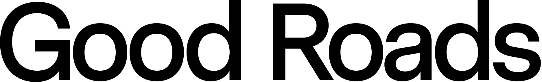
**Municipal Logo**

# Winter Operations Plan

**“Municipality Name”**

**Approved by Council: Date**

***This winter operations plan is a “living” document that is reviewed and updated annually****.*

****Logo

Description automatically generated with medium confidence

**Please read the following**

**Every municipality can use this document as a template for creating a Winter Operations Plan. This document is written as an example for a municipality with a single shift operation. Every municipality using this template is required to modify the document to accurately describe your operation.**

Most sections of the template will have a text box like this that will include instructions on how to complete each section of the plan or describe other resources that may be needed to complete your plan.

Example wording and tables are provided in each section which can be revised, replaced, or deleted to accurately describe your operation. Highlighted text will need to be filled in or revised.

NOTE: Delete all grey boxes and highlighting when complete.

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# Purpose

The purpose should describe what the municipality wants to achieve for winter maintenance.

In accordance with bylaw \_\_\_\_\_\_\_\_ the **“Municipality Name”** sets out a standard operational procedural framework for ensuring that **“Municipality Name”** continuously provides for the effective delivery of winter maintenance services that meet the level of service as set out in this plan and the expectations of those living in our community.

This Winter Operations Plan for **“Municipality Name”** was endorsed by council on the \_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_20\_\_

# Definitions

**Anti-icing:** The application of liquid de-icers directly to the road surface in advance of a winter event.

**De-icing:** The application of solids or pre-treated material to the road surface at the on-set of and during a winter event.

**Highway:**Includes a common and public highway, street, avenue, parkway, driveway, square, place, bridge, viaduct or trestle, any part of which is intended for or used by the general public for the passage of vehicles and includes the area between the lateral property lines thereof.

**MMS:**Refers to Ontario Regulation 239/02 Minimum Maintenance Standards for Municipal Highways as amended from time to time.

**Paved Road:** A road with an asphalt surface, concrete surface, composite pavement, or portland cement.

**Pre-treat:** The application of liquids (calcium chloride, sodium chloride, etc.) to dry sand or salt prior to being loaded for storage or applied to the road surface.

**Pre-wetting:** The application of liquids (calcium chloride, sodium chloride, etc.) at the spinner of the truck just prior to application to the road surface.

**Significant Weather Event:** An approaching or occurring weather hazard with the potential to pose a significant danger to users of the highways within a municipality.

**Surface Treated Road:** A road with bituminous surface treatment comprised of one or two applications of asphalt emulsion and stone chips over a gravel road.

**Unpaved Road:**A road with a gravel, stone or other loose traveling surface.

**Winter Event:**A weather condition affecting roads such as snowfall, wind blown snow, freezing rain, frost or ice to which, a winter event response is required.

**Winter Event Response:**A series of winter control activities performed in response to a winter event.

* **Continuous Winter Event Response:** A response to a winter event with full deployment of manpower and equipment that plow/salt/sand the entire system.
* **Spot Winter Event Response:**A response to a winter event with only a part deployment of manpower and equipment or with full deployment to only part of the system.

**Winter Event Response Hours:**The total number of person-hours per year (plowing, salting/sanding, winging back, etc.) to respond to winter events.

# 1.0 Winter Operations – Goal

Goals describe why the service is provided and what to expect from it.

**“Municipality Name”** public works staff will strive, insofar as reasonably practicable, to provide safe winter road conditions for vehicular and pedestrian traffic as set out in this Winter Operations Plan and within the resources established by the Council of **“Municipality Name”**.

# 2.0 Winter Operations – Objective

# “Municipality Name” will provide efficient and cost-effective winter maintenance to ensure, insofar as reasonably practicable, compliance with applicable provincial legislation and accepted standards while striving to minimize adverse impacts to the environment. These commitments will be met by:

Objectives are specific aspects of the goals to be attained.

* Adhering to the procedures contained within the Winter Operations Plan.
* Optimizing the use of winter maintenance materials containing chlorides on all municipal roads to minimize negative impacts to the environment.
* Committing to ongoing winter maintenance staff training and education.
* Annually monitoring winter maintenance operations, as well as the effectiveness of the Winter Operations Plan to allow the municipality to evaluate and phase-in any changes, new approaches and technologies in winter maintenance activities in a fiscally sound manner.
* Ensuring any modifications to winter maintenance activities do not compromise roadway safety while confirming the management of road salt used in winter maintenance operations, complies with Environment Canada’s Code of Practice for the Environmental Management of Road Salts

# 3.0 Winter Maintenance Program

### 3.1 The System Maintained

**“Municipality Name”** is responsible for winter maintenance on the following roads, sidewalks, separated bike lanes, walkways, trails, parking lots and transit stops. A map(s) of the system maintained showing the various plow routes, sidewalk routes etc., plus classes of road and priority roads within each plow route is included in Appendix 1 as a supplement to the table.

