

Winter Maintenance Policy

Purpose

The purpose of the Winter Maintenance Program is to provide winter maintenance that effectively supports the health, attractiveness, and economic viability of this community. The purpose of this Policy is to provide winter maintenance guidelines for the Winter Maintenance Program. Both the policy and program are intended to be complimentary with the City of Regina Salt Management Plan. All activities in the program, in particular the Ice Control activity, will follow the intent, guidelines, and practices laid out in the Plan.

Scope

The scope of the Winter Maintenance Program and Policy addresses those public right of way assets involving:

- a) streets;
- b) sidewalks;
- c) alleys; and
- d) easements.

Not included in the scope of this Policy or the Program are public and private property or right of way assets that are located within City limits:

- a) in City parks and open spaces;
- b) on City facilities and properties or on properties that are controlled by the City;
- c) in the F.W. Hill Mall;
- d) on properties controlled by the Wascana Centre Authority;
- e) are the responsibility of Saskatchewan Highways; or
- f) on private roads, sidewalks, facilities, or properties.

The Winter Road Maintenance Program is comprised of the following general activities:

- a) snow plowing of roads, alleys and sidewalks;
- b) ice control of roads, alleys and sidewalks;
- c) snow removal;
- d) snow dump sites; (To Be Inserted at Later Date)
- e) spring runoff - catch basins and ditches; (To Be Inserted at Later Date);
- f) snow fencing; and (To Be Inserted at Later Date)
- g) success indicators, monitoring, documentation and reporting (To Be Inserted at Later Date)

Authority This Policy is established by City Council.

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Definitions

Bare Pavement – refers to a road surface condition where the wheel paths in driving lanes are generally visible. Ice, frost, or snow may remain in wheel paths which results in slippery conditions. Loose snow between or outside of the wheel paths is normally plowed. Generally 3 cm of compacted snow between or outside of the wheel paths is not plowed.

Ice Control – the application of aggregate abrasives and/or chemicals to a driving or walking surface to improve traction.

Normal Winter Driving Conditions – refers to the road conditions which result from adhering to a set of end condition statements as described in this Policy document.

Passability - refers to maintaining a driving lane in such a condition that police, fire, and ambulance vehicles can use the street in an emergency response.

Peak Traffic Hours – the hours between 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. Monday to Friday, excluding holidays.

Plow Snow (Alleys) – the pushing of accumulated snow from the centreline of the alley surface, leaving snow ridges on each side, such that one vehicle width is provided.

Plow Snow (Roads) - the pushing of accumulated snow from driving or parking lanes. The resulting snow ridges may be stored in centre medians or in parking lanes adjacent to the curb.

Plow Snow (Sidewalks) – the pushing of accumulated snow from the sidewalk surface, resulting in a minimum one metre wide compacted snow walking surface, leaving snow ridges on both sides of the sidewalk.

Plowed Around – during plowing operations a plow may travel around a parked vehicle leaving a snow ridge.

Road Categories for Systematic Plowing and Ice Control – every road segment within the entire road network is classified into one of five categories which are defined as follows:

Category 1	Freeways/expressways including ramps and loops, major arterial roads, and any road on a designated hospital emergency route.
Category 2	Minor arterial roads, major collector roads with traffic volumes > 5,000 vehicles per day and all roads in the area referred to as Regina downtown.
Category 3	Major collector roads (with traffic volumes < 5,000 vehicles per day), industrial/commercial roads, and any minor collector or major residential local roads on a designated transit or truck route.
Category 4	Minor collector roads and major residential local roads which lead into school bus unloading zones.
Category 5	Residential local roads.
Category 6	Gravel roads.

Road Segment – the distance between two intersections.

Rutting – refers to the wheel path troughs in compacted snow surfaces.

Salt Management Plan – the most recent version of the City’s “Plan” developed in accordance with Environment Canada’s “Code of Practice for the Environmental Management of Road Salts”.

Snow Event – a combination of snow or wind causing snow to accumulate on driving or walking surfaces. For the ice control activity, snow event shall also include rain or freezing rain or other weather conditions that have a similar effect on road surfaces. The end of a snow event is when winter precipitation no longer accumulates on roadway surfaces for a sufficient period of time to allow complete systematic plowing and ice control to be completed as specified in this Policy.

