



City of Superior Public Works Department

WINTER SNOW AND ICE MANAGEMENT POLICY



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Amended 2001, 2019, 2020, 2022*

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Purpose of Policy

The purpose of the Winter Snow and Ice Management Policy is to establish standard operating procedures and policies for the management of winter snow and ice in the City of Superior, Wisconsin.

The policy provides a uniform understanding of the priorities and procedures used to combat snow and ice related conditions. Each winter storm has unique characteristics such as storm intensity, duration, wind, temperature, timing, and moisture content. These factors affect the total snow and ice accumulation and influence the methodology used to address the resulting conditions. No individual policy can describe all possible storms or the resulting response. This policy describes the standard policies and practices used under typical conditions.

This policy does not alter any existing City of Superior ordinance.

Goals of Snow and Ice Management

The management of snow and ice accumulation on winter roads directly impacts the safety and travel convenience of the public. The goal of winter maintenance is to make roadways safe within the limitations of resources, roadway protection, and environmental concerns. Winter driving can cause inconvenience and motorists should modify their driving practices to road conditions. The Public Works Department addresses snow and ice removal based upon the principles of safety, quality, and cost.

1. Safety - Snow and ice removal is performed in manner that minimizes the travel risk to the general public. Safeguarding transportation health is the Public Works Department's primary goal. In addition to public safety, the safety and welfare of the city employees engaged in snow and ice removal is of prime importance. There are extreme times when conditions place an unreasonable risk on performing snow and ice removal and crews are required to wait until conditions improve.
2. Quality - All work performed by the Public Works Department is expected to be done to a high standard of quality. A high standard of quality for snow and ice removal includes utilization of the best practices available such as use appropriate use of available equipment, proper application of chemical treatments, and a keen eye to developing conditions and the timeliness of snow and ice operations. Winter storms produce many challenging conditions. The intent is to mitigate those conditions as efficiently and quickly as possible.
3. Cost – Snow and ice removal operations are costly. Employee time, equipment cost, and chemical costs add up quickly. The Public Works Department works to meet the goals of safety and quality while doing so in a cost-effective manner. Cost and resource availability are real-world limitations and are considered in decisions regarding hours invested, chemical treatment used, and equipment utilized in snow and ice removal.

Snow and Ice Control Generally

Planning and preparing for snow and ice control projects is difficult and is made more difficult by the uniqueness of each storm. No two storms are identical. The interrelationship of factors such as rate of snowfall, moisture content, accumulation, temperature, time of day, and wind velocity determine the uniqueness of each storm. Therefore, the city's snow and ice control policy must be specific enough to establish systematic procedures for fighting any storm, while being flexible enough to combat the unique aspects of each storm.

When evaluating the effectiveness of the snow and ice control policy, it must be remembered that there are many factors affecting the impact of a storm on the community. During most storms, the greater the snow accumulation, the greater the problem. This is particularly a problem in the central business district where the snow accumulation may have to be hauled from the area. The time at which the storm occurs can have a very adverse effect. A storm during a weekday rush hour is more difficult to combat than the same storm during a weekend. High wind conditions will cause streets to quickly fill up again with drifted snow, thus requiring additional effort on the part of snow fighting forces. The temperature at the time of the storm will also affect conditions. Snow falling on warm pavement may disappear with little effort. However, a moderate storm, coupled with a prolonged sub-freezing period, will greatly increase the required removal effort. The type of snow will also have an effect on the snow fighting effort. Light, dry snows handle more easily than heavy, wet snows.

Receiving and analyzing weather information is perhaps the most critical link for a successful snow and ice control program. Making a decision at the right time before the storm has effectively blocked courses of action is vital to the success or failure of the operation. The Public Works Department depends upon National Weather Service forecasts and recommendations provided through the Federal Highway Maintenance Decision Support System (MDSS). The MDSS is a computer-based tool that provides route-specific weather forecast information and treatment recommendations. These forecasting tools allow the Public Works Department to make predictive decisions on how to prepare for and combat the winter conditions. In addition to predictive decision-making, emergency calls from the Police and Fire Departments regarding accident, medical, or other emergency situations are given top priority to support their emergency response efforts.

