance or guarantee that the services provided by the Public Works Department will be in excess of the minimum standard, as required by regulation and detailed herein.

Inherent within the standard is the expectation that drivers will act responsibly and will operate their vehicles, at all times, reasonably with due regard for the prevailing weather and roadway conditions.

### Definitions:

**“AADT”** Average Annual Daily Traffic is a technical measurement of traffic volume on a road, in both directions. Conversion factors, which vary depending on time of year and week, extrapolate daily traffic counts into AADT. (See seasonal.)

**“Ambient Conditions”** are conditions that are commonly found in a stabilized environment. Normally in ambient conditions there are no negative effects actively reducing the existing conditions. i.e. Storm, excess traffic or construction effects are not in evidence. (See storm conditions.)



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**“Aspects”** in the context of these standards refer to specific elements of roadway service, which are defined by these standards.

**“As Soon As Practicable”** shall mean without undue delay.

**“Bare”** conditions refer to winter road conditions where all traveled lanes are effectively clear of snow build-up or general ice conditions that might impair the safe travel on the road below the travel speed under ambient conditions.

**“Centre Bare”** conditions refer to winter road conditions where one wheel track of each of the traveled lanes is substantially clear of snow and ice conditions allowing the user to negotiate safer travel than if snow packed or general ice conditions prevail.

**“Class”** in the context of these standards refers to the criteria for classifying roadways as set out in O. Reg. 239/02 Minimum Maintenance Standards.

**“Conditions”** define the state in which the subject matter is found. The standard indicates the condition being measured.

**“Cycle”** is that time interval between Winter Maintenance conducted for a specific purpose on any identified road segment. Consideration can still be made for inspection cycle time adjustments at the discretion of the city's Supervisor or designate for mitigating circumstances, which are of an uncommon, or unpredictable, nature.

**“Day”** is a calendar day.

**“Desirable”** describes that level of service standard the roadway authority has established as an objective for road department operations.

**“Effect”** is the acting of an external influence on the condition of any aspect of the roadway.

**“Hardtop”** refers to a road surface, which is relatively hard in nature, by treatment with either a bonding agent or cement, which effectively prevents reshaping by conventional motor grader.

**“Improved”** condition refers to the condition being better than it was before, from the perspective of a typical user, all other effects being equal.

**“Inspection”** is the activity performed by a qualified person, authorized and directed by the Director of Public Works or designates, to investigate and report on the relevant conditions of the roadway. General inspection has regard for road surface and roadside standards. Winter inspection has regard for winter road surface standards.



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**“Lane”** is that portion of the road designated for a single file of vehicles to travel over, in one direction. For roads where two-way traffic is permitted, the lane width is half the road width unless otherwise delineated by pavement marking.

**“Localized”** conditions, for the purpose of these standards, that occur on short lengths of roadway specifically on bridges, intersections, curves and hills.

**“Loosetop”** refers to a road surface that is of a granular manufactured product, which can reasonably be shaped by a motor grader, and includes road surfaces under reconstruction.

**“Maintenance Priority Classes”** means the priority for roadway maintenance services as defined by Table 1 of the level of service policy; roadway maintenance classification.

**“Notice”** of an effect or condition is considered given when received by an appropriate employee of the road authority.

**“Operations”** means those activities the Public Works Department performs to improve a condition or sustain a roadway standard. Operations are normally defined by guidelines (not policy), with discretion of the supervisor to choose various methods to achieve results cost-effectively.

**“Policies”** decisions of a formal nature made by the road authority to enable, qualify and govern the mission of the road authority as directed by-law.

**“Priority”** an order of the Class of roads to be maintained during a winter event.

**“Response”** describes that action taken by the roadway authority when informed of an effect or condition. Monitoring an effect or condition may constitute a response. A reasonable response takes into account the relevant standards.

**“Right Of Way”** (R.O.W.) describes the corridor of land reserved for roadway improvements and under the jurisdiction of the roadway authority. Certain rights of way infer a right of passage to the public. However, in the context of these standards, only rights of way with assumed public roadways are considered. Rights of way solely for non-vehicular traffic are not addressed in these standards (e.g. Pedestrian, equestrian, bicycle.).

**“Road”** refers specifically to the traveled road surface on a roadway assumed by a roadway authority, but not including on-street parking or stopping zones.

**“Roadside”** refers to all features that make up the roadway within the jurisdiction of the roadway authority, except for the road surface itself.

