Waukesha County

DEPARTMENT OF PUBLIC WORKS

Winter Road Management Program

2023

Waukesha County Dept. of
Public Works
515 W. Moreland Blvd.
Room AC 220
Waukesha, WI 53188

Introduction

The Department of Public Works Winter Road Management Plan prescribes specifications for the removal and control of snow and the removal, treatment and sanding of ice. These guidelines are considered a living document and will typically be reviewed at the end of each winter season.

The goal of winter maintenance is to make roadways safe within the limitations of resources, roadway protection and environmental concerns. Motorists are expected to modify their driving practices to adapt to road conditions and should expect some inconveniences.

Plowing is to be the primary means of snow removal. De-icing agents are used principally to keep snow from bonding to the pavement, which in turn facilitates clearing of the pavement after a storm. Abrasives used to provide traction should be used in combination with de-icing agents. When weather conditions warrant, anti-icing methods may be used as a proactive approach.

Responsible Parties

The Public Works Department oversees the winter maintenance program. The department should ensure effective administration of the program including the gathering of maintenance forces, identification of required activities, and establishing priorities. The department shall also monitor operation for uniformity of service, consistently of guidelines, and appropriate usage of salt and other de-icing agents. Adequate supervision of personnel, equipment, and resources shall be provided. This includes ensuring proper training to perform assigned duties and operation of necessary pieces of equipment. The department is responsible for personnel call-outs and removing operators from the road during extreme conditions, for rest breaks, and number of service hours. Contact with the law enforcement officials are also coordinated by the department.

The responsible parties for the Winter Road Management Plan are:

Primary: Hans Guderyon
Highway Operations Manager
1641 Woodburn Road,
Waukesha, WI 53188
Office (262) 548-7736
Cell (262) 424.9002

Expectations

When conditions warrant, coverage should be provided up to 18 hours per day during the storm. The gap coverage is necessary to provide for operator recovery time. The operator recovery time should typically be between the hours of 9:00 pm and 3:00 am, but will vary with specific storm conditions. Some minimal ability to respond to emergencies should be provided during the hours that full coverage is not provided.

Typically, a plow operator's time should not exceed a continuous 18-hour shift.

Cycle times for each route should generally not exceed 3 to 4 hours.

Exceptions to these guidelines may include:

1. Reducing coverage due to extreme conditions which would include limited visibility for operators and length and severity of the storm event.
2. Continuing service beyond suggested hours to prevent snow compaction or other hazardous conditions
3. Allowing breaks between shifts during off peak hours to reduce operational costs and operator fatigue.

In order to minimize unexpected changes in pavement conditions, one of the objectives is to achieve consistent service on similar facilities. Changes in pavement conditions should be anticipated at high volume intersections, where traffic volumes significantly change, leaving or entering municipalities, and dramatic or well defined changes in topography.

Seasonal Labor

The department acknowledges that it may be necessary to hire additional snow operators during the winter season to meet service levels expectations of the department. The department supports the hiring and use of seasonal employees for winter operations.

Salting Authority

The department has the authority to determine the appropriate response for winter events. Requests by law enforcement agencies to the department for plowing or the application of snow and ice control agents be conducted are advisory in nature. The department has the authority to exercise discretion related to their response to such requests.

Operators

The operators of snow removal equipment should be provided with training in all aspects of winter operations. This may include service objectives, operation of equipment, proper use of de-icing agents, varying weather conditions and driving in traffic under adverse conditions. A commercial driver's license (CDL) is required to operate any vehicle with a gross weight over 26,000 pounds. Operators are required to comply with all CDL regulations. All operators are

required to follow Waukesha County's policies.

Assisting Others

Operators on winter maintenance sections should be discouraged from offering assistance to stuck or stranded vehicles unless there is an emergency or the stranded vehicle is interfering with plowing operations.

Passable Roadway & Level of Effort

One of goals of winter maintenance is to achieve "passable roadway" within limitations imposed by climatological conditions, the availability of resources, and environmental concerns during a winter storm event. 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 is not necessarily a "dry pavement" or "bare pavement" which is essentially free of all ice, snow, and any free moisture from shoulder to shoulder. "Reasonable speeds" are considered a speed that a vehicle can travel without losing traction which is typically lower than the posted speed limit. Motorists can expect some inconvenience and will be expected to modify their driving practices to suit road conditions.

The department should strive for "passable roadway" conditions on the driving lanes during the winter storm event. Plowing is the first priority for snow removal to strive to keep the snow from packing on the driving lanes during the winter storm event. De-icing agents should be used to keep the total accumulation workable, thereby minimizing bonding during the winter event. If packing should occur, the department will strive for "passable roadway" conditions and eventually "bare pavement" conditions as soon as practical after the winter storm event during normal work hours. During the time between the winter storm event ending and achieving "passable roadway" conditions, it is acceptable that only clear wheel tracks be provided when conditions warrant.

Exceptions to this guideline will occur when subsequent winter storm events happen at a frequency where it is not possible to obtain passable roadway conditions and subsequently bare pavement between the events. The severity of a winter storm event, roadway temperatures, and availability of resources along with other factors will dictate how soon passable roadway conditions and subsequently bare pavement can be obtained. And it may be deemed appropriate to use extraordinary means when impending weather or an influx of traffic, such as traffic prior to a holiday, is anticipated. Another exception may occur because of budget restrictions or unavailability of de-icing chemicals.

