



Appendix A

Winter Operations Planning Document for Municipality of Middlesex Centre

(Winter Season 2021-2022)

Approved by Council on 2021-Oct-27



A. Purpose

This winter operations plan sets out a policy and procedural framework for ensuring that the Municipality of Middlesex Centre continuously improves on the safe and sustainable delivery of winter maintenance services and the effective and efficient use of road salt in their winter maintenance operations. This plan supersedes all previous plans for the Municipality of Middlesex Centre.

The plan is meant to be dynamic, to allow the municipality to evaluate and phase-in any changes, new approaches and technologies in winter maintenance activities in a fiscally sound manner. At the same time, any modifications to municipal winter maintenance activities must ensure that roadway safety is not compromised.

This Winter Operations Plan for the Municipality of Middlesex Centre was endorsed by council on the 27 day of October 2021.

B. Definitions

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

Continuous Winter Event Response is a response to a winter event with full deployment of manpower and equipment that plow/salt/sand the entire system.

De-icing means the application of solids, liquids, pre-treated material to the road surface after the on-set of the winter event.

Director, Public Works and Engineering is the person who is on duty, directing the snow/ice removal operations of the Municipality of Middlesex Centre.

Highway means 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.

Paved Road means a road with an asphalt surface, tar and chip surface, concrete surface, composite pavement, or portland cement.

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

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

Route of Representative Roads is another term used for patrol routes.

Salt Route is a collection of road segments, which during a winter storm will receive applications of salt to prevent the formation of a bond between snow and pavement, or if such a bond has already formed, to break that bond. Typically such routes have some sort of bare pavement level of service. Under certain circumstances (e.g. extremely cold pavement temperatures such that road salt would not be effective at bond breaking or prevention) sand may be applied to such routes to provide a temporary increase in grip.

Sand Route is a collection of road segments which during a winter storm will receive applications of sand to provide a temporary increase in grip. Typically such routes include gravel and other unpaved roads, where the use of salt or other freeze-depressant materials might impact road stability. The level of service on such routes would not have bare pavement as a service goal.

Spot Winter Event Response is a response to a winter event with only a partial deployment of manpower and equipment or with full deployment to only part of the system.

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

Unpaved Road is a graded road with a gravel, stone or other loose traveling surface.

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

Winter Event Response is a series of winter control activities performed in response to a winter event.

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

1. Object of Winter Operations Management

The Municipality of Middlesex Centre is committed to providing safe and sustainable winter maintenance operations while continuing to improve those operations to provide safety and mobility for the traveling public. As an integral part of this effort the Municipality of Middlesex Centre will strive to optimize the use of all winter maintenance materials as they pursue the goal of a safe and sustainable transportation system.

the Municipality of Middlesex Centre public works staff will strive, insofar as reasonably practicable, to provide safe winter road conditions for vehicular and pedestrian traffic as set out in the level of service policies and within the resources established by the Council of the Municipality of Middlesex Centre.

2. Policy Statement

The Municipality of Middlesex Centre will provide efficient and cost effective winter maintenance to ensure, insofar as reasonably practicable, the safety of users of the municipal road network in keeping with applicable provincial legislation and accepted standards while striving to minimize adverse impacts to the environment. These commitments will be met by:

- Adhering to the procedures contained within the Winter Operations Plan; Reviewing and upgrading the Winter Operations Plan on an annual basis to incorporate new technologies and new developments;
- Committing to ongoing winter maintenance staff training and education; and Monitoring on an annual basis, the present conditions of the winter maintenance program, as well as the effectiveness of the Winter Operations Plan.

3. Quick Overview of the Municipality of Middlesex Centre

Type of Organization: Municipal

Structural Level: Lower Tier Municipality

Estimated Population: 18,000

Total Area: 588.0 Square kilometres

Total Road Center Line Kilometers: 583 km's

Total Kilometers of Sidewalk: 30 km's

Street Address: 10227 Ilderton Road, Ilderton, Ontario N0M 2A0, Canada

Telephone: 519-666-0190

Website: www.middlesexcentre.on.ca

Director, Public Works and Engineering: Rob Cascaden, P.Eng,
Phone: 519-666-0190, ext 245

Police: Ontario Provincial Police, Contact Person: N/A, Primary Phone: 1-888-310-1122

Contractors: N/A

4. Winter Maintenance Program

4.1. The System Maintained

The major activities related to winter maintenance are:

- Anti-icing
- Snow plowing
- Salt/Sand application
- Snow removal
- Sidewalk plowing
- Multi-use pathway plowing (select paths)
- Municipal parking lot plowing

The Municipality of Middlesex Centre is responsible for winter maintenance on:

Road Category	Urban Road (Lane Km)	Rural Roads (Lane Km)	Total Length (Lane Km)
Class 3	4.4	160.44	164.84
Class 4	25.36	747.72	773.08
Class 5	102.92	0	102.92
Class 6	7.4	94.16	101.56
Total Lane Km			1,142.4

4.2. Level of Service

The Municipality of Middlesex Centre provides the following level of service in accordance with Provincial [Minimum Maintenance Standards](#) during the winter maintenance season, and as set out in 4.3, in response to a winter event.

The minimum standard for clearing snow accumulation is as follows.