**“Roadway”** in the context of these standards means any public assumed road right of way, intended for vehicular traffic. It refers not only to the traveled road surface, but to



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all services relevant to the road, within the right of way. In the context of an urban road this includes the traveled portion plus the ancillary lanes. In the case of rural roads this includes the ancillary lanes and the shoulders.

**“Roadway Authority”** indicates the public agency accountable for the status and condition of the roadway. This refers to the Corporation of the City of Kawartha Lakes and its designated officials or agents.

**“Section”** refers to a portion of roadway with a distinct classification, and homogeneous character. A roadway section is commonly used for construction costing, inventory control in Maintenance Management Systems, Road Needs Studies, Pavement Management Studies, and Priority Planning and Budgeting.

**“Seasonal”** refers to the limited time of the year where certain roadway service standards apply to the subject roadway. (eg. Summer roads, Winter roads). In the context of these standards seasonal roads are classified as those not receiving winter services, unless otherwise defined.

**“Service”** can be defined in two contexts. In the larger context any government activity is a service. A roadway network is a service, as is a library, potable water supply, etc. When used in the context of these standards, “service” refers more specifically to aspects of a roadway and their condition. Services are seen from the perspective of the user.

**“Service Level Matrix”** the Table(s) established within this policy that specifically defines the service level according to Class of roadway.

**“Service Levels”** a range of values that quantify a particular service standard, by one or more parameters, across a range of roadway classifications. Service levels typically reflect a maximum or minimum condition.

**“Shoulder”** that maintained surface immediately adjacent to the traveled surface of the road. The shoulder may be partially or fully hardtop, loosetop, grassed, or earth. It is not considered a part of the road for these standards.

**“Snow Accumulation”** means the natural accumulation of any of the following, alone or together:

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

**“Snow Packed”** conditions refer to winter road conditions where the traveled surface of the road is covered with a buildup of snow and/or ice.



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**“Speed”** refers to the average speed at which an average automobile can safely travel on a road without the effects of traffic. This does not refer to design speed or legal speed unless specifically qualified. Posted speed is either legal or advisory.

**“Standards”** quantified statements, defining the nature of a product or activity. Usually such standards are minimum or desirable, and in this context refer specifically to the roadway service standards adopted as policy, by a roadway authority.

**“Storm”** conditions or effects are when natural or external effects are acting upon the roadway to reduce the condition as defined by one or more roadway service standards. It does not refer to weather conditions that do not impact on the infrastructure. Storm conditions could include wind, rising and/or moving water, precipitation, cold temperatures (below -15C), snowfall, freezing rain, hail, blowing snow, etc.

**“Substandard”** refers to a condition that is outside the defined standard. Normally a substandard condition requires a response, unless otherwise considered in the standard.

**“Supervisor”** refers to a person in the Public Works Department who is accountable for the deployment of operations that impact on the condition or roadway services.

**“Surface”** the exposed top of the traveled road and includes adjacent surfaces for turning or stopping, but not parking or shoulders.

**“System”** refers to a collection of roadways, typically of various classifications, owned by a single road authority.

**“User”** refers to any person traveling on or over the roadway, including vehicle operators, passengers and pedestrians.

**“Winter”** the season when cold weather effects on road conditions can be reasonably expected and as specified herein.

## Policy:

### Winter Response

This level of service policy covers these activities which are required to produce safe driving conditions for a driver acting responsibly, during those times of the year in which winter conditions can be anticipated.

An analysis of winter operational records for the period of 2001 to 2010 inclusive indicates that on average the first occasion for which a winter response is required will occur on or about November 15 and the commencement of continuous winter operations will typically occur beyond December 15 of each year. The need for an ongoing response will on average continue to approximately March 15 of each winter



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season and the last date for which a response is required will be about April 8 of each season. Acknowledging that winter conditions can occur before and after these periods, the City of Kawartha Lakes will prepare the conversion of its resources from summer to winter maintenance mode to meet the following state of readiness

Beginning of Winter	50% Operational	October 31
	100% Operational	November 15
	Initiate Night Patrol	November 15
End of Winter	100% Operational	March 31
	End of Night Patrol	March 31
	50% Operational	April 15

The winter control resources of the City of Kawartha Lakes consists of single axle, tandem axle combination plow/spreader trucks and graders equipped to plow (if required), with sufficient operators for the current number of plow routes, organized in a one day shift. In order to ensure that these resources are employed as efficiently and effectively as possible, the City of Kawartha Lakes adopts a policy of having the resources deployed generally when the needs are required as per the adopted Levels of Service.