Delete tables that do not apply. Modify the tables as needed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Summary of Plow Routes – Urban Roads** | | | | | |
|  | Classes of road within route (MMS class 1 through 6) | Length of route (km) | Function of road within route (arterial, collector, local residential) | Surface type (paved, surface treated, unpaved) | Description of priority roads within each route |
| Route 1 |  |  |  |  |  |
| Route 2 |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
| **Summary of Plow Routes – Rural Roads** | | | | | |
|  | Classes of road within route (MMS Class 1 through 6) | Length of route (km) | Function of road within route (arterial, collector, local residential) | Surface type (paved, surface treated, unpaved) | Description of priority roads within each route |
| Route 1 |  |  |  |  |  |
| Route 2 |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
| **Summary of Salting Routes – Urban Roads** | | | | | |
|  | Classes of road within route (MMS Class 1 through 6) | Length of route (km) | Function of road within route (arterial, collector, local residential) | Surface type (paved, surface treated, unpaved) | Description of priority roads within each route |
| Route 1 |  |  |  |  |  |
| Route 2 |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
| **Summary of Salting Routes – Rural Roads** | | | | | |
|  | Classes of road within route (MMS Class 1 through 6) | Length of route (km) | Function of road within route (arterial, collector, local residential) | Surface type (paved, surface treated, unpaved) | Description of priority roads within each route |
| Route 1 |  |  |  |  |  |
| Route 2 |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
| **Summary of Anti-icing Routes** | | | | | |
|  | Classes of road within route (MMS Class 1 through 6) | Length of route (km) | Function of road within route (arterial, collector, local residential) | Surface type (paved, surface treated, unpaved) | Description of priority roads within each route |
| Route 1 |  |  |  |  |  |
| Route 2 |  |  |  |  |  |
|  |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
| **Summary of Sidewalk Routes** | | | | | |
|  | Classes of road within route (MMS Class 1 through 6) | Length of route (km) | Function of road within route (arterial, collector, local residential) | Surface type (asphalt, concrete) | Description of priority sidewalks within each route |
| Route 1 |  |  |  |  |  |
| Route 2 |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- | --- |
| **Summary of Walkway/Trail Routes** | | | | | | |
|  | Location | Length of walkway/trail (km) | Function of walkway/trail (hiking only, multi-use) | Surface type (paved, unpaved) | AODA Compliant (yes/no) | Description of amenities maintained in winter |
| Trail name |  |  |  |  |  |  |
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| --- | --- | --- | --- |
| **Summary of Transit Stops** | | | |
| Street | Location | Type pf transit stop | Description of amenities at each stop |
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### 3.2 Winter Maintenance Season

Dates for the beginning and end of the winter maintenance season could be written using specific date references e.g., November 15th of each year through to and including April 15th of the next year following. Or the date could be more generic, e.g., the 3rd Monday of November of each year through to and including the 2nd Friday of April of the next year following.

NOTE: The start and end date for the Winter Maintenance Season shown in this section is based on your experience (which could be a 5-year average) as to when the 1st winter event of the season normally occurs and the usual date of the last winter event.

The winter maintenance season within which **“Municipality Name”** will perform winter highway maintenance commencing on **“date”** through to and including “date” of the next year following. Winter events may occur prior to the start date or after the end date listed above. If an early or late storm were to occur **“Municipality Name”** will be prepared for the winter event by complying with sections 3.3.2, 3.3.3, 3.6.1 and 3.6.2 of this plan.

### 3.3 Winter Preparations

In the months prior to the start of the winter maintenance season, as identified in 3.2, the **“Municipality Name”** undertakes the following tasks to prepare for the upcoming winter season.

### 3.3.1 (x) months Prior to the Winter Season

Identify in the title for 3.3.1 the number of months in advance of the winter season, as identified in 3.2, the municipality begins preparations for winter maintenance. Example information is provided in 3.3.1, 3.3.2, 3.3.3 and 3.3.4. These sections must accurately describe the preparations made for winter.

The Director of Public Works or designate will:

1. Prepare and call tenders for supply of materials (salt, sand, liquid), value added meteorological services (VAMS) and contract equipment (plow trucks, sidewalk plows, etc.).
2. Ensure replacement parts (for plows, plow trucks, solid and liquid application equipment) are replenished.
3. Conduct a mandatory training session for all supervisors, patrolpersons, operators, contract operators and call centre operators where all policies, procedures, schedules, reporting procedures for callout, route maps, record keeping, equipment training, and safety precautions will be discussed. Any issues resulting from the meeting regarding the policies, procedures, schedules, reporting procedures for callout, route maps, record keeping, equipment training, and safety precautions will be resolved either at the meeting or prior to the winter season.
4. Ensure patrolpersons will receive additional training on the route of representative roads and sidewalks to be patrolled, their duties during a winter event, record keeping requirements, callout procedures and the de-icing chemicals to be applied for the forecast weather conditions.
5. Inspect equipment to ensure proper working order. All repairs will be completed one month in advance of the start of the winter season (3.2).
6. Confirm that staff have inspected all guiderail, catch basin and fire hydrant markers, steep hill, sharp curve ahead warning signs, bridges ices signs, if any, are in place. Missing or damaged signs and markers will be replaced prior to the winter season.