4.2.1. Snow Accumulation and Ice Formation Policy

Snow Accumulation:

- The standard for addressing snow accumulation is:

- After becoming aware of the fact that the snow accumulation on a roadway is greater than the depth set out in the Table to this section, to deploy resources as soon as practicable to address the snow accumulation; and
- After the snow accumulation has ended, to address the snow accumulation so as to reduce the snow to a depth less than or equal to the depth set out in the Table within the time set out in the Table:
 - To provide a minimum lane width of the lesser of three metres for each lane or the actual lane width, or
 - On a Class 4 or Class 5 highway with two lanes, to provide a total width of at least five metres. O. Reg. 47/13, s. 4.
- If the depth of snow accumulation on a roadway is less than or equal to the depth set out in the Table to this section, the roadway is deemed to be in a state of repair with respect to snow accumulation. O. Reg. 47/13, s. 4.
- For the purposes of this section, the depth of snow accumulation on a roadway and, if applicable, lane width under subsection (1)(b), may be determined in accordance with subsection (4) by a municipal employee, agent or contractor, whose duties or responsibilities include one or more of the following:
 - Patrolling highways.
 - Performing highway maintenance activities.
 - Supervising staff who perform activities described in paragraph 1 or 2. O. Reg. 47/13, s. 4.
- The depth of snow accumulation on a roadway and lane width may be determined by:
 - Performing an actual measurement;
 - Monitoring the weather; or
 - Performing a visual estimate. O. Reg. 47/13, s. 4.
- For the purposes of this section, addressing snow accumulation on a roadway includes, but is not limited to:
 - Plowing the roadway;
 - Salting the roadway;
 - the application of other chemical or organic agents to the roadway;
 - Applying abrasive materials to the roadway; or

- Any combination of the methods described in clauses (a), (b), (b.1) and (c). O. Reg. 47/13, s. 4.
- This section does not apply to that portion of the roadway designated for parking. O. Reg. 47/13, s. 4.
- If at any time a municipality declares a weather emergency, then all roadways within the municipality are deemed to be in a state of repair in respect of any snow accumulation present, until the applicable time under the Table to this section expires following the end of the declared weather emergency.

Ice Formation:

- The standard for attempting the prevention of ice formation on roadways is doing the following in the 24-hour period preceding an alleged formation of ice on a roadway:
 - Monitor the weather in accordance with section 3.1.
 - Patrol in accordance with section 3.
 - If the municipality determines, as a result of its activities under paragraph 1 or 2, that there is a substantial probability of ice forming on a roadway, treat the roadway to attempt to prevent ice formation within the time set out in the Table to this section, starting from the time that the municipality determines is the appropriate time to deploy resources for that purpose. O. Reg. 47/13, s. 5.
 - If the municipality meets the standard set out in subsection (1) and, despite such compliance, ice forms on a roadway, the roadway is deemed to be in a state of repair until the earlier of:
 - The time that the municipality becomes aware of the fact that the roadway is icy; or
 - The applicable time set out in the Table to this section for treating the roadway to prevent ice formation expires. O. Reg. 47/13, s. 5.
- The standard for treating icy roadways after the municipality becomes aware of the fact that a roadway is icy is to treat the icy roadway within the time set out in the Table to this section, and an icy roadway is deemed to be in a state of repair until the applicable time set out in the Table for treating the icy roadway expires. O. Reg. 47/13, s. 5.
- For the purposes of this section, treating a roadway means applying material to the roadway, including but not limited to, salt, sand or any combination of salt and sand. O. Reg. 47/13, s. 5.
- If at any time a municipality declares a weather emergency, then all roadways within the municipality are deemed to be in a state of repair in respect of any ice present,

until the applicable time under the Table to this section expires following the end of the declared weather emergency.

Snow Accumulation

Class of Highway	Depth	Time
1	2.5 cm	4 hours
2	5 cm	6 hours
3	8 cm	12 hours
4	8 cm	16 hours
5	10 cm	24 hours

Ice Formation Prevention

Class of Highways	Time
1	6 hours
2	8 hours
3	16 hours
4	24 hours
5	24 hours

Treatment of Icy Roadways

Class of Highways	Time
1	3 hours
2	4 hours
3	8 hours
4	12 hours
5	16 hours

The snow accumulation and ice-formation policies are attached herein as a separate document, in Appendix 3-1.

4.2.2. Private Sidewalk Responsibility

Sidewalk clearing adjacent to the roadway is the responsibility of Middlesex Centre.

4.2.3. Plowing Private Property

Private properties are the responsibility of respective owners.

4.3. Winter Season Maintenance

For Operational purposes, the Municipality of Middlesex Centre assumes the winter season commences on 2021-Nov-01 and is completed by 2022-Mar-31, while acknowledging that winter events may occur outside of this timeframe.

4.4. Winter Preparations

In the months prior to the start of the winter maintenance season, as identified in 4.3, the Municipality of Middlesex Centre undertakes the following tasks to prepare for the upcoming winter season.

4.4.1. Prior to Winter Season

Prior to the winter season, if required, prepare and call tenders for the supply of materials (e.g. salt, sand, liquid, etc.), replacement parts (for plows, solid and liquid application equipment), value added meteorological services (VAMS) and contract equipment (e.g. plow trucks, spreader trucks, combination units, etc.).

Sometime prior to the winter season the Municipality of Middlesex Centre will:

- Conduct a mandatory training session for staff and contract operators where all policies, procedures, schedules, reporting procedures for callout, route maps, equipment training and safety precautions will be discussed. Any issues resulting from the meeting with regard to the policies, procedures, schedules, reporting procedures for callout, route maps, equipment training and safety precautions shall be resolved either at the meeting or prior to the winter season.
- Train winter patrollers (or staff whose duties also include patrolling) on the route of representative roads 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.
- Inspect equipment to ensure proper working order. Schedule and complete any and all equipment repairs.
- Arrange for the delivery of materials (salt, sand and liquid solution) and begin filling storage facilities. If liquid solution is mixed on site, begin mixing and filling storage tanks.
- Confirm that all guiderail, catchbasin, hazard and fire hydrant markers, steep hill, sharp curve ahead warning signs, bridges ices sign, if any, are in place. Any missing markers should be replaced prior to the winter session.