Snow Removal – refers to the reducing or cleaning away of snow ridges or piles. Typically, this is accomplished by redistributing this excess snow to existing snow ridges on the same block and if this is not possible then it is removed by loading and hauling off site.

Snow Ridge- the row of excess snow formed by plowing roads, alleys, or sidewalks.

Systematic Ice Control (Roads) – refers to a methodical approach taken to complete one ice control cycle on the road network as specified in this Policy following systematic road plowing or the end of a snow event.

Systematic Plowing (Roads) – refers to a methodical approach taken to complete one plowing cycle on the road network as specified in this Policy following the end of a snow event.

Typical Winter – refers to the average weather conditions for Regina between October and April including approximately: two blizzards lasting six hours or more per year; 30 blizzard hours per year; 50 days with snow fall per year; total annual snowfall of 105 cm; temperature ranges from 10°C to -50°C; and individual snow events less than 10 cm.

Windrowing – multiple snow ridges placed in an open field parallel with the road to minimize drifting snow from collecting on the road surface.

Policy Statement

1.0 GENERAL

The performance and end condition objectives outlined by this policy include the following underlying assumptions:

- a) That the operational activities are being undertaken during a typical weather event during a typical winter season. The City acknowledges that Regina may be subject to extreme or extraordinary weather which may diminish the City's ability to achieve the policy objectives within the stated time frames.
- b) The activities detailed herein attempt to reduce hazardous roadways conditions caused by winter weather; however, the City acknowledges that weather conditions are beyond the City's control and dangerous conditions may nonetheless result despite the City's efforts.
- c) That winter road safety is a cooperative activity between users of the roadways and the City. The City expects that users of the roadways will

exercise reasonable care for their own safety when travelling the roadways during winter conditions.

There are several general objectives which support the purpose of the program policy:

Objective #1	All roads are made passable for emergency (fire, police, ambulance) response vehicles.
Objective #2	Normal winter driving conditions and reasonable sidewalk access are provided on key routes through systematic plowing and sanding operations on priority one roads.
Objective #3	Normal winter driving conditions and reasonable sidewalk access are provided along regional commercial developments and secondary routes through systematic plowing and sanding operations on priority two roads.
Objective #4	Normal winter driving conditions are provided along tertiary routes through systematic plowing and sanding operations on priority three roads.
Objective #5	Safety and travel efficiency are provided through the plowing and removal of windrows from in front of guardrails and off of bridge decks.
Objective #6	Alleys are passable for the collection of solid waste collection and access by utility companies and the public.
Objective #7	Normal winter driving conditions are maintained through snow removal operations.
Objective #8	Residential and low volume routes are made passable through plowing operations.
Objective #9	Snow clearing is provided at City owned facilities to provide reasonable parking and access.
Objective #10	Snow clearing is provided on pathways in some parks and connecting walkways and in some open spaces which are typically in the vicinity of recreation centres.
Objective #11	Reasonable sidewalk access is provided through enforcement of the Regina Clean Property Bylaw, 1997.

When severe weather conditions reach a point where winter maintenance operations can not continue without compromising public and/or employee safety, temporary road closures may be implemented.

The Manager of Winter Maintenance, or his/her designate, makes the ultimate decision to temporarily close a road. When this occurs, the Public Works Dispatch Office shall contact:

- Traffic Operations Command Centre;
- Fire, Police, and Emergency Medical Services;
- City Central and City Manager's Office;
- Communications Division;
- Local radio/television newsrooms and the Leader Post.

The Manager of Winter Maintenance is responsible for the day-to-day operation and coordination of the Roadway Operations Winter Maintenance Program.

2.0 PLOWING

There are three operating environments involved in the snow plowing operation:

- During a snow event;
- Systematic road plowing; and
- Routine maintenance

2.1 ROADS

The City will classify the road network for snow plowing activities. In all three operating environments, road snow plowing will be conducted in accordance with the Road Categories for Systematic Plowing and Ice Control.

a) During a Snow Event:

- **General**

During a snow event, the first priority objective for road snow plowing is to maintain passability on roads for emergency response vehicles. As the end of the storm approaches, this operational objective becomes increasingly shared with the next operational objective, that of systematically plowing the road network. Plowing will be initiated on Category 1 and 2 roads when approximately 5 cm of snow has accumulated on the road surface during a snow event. When severe snow events occur, operations to establish and maintain passability may only focus on Category 1 and 2 roads.