The Superior Public Works Department endeavors to maintain adequate traction for vehicles properly equipped for winter driving conditions. There is typically not an expectation of bare, dry pavement after a snowfall or ice storm. During a storm event the goal is to achieve at minimum "passable roadways" within the limitations imposed by climatological conditions, the availability of resources, and environmental concerns. A passable roadway is defined as a roadway surface that is free from drifts, snow ridges, and as much ice and snow pack as is practical and can be traveled safely at reasonable speeds. A passable roadway does not mean dry or bare pavement. A dry/bare pavement condition may not exist until the weather conditions improve. Reasonable speed is considered a speed that a vehicle can travel without losing traction. During and immediately after a winter storm event, a reasonable speed will

most likely be lower than the posted speed limit. Motorists can expect some inconvenience and should modify their driving practices to suit road conditions.

Initial Mobilization Procedures

The need for implementation of the Winter Snow and Ice Management Policy will be an accumulated snowfall of depths greater than two inches, or less, if combined with freezing and icing conditions, or the occurrence of an ice storm or freezing rain which would make the public ways difficult to travel.

Weather reports issued by the National Weather Service and the MDSS are used to prepare for an anticipated mobilization of snow and ice removal forces. The responsibility for ordering personnel and equipment into service for a winter maintenance operation is with the Public Works Director, the Superintendent of Public Works, or his designee. The Police Department, during off-hours, keeps watch and assists in notification to the Public Works Superintendent. The Public Works office also responds to calls of complaints and addresses them on a priority basis.

If the decision to fight a storm is made after the normal working day has ended, a telephone call list is used to notify the affected personnel. As the necessary personnel arrive, priority routes are assigned and the snow fighting operation is initiated.

Personnel and Equipment

All snow clearing and removal operations are conducted by Superior Public Works Department personnel. The Municipal Services Building at 2301 Hill Avenue serves as the headquarters for all snow operations.



Street Snow Plowing

Priority Routes

The first step in the snow removal operation is the clearing of the priority snow removal routes. This takes place when there is two inches or more of snow on the streets and more is expected or when freezing rain and deteriorating conditions requires a quicker response. The priority snow routes are the arterial and major collector streets. These streets carry the highest volumes of traffic and form an important network of primary routes assuring access to all parts of the city. The priority routes are laid out in a grid pattern with most residences no more than six blocks from a priority route. These highways and streets receive treatment first in a snow event. Keeping these routes open throughout the event is the first priority.

These routes typically receive both plowing and chemical treatment. When plowing the priority snow routes, snow plowing equipment is dispatched in a team of three on each individual route. Experience has shown that plowing each route with a team of three pieces of equipment is the most effective. In many instances, equipment moving in teams will be able to widen a street from centerline to curb, thus eliminating the need for a second pass to widen the route. As each route is completed, the equipment is then moved to Secondary Routes additional routes as assigned until all streets designated for priority snow removal have been plowed. A map of these priority snow removal routes is provided in Appendix A.

Secondary Routes Residential Districts

The remaining streets are divided into six residential plowing districts. The residential plowing districts are the lesser traveled collector streets and residential streets. The streets within the residential districts are plowed after the priority routes/secondary routes are in acceptable driving condition and if the total snow accumulation is more than three inches.

The order which the residential districts are plowed is based on the topographic conditions of each district. Those districts which have conditions that are the difficult for motorists to negotiate in inclement weather and those that have school access streets are prioritized first. However, other conditions such as depth and moisture content of the snow and the ability of vehicles to travel in residential streets enter into each residential plowing decision. Normally two plows are assigned to each district.

Alley Routes

Alleys are of a lower priority. The decision to plow the alleys is based on factors such as snow depth, moisture content of the snow and the ability of vehicles to travel through the alleys.

Snow Emergency Route

In accordance with City of Superior Ordinance Sec. 112-54, should the Director of Public Works, their designee, or the Mayor determine that existing weather conditions or forecasted weather conditions require that traffic be expedited or snow plowing be carried out on certain designated routes, a snow emergency may be declared. Once initiated, no person may park or allow to remain parked, any vehicle on any portion of the snow emergency route. The designated Snow Emergency Route is general described as:

1. From the city limits along E 2nd Street north to 31st Avenue East;
2. 31st Avenue East west to East 5th Street;
3. East 5th Street north to 18th Avenue East;
4. 18th Avenue East west to North 28th Street;
5. North 28th Street west to Hammond Avenue; and
6. Hammond Avenue north to North 5th Street.

Ice Removal

Chemical Treatment

Combating ice and slippery roadway conditions often requires the application of chemical treatment and/or sand. The spreading of road salt for snow and ice removal is perhaps the most widely recognized procedure for alleviating icy conditions. With favorable temperatures, salt can melt up to two inches of snow. Salt also prevents the bonding of compacted snow to pavement. This ensures a cleaner plowing job should plowing become necessary. Salt becomes a less effective treatment at temperatures below 15° F or when moisture isn't available to activate the chemical.