4.4.2. One Month Prior to the Winter Season

One month prior to the winter season the Municipality of Middlesex Centre will:

- Prepare the winter shift schedule in accordance with the municipality's policies, if any.
- Assign equipment to staff.
- Calibrate material application equipment.
- Allow operators (staff and contract) 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).
- Monitor weather forecasts on a daily basis. Upon the forecast of an approaching winter event, schedule a patrol of a route of representative roads. If a winter event is forecast prior to the start of the next scheduled shift a night and/or weekend patrol(s) of a route of representative roads will be scheduled. If a night or weekend patrol is scheduled the patroller should monitor and record the weather forecast and road conditions. The patrol person should be authorized to initiate a winter event response if conditions warrant a response.
- Have 50 % of the fleet ready to respond to a winter event.
- Have sufficient staff available to operate the fleet if conditions warrant a winter event response.

4.4.3. Two Weeks Prior to the Winter Season

Two weeks prior to the winter season the Municipality of Middlesex Centre will:

- Prepare night patrol schedule of representative roads
- Have 100 % of the fleet ready to respond to a winter event.
- Have staff available to operate the required complement of the fleet if conditions warrant a winter event response

4.4.4. At the Start of the Winter Season

At the start of the winter season:

- Implement the winter shift schedule. (Morning Shift- 5:00am-1:30pm, Day Shift- 7:30am-4:00pm, Evening Shift 3:30pm-12:00 midnight)

- Begin patrolling representative roads in all roads/areas that the organization is responsible for
- Respond to winter events as per the winter operations plan.

4.5. Winter Patrol

During the winter maintenance season, 4.3, the Municipality of Middlesex Centre carries out a winter patrol on a route of representative roads three times daily Monday to Friday, and twice daily on weekends and holidays, 7 days a week. Between winter events a patrol of representative roads will occur during each scheduled shift and twice on weekends and holidays. The purpose of the patrol is to monitor and record weather and road conditions and mobilize winter maintenance operators and equipment should a winter event be observed and a winter event response is required. On the approach of a winter event or during a winter event the route of representative roads may be modified, insofar as reasonably practicable, depending on the type and severity of winter event or the direction from which the storm approaches. The patrol person will be familiar with local conditions in their patrol area, and report to a supervisor or lead hand as required to mobilize any required maintenance activities. The winter patrol schedule parallels the designated winter season.

4.6. Operations

4.6.1. Staffing and Hours of Work

The Municipality of Middlesex Centre has a full time employee assigned to each vehicle used for winter operations. Each vehicle is assigned a route for sanding/salting and/or plowing.

The Municipality operates three staggered shifts 5:00 a.m. to 1:30 p.m., 7:30 a.m. to 4:00 p.m., and 3:30 p.m. to 12:00 midnight. Monday to Friday. The supervisory staff is also tasked with patrolling during each shift to inspect and document roads deficiencies. Staff are also deployed 24/7 as required to address winter storms beyond the aforementioned shifts as deemed necessary by the on-duty supervisor.

The Municipality of Middlesex Centre adheres to the hours of service as dictated by Highway Traffic Safety Act, Reg. 555/06 (Ontario, Canada).

Middlesex Centre currently employs 16 equipment operators, 2 mechanics/operators, 2 lead hands, 2 assistant road supervisors, and 1 road supervisor. This is in addition to 6 full time seasonal operators and 1 part time road patroller, and 2 casual operators. The total staffing complement is as follows:

- Full time equipment operators - 16
- Full time Mechanics/Operators - 2
- Lead hands - 2
- Assistant road supervisors - 2
- Road supervisor - 1
- Full time seasonal operators - 6
- Part time road patroller - 1
- Casual operators - 2
- Total available winter maintenance staffing levels - 32

Some of the key responsibilities associated with the management and overseeing of winter operations for this winter season are as below:

- Transportation Manager will receive issues and concerns of the citizens regarding snow and ice control efforts, and decisions regarding general operation.
- Director, Public Works and Engineering will be responsible for making decisions regarding the declaration of snow events.
- Road Supervisor will be authority to which the field staff will communicate the field conditions to.
- Road Supervisor will be responsible for shift scheduling.
- Road Supervisor will (when physically possible) be responsible for providing appropriate signage and or barricade in case a road has to be closed due to severe winter storm.
- Director, Public Works and Engineering will ensure media releases are sent to local news and radio stations advising of road closures.
- Transportation Manager will be second in command to the Director, Public Works and Engineering.

4.6.2. Winter Material Used Annually

Primary Solid Material	Brand Name or Supplier	Expected Quantity This Season vs. Actual Quantity Last Season	Comes Pre-Mixed With	In-House Mix Added
Salt (NaCl)	Minerals	3900.0 Tonnes (Can) vs. 3900.0 Tonnes (Can)		Sand 80.0% Salt 20.0%

4.6.3. Application Rates

Min. and Max. Ranges (Kilograms/Lane-Kilometer)

	0.0° to -5.0° Celsius	-5.0° to -10.0° Celsius	-10.0° to -18.0° Celsius
Frost	30.0 – 60.0	60.0 – 80.0	80.0 – 100.0
Light Snow	60.0 – 80.0	80.0 – 120.0	120.0 – 140.0
Heavy Snow	100.0 – 130.0	130.0 – 150.0	150.0 – 170.0
Freezing Rain	110.0 – 130.0	130.0 – 170.0	170.0 – 180.0

4.6.4. Equipment - Winter Maintenance Fleet

The Municipality of Middlesex Centre provides winter maintenance services on 15 routes with the equipment listed in Appendix 3.