- **Locations**

All roads which are not passable for emergency response vehicles.

- **Time Frames**

Time frames are not applicable during a snow event. Operations will continuously cycle for the duration of the snow event. Following typical snow events, all roads will be passable for emergency response vehicles within twenty-four hours from conclusion of snow event.

- **End Conditions**

Passability is maintained on as many roads as resources and weather conditions permit.

Snow and ice accumulation could remain on the road surface

Snow ridges across driveways, intersections, alleys, transit stops, and around parked vehicles may not be reduced in height.

b) Systematic Plowing:

- **General**

During systematic road plowing, the operational objective is to re-establish traffic flow in driving lanes and designated turning lanes. Systematic road plowing operations will be triggered by the following snow accumulations during a single snow event:

Category 1 and 2 roads – 5 cm

Category 3 and 4 roads – 10 cm

Category 5 roads – 25 cm

Category 6 roads – 10 cm

Systematic road plowing operations may also be triggered in other circumstances where there are several snow accumulations of less than 5 cm, and the Manager of Winter Maintenance will make the determination to call a systematic response if warranted.

- **Locations**

All roads provided snow accumulation has met or exceeded trigger values for each category.

- **Time Frames**

Systematic road plowing will be completed within the following time frames from end of snow event:

Category 1 roads within 24 hours
Category 2 roads within 36 hours
Category 3 roads within 48 hours
Category 4 roads within 60 hours
Category 5 roads – no time frames specified
Category 6 roads – within 60 hours

- **End Conditions**

Systematic road plowing is considered to be complete when the following conditions are met.

All Roads

Snow ridges will be reduced to a maximum height of 30 cm across driveways, intersections, alleys and signed unloading zones (including for school buses adjacent to schools and in front of senior's complexes with over 20 units in a single building).

Snow ridges will be reduced to a maximum height of 15 cm on Transit stops.

Snow ridges of any height may be left around parked vehicles.

Snow ridges placed in parking lanes may encroach up to 30 cm on to the sidewalk.

The driving lanes and designated turning lanes will be plowed to the following conditions during systematic plowing:

- Category 1 and 2 roads to bare pavement as defined
- Category 3 and 4 roads to a compacted snow surface of approximately 8 cm or less depth
- Category 5 roads to a compacted snow surface
- Category 6 roads to a compacted snow surface of approximately 8 cm or less depth

c) Routine Maintenance

- **General**

During routine maintenance, the operational objectives are to:

- a) Complete post snow event cleanup on the road network to establish normal winter driving conditions as defined for each category of road;
- b) Maintain the road network to normal winter driving conditions and correct deficiencies which result from cumulative light snow events, spot drifting, or traffic effects; and
- c) Prepare for future snow events.

Category 5 roads may be systematically plowed to reduce snow pack depth resulting from cumulative snow events.

- **Locations**

Routine maintenance is conducted on all roads in accordance with the Road Categories for Systematic Plowing and Ice Control.

- **Time Frames**

- a) Post snow event cleanup will be completed within the following time frames following systematic plowing completion:
 - Category 1 and 2 roads – seven days
 - Category 3 and 4 roads – 14 days
 - Category 5 roads – 21 days
 - Category 6 roads – 14 days
- b) Time frames are not applicable when maintaining the road network to normal winter driving conditions and correcting deficiencies which result from cumulative light snow events, spot drifting, or traffic effects.
- c) Time frame requirements are not applicable when preparing for future snow events.

- **End Conditions**

Normal winter driving conditions are considered to be established on roads when the following conditions are met:

- Snow ridges will be reduced to a maximum height of 30cm across driveways, intersections, alleys and signed unloading zones

(including for school buses adjacent to schools and in front of seniors' complexes with over 20 units in a single building).

