

Crow Wing County Highway Department Snow and Ice Operations Methodology

The Crow Wing County Highway Department has jurisdiction over more than 600 miles of county roads and secondary roads. The removal of snow and ice from these roadways is one of the most important services the Highway Department provides during the winter months.

The public safety is the number one priority for the Highway Department at all times. The efficient use of public funding to support effective snow and ice removal operations is also a top priority. Finding the balance point between these two priorities is sometimes challenging; however at no time will public safety be willfully compromised. In extreme cases, an inefficient snow and ice fighting technique may be required to ensure public safety.

Each winter weather event is different and presents its own unique challenges. Decision makers must have the flexibility to determine the appropriate timing and methods used to combat the roadway conditions. Snow and ice operations can begin at any time of that day or night and may include only a portion or the entire crew as dictated by the roadway conditions. These important decisions are ultimately the responsibility of the County Highway Engineer. The Highway Maintenance Supervisor has delegated authority to deploy the resources and methods necessary to conduct effective snow and ice operations.

For typical snow events, plows usually will not be dispatched until after a snowfall has ceased. Ice fighting techniques may begin in advance of actual precipitation and continue throughout the event. Equipment operators may be called off the roads during extended periods of snowfall to ensure proper coverage during peak travel times. Under extremely hazardous circumstances plows may not be deployed or removed from service early to ensure operator safety.

The Highway Maintenance Supervisor continuously monitors the winter weather and its effect on the condition of the county road system. While on patrol, County Sheriff's deputies often provide firsthand accounts of roadway conditions via the county dispatch center. An active network including officials from local school districts and busing contractors has been established to assist with determining if road conditions may contribute to school closings or delays.

The Crow Wing County Highway Department utilizes 17 snow plow trucks as well as other heavy equipment to remove snow and ice. The County employs only enough workers to occupy one work shift during any snow or ice event. Each of the 17 drivers is assigned to a specific plow route representing an equitable portion of the more than 600 miles of roadway. A typical shift is limited to 12-14 hours. Plow truck operators must then be allowed to receive adequate rest before returning to work.

In contrast to other agencies with roadway jurisdiction in the area, Crow Wing County does not maintain a bare lane snow and ice policy. A bare lane policy requires plowing operations to continue, without stopping, until the roadway is completely clear of snow and ice. To deliver this level of service, an agency must sustain the proper amount of personnel and equipment necessary to conduct snow plowing operations 24 hours a day. This often includes two or more shifts of qualified plow truck drivers.

Crow Wing County utilizes straight salt and various concentrations of salt/sand mixtures to treat roadways during snow and ice events. Salt water brine is applied to all mixtures to aid in the proper distribution of salt/sand from the plow truck to the roadway.

The standard road salt used by the Highway Department is most effective above 15° F. The effectiveness of salt as an ice cutting method degrades quickly after that temperature and at 0° F is almost ineffective. Other snow and ice fighting chemicals, active at lower temperatures, are available; however these products and associated delivery systems are currently considered cost prohibitive.

Application of straight salt is mainly reserved for high volume routes and those that are located in urban areas where contamination of storm sewer systems is a concern. Mixtures of salt/sand are the most frequent treatment placed on the county road system to combat snow and ice. Concentrations of 10% salt are most common; however 50/50 concentrations are occasionally used to combat particularly stubborn conditions. These mixtures combine the benefits of increased traction with the ice cutting action of road salt.

The Crow Wing County Engineer has conducted an evaluation of the entire county highway system and has assigned a snow and ice priority ranking for each segment of roadway. This system ensures that roadways receive snow and ice services in a timeframe and level of service corresponding to its importance to the overall transportation system. The primary criteria used to determine a roadway's priority ranking is traffic volume. Roads with relatively low traffic volumes that serve as a logical collector system for the higher volume arterial roads may be eligible for a higher priority ranking. Please see Snow Plowing Priority & Level of Service Map.

The following summarizes each of the three priority rankings and the corresponding level of service that can be expected for each:

Priority 1: High traffic volume areas of high collection. Major connection routes of travel with more than 5000 cars a day.

Level of Service Target: Single pass with the plow in each lane with salted or sanded hills, curves, intersections and stop signs within 6 hours

of the snowfall's termination. Intermittent bare single wheel paths in each lane within 18 hours.

Priority 2: Areas of rural collection, moderate to high volume with daily traffic counts between 5000 – 500 cars a day.

Level of Service Target: Single pass with the plow in each lane with salted or sanded hills, curves, intersections and stop signs within 12 hours of the snowfall's termination. Intermittent bare single wheel paths in each lane within 48 hours.

Priority 3: Low volume traffic counts, with less than 500 cars a day.

Level of Service Target: Single pass with the plow in each lane with salted or sanded hills, curves, intersections and stop signs within 18 hours of the snowfall's termination. Snow compaction on gravel roads shall be expected. Sanding may take place at the operator's discretion. The County Highway Department can not ensure intermittent bare pavement, but will salt or sanded hills, curves, intersections and stop signs on blacktop roads.

CROW WING COUNTY

Snow Plowing Priority & Level of Service

Legend

— MnDOT Highway

Route Priority

- 1 (ADT>5000)
- 2 (500>ADT<5000)
- 3 (ADT<500)

Priority 1

High traffic volume areas of high collection. Major connection routes of travel. More than 5000 cars a day.