Consisting of:

- 14 pieces of combination road plowing and de-icing equipment
- 1 one ton truck with plow and sander
- 1 ¾ ton truck with plow and sander
- 5 road plowing graders
- 3 front-end loaders
- 2 rubber tired backhoes; and,
- 2 sidewalk machine

4.6.4.1. Mechanics

The Municipality of Middlesex Centre has:

- 2 in-house mechanic(s) available
- 0 external (e.g. contracted) mechanic(s) available

Facilities with mechanics include:

- Denfield Operations Centre

The timings for the above mechanics are as below:

- 7:30am – 4:00pm

4.6.5. Winter Maintenance Facilities

The Municipality of Middlesex Centre provides winter maintenance services from the winter maintenance facilities listed below.

4.6.5.1. Denfield Operations Centre

Facility Type: Patrol Yard

Facility Address: 23053 Denfield Road, Ilderton – Middlesex – Middlesex Centre, Ontario N0M 2A0, Canada

Facility Phone: 519-666-2390

Number of Front-end Loaders: 2

Year Built: 2011

Design and Logistics:

- All materials are handled in a designated area characterized by an impermeable surface
- Equipment is in place to prevent overloading of trucks
- System is in place for collection and/or treatment of wastewater from cleaning of trucks
- Control and diversion of external waters (not impacted by salt) is in place
- Ongoing clean-up of the site surfaces and spilled material is swept up quickly
- Risk management and emergency measures plans are in place

Material Storage Details:

- Material is stored inside the salt/sand shed

- The salt/sand shed presently stores:
 - Salt – 660.0 Tonnes(Can)
 - Sand – 3300.0 Tonnes(Can)

Equipment Storage Details:

- Snow Plows, Graders, Pickup Trucks, Front End Loaders, Backhoes
- Total Number of Bays: 18 (1 dedicated for washing - 2 dedicated for Mechanics)
- Equipment washing details

Miscellaneous Material Details:

- Granular material stored on site at rear of building

4.6.5.2. Delaware Operations Centre

Facility Type: Patrol Yard

Facility Address: 805 Gideon Drive, London, Ontario N6P 1P2, Canada

Facility Phone: 519-471-5197

Number of Front-end Loaders: 1

Year Built: 2011

Design and Logistics:

- All materials are handled in a designated area characterized by an impermeable surface
- Equipment is in place to prevent overloading of trucks
- System is in place for collection and/or treatment of wastewater from cleaning of trucks
- Control and diversion of external waters (not impacted by salt) is in place
- Ongoing clean-up of the site surfaces and spilled material is swept up quickly
- Risk management and emergency measures plans are in place

Material Storage Details:

- Material is stored inside the salt/sand shed

- The salt/sand shed presently stores:
 - Salt -340.0 Tonnes
 - Sand– 1700.0 Tonnes(Can)

Equipment Storage Details:

- Equipment is stored indoors
- Total Number of Bays: 6 (1 dedicated for washing - 1 with oil-and-grit separators)

4.6.6. Parking Lots

The Municipality of Middlesex Centre provides winter maintenances services to two municipal parking lots Arva lot located at 14352 Medway Road and Ilderton lot located east of 13224 Ilderton Road, maintenance and resources are deployed as quickly as reasonably possible noting parking lots are not a priority. Staff also plow and apply sand/salt mixtures to 22 PWE facilities:

Property Name	Site Address	Town/Village
Arva Wastewater Pumping Station	21444 Richmond Street	Arva
Birr Water Treatment Facility	158 Gwendolyn St.	Birr
Delaware Re-chlorination Facility	969 Gideon Dr.	Delaware
Delaware Water Tower	11229 Longwoods Rd.	Delaware
Denfield Water Facility	23856 Denfield Rd.	Denfield
Ilderton Water Facility	13467 Ilderton Rd.	Ilderton
Ilderton Water Tower	22821 Hyde Park Rd.	Ilderton
Ilderton Wastewater Treatment Facility	147 Meadowcreek Dr.	Ilderton
Ilderton Pump Station #1	69 Timberwalk Trail	Ilderton
Ilderton Pump Station #2	13464 Ilderton Rd.	Ilderton
Kilworth Wastewater Treatment Plant	22265 Jefferies Rd.	Kilworth
Kilworth Pump Station #1	71A Blackburn Crescent	Kilworth
Kilworth Pump Station #2	Yet to be determined	Kilworth
Komoka BPS	171 Queen St.	Komoka
Komoka Water Tower	10073 Oxbow Dr.	Komoka
Komoka IPS	166 Railway Ave	Komoka

Property Name	Site Address	Town/Village
Komoka Wastewater Treatment Facility	22280 Komoka Rd.	Komoka
Komoka Pump Station	22597 Komoka Rd.	Komoka
Melrose Water Treatment Facility	7 Wynfield Gate	Melrose
Longwoods Enviro Depot	10191 Longwoods Rd	Delaware
Denfield Operations Centre	23053 Denfield Rd	Denfield
Delaware Operations Centre	805 Gideon Dr.	Delaware

4.6.7. Snow Removal and Disposal

The Municipality of Middlesex Centre has two designated snow disposal sites located at the enviro depots (23053 Denfield Road, and 10191 Longwoods Road), both locations have been reviewed by the Ministry of Environment and Climate Change, and are fenced and screened to prevent unwanted dumping.

The municipality will undertake snow removal when equipment and staffing resources permit to remove sight obstructions and safety hazards as a result of snow plowing activities (snow banks). Staff will also clear bus stop locations if and when staff and equipment resources permit, these activities are not deemed priority and may take place sometime well after a snow event has occurred.

4.6.8. Plow Routes

Appendix 2 contains a map of plow routes.

4.6.9. Salt Vulnerable Areas

N/A.