- Snow ridges placed in parking lanes may encroach up to 30 cm on to the sidewalk. The outside base edge of the snow ridge will not exceed 60 cm from the curb face.
- On bridge decks and in subways snow ridges will generally be less than 1 metre high or 1.5 metres wide.
- Snow ridges in front of guard rails will generally be less than 30 cm in height.
- Maximum height of snow ridges within transit stops will be 15 cm and will not encroach onto the sidewalk.
- Transit stops will be a minimum of 12 m in length.

Driving lanes and designated turning lanes will be maintained to surface conditions as follows:

- Category 1 and 2 roads to bare pavement including a portion of the parking lanes adjacent to a snow ridge.
- Category 3 and 4 roads rutting in excess of approximately 8 cm will be addressed.
- Category 5 roads rutting in excess of approximately 10 cm will be addressed.
- Category 6 roads rutting in excess of approximately 8 cm will be addressed.

2.2 ALLEYS

The City does not classify the alley network for the purpose of prioritizing snow plowing activities in alleys.

a) During a Snow Event

- **General**

Typically, alleys will not be plowed during a storm event.

b) Systematic Plowing

- **General**

During systematic alley plowing, the operational objective is to return the alley network to normal winter driving conditions. Systematic alley plowing operations are triggered by a 25 cm snow accumulation during a single snow event.

- **Locations**

All alleys.

- **Time Frames**

Systematic alley plowing will be completed within 96 hours from the end of a snow event.

- **End Conditions**

Normal winter driving conditions are considered to be established on alleys when the following conditions are met:

- The compacted snow surface width will provide single vehicle passage.
- Snow ridges may be formed on both sides of the plowed surface.
- Snow ridges are not reduced in height across garages, driveways, or parking lot entrances.

c) Routine Maintenance

- **General**

During routine maintenance, the operational objective is to maintain normal winter driving conditions in alleys as defined. Alleys may be systematically plowed to reduce snow pack depth resulting from cumulative snow events.

- **Time Frames**

No time frames specified.

- **End Conditions**

The compacted snow surface width will provide single vehicle passage.

Rutting in the compacted snow surface will not exceed approximately 10 cm.

2.3 SIDEWALKS

The City does not classify the sidewalk network for the purpose of prioritizing snow plowing activities on sidewalks.

- a) **During a Snow Event**

Systematic sidewalk plowing operations will be triggered by 5 cm snow accumulations during a single snow event.

- b) **Sidewalk Plowing**

- **General**

The City will plow and maintain specific sidewalk locations.

- **Locations**

- Any sidewalk adjacent to a City owned building or property that is located within the area noted in Schedule B of The Clean Property Bylaw No. 9881.
 - Any sidewalk adjacent to a City owned building or parking lot that is regularly used by the public during the winter season, excluding outdoor rinks.
 - Any sidewalk adjacent to bridge decks and subways.
 - Any sidewalk adjacent to transit stops on the Heritage bus route which is not covered by The Clean Property Bylaw No. 9881.
 - Adjacent to no frontage locations.
 - Adjacent to storm channel and railway crossings on Category 1 and 2 streets.

- Adjacent to vacant land on Category 1 and 2 streets.
- Adjacent to city owned parks on Category 1, 2, 3, and 4 streets.
- Adjacent to city owned parks that are next to a public school.
- Adjacent to city owned buildings or parks not accessed by the public in winter on Category 1 and 2 streets.
- Adjacent to hospital gateway (sidewalks both sides on 14th Avenue from Broad Street to the alley east of Halifax Street).
- Adjacent to Core Community Park (Quebec Street side).

- **Time Frames**

Within 72 hours from end of snow event.

- **End Conditions**

Sidewalk locations will be maintained to a general width of 1 metre.

Sidewalk locations will be maintained to a compacted snow surface with a maximum depth of approximately 5 cm.

3.0 ICE CONTROL

There are three operating environments involved in the ice control operation:

- During a snow event;
- Systematic ice control; and
- Routine maintenance

Typically, ice control materials are only applied intermittently at spot sections along roads, alleys, or sidewalks. Continuous or uninterrupted application of ice control materials is not standard practice.