### 3.3.2 One Month Prior to the Winter Season

The Director of Public Works or designate will:

1. With the input and approval of the Mayor, post on media sources, as outlined in section 3.4.10, a notice reminding the public that winter is coming. The notice will include but will not be limited to: winter levels of service, operational plans, winter driving tips and the publics responsibilities in winter.
2. Post the winter shift schedule.
3. Assign equipment to staff.
4. Ensure all material application equipment is calibrated. Complete a Calibration Test Form, found in Appendix 2 for each spreader unit.
5. Ensure all operators are given sufficient time to familiarize themselves with any new equipment, material application rates, material application equipment and their route (driving the route and noting obstacles along the route).
6. Ensure all operators (staff and contract) drive their route to note any features/obstacles/hazards along the route.
7. Arrange for the delivery of materials (salt, sand and liquid solution) and begin filling storage facilities.
8. Assign staff to monitor and record weather forecasts as per the requirements of the MMS.
9. Have 50% of the fleet ready to respond to a winter event.
10. Have sufficient staff available to operate the fleet if conditions warrant a winter event response.

### 3.3.3 Two Weeks Prior to the Winter Season

The Supervisor will:

1. Have the full complement of the fleet ready to respond to a winter event.
2. If weather monitoring indicates that there is a substantial probability of snow accumulation on roadways, ice formation on roadways or icy roadways, a patrol of representative highways will be undertaken at intervals deemed necessary by the supervisor, to check for such conditions.
3. Have staff available to operate the required complement of the fleet if conditions warrant a winter event response.

### 3.3.4 At the Start of the Winter Season

The Supervisor will:

1. Implement the winter shift schedule.
2. Ensure that weather monitoring, patrolling and the response to winter events are completed as per this winter operations plan.

### 3.4 Level of Service

Insert your council approved Level of Service (LOS) policy. If the municipality does not have an LOS policy, then include the statement below to recognize that the municipality meets the MMS. As an alternate you could copy and paste the sections of the MMS that relate to winter. REMEMBER you will need to state here what the level of service is for Class 6 Roads.

**“Municipality Name”** provides a level of service in response to a winter event that meets the requirements of Ontario Regulation 239/02 Minimum Maintenance Standards for Municipal Roads as amended from time to time. For Class 6 roads the level of service is

**(fill in the blank)**.

### 3.4.1 Winter Patrol

Upon the forecast of an approaching winter event and at the discretion of the supervisor or designate, a patrol of the route of representative roads and sidewalks will be conducted to monitor and record observed weather and road conditions The route of representative roads and sidewalks will be the priority for the patrolperson. The condition of multi-use trails, parking lots and transit stops will be inspected, and a winter event response initiated, if required, as soon as practicable during the storm.

At the discretion of the supervisor and/or patrolperson, the direction in which the route of representative roads and sidewalks is patrolled will be, based on the direction from which the forecast winter event is coming. Sidewalks on the route of representative roads that are monolithic with the curb will be observed from the patrol truck. Sidewalks that are in the boulevard will be physically inspected by walking upon the sidewalk to observe conditions at intervals of **(x)km** between physical inspections. The route of representative roads and sidewalks may be modified depending on the type and severity of winter event or the direction from which the storm approaches. The patrolperson will request permission from the supervisor or designate to modify the patrol. A map of the route of representative roads and sidewalks is included in Appendix 3.

Accurately describe winter patrol procedures for your municipality in this section. This example is based on a single day shift operation. Ensure you describe any variations that may be made to the route.

A description of patrolling sidewalks is included. Please revise to include how your municipality observes sidewalk condition in winter. The interval in which you observe sidewalks must be reasonable. If, for example, the route of representative roads and sidewalks is 50km long and there are sidewalks along the entire route, is it reasonable to inspect the in-boulevard sidewalk 10 times along that route? To answer that question, you need to know the volume of pedestrian traffic, are there sidewalks to schools or arenas that may require inspection at frequent intervals as compared to a sidewalk that has lesser usage.