Road salt is an effective deicer; but it also comes with a cost. The cost is both financial as well as environmental. The monetary cost of road salt is substantial; particularly when multiplied out over thousands of road miles over the course of a winter season. Road salt also has a significant environmental cost. The section below, "Salt Considerations" discusses some of the environmental impacts. Given these financial and environmental concerns, the city minimizes its use of road salt by using it only when necessary and by diluting its use by mixing the salt with sand. Under typical conditions the city uses a salt/ sand mixture of approximately 1 part salt to 3 parts sand. This ratio may change depending on conditions. Under the worse icing conditions pure road salt may be used.

The chemical magnesium chloride is also utilized in combination with the road salt/sand mixture. Magnesium chloride is a deicer used to pre-wet dry road salt and sand to improve its performance. The liquid magnesium chloride is introduced at the spinner just before the salt is dispersed onto the roadway. Road salt lowers the freezing point of water to roughly 15°F. The addition of liquid magnesium lowers the freezing point further to -15°F. In addition to working in lower temperatures, the added effectiveness of the magnesium chloride and salt mixture results in the overall use of less salt. The wetted mixture also sticks to the roadway better and is less prone to be scattered by passing traffic.

Potassium acetate is a third chemical treatment used to combat icy conditions. Potassium acetate used as a deicer is an organic, biodegradable liquid. The chemical is applied directly to the roadway through spray bars mounted at the rear of the truck. It can be used to anti-ice (or pretreat) roads prior to a storm. In contrast to road salt or a chemical salt such as magnesium chloride, potassium acetate has less of an environmental impact while being more efficient at removing ice. Potassium acetate is effective at melting snow and ice at much lower temperatures (-25°F) than road salt or even magnesium chloride. It is also biodegradable and non-corrosive. The use of potassium acetate allows the city to more effectively treat the roads and lessen road salt use and its related environmental impacts.

Chemical treatments are utilized on the priority routes including the arterial and major collector streets. Due to the financial and environmental costs, chemical treatments are not applied to the lesser traveled secondary routes including residential streets. However, sand is spread when needed for traction; particularly on residential intersections.

Plowing is the primary means of snow removal on all roadways. De-icing agents such as salt, magnesium chloride, or potassium acetate are used principally to keep snow from bonding to the pavement, which in turn facilitates clearing of the pavement after a storm. De-icing chemicals are typically not used to “burn off” accumulated snow and ice due to prohibitory monetary and environmental costs.

Road Salt Considerations

Salt is an effective chemical for winter roadway maintenance. It has been used for decades to melt ice on roadways. It can make a roadway less slippery and safer for travel. The application of road salt has huge short-term benefits. Unfortunately, it also has serious long-term environmental impacts. Many of the impacts are difficult or impossible to reverse. The use of road salt has to be a balance between its immediate and temporary benefits and its long lasting environmental legacy.

Snow melt and rainwater carries road salt into storm drains and then to lakes and rivers where it steadily accumulates. The elevated chloride levels in the water become a threat to the health of fish and aquatic bugs. Statewide studies have shown sharp increases in the levels of chlorides in Wisconsin streams and lakes over the last 50 years of road salt use. While not yet at levels considered toxic to humans, drinking water could have to be desalinated before consuming if levels were to continue to rise. Salt can also be dangerous to animals. Chemical burns and toxicity for pets can occur if they are exposed to high enough concentrations of salt.

Salt also seeps into groundwater and is stored in soil. Salt in the ground harms soil bacteria at low levels and leads to degradation of the soil structure and erosion. Salt in soil also inhibits plant growth. It can be observed in browning needles, stunted growth, delayed budding, and inhibited seed germination. Salt is not removed by holding ponds or rain gardens.

Lastly, beyond the impacts to the natural environment, salt causes significant damage to the unnatural environment including vehicles and road infrastructure. Salt attracts and holds water molecules. This results in corrosion on cars, trucks, bridges, and concrete. Nationally road salt contributes to billions of dollars of corrosion damage annually.

Road salt remains an important tool for the City of Superior for addressing slippery road conditions. However the city works to be sensible in its use of road salt. Minimizing the amount of unnecessary salt laid on the roadways saves a financial cost. But as importantly, it mitigates an immense environmental cost.

Snow Removal

Snow that has been plowed to the sides of roads or onto boulevards and sidewalks can begin to accumulate into large piles that hinder vehicular and pedestrian movement. That accumulation may happen after one large snow event or multiple smaller events. Hauling away of accumulated snow banks improves safety and mobility. It also recaptures snow storage space for future storms. The snow hauling operation is not initiated until all the priority snow removal routes and residential streets are in satisfactory driving condition.