4.6.10. Weather Monitoring

In order to determine an effective winter event response and allocate the appropriate resources the Municipality of Middlesex Centre supplements their general observations with weather information from various sources which includes:

- OGRA Weather Tracking Service

4.6.11. Communications

Maintaining reliable internal communications is a critical component of winter operations. The Municipality of Middlesex Centre uses the following:

- All winter maintenance vehicles are equipped with two way communications.

All citizen issues concerning snow and ice control efforts will be routed to the Transportation Manager. The Director, Public Works and Engineering will determine appropriate follow-up responses to citizen inquiries.

The municipality provides external communication with the general public via:

- Information posted on the municipality's website: www.middlesexcentre.on.ca/roads

4.6.12. Boundary Street Jurisdiction and Responsibility

Middlesex Centre maintains boundary agreements with adjacent municipalities to ensure all boundary roads are maintained in accordance with O.Reg 239/02 Minimum Maintenance Standards for Municipal Highways

4.6.13. Callout Procedures

Operational decisions will be made by the Supervisor on call or designate with the aid of available forecasting, Level of Service policy, patrolling etc. However, it should be emphasized that decisions will be subjective and external input, whether in this plan or elsewhere, merely acts as an aid in determining if a call out of staff and equipment by the Supervisor on call to respond to a winter event is warranted.

It is vital therefore that the Road Supervisor records the prevalent conditions and relevant information when he makes a decision.

The patrol person shall inform the Road Supervisor, or designated supervisor of changing of road and weather conditions observed in the field. When a winter event response is required the Supervisor on call or designate will contact staff by radio or phone. In the absence of the Director, Public Works and Engineering the Transportation Manager shall be his designate and initiate a call out in response to a winter event.

4.6.14. Road Closure and Procedures

In the event a road must be closed due to a severe winter storm, Ontario Provincial Police will request signs be placed to close the road. Appropriate signage and barricade will be available at the patrol yard. Upon receiving a request from Ontario Provincial Police to close a road to traffic, The Director, Public Works and Engineering or his/her

designate will contact the call centre and request that a media release (Appendix 4-1) be sent to the local news and radio stations advising of the road closure. Roads will be deemed to be closed once the signs and barricades are placed. When it is physically impossible to place signs and barricades to close a road, the Director, Public Works and Engineering or his/her designate will advise Ontario Provincial Police and request Ontario Provincial Police permission to send the media release (Appendix 4-2).

4.6.15. Towing Illegally Parked Vehicles – Declaration Emergency Parking Ban

Cars parked on the streets during a snow removal effort may be ticketed and/or towed away. A snow emergency parking ban may be declared by Director, Public Works and Engineering, or their designee. The Ontario Provincial Police and media will be notified when the parking ban is initiated.

4.6.16. Operating Instructions and Safety Rules

All individuals (whether local staff or contracted) shall abide by operating instructions and safety rules as stated in Appendix 5.

4.7. Decommissioning Winter Operations

After the winter season identified in 4.3 expires, the Municipality of Middlesex Centre undertakes the following tasks to decommission winter operations:

4.7.1. Two Weeks After the Winter Season Ends

Two weeks after the winter season ends:

- Continue monitoring and recording weather forecasts.
- Assign night patrol shift if forecast indicates an overnight winter event is probable.
- Decommission 50 % of the fleet.

4.7.2. One Month after the Winter Season Ends

One month after the winter season ends:

- Cease all winter highway maintenance operations

- Decommission the remainder of the equipment providing weather forecasts warrant the decommissioning.

4.8. Training

The Municipality of Middlesex Centre provides winter operations training for all staff involved in the delivery of winter services.

Individuals in the following positions within and outside of the organization have been trained:

- Within Organization:
 - Manager(s)
 - Supervisor(s)
 - Operator(s)
 - Mechanic(s)
 - Patroller(s)

It is compulsory for all staff, including contractor staff, to attend the training session. Staff, including contractors' employees, will verify that the training was received by either signing the "Record of Training" included in Appendix 6-1 or 6-2, or another verification document.

Current winter operations training(s) for in-house staff:

- Equipment Circle Check
- Equipment Calibration
- Record Keeping
- Health and Safety
- Level of Service – policies, practices and procedures
- Identification of Plow Routes – including variations for year to year and issues identified along the route
- De-icing Chemicals – application procedures, rates, storage and handling
Identification of vulnerable areas
- Yard and Equipment maintenance

4.9. Record Keeping

Full and accurate completion of the documents listed below, according to the applicable procedures, ensures that the municipality is protected from liability by providing solid documentation that procedures have been followed.

Staff is responsible for keeping the following records:

- For Equipment Operators:
 - CVOR Time Card
 - Materials used (sand, salt, liquids)
 - Route plowed and strategy used (plow only, salt/sand only, anti-ice, combination plowing/sanding/salting)
- For Patrollers
 - Weather and/or RWIS Information Received
- For Operations Supervisors
 - Incident/Collision Reports
 - Total materials used
 - Equipment Calibration Records

In order to help improve decision-making for maintenance strategy, The Municipality of Middlesex Centre:

- Has Automatic Vehicle Location (AVL) system installed on fleet

The date will be recorded as YYYY-MMM-DD. It will be written in a numerical format. The time shall be documented using the 24 hour clock format.

Always retain the original copy of documents regardless of their appearance. Writing must be legible for others to read and written in ink. Stains or dirt on the documents is not an issue. If a document requires correction then a line is to be placed through the incorrect information without making it illegible and continue writing on the original document. Initial corrections or change in the colour of ink in a case where you change writing pens.

5. Plan Improvements

The current winter maintenance policies, practices and procedures form the baseline or benchmark upon which improvements can be made to improve winter operations and/or the use and management of road salt.