Prior to the storm the patrolperson will:

* Patrol the route of representative roads and sidewalks.
* Record on the log shown in Appendix 4 all weather, road and sidewalk condition observations as well as any actions taken.
* If the patrolperson identifies that a response to a winter event is required, the patrolperson will notify the supervisor or designate who will initiate a callout by contacting the call centre, see 3.4.10.

During a storm the patrolperson will:

* Verify that operations are proceeding as planned.
* Notify the supervisor or designate if alternative strategies may be required due to a change in the type of event, severity of event or change in wind direction or intensity.
* Monitor multi-use trails, parking lots and transit stops to determine if a winter event response is required.
* Monitor regulatory signs (stop signs, speed limit signs), warning signs and traffic signal heads to ensure that they have not been covered by snow and ice. If required, arrange to be cleaned as soon as practicable after the storm ends.

At the end of the storm the patrolperson will:

* Confirm that the level of service has been achieved.

If a winter event is forecast prior to the start of the next scheduled patrolperson’s shift a night and/or weekend patrol(s) of a route of representative roads and sidewalkswill be scheduled at the discretion of the supervisor or designate.

### 3.4.2 Operations

The major activities related to winter maintenance are:

* Placing and removing snow fence
* Anti-icing
* Snow plowing, roads, sidewalks, bike lanes, multi-use trails, parking lots and transit stops
* De-icing, roads, sidewalks, bike lanes, multi-use trails, parking lots and transit stops
* Snow melting
* Salt and sand storage
* Snow removal
* Snow storage

Include in the following table a description of how and when the service will be provided. If the response varies for different classes of road, list each class separately. If there are roads with priorities, such as a road with a hospital on it, those priorities should be described for each road class.

|  |  |
| --- | --- |
| Service Area | Service Description |
| Roads | Anti-icing |
| De-icing |
| Plowing |
| Snow Removal |
| Snow storage |
| Integral  Bike Lanes | De-icing |
| Plowing |
| Physically Separated Bike Lanes | De-icing |
| Plowing |
| Sidewalks | De-icing |
| Plowing |
| Multi-use Trails | De-icing |
| Plowing |
| Parking Lots | De-icing |
| Plowing |
| Transit Stops | De-icing |
| Plowing |

### 3.4.3 Staffing and Hours of Work

All public works staff (supervisor, patrolperson, operator) work a scheduled 07:00 to 15:30 shift Monday to Friday. For winter events that begin during normal shift, staff will remain on duty until the lesser of reaching the level of service or their hours of service as per Ontario Regulation 555/06 has been reached. Winter events that are forecast to begin overnight prior to the next scheduled shift or on weekends, the supervisor or designate will either arrange for staff to start their shift early to clear priority roads prior to 06:00 or call staff out as needed. On weekends staff will be on-call.

Include contractor employees in the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Staffing for Winter Maintenance** | | | | |
| **Employee** | **Job Title** | **Contact Information** | **Unit Assigned** | **Assigned Route** |
| Patrol 1 |  |  |  |  |
| Name #1 | Supervisor |  |  |  |
| Name #2 | Patrolperson |  |  |  |
| Name #3 | Operator |  |  |  |
| Patrol 2 |  |  |  |  |
| Name #1 | Supervisor |  |  |  |
| Name #2 | Patrolperson |  |  |  |
| Name #3 | Operator |  |  |  |

### 3.4.4 Application Rates

Use the table(s) which apply or create your own table(s). Delete tables that do not apply.

|  |  |  |  |
| --- | --- | --- | --- |
| **Solids** | **Spreading Rates per 2 lane km** | | |
| **Highway Class** | **Pre-wet Salt** | **Dry Salt** | **Sweetened Sand (X)% NaCl** |
| Class 1 |  |  |  |
| Class 2 |  |  |  |
| Class 3 |  |  |  |
| Class 4 |  |  |  |
| Class 5 |  |  |  |
| Class 6 |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Application Rates per kg/2 lane km for Onboard Pre-wet Road Salt** | | | |
|  | **Temperature** | | |
|  | 0 to -5oC | -5 to -10oC | -10 to -18oC |
| Frost |  |  |  |
| Light snow |  |  |  |
| Heavy snow |  |  |  |
| Freezing rain |  |  |  |

|  |  |
| --- | --- |
| **Liquids – Direct Application** | **Application Rates litres per lane km** |
| **Frost and Black Ice Prevention** | |
| Light traffic/low speed |  |
| Heavy traffic/high speed |  |
| **Anti Icing – Preventing or Reducing Bond to Road Surface** | |
| Light traffic/low speed |  |
| Heavy traffic/high speed |  |
| **De-icing** | |
| Mild temperature/ light precipitation |  |
| Cold temperature/moderate precipitation |  |

### 3.4.5 Equipment - Winter Maintenance Fleet

The municipality provides winter maintenance services on **“number”** routes with the equipment listed in Appendix 5.