Removing snow typically involves the use of graders and frontend loaders to windrow the snow onto the street. A large snow blower is then used to load the snow onto city trucks. The snow is hauled to the nearest disposal site.

Snow is hauled from locations based upon the snow removal priority list shown below.

Primary Priority

1. Plow all streets and alleys.
2. Snow blow viaducts.
Two loaders clear school crossings and priority sidewalks¹.
Two graders wing Hollywood sidewalks².
3. Snow removal on Tower Avenue from N 12th to N 28th Streets, both sides. (SH/HS/DTA)
4. Snow removal on E 2nd Street where not winged. Eastbound 23rd Avenue E south to 52nd Avenue E. Westbound 48th Avenue E to 44th Avenue E. (SH/HS/DTA)
5. Snow removal on Tower Avenue from N 57th to N 62nd Streets both sides. (SH/HS/DTA)

Secondary Rotating Priority

6. Snow removal on Catlin Avenue from N 19th to N 28th Street (HS/DTA)
7. Snow removal on Tower Avenue from N 12th to N 3rd. (HS/DTA)
8. Snow removal on Tower from N 3rd to N12th. (HS/DTA)
9. Snow removal on Belknap from Catlin to Banks. (DTA/SRTS)
10. Snow removal on Belknap Catlin to E 2nd Street (HS)
11. Snow removal on Ogden Avenue from Belknap to Winter and side Streets west to Tower. (HS)
12. Snow removal on Banks from Belknap to Winter and side streets east to Tower. (HS)
13. Snow removal on Hammond Avenue from Belknap to High Bridge. (HS/SER/SRTS)
14. Snow removal on Hammond Avenue from Belknap to N 28th Street (HS/SER)
15. Outlying Business districts - East End, Billings Park.
16. Remaining E 2nd Street. (SER/HS)
17. DTA Bus Routes.
18. Municipal Parking lot snow removal.

School Crossings & Priority Sidewalks

Loader No. 1

1. 18th Avenue at E 8th Street
2. 18th Avenue at E 5th Street
3. N 21st Street at Raspberry Avenue
4. Baxter Avenue at Belknap Street - Cathedral school after 8:30. East side only from Belknap to school crossing on the north side and both crosswalks south side of Belknap
5. Tower Avenue at Belknap Street - Library side one block south and one block east
6. N 28th Street - Tower to Cumming Avenues
7. Hammond Avenue at N 28th Street - West side south to first driveway

Loader No. 2

1. Missouri Avenue at N 17th Street
2. Missouri Avenue at N 18th Street
3. Missouri Avenue at N 21st Street
4. Wyoming Avenue at N 17th Street
5. Wyoming Avenue at N 18th Street
6. Hammond Avenue at N 21st Street
7. Lamborn Avenue at N 21st Street
8. Tower Avenue at N 61st Street (Central Avenue) (HWY 105): All Four Corners
9. Tower Avenue at N 63rd Street
10. John Avenue at N 61st Street (Central Avenue)
11. If completed assist on snow removal on N 28th Street from Tower to Cummings

Hollywood Sidewalk Wingback

EAST END

E 2ND Street

1. 17th Avenue E – 18th Avenue E, south side
2. 18th Avenue E - E 2nd Street to E 3rd Street, west side
3. E 2nd, 23rd Ave E to 53rd Ave E, south side where there are no houses
4. Stockade to Bong Center - wing towards the bay
5. Barker's Island - Along Bay, by hotel push over edge
6. E 6th Street - 23rd Avenue E – 24th Avenue E, NE side

SOUTH SUPERIOR

Tower Avenue

1. N 28th – N 52nd, west side
2. N 58th, s-curve by golf course

UWS AREA

Morterelli Drive - Belknap to N 21st Streets

Catlin Avenue

1. N 21st Street at WITC, parking lot to tracks
2. N 19th Street to Faxon Avenue

N 28TH Street - Hammond Avenue to Maple Lane, south side

Hammond Avenue

1. N 28th – SW Corner to Driveway
2. N 25th – Hammond to Cumming, south side
3. N 23rd – Hammond to Cumming, south side

N 37th Street - Tower Avenue to John Avenue, north side

BILLINGS PARK

1. *Belknap Street* - Belknap roundabout sidewalk
2. *Wyoming Avenue* - Hollywood Sidewalk N 24th to N29th Streets west side
3. *Winter Street* - Salt dock to Amsoil entrance, north side.