Based upon the need to maintain continual service throughout the season, and the previous experience obtaining critical supplies and equipment at the height of the season, over the next ten years the Municipality of Middlesex Centre plans to undertake a number of improvements that will be monitored and updated annually.

- Equipment
 - 2017-2018 Season: Implementation of new fleet services program
- Facilities
 - 2018-2019 Season: Update and repair as required
- Safe and Sustainable Salt Management
 - 2018-2019 Season: Continue to have sand mix.
- Road Cameras
 - 2019-2020 Season: Make use of technology to improve monitoring of road conditions
 - 2021-2022 purchase and installation of 1 additional road camera to further improve monitoring of road conditions (7 road cameras in total for condition monitoring)

6. Plan Improvements

Safe and sustainable winter operations includes, as one of its fundamental tenets, the monitoring and updating of winter operations plans, policies, practices and procedures (the “four Ps”) of the Municipality of Middlesex Centre in an ongoing manner. To that end, the following continuous improvement cycle is used to refine the “four Ps” annually.



At the end of the winter season, as identified in 4.3, a meeting to review winter operations will be held each year with all winter operations staff 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 Municipality of Middlesex Centre shall train staff on the changes to equipment and/or winter maintenance policies, practices, and procedures.

The winter season of (2020/2021) will be the benchmark year. Year over year achievement using the performance measures listed below will be measured against said benchmark year. Performance measures will be used to determine whether or not the objectives of the Winter Operations Plan and/or winter maintenance policies, practices, and procedures have been met.

Monitoring the severity of the winter season:

- % change (+/-) in the total annual centimetres of snow accumulation from the benchmark year
 - Last Season: 450.0
 - This Season: 200.0
 - % Change: -55.00
- % change (+/-) in the total number of days with measurable snowfall from the benchmark year
 - Last Season: 70

- This Season: 60
 - % Change: -15.00
- % change (+/-) in the total number of days with freezing rain from the benchmark year
 - Last Season: 8
 - This Season: 7
 - % Change: -12.50
- % change (+/-) in the total number of continuous winter event responses from the benchmark year
 - Last Season: 7
 - This Season: 7
 - % Change: +0.00
- % change (+/-) in the total number of spot winter event response from the benchmark year
 - Last Season: 15
 - This Season: 15
 - % Change: +0.00
- % change (+/-) in the total number of winter event hours from the benchmark year
 - Last Season: 750.0
 - This Season: 750.0
 - % Change: +0.00
- % change (+/-) in the total number of days that required salt operation from the benchmark year
 - Last Season: 90
 - This Season: 60
 - % Change: -33.00

Monitoring the Salt Used:

- % change (+/-) in the total tons of salt purchased annually from the benchmark year
 - Last Season: 3900.0

- This Season: 3900.0
- % Change: +0.00
- % of applications where discharge rates exceeded
 - Last Season: 5
 - This Season: 5
 - % Change: +0.00
- % change (+/-) in the total tons of salt applied annually per lane km per winter event
 - Last Season: 7.2
 - This Season: 7.2
 - % Change: +0.00

Ensuring customer satisfaction:

- % change (+/-) in the total number of winter event responses that met or exceed the level of service policy from the benchmark year
 - Last Season: 90
 - This Season: 90
 - % Change: +0.00
- % change (+/-) in the total number of complaints received regarding winter operations from the benchmark year
 - Last Season: 150
 - This Season: 50
 - % Change: -66.00

7. Distribution of This Plan

This Plan shall be distributed to the following:

- Mayor and Council
- Public Works Director
- Public Works Supervisors

8. Disclaimer

This Operations Plan may be affected by at least one or more of the following events which could delay or alter snow and ice control by the Municipality of Middlesex Centre:

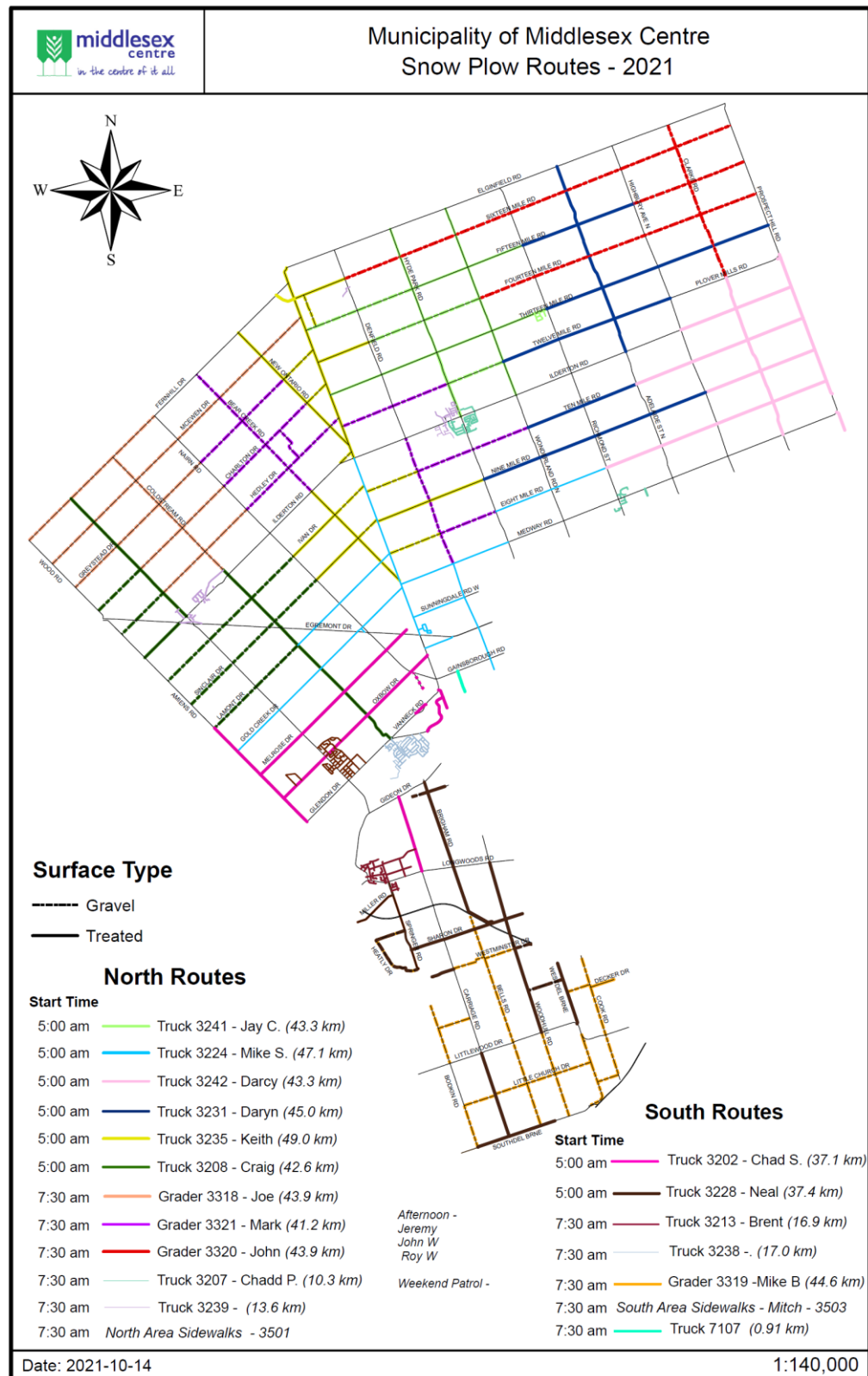
1. Equipment breakdown
2. Vehicles disabled in deep snow.
3. Weather so severe as to cause work to be stopped for the safety of all personnel.
4. Unforeseen conditions and emergencies.
5. Significant medical related emergencies.

Appendix 1: Representative Winter Patrol Route

Last Revision Date: 10/14/2021



Appendix 2: Road and Sidewalk Routes



South Sidewalks Winter Maintenance



Kilworth

Total Length: 7302m



Delaware

Total Length: 5763m



Komoka

Total Length: 6329m

Legend

- Not Serviced
- Maintained by Middlesex Centre



North Sidewalks Winter Maintenance

Ilderton



Total Length: 12,616m

Denfield



Total Length: 1282m

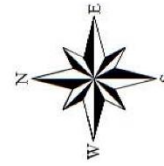
Arva



Total Length: 762m

Legend

- Not Serviced
- Maintained by Middlesex Centre



Appendix 3: Equipment List

Equipment	Type	Electronic Controller Installed	Calibration Date	Pre-Wet Capability	Anti- Icing Capacity	Infrared Thermometer installed
3202 Tandem Workstar	Tandem Axle	Y	2021 Nov-01	Y	N	N
3204 Tandem Workstar	Tandem Axle	Y	2021-Nov-01	Y	N	N
3206 Tandem Workstar	Tandem Axle	Y	2021-Nov-01	Y	N	N
3207 Single Axle 7400	Single Axle	Y	2021-Nov-01	Y	N	N
3208 Tandem Workstar	Tandem Axle	Y	2021-Nov-01	Y	N	N
3213 108SD 4x2 Single Axle	Single Axle	Y	2021-Nov-01	Y	N	N
3241 Tandem Axle Roll Off	Tandem Axle	Y	2021-Nov-01	Y	Y	N
3231 4700SB Tri-Axle	Tri Axle	Y	2021-Nov-01	Y	N	N
3224 Tandem Workstar	Tandem Axle	Y	2021-Nov-01	Y	N	N
3228 7600 SBA 6x4 2010Triaxle	Tri Axle	Y	2021-Nov-01	Y	N	N
3235 Tandem Axle 7600 6x4	Tandem Axle	Y	2021-Nov-01	Y	N	N
3238 Single Axle 7500	Single Axle	Y	2021-Nov-01	Y	N	N
3239 Single Axle 7500	Single Axle	Y	2021-Nov-01	Y	N	N
3242 International Tandem 5th Wheel	Tandem Axle	Y	2021-Nov-01	Y	N	N
3312 Grader	Grader	Y	2021-Nov-01	N	N	N
3318 Grader	Grader	Y	2021-Nov-01	N	N	
3319 Grader	Grader	Y	2021-Nov-01	N	N	N
3320 Grader	Grader	Y	2021-Nov-01	N	N	N
3321 Grader	Grader	Y	2021-Nov-01	N	N	N

Appendix 4-1: Media Release Road Closed



From: Municipality of Middlesex Centre _____

Date: _____

Time: _____

Media Release

Due to a severe winter storm Ontario Provincial Police advise that the following roads in the Municipality of Middlesex Centre are impassable due to (reason, e.g. “drifting and blowing snow”) and have been closed to traffic.

Street Name	From	To

Ontario Provincial Police advise that these roads will remain closed until the storm subsides and driving conditions improve.

Appendix 4-2: Media Release Severe Weather



From: Municipality of Middlesex Centre _____

Date: _____

Time: _____

Media Release

Due to a severe winter storm Ontario Provincial Police advise that many roads in the Municipality of Middlesex Centre are impassable due to drifting and blowing snow. Ontario Provincial Police advise that you do not drive until the storm subsides and driving conditions improve.