### 3.4.6 Snow Removal and Disposal

Currently, municipal staff removes and hauls snow to the sites listed in the table below when the accumulation of piled snow impedes the flow traffic on the road and/or sight lines at intersections. At the end of each storm, the supervisor or designate will determine if snow removal is required and arrange for the removal and hauling of snow to the disposal site as soon as practicable.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Location** | **Surface** | | **Drainage/Run Off** | | **Surrounding Land Use** | | | |
| **Paved** | **Unpaved** | **Controlled** | **Uncontrolled** | **West** | **East** | **North** | **South** |
| Site #1 |  |  |  |  |  |  |  |  |  |
| Site #2 |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

### 3.4.7 Vulnerable Areas

Describe the methods used by the municipality to minimize the impacts of salt on vulnerable areas. Include in Appendix 6 a map of the vulnerable areas within your municipality.

### 3.4.8 Weather Monitoring

To prepare for an effective winter event response and allocate the appropriate resources the call centre, supervisor or designate and patrolperson receives weather forecasts from a Value-Added Meteorological Service **name the service**once every shift or three (3) times per day whichever is more frequent. The forecast data is stored by the service provider in perpetuity. The patrolpersons log of observed weather conditions acquired during a patrol supplements the weather forecast.

### 3.4.9 Significant Weather Event

A significant weather event will be declared when a winter event is either forecast or occurring and meets one of the following requirements:

1. Heavy snowfall/blizzard – Has a snow accumulation greater than **(x)cm/hr** that has reduced visibility to **<(x)m** and a duration of greater than **(x) hours**.
2. Blowing snow/snow squall – Has a wind intensity greater than **(x)km/h** that has reduced visibility to **<(x)m** and a duration of greater than **(x) hours**.
3. Freezing rain – With an accumulation of greater than **(x)mm**.

The Director of Public Works, with input from the supervisor or designate, will declare a significant weather event and notify the call centre to post/send the declaration to the public via the methods listed in 3.4.10.

When the winter event ends, and staff can provide service that meets the tables in sections 4, 5 and the timeframes in sections 16.3, 16.5 and 16.6 of the MMS, the Director of Public Works, with input from the supervisor or designate, will declare that the significant weather event has ended and notify the call centre to post/send the declaration via the methods listed in 3.4.10.

### 3.4.10 Communications

Provide information on how staff communicates with one another, emergency services and the public during the winter season. Example provided.

All winter maintenance vehicles, municipally owned and contract, are equipped with two-way radio communications. All operations staff and contract staff are responsible for reporting changing winter weather and/or road conditions to the call centre and/or supervisor or designate as changes are observed.

For two weeks prior to and throughout the winter season, as identified in 3.2, the call centre is staffed 24 hours per day 7 days a week. The call centre serves as the main hub for incoming and outgoing calls from staff, emergency services and the public. The call centre will continue operation for two weeks after the end of the winter season as identified in 3.2.

All municipal staff who receive an email, phone call or in-person message from any member of the public will complete a Request for Service Form (Appendix 4) and relay that report to the call centre, who will log the report and pass the information to the supervisor or designate.

With the approval of the Mayor and Director of Public Works, the call centre will provide communication with the public and external organizations via:

* Press releases sent to **(list all radio and television stations plus all  
  emergency services)**
* Information posted on the municipality’s website
* Information posted on social media **(list all social media sites used)**

### 3.4.11 Call Out Procedures

The patrolperson will inform the supervisor or designate of changing of road and weather conditions observed in the field. When it is determined that a winter event response is required, the supervisor or designate will contact the call centre. The call centre will contact staff as per the direction given by the supervisor or designate. In the absence of the supervisor the patrolperson will be designated to initiate a call out in response to a winter event. The call centre will log the date and time when the call out was initiated and who was called. Staff are required to respond within **½ hour** of receiving the call from the call centre.

### 3.4.12 Road Closure Procedures

Upon receiving a request from **“the name of the local police service”** to close a road to traffic, the supervisor or designate will organize manpower and equipment to place signs and barricades as soon as practicable. The supervisor or designate will contact the call centre and request a media release be sent as per 3.4.10 advising of the road closure. Roads will be deemed to be closed to traffic once the signs and barricades are placed.

When a winter event affects all roads and it is physically impossible to place signs and barricades to close all roads, the supervisor or designate will request that the call centre send a media release to the list of external organizations as per 3.4.10 advising that all roads within **“Municipality Name”** are closed to traffic.

### 3.5 Yard Facilities

In the table below describe the buildings used to store equipment and the capacity for storage of sand, salt and liquids. Ensure that the description is complete and provides sufficient information on the type of building, age, condition, etc. If outside storage is used indicate what is stored outside. Indicate whether equipment washing is inside or outside, if there is a separate wash bay and how wash water is collected and treated, if any. For site drainage, describe what the site discharges to and if there are any controls on what is discharged.