Target: Single pass with the plow in each lane with salted or sanded hills, curves, intersections and stop signs within 6 hours of the snowfall's termination. Intermittent bare single wheel paths in each lane within 18 hours.

Priority 2

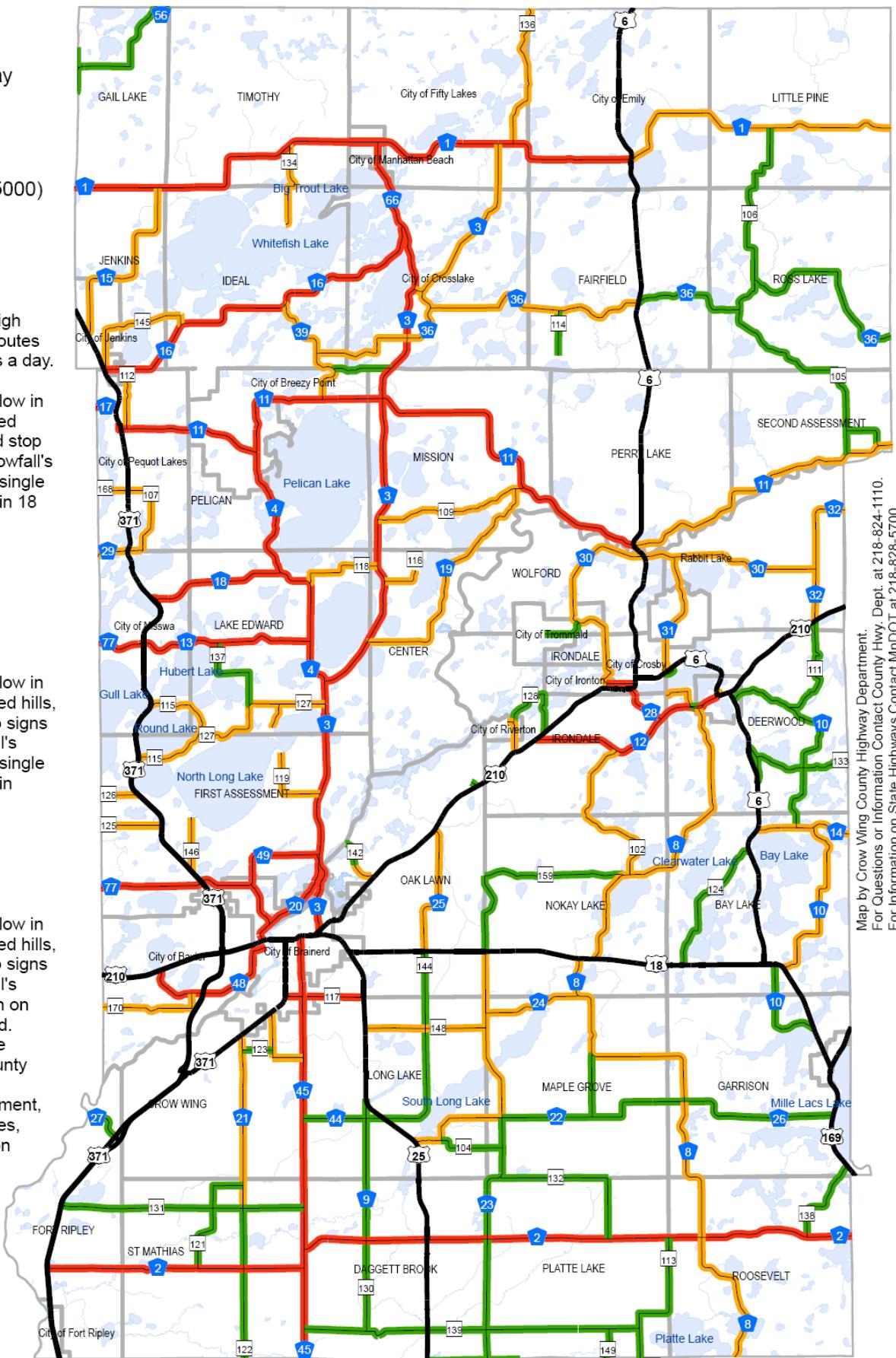
Areas of rural collection,
moderate to high volume.
Daily traffic counts between
5000 - 500 cars a day.

Target: Single pass with the plow in each lane with salted or sanded hills, curves, intersections and stop signs within 12 hours of the snowfall's termination. Intermittent bare single wheel paths in each lane within 24 hours.

Priority 3

Priority 3
Low volume traffic counts.
Less than 500 cars a day.

Target: Single pass with the plow in each lane with salted or sanded hills, curves, intersections and stop signs within 18 hours of the snowfall's termination. Snow compaction on gravel roads shall be expected. Sanding may take place at the operator's discretion. The County Highway Department can not ensure intermittent bare pavement, but will salt or sand hills, curves, intersections and stop signs on blacktop roads.



Map by Crow Wing County Highway Department.
For Questions or Information Contact County Hwy. Dept. at 218-824-1110.
For Information on State Highways Contact MnDOT at 218-828-5700.