An analysis of the variation of traffic over time, based on traffic engineering principles, demonstrates that 85 to 90% of the average daily traffic can be anticipated between the hours of 5 a.m. and 9 p.m. Therefore, the City of Kawartha Lakes will focus its efforts to meet this demand. Outside this period, the City employs a small number of additional operators to act during the evening and night time hours. The function of this partial second shift will be to maintain the main arterial roads in a safe and passable condition for emergency response purpose and to address localized substandard conditions that may be observed in the course of their rounds.

A full call out of winter maintenance resources between the hours of 9:00 pm and 4:00 am will not as a general rule be made except where weather and road conditions deteriorate to the state where the travelled road network has compromised the road users' safety. Otherwise, the City of Kawartha Lakes will strive to achieve the objectives of this policy through the use of the evening and night time hours as specified above.

Winter maintenance activities covered by this policy include snow fencing, continuous plowing, spot plowing, continuous sanding/salting, spot sanding/salting, ice blading, winging back banks, snow removal, the provision of winter drainage outlets, and road patrolling during normal ambient and storm conditions.

### **Snow Clearing Level of Service:**



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The policy for snow clearing is to deploy resources as soon as practicable to clear snow accumulations after becoming aware of the fact that the snow accumulation is greater than the depth set out in Table 1 below and to ensure that the accumulation of snow is maintained at a level less than or equal to the maximum depth indicated within the time allowed for in the policy for the duration of the storm. During the storm the objective will be to maintain only the through lanes but not less than 3.0 metres in width per lane and left hand turn lanes in each direction. Ancillary lanes such as right turn lanes, intersection ramps, acceleration/deceleration lanes, shoulders and parking lanes will only be treated after all roads have been addressed.

Once the snow accumulation has ended, and within the time specified after the end of the storm, the objective shall be to return the road to at least the minimum surface condition as shown in Table 1. Class 1, 2, 3 and 4 roadways, clearing operations will clear the snow from the edge of roadway and all ancillary lanes and ramps etc. Class 5 roads with two lanes, if after the snow accumulation has ended, the snow accumulation is greater than the depth set out in Table 1, the objective will be to clear the snow accumulation to a depth less than or equal to the depth set out in Table 1 and to a width of at least the width of the 3.0 metre lane and shall be maintained and open for the public's use within the time period, after the end of the storm. Once the snow pack has been adequately established on the roads, the objective will be to remove all new fallen snow and reinstate the hard pack surface with winter abrasives within the time frames indicated. Ice blading of snow packed surfaces will be undertaken as necessary to provide additional traction as determined by the Area Manager or designate (Supervisor, Acting Supervisor or Lead Hand under the direction of the Area Manager).

The maximum allowable accumulation provision of this policy does not apply to that portion of the road designated for parking. Snow removal from parking areas will only be completed after all other areas have been cleared.

Table 1 – Snow Accumulation Level of Service:

Minimum Maintenance Standards Classification	Response to Snow Accumulation		
Road Class	CKL Road Priority	Maximum Depth	Time Cycle
1	N/A	N/A	N/A
2	1-Arterial	2.5 cm	4 hours
3	1-Arterial	2.5 cm	4 hours
4	2 - Collector	8 cm	12 hours
5	3 - Residential	8 cm	12 hours

## Sanding and Salting:

The objective will be to deploy resources as soon as practicable, after becoming aware of the fact that the road surface is in a snow or ice covered condition and the safe





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operation has dropped below the threshold indicated in Table 2. The response will be to treat the road way or sections thereof with deicing chemicals and/or abrasives as appropriate to remove the ice or provide traction within the timeframes indicated in Table 2 for such response.

It is the objective of the actions taken to improve the surface conditions of the road within the time shown in Table 1, such that the safe operation on the road will meet or exceed levels as shown in the Table 2.

Table 2 – Icy Roads Response Level of Service:

CKL Road Priority	Response Time	Cycle Time
1 – Arterial	4 hours	6 hours
2 – Collector	8 hours	12 hours
3 – Residential	8 hours	12 hours

## Winging Back Of Snow Banks:

At various times during a winter season it may be necessary to wing back snow banks in order to reduce the height of the banks so that driver visibility is not impaired and/or provide space to store additional snow. Typically this work will be undertaken in rural and urban residential areas.