Describe the housekeeping practices in place to manage the day-to-day delivery and loading of salt and the clean-up of a salt spill.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Location** | **Equipment Storage** | | | **Material Storage** | | |
|  | Description | Equipment Washing | Site Drainage | Sand | Salt | Liquids |
| Patrol Yard #1 |  |  |  |  |  |  |
| Patrol Yard #2 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

### 3.6.0 Decommissioning Winter Operations

When the winter season identified in 3.2 expires Public Works will undertake the following tasks to decommission winter operations.

1. The regular winter shift schedule will cease.
2. Staff will continue to monitor and record weather forecasts once every shift or 3 times per day, whichever is more frequent until April 30th.
3. If the weather forecast identifies an approaching winter event, the supervisor or designate will schedule a patrol of the route of representative roads.
4. The fleet of equipment will remain ready to respond to a winter event.
5. Staff will be available on call after normal work hours if conditions warrant a winter event response.

### Two Weeks After the Winter Season Ends

Two weeks after the winter season ends, if long range weather forecasts permit, decommission 50% of the fleet and decommission the call centre.

### 3.6.2 One Month After the Winter Season Ends

One month after the winter season ends cease all winter highway maintenance operations and decommission the remainder of the equipment providing weather forecasts warrant the decommissioning.

### 3.7.0 Training

If training is provided by outside sources identify the training provider and the topics covered*.*

**“Municipality Name”** provides winter operations training for all staff involved in the delivery of winter services. It is compulsory for all staff, **including contractor staff**, to attend the annual training session. The modules covered by the training are shown in the “Record of Operator Training” or the “Record of Patroller Training” included in Appendix 7. Staff, **including contractor staff**, will verify that the training was received by signing the training record.

**3.8.0 Record Keeping**

Modify the above list to reflect the records your municipality keeps.

Full and accurate completion of the documents listed below and included in Appendix 4 ensures that the municipality is protected from liability by providing solid documentation that procedures have been followed.

Staff are responsible for keeping the following records:

Equipment Operators:

* CVOR Hours of Service
* Operators Log – Appendix 4

Patrolperson

* Patrol Record – for routine patrols
* Winter Patrol Record – Appendix 4

Supervisor

* Operations Diary
* Incident/Collision Reports

Call Centre

* Request for Service – Appendix 4
* Call Out Log

On all logs, the date will be recorded as Day/Month/Year written in a numerical format (27/01/23). The time shall be documented using the 24-hour clock format.

The original copy of documents will always be retained regardless of their appearance. Writing must be legible and written in ink. Stains or dirt on the documents are not an issue. If a document requires correction, line out the incorrect information with a single line leaving the incorrect information legible and continue writing on the original document. Initial all corrections.

Records will be completed daily and forwarded to the Director of Public Works weekly for retention.

# 4.0 Monitoring and Updating

The purpose of monitoring and updating winter operations is to provide a basis for continuously improving winter maintenance policies, practices, and procedures. To ensure consistent monitoring of operations a series of performance measures, as shown in the table below, will be used to determine whether the objectives of the Winter Operations Plan and/or winter maintenance policies, practices, and procedures have been met. The performance measures will be used to demonstrate year over year changes in policies, practices, and procedures have improved operations.

At the end of the winter season, as identified in 3.2, a meeting to review winter operations will be held each year with all winter operations staff. The purpose of this meeting is to itemize all issues that arose during the winter season and discuss how these issues may be resolved. Prior to the start of the next winter season and with sufficient lead time to implement any changes, the Director of Public Works shall:

* Revise policies, practices, and procedures in accordance with changing legislation and input received from staff.
* Revise this plan to reflect the changes to policies, practices, and procedures.
* Have changes to policies, practices, procedures, and plan approved by council.
* Train staff on changes to policies, practices, procedures, and plan.

|  |  |  |  |
| --- | --- | --- | --- |
| Winter Operations Performance Measurement Program | | | |
| Financial | Customer | Quality | Management |
| % of annual road budget spent on to winter maintenance | total number of winter event responses that meet or exceed the level of service policy | % of winter event responses that met the MMS | Total number of winter event response hours |
| % of annual winter maintenance budget spent | % of survey responses received where the respondent is satisfied with winter operations | Number of winter event responses where the road system was returned to bare pavement within 24 hours after the end of a winter event | Total number of continuous winter event response hours |
| $ of reserve account funds spent on winter operations | % of total complaints received over the winter season due to winter road condition |  | Total number of spot winter event response hours |
| $ per lane km road winter maintenance |  |  | Total cm of snowfall for the winter season |
| $ per m2 sidewalk winter maintenance |  |  | Total number of days with measurable snowfall |
|  |  |  | Total number of days with freezing rain |
|  |  |  | Total tonnes of salt, sand and liquids used for the season |