To determine if a spot section is treated with ice control material during any given cycle, staff judge the relative visibility of previously applied materials.

3.1 ROADS

The City will classify the road network for ice control activities. In all three operating environments, ice control will be conducted in accordance with the Road Categories for Systematic Plowing and Ice Control. For the ice control activity, time frames are typically expressed as a cycle frequency. Cycle frequency refers to the time interval between successive passes on a road to apply materials as judged by City staff.

a) During a Snow Event

• **General**

During a snow event, the operational objective of the ice control activity is to slow the rate of deterioration in driving conditions.

• **Locations**

During a snow event ice control operations on Category 1, 2, 3, and 4 roads will be initiated near the start of snow or freezing rain precipitation.

As snow or freezing rain precipitation continues, ice control operations will be increasingly directed, as determined by City staff, to Category 1 and 2 roads only.

• **Time Frames**

From near the start of snow accumulation to a point where approximately 2 cm of snow has accumulated during a single snow event on the road surface, cycle frequency will be as follows:

Category 1 roads (posted speeds > 70kph)	4 hour cycle
Category 1 roads (posted speeds < 70kph)	12 hour cycle
Category 2 roads	12 hour cycle
Category 3 roads	24 hour cycle
Category 4 roads	24 hour cycle

After approximately 2 cm of snow accumulation during a single snow event, cycle frequency will be as follows:

Category 1 roads (posted speeds) > 70kph	4 hour cycle
Category 1 roads (posted speeds) < 70kph	5 hour cycle
Category 2 roads	5 hour cycle
Category 3 and 4 roads	Not specified

• **End Conditions**

The effectiveness of ice control can not be pre-determined.

Spot sections of roads that are typically treated, based on the judgement of staff are:

- sections leading up to sign or signal controlled intersections and crosswalks;

- bridge decks and subways including the approach to and exit from;
- grades greater than 5%;
- ramps and merging lanes;
- curves located on Category 1 – 4 roads; or
- public and separate school frontage roads and those intersections immediately adjacent to school properties.

b) Systematic Ice Control

- **General**

During systematic ice control operations, the operational objective is to complete one cycle of ice control on spot sections of all roads which have been systematically plowed.

- **Locations**

All roads which have been systematically plowed.

- **Time Frames**

Systematic ice control will be completed within the following time frames:

Category 1 and 2 roads within four hours of systematic plowing.

Category 3 and 4 roads within eight hours of systematic plowing.

Category 5 and 6 roads within 24 hours of systematic plowing.

- **End conditions**

The effectiveness of ice control can not be pre-determined.

Spot sections of roads that are typically treated, based on the judgement of staff are:

- sections leading up to sign or signal controlled intersections and crosswalks;
- bridge decks and subways including the approach to and exit from;
- grades greater than 5%;
- ramps and merging lanes;
- curves located on Category 1 – 4 roads; or
- public and separate school frontage roads and those intersections immediately adjacent to school properties.

c) Routine Maintenance

- **General**

During routine maintenance for the ice control activity, the operational objectives are to:

- Complete one cycle of ice control following post snow event cleanup operations. This cycle will be similar to that provided during systematic ice control.
- Conduct routine ice control on each road category at a pre-determined cycle frequency.

- **Time Frames**

The one cycle of ice control will be completed within eight hours following post snow event clean-up operations.

Routine ice control cycle frequency will be as follows:

Category 1 roads (posted speeds > 70kph)	12 hour cycle
Category 1 roads (posted speed < 70 kph)	24 hour cycle
Category 2 roads	24 hour cycle
Category 3 roads	48 hour cycle
Category 4 roads	48 hour cycle
Category 5 roads	120 hour cycle
Category 6 roads	120 hour cycle

- **End Conditions**

The effectiveness of ice control can not be pre-determined.

End conditions are judged solely on whether cycle frequency time frames have been met.

Spot sections of roads that are typically treated, based on the judgement of staff are:

- sections leading up to sign or signal controlled intersections and crosswalks;
- bridge decks and subways including the approach to and exit from;
- grades greater than 5%;
- ramps and merging lanes;
- curves located on Category 1 – 4 roads; or

- public and separate school frontage roads and those intersections immediately adjacent to school properties.