If an acceptable level of roadway conditions exist after the storm has ended and while crews are on overtime hours, it may be desirable and acceptable to cease plowing and salting and to wait until the next day to continue working towards the bare/wet and ultimately bare/dry pavement conditions. The termination of plowing and salting at this time assumes that the weather forecast and other factors will allow this to happen.

White Shoulders

Generally a light accumulation of snow on roadway shoulders is not hazardous and time should

not be taken to remove it. However, any snow, because of accumulation or consistency that

creates hazardous conditions, should be removed during normal non-overtime working hours, under non-drifting conditions. For non-paved shoulders, the white shoulder rule shall apply to ensure retention of shoulder aggregate until the shoulder materials have frozen together. The white shoulder is achieved by the plow or wing being held above the shoulder in such a fashion as to leave one or two inches of snow. Clean-up efforts from the shoulders would typically be performed during normal non-overtime working hours under non-drifting conditions or other circumstances require this.

Storm Cleanup

Cleanup is generally accomplished during normal non-overtime working hours. Cleanup should include the removal of snow from shoulders, areas where snowmelt may run onto the roadway, areas subject to drifting, and areas where snow storage reduces visibility in intersections.

Plow the shoulder without displacing the gravel. Benching may be necessary to prevent road blockage and finger drifts, to control icing conditions on pavements due to drifting snow, or provide additional snow storage for future storms. The height of the bench can vary depending upon the amount of snow.

Anti-Icing Techniques

Anti-icing is a proactive snow and ice control strategy aimed at preventing the formation or the development of bonded snow and ice by the timely application of a freezing point depressant. The department will use a pre-wetted salt if an anti-icing technique is utilized. Anti-icing should be done during normal, low traffic volume. If anti-icing techniques are utilized, it should be conducted prior to forecasted frost, freezing fog, or black ice events on bridge decks and pavement trouble spots (such as hills, curves, shaded areas, or intersections) on an as needed basis. Anti-icing techniques may also be utilized prior to predicted light sleet and light or moderate snow event and to prevent a re-freeze situation. Pavement temperature is recommended to be at or above 23°F or the pavement temperatures are forecasted to rise and stay above 23°F.

Anti-icing techniques should not be utilized prior to forecasted rain or freezing rain events, when winds are more than 15 m.p.h., and when they cause blowing or drifting snow to stick to the roadway, pavement temperature is below 20°F or forecasted to fall below 20°F, or snow packed roadway.

De-Icing Techniques

De-icing agents are used under appropriate winter maintenance conditions to prevent the formation of ice (anti-icing), prevent the formation of a bond between accumulated snow, ice, or slush and the pavement and keep the accumulation “plowable”, de-ice (melting of bonded ice or snow), and keep abrasive material free flowing in freezing conditions. Plowing, dry salt, and prewetting salt with a brine solution are the dominant de-icing technique the department will utilize. Applying the de-icing agents during the storm will prevent the bond of accumulated

precipitation and to keep the snow in a plowable condition. The de-icing agents utilized for the storm event will depend on winds, temperatures of the pavement and air, and drifting conditions. Dry salt may be most effective during and after the storm when the pavement temperature is 20°F or higher. Prewetting of dry salt with salt brine may be appropriate to reduce the loss of de-icing materials that are blown or bounce off the pavement as a result of traffic or the act of dispensing the material from a moving truck. Salt brine will be applied on the trucks using a spray bar with controls at the salt shoot to provide uniform application which is calibrated annually or as needed.

Abrasives

Abrasives (sand) may be employed to enhance traffic safety when condition precludes salt or use of other remedies. Abrasives may be employed when the temperatures are low enough that salt or prewetted salt are not effective. The sand may be prewetted and is recommended to be used on low speed trouble areas and intersections. The City of Pewaukee typically uses a sand/salt mix only when salt supplies are limited and need to be rationed to last the remainder of the winter season.

Equipment

The principle vehicles for this work are single axle trucks and a dual axle truck. Other vehicles may include a 4x4 truck and grader. Snow removal equipment should be checked to ensure equipment and safety lights are in good working order prior to leaving the shop area. Be aware of following vehicles. Minimize snow clouds. Care should be exercised around obstacles, curb and gutter ends, mailboxes, parked cars, soft shoulders and turnarounds or turning lanes which are too tight for the combination of truck and plow.

Spreaders are a spinner type and are calibrated every fall prior to the winter season or as warranted. Ground speed controllers are on all of the standard trucks. Each truck is equipped with an on-board prewetting system starting for the 2006 season. Trucks are equipped with a primary plow and a wing plow. The trucks are either a 39,000 GVW Single Axle or 58,000 GVW Tandem.

Salt Storage and Brining Facilities

In 2019 and early 2020, the State of Wisconsin and Waukesha County completed the construction of a new 15,000 ton salt and brine facility. New operational procedures are being developed for the expanded use of brine through rapid and increased production capabilities. In addition, a truck scale was installed to improve overall accountability of salt usage and driver loading standards. The new facility incorporates a state of the art water recycling feature aimed at reducing dependence on clean water. The new construction has increased on-site storage at the 1641 Woodburn Road Operations Center to over 31,000 tons of salt and 36,000 gallons of liquid brine.

Weather Data

Weather data is provided by National and Local Weather Services.

Event Information to Record

Monthly records shall be kept per use event for November 1st through March 31st include how much and which product was used, weather data including temperature ranges and precipitation amounts, hours worked, number of trucks in service, hours of post-event clean up, and other measurable data that is useful to the department to evaluate the program on a yearly basis.