# Appendix 1 – Plowing, Sanding/Salting, Sidewalk Routes, Trail Routes, Parking Lots and Transit Stop Locations

# Provide a map(s), if a map is not available provide a description or location.

**Appendix 2 – Calibration Test Form**

|  |  |  |  |
| --- | --- | --- | --- |
| Truck # | Make/Model | | Year |
| Spreader Type | | Spreader controller | |
| Date | Calibrated by | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test | Setting for Verification Test | | | | Solid Discharge | | | | Liquid Discharge | | | |
| Set Application Rate (kg/km) | Set Pre-wetting Rate (litre/kg) | Set Simulated Truck speed (km/h) | Test Time (seconds) | Test Solid Discharge  (kgs) | Controller Recorded  Solid Discharge (kgs) | Theoretical Solid  Discharge (kgs) | Acceptable  Discharge Range  Amount (kgs) | Test Liquid  Discharge (litre) | Controller Recorded  Liquid Discharge  (litre) | Theoretical Liquid  Discharge (litre) | Acceptable  Discharge Range  Amount (litre) |
| 1 | 70 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | 70 |  |  |  |  |  |  |  |  |  |
| 3 | 70 |  |  |  |  |  |  |  |  |  |
| Average | | | | |  |  |  |  |  |  |  |  |
|  | | | | | | | | | | | | |
| 1 | 130 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | 130 |  |  |  |  |  |  |  |  |  |
| 3 | 130 |  |  |  |  |  |  |  |  |  |
| Average | | | | |  |  |  |  |  |  |  |  |
|  | | | | | | | | | | | | |
| 1 | 170 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | 170 |  |  |  |  |  |  |  |  |  |
| 3 | 170 |  |  |  |  |  |  |  |  |  |
| Average | | | | |  |  |  |  |  |  |  |  |

# Appendix 3 – Route of Representative Roads and Sidewalks

# Provide a map indicating the route of representative roads to be patrolled during the winter season. If a map is not available provide a description of the route.

**Appendix 4 Records**

Insert examples of the records your municipality uses.

**Winter Patrol Record**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date of Patrol: | | Condition Codes | | Action Requires |
| Start of Patrol (Time): | End of Patrol (Time): | ü | Observed Condition requiring a Winter Event Response | Schedule operations to comply with MMS or LOS |
| Patrolled by: | | X | Observed Condition No Response Required | No action required |
| Signature: | | N/A | Not applicable | No action required |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Weather | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clear | |  | Time: | | Wind | | | | | Light: | | | |  | | | | Moderate: | | | |  | | | | | Strong: | | |  |
| Partly Cloudy | |  | Time: | | Direction: | | | | | | | | | | | | | | | | | | | | |
| Overcast | |  | Time: | | Visibility | | | | | Good | | | |  | | | | Time: | | | | | | | | | | | | |
| Rain | |  | Time: | | Fair | | | |  | | | | Time: | | | | | | | | | | | | |
| Snow | |  | Time: | | Poor | | | |  | | | | Time: | | | | | | | | | | | | |
| Freezing Rain | |  | Time: | | Weather Comments: | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fog | |  | Time: | |
| Results of the Patrol Representative Roads | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Location | | | | | Road Surface, Bicycle Lanes, Sidewalk Conditions | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Name | From | | | To | Pavement Temperature | Maintenance Class |  | Bare & Dry  Partially Snow Covered |  | |  |  |  | | Snow Covered | Snow Packed | Ice Covered | | Drifting | Black Ice | Frost | | Sush |  | Bike lane requires service Y/N  Sidewalks on this road section Y/N | Bike lanes on this road section Y/N | | Sidewalk requires service Y/N | Comments | |
|  |  | | |  |  |  | Air Temperature |  | Bare & Wet | |  | Partially Snow Packed | Partially Ice Covered | |  |  |  | |  |  |  | |  |  |  |  | |  |  | |
|  |  | | |  |  |  |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  |  | |  |  | |
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### 