The objective will be to deploy resources on roadways within the response time frames after becoming aware that the snow banks exceed the height specified and to reduce the height of the banks to at or below the height indicated in Table 3 within the time frames specified for each classification of roadway.

Table 3 – Snow Bank Winging Back Level of Service:

	Objective to Address Snow Banks	Snow Bank Height	
CKL Road Priority	Response Time	Maximum Height (Metres)	Cycle Time
1 – Arterial	24 hours	0.9	24 hours
2 – Collector	48 hours	0.9	48 hours
3 – Residential	48 hours	0.9	48 hours

No objective is established for the necessity to wing back banks for purposes of creating additional snow storage. Such work will be undertaken as and when it is deemed necessary to do so by the Supervisor and time is available to undertake such work between winter events and other priority work.

## Snow Removal:



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Removal and disposal of snow in an approved snow disposal facility is carried out in those areas where inadequate physical space exists to store the snow and/or the presence of snow banks interferes with the movement of pedestrian traffic. Snow will be removed from the central business districts of the City of Kawartha Lakes and other designated built up areas within the City.

The objective will be to deploy resources on roadways within the response time frames after becoming aware that the snow banks parallel to the roadway and away from the legal cross walk areas exceed the height specified and to reduce the height of the banks to at or below the height indicated in Table 4 within the time frames specified for each classification of roadway.

Table 4 – Snow Removal Level of Service, Urban/ Built Up Areas, Roadside:

	Objective to Address Snow Banks	Snow Bank Height	
CKL Road Priority	Response Time	Maximum Height (Metres)	Cycle Time
1 – Arterial	48 hours	0.9	12 hours
2 – Collector	48 hours	0.9	24 hours
3 – Residential	48 hours	0.9	24 hours

At all cross walks and intersections the objective will be to deploy resources within the response time frames after becoming aware that the snow banks parallel to the roadway and away from the legal cross walk areas exceed the height specified and to reduce the height of the banks to at or below the height indicated in Table 5 within the time frames specified for each classification of roadway.

Table 5 – Snow Removal Level of Service, Cross Walks:

	Objective to Address Snow Banks	Snow Bank Height	
CKL Road Priority	Response Time	Maximum Height (Metres)	Cycle Time
1 – Arterial	24 hours	0.6	12 hours
2 – Collector	48 hours	0.6	24 hours
3 – Residential	48 hours	0.6	24 hours

## Winter Patrolling Level of Service –Winter Season Conditions:

Winter patrolling during the occurrence of winter events, conditions shall be in accordance with Table 7. Patrolling shall be carried out by driving or monitoring of weather service providers and other Value Added Meteorological Services (VAMS) to



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ascertain conditions and the need for a response. Patrolling of a representative sample of the road system shall be deemed to be sufficient to identify problem areas.

Table 6 – Winter Representative Patrolling – Winter Season Levels of Service:

CKL Road Priority	Cycle
1 – Arterial	1 x per day
2 – Collector	Once every 3 days
3 - Residential	Once every 7 days

## Winter Patrolling – Night, Evening and Weekend Conditions:

During the season when a municipality performs winter highway maintenance, the minimum standard for patrolling highways is, in addition to that set out to that noted above, to patrol highways that the municipality selects as representative of its highways, as necessary, to check for conditions requiring winter control maintenance. The City of Kawartha Lakes shall provide a winter night patrol between the hours of 3:30 p.m. and 7:00 a.m. for the period of the year when continuous winter operations can be anticipated. The purpose of the night patrol will be to monitor weather and roadway conditions during the night time hours and to assist in addressing localized substandard conditions found in the course of its patrolling. The objective will be to maintain the roads in passable condition until the regular shift comes on duty at 7:00am or commence full or partial maintenance operations at 4:00 a.m.

## Snow Fencing:

The City may erect snow fencing in rural areas where experience has identified a frequent localized build up of wind blown snow. Maintenance staff will monitor conditions over the course of the winter and identify potential sites where the erecting of snow fence has the potential to reduce the number of responses. The potential sites for installation of snow fence will be reviewed by area maintenance staff in the fall of each year and those locations having the greatest potential to reduce the number of site specific responses approved for the installation of snow fence. Snow fencing if deemed appropriate will be erected by November 15<sup>th</sup> of the year and will be removed not later than April 15<sup>th</sup> so as to not interfere with agricultural operations.

## Revision History:

Proposed Date of Review:

Revision	Date	Description of changes	Requested By