Snow Disposal

The City of Superior disposes of all snow by the land disposal method. Other methods are not economical at present. Everything we have learned leads us to believe land disposal is the best snow disposal method, providing a buffer zone is created to contain debris. For purposes of analyzing snow disposal in the City of Superior, existing land disposal areas are described as follows:

- a) East side of Mortorelli Drive between Belknap Street and North 21st Street.
- b) Stinson Avenue at East 12th Street
- c) Itasca
- d) South Superior

The identified snow disposal areas are for city use only. Private snow removal contractors are required to locate their own disposal areas.

Parking

City of Superior ordinance Sec. 112-51 provides for an "Alternate Side (Calendar) Parking" program. The program allows for alternate side parking on a weekly basis, with weekly changes beginning at 12:01 a.m. on Monday through Sunday with the changeover period designated at 4:00 p.m. to 8:00 p.m. Sunday. In a block where parking is normally permitted on one side of the street only, vehicles shall be parked on the opposite side in accordance with the provisions of the ordinance, except on those street as designated exempt. This ordinance is annually designated for even and odd side weekly parking by the Police Department.

Towing of Illegally Parked Vehicles

City of Superior ordinance Sec. 112-155 provides that whenever a vehicle is illegally parked, stopped or standing in such a manner as to prevent or impede municipal snow removal upon any city street, alley or highway, the director of public works or the chief of police or their designees are authorized to move or remove such vehicle to an off street location or to any other portion of a street, alley or highway within the limits of the city where the vehicle will no longer prevent or impede snow removal. All removal, towing, damage and storage costs are the responsibility of the owner and/or user of the vehicle. The city is not liable for damages to vehicles removed, towed, or stored.

The Superior Police Department assists the Public Works Street Division in the towing of vehicles parked illegally and impeding snow removal on city streets. Such vehicles are issued a citation at the time of removal. During an immediate snow removal process by city crews, vehicles impeding such removal are immediately cited and towed by the Police Department. For planned snow removal processes, the Public Works Street Division notifies the Police Department of such plans, date and location/s of the removal. The Police Department precedes the snow removal process by ticketing vehicles in violation of the Calendar Parking ordinance and arranges for towing of those vehicles as necessary for snow removal operations.

Sidewalk Snow Removal

Make Superior safe for everyone by clearing snow and ice from the public sidewalks around your property.

Superior Municipal Code, Sec. 106-10 requires property owners in the City of Superior to have all snow and ice removed from public sidewalks and curb ramps abutting and adjacent to their property no later than 24 hours after snow or freezing rain has stopped falling. Snow and ice on the sidewalk make it difficult for everyone – especially people with disabilities, seniors, and children – to walk safely. Making sure sidewalks are cleared is a community accessibility and a public safety concern.

If an owner does not clear the sidewalk, the city may take action to have the snow removed without prior notice. The cost of the removal along with an additional administrative fee will be charged to the owner of the property.

Private Plowing and Snow Removal

No snow or ice removed from private property shall be deposited in the public right of way in areas owned by the City of Superior. This would include any of the following which are prohibited:

1. Pushing snow or ice across a roadway or walk.
2. Pushing or carrying and depositing snow or ice on a public right of way, particularly those maintained for pedestrian or vehicular traffic.
3. The blowing of snow or ice onto a pedestrian or vehicle travel area.

Any of the above are dangerous and could cause injury or accidents and may not allow for safe passage by the public. Violation of any of the above may result in action against the property owner, punishable by the fee structure set by ordinance, until such nuisance is removed.

The city will not chemically treat, sand or plow on private property and cannot shovel out ridges in driveways caused by the snow plows. Snow removed from driveways and sidewalks is the responsibility of the property owner.

Conclusion

Winter in northern Wisconsin can create many challenges to road and pedestrian travel. The goal of the City of Superior is to minimize these challenges with policies and practices that provide safe and accessible roadways and sidewalks for everyone. Because no storm event is the same, city policies and practices need to be adaptable and flexible to meet each storm's unique challenges. However, a policy such as this one is meant to provide a framework for the city response and a general set of expectation for those affected by winter weather. The City of Superior will always work to provide the best and most cost-effective service possible.

Where to Call for Information

Questions regarding snow and ice removal:
Public Works Street Division: 715-394-0244

Questions regarding the shoveling of sidewalks or other private property snow concerns:
Code Compliance: 715-395-7596 or codecompliance@ci.superior.wi.us

Public Works General Inquiries:
Public Works Main Desk: 715-395-7334



Appendix A