3.2 Alleys

The City does not classify the alley network for the purpose of prioritizing ice control activities in alleys.

Ice control activities for alleys are conducted as time and resources permit. No time frames are specified for ice control in alleys.

- **Locations**

Alleys that will be considered for ice control activity must:

- Have a majority of commercial or apartment building properties adjacent to the alley;
- Be adjacent to school parking lot entrances or school bus unloading zones that are located in an alley; or
- Have grades exceeding 5%

- **End Conditions**

The effectiveness of ice control can not be pre-determined.

Ice control will be applied on spot sections at the alley exit points and on grades exceeding 5%.

3.3 Sidewalks

The City does not classify the sidewalk network for the purpose of prioritizing ice control on sidewalks.

- **Locations**

- Any sidewalk adjacent to a City owned building or property that is located within the area noted in Schedule B of The Clean Property Bylaw No. 9881.
- Any sidewalk adjacent to a City owned building or parking lot that is regularly used by the public during the winter season, excluding outdoor rinks.
- Any sidewalk adjacent to bridge decks and subways.
- Any sidewalk adjacent to Transit stops on the Heritage bus routes which are not covered by The Clean Property Bylaw No. 9881.
- Adjacent to no frontage locations.

- Adjacent to storm channel and railway crossings on Category 1 and 2 streets.
- Adjacent to vacant land on Category 1 and 2 streets.
- Adjacent to city owned parks on Category 1, 2, 3, and 4 streets.
- Adjacent to city owned parks that are next to a public school.
- Adjacent to city owned buildings or parks not accessed by the public in winter on Category 1 and 2 streets.
- Adjacent to hospital gateway (sidewalks both sides on 14th Avenue from Broad Street to the alley east of Halifax Street).
- Adjacent to Core Community Park (Quebec Street side).

- **Time Frames**

Ice control activities following freezing rain events will be completed within 72 hours from end of event.

Ice control activities on compacted snow surfaces as determined by staff have no time frame for completion specified.

- **End Conditions**

The effectiveness of ice control can not be predetermined.

End conditions are not specified.

4.0 SNOW REMOVAL

- **General**

Plowing and ice control activities take precedence over snow removal activities both during a snow event and during systematic plowing or systematic ice control operations. Snow removal operations may be suspended at the beginning of snow events or during systematic operations so resources can be reallocated to address non-typical winter conditions and higher priority objectives.

- **Locations/Time Frames/ End Conditions**

- a) At the following locations, snow ridges of any height caused by plowing will be cleared from those areas within the time frames noted.
 - In school bus unloading zones at schools within 48 hours of road plowing (curb face showing).
 - In unloading zones in front of seniors complexes with over 20 units in a single building within 14 days of plowing.

- In disabled metered parking stalls within 24 hours of plowing.
- b) At the following locations, snow ridge heights caused by plowing will comply with the sight line controls as set out in section 69 and Schedule H of the Traffic Bylaw within the time frames noted:
 - At intersections adjacent to school properties and, at school fence gates that are opening onto roads within seven days of plowing. The snow ridge will be reduced at these locations to a maximum height of 30 cm.
 - At signal or sign controlled pedestrian corridors within 14 days of plowing.
 - At intersections on Category 1 and 2 roads, within 14 days of plowing.
- c) Snow removal involving load and hauling off site will generally be initiated when:
 - On blocks where the school bus unloading zones are located, snow ridges in excess of 75 cm exist – within 14 days of plowing.
 - In metered parking stalls, snow ridges in excess of 60 cm within 14 days.
 - Snow ridges generally greater than 1 m in height that impact travel widths or sight lines as determined by City staff on:
 - Category 1 and 2 roads;
 - Roads within the area bounded by Victoria Avenue to College Avenue and Albert Street to Broad Street;
 - 4th Avenue to Dewdney Avenue and Albert Street to Toronto Street;
 - Roads immediately adjacent to Regina General Hospital;
 - 14th Avenue from Halifax Street to Broad Street;
 - 15th Avenue from Broad Street to Winnipeg Street; and
 - Category 3 roads needed to provide City Transit with adequate travel width.