### Town of \_\_\_\_\_\_\_\_\_\_\_ Service Request

|  |  |  |
| --- | --- | --- |
| Report Date: | | Taken by: |
| Report Time: | |
| How Received: phone call in-person email other | | |
| Problem Reported: | | |
| Name & Address:  Telephone #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_fax#\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_email\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Assigned to: Public Works Parks Building Dept Property Stds Other \_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Signed: (person receiving request) | | |
| Date (received by department) | Time (received) | |
| Service Response: emergency maintenance standards apply no standard | | |
| Requires field review to confirm issue | | |
| Signed: (person in assigned department) | | |
| Action taken: | | |
| Completed on Date: Time: | | |
| Comments: | | |
| Signed: | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Date of Patrol: | Equipment: | Weather | | | | | | | | | | |
| Clear |  | Time: | Wind | Light: |  | Moderate: | |  | Strong: |  |
| Start of Patrol (Time): | End of Patrol (Time): | Partly Cloudy |  | Time: | Direction: | | | | | | |
| Overcast |  | Time: | Visibility | Good: | |  | Time: | | | |
| Operator: | | Rain |  | Time: | Fair: | |  | Time: | | | |
| Snow |  | Time: | Poor: | |  | Time: | | | |
| Signature: | | Freezing Rain |  | Time: | Weather Comments: | | | | | | | |
| Fog |  | Time: |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ü** **= Work** **Completed**  Use a separate sheet if additional space is required.  **Continuous** **Winter** **Event** **Response** is a response to a winter event with full deployment of employees and equipment that plow/salt/sand the entire route.  **Spot Winter Events Response** is a response to a winter event with only a part deployment of employees and equipment or full deployment to only part of the route. | | | | | | **Continuous Winter Event Response**  Winging Back Windrow  Ice Blading  Sanding Only  Salting Only  Plowing | | | | | | | | | | **Comments** |
|  |  | Plowing and Salting |  | Salt Application Rate | Plowing and Sanding | Sand Application Rate |  |  |  |  |
| **Work completed 1st pass** | | Start Time: | | End Time: | |  |  |  |  |  |  |  |  |  |
| **Work completed 2nd pass** | | Start Time: | | End Time: | |  |  |  |  |  |  |  |  |  |
| **Work completed 3rd pass** | | Start Time: | | End Time: | |  | Spot Ice Blading  Spot Plowing  Spot Plowing and Salting  Spot Plowing and Sanding |  | Salt Application Rate |  | Spot Sanding Only |  |  |  |
| **Spot Winter Event Response** | | | | | |  |  | Spot Salting Only |  |  |  |  | Sand Application Rate |  | Snowbank Removal |
| Road: | From: | | To: | | Start Time: |
|  |  | |  | |  |  |  |  |  |  |  |  |  | Spot Winging Back Windrow |  |
|  |  | |  | |  |  |  |  |  |  |  |  |  |  |  |
|  |  | |  | |  |  |  |  |  |  |  |  |  |  |  |
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|  |  | |  | |  |  |  |  |  |  |  |  |  |  |  |

**Winter Operation Log – Route 1**

**Appendix 5** – **Winter Maintenance Equipment**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Unit # | Make, model & year | Describe plow equipment | Describe spreader equipment | Infrared thermometer  (Y/N) | Located at Patrol # | Assigned to route # |
| Supervisor and Patrolperson Equipment | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Road Maintenance Equipment | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Contractor Road Maintenance Equipment | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Sidewalk Maintenance Equipment | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Contractor Sidewalk Maintenance Equipment | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Other Equipment | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

# Appendix 6 – Vulnerable Areas

**Provide a map of the salt vulnerable areas within the municipality.**

# Appendix 7 – Records of Training Received

(Municipal Logo

And name) **Record of Operator Training**

This statement certifies that **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name)** has completed the in-house Operator Training program as required by **“Municipality Name”** Winter Operations Plan.

The Winter Operator Training program is comprised of the following modules:

* Equipment Circle Check
* Equipment Calibration
* Spreader Controls
* De-icing chemicals – application rates, storage and handling
* Identification of road salt vulnerable areas and the procedures to follow in those areas
* Plow Controls
* Record Keeping
* Health and Safety
* Level of Service – policies, practices, and procedures
* Identification of Plow/Salting Routes – including variations from previous year
* Typical Hazards – that may be present along the route
* Yard and Equipment maintenance

Employee Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Location of Training\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Trainer Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Supervisor Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Municipal Logo

And name)

**Record of Patroller Training**

This certifies that **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name)** has completed the in-house Winter Operations – Patroller Training as required by **“Municipality Name”** Winter Operations Plan.

The Winter Operations – Patroller Training includes the operator training plus the following modules:

* Interpreting weather forecasts
* Interpreting pavement temperature and dew point
* De-icing chemicals (salt, sand, liquids) – usage, eutectic temperature, application rates, storage and handling
* Route of Representative Roads and Sidewalks including areas with steep hills, sharp curves, areas prone to icing early or snow drifting plus variations allowed to the route
* Level of Service – policies, practices and procedures
* Identify Plow/Salting/Sidewalk/Trail/ Transit Stops and Parking Lot Routes
* Identification of road salt vulnerable and/or susceptible areas and the procedures to follow in those areas
* Identify the impacts of traffic on the road surface and locations where a road to may ice earlier than other roads
* Winter Shift Schedules
* Call-out procedures
* Emergency contacts
* Record Keeping
* Health and Safety
* Yard and Equipment maintenance

Employee Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date of Training\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Location of Training\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Trainer Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Supervisor Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_