(Sometimes it is physically impossible to place signs and barricades to close a road, in this instance use this release when the roads have NOT been physically been closed by the placement of signs and barricades or an officer is present to redirect traffic)

Appendix 5: Operating Instructions and Safety Rules

Municipality of Middlesex Centre: Operating Instructions and Safety Rules

1. Work Hours

For major storm events, two 12 hour shifts will be established at the discretion of the Director of Public Works or his or her designate.

2. Safety Procedures

Safety is paramount during any snow storm. The following safety rules will be observed by all equipment operators.

A. Check your snow removal equipment prior to leaving the yard and also the following:

- 1) All work lights and emergency lights
- 2) Two-way radio
- 3) Snow plow and frame for damage
- 4) Sander
- 5) Rear view mirrors
- 6) Flags and reflectors
- 7) Windshield wipers
- 8) Heater and defroster
- 9) All necessary mapping for snow and ice removal
- 10) Vehicle Inspection Items
- 11) Liquid dispensing apparatus

B. Report any non-working equipment to a Supervisor immediately.

C. Use reasonable caution in operation of snow removal equipment.

D. Drive cautiously.

E. Utilize caution when operating in cramped quarters with parked cars on a street.

F. Know your route and any fixed objects covered by snow.

G. Obey all traffic laws.

- H. Do not follow traffic too closely.
- I. Slow down prior to turning—your plow will tend to push you where it wants to go.
- J. Equipment involved in snow and ice control operations is emergency equipment, but you as the operator, must obey all traffic laws and provide right-of-way to other vehicles.
- K. Do not attempt to tow private automobiles—offer assistance by way of radio contact to Dispatch or Supervisor.
- L. Utilize caution when operating deicing equipment. Watch for overhead obstructions.
- M. Lower box when necessary.

3. Accidents

Report all moving vehicle accidents immediately to your Supervisor. Depending on the severity of the accident and availability due to storm related issues, the (Police Department) will typically be called to evaluate the accident. Prior to leaving duty on the shift, a Motor Vehicle Accident Report & Review form and the internal Vehicle Damage Claim Report should be filled out. Your Supervisor will attempt to interview the driver at the end of the shift or within 24 hours after return to normal duties.

Accident forms should be available from the on-duty Supervisor or dispatcher.

4. Care and Use of Equipment

The snow plow operator is responsible for routine maintenance of the vehicle. Report any maintenance needed to the Supervisor or mechanic on duty. Check vehicle before and after use for any maintenance needed or damage to equipment. Fill out Operations Daily Inspection Check Sheet. The vehicle should be refueled at the end of each operator's shift.

5. Radio Communications

Operators are to take duty instructions from the Public Works Dispatcher or Supervisor on duty. The Police may report road conditions or other issues to the Public Work's Dispatcher or Supervisor. It will be the role of the Public Works Supervisor to direct all winter maintenance related operations.

6. Daily Reports

Upon completion of the shift, operators will be required to fill out a Daily Report sheet. This sheet will document location, date, mileage, and material usage.

Appendix 6-1: Record of Training – Winter Operations



Record of Training

This statement certifies that the below named individual has successfully completed the in-house Winter Operations Training program as required by the Municipality of Middlesex Centre Winter Operations Plan.

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

- ☐ Equipment Circle
- ☐ Check Equipment
- ☐ Calibration
- ☐ Record Keeping
- ☐ Health and Safety
- ☐ Level of Service – policies, practices and procedures
- ☐ Identification of Plow Routes – including variations for year to year and issues identified along the route
- ☐ De-icing chemicals – application rates, storage and handling
- ☐ Identification of road salt vulnerable areas and the procedures to follow in those areas
- ☐ Yard and Equipment maintenance

Employee Name (print) _____

Location of Training _____ Training Date _____

Employee Signature _____ Date _____

Trainer Signature _____ Date _____

Supervisor Signature _____ Date _____

Appendix 6-2: Record of Training – Night Patroller



Record of Patroller Training

This certifies that the below named individual has successfully completed the in-house Winter Operations–Patroller Training as required by the Municipality of Middlesex Centre Winter Operations Plan.

The Winter Operations–Patroller Training workshop includes the following modules:

- ☐ Weather monitoring and forecasting results including: Road Weather Information, System, Value Added Meteorological Service, eutectic temperature, pavement temperature, dew point
- ☐ Winter Shift Schedules
- ☐ Record Keeping
- ☐ Health and Safety
- ☐ Level of Service – policies, practices and procedures
- ☐ Identification of Plow Routes – including variations for year to year and issues identified along the route
- ☐ De-icing chemicals – usage, application rates, storage and handling
- ☐ Identification of road salt vulnerable and/or susceptible areas and the procedures to follow in those areas
- ☐ Call-out procedures Emergency contacts
- ☐ Yard and Equipment maintenance

Employee Name (print) _____

Location of Training _____ Training Date _____

Employee Signature _____ Date _____

Trainer Signature _____ Date _____

Supervisor Signature _____ Date _____

Appendix 7: OGRA and Salt Institute Disclaimer

Ontario Good Roads Association (OGRA) and Salt Institute DISCLAIMER:

The information and statements contained within this document do not constitute legal advice. They are not intended to take the place of legal advice. All users are encouraged to consult with their own legal counsel with respect to the information and statements contained herein. Furthermore, the information and statements contained in this document are solely the opinion of OGRA and the Salt Institute. They are not intended to establish, and they should not be viewed as establishing, legal standards, requirements or policies. They may not be applicable in every situation or circumstance. They are not intended to cover all proper methods or approaches. OGRA, the Salt Institute, and their members and officers disclaim all liability for the accuracy and completeness of the information and statements contained in this document and disclaim all warranties, express or implied, to incorrect application or usage of the information and statements.