

Town of Hanover Snow and Ice Control Manual

1. Introduction

The Town of Hanover Department of Public Works (DPW) is responsible for the management of winter storms with respect to the Town's infrastructure. Specifically, the DPW ensures that the Town's 86 miles of roads as well as the public facilities of the Town are reasonably safe for pedestrian and vehicular travel.

Hanover typically experiences 25-40 winter storm events a year. The average number of significant storms requiring the use of snow plows to remove snow is typically 5-7. The rest of the winter storm events are handled through anti-icing techniques using various anti-icing chemicals. The Department utilizes nine sanders to apply road salt and other anti-icing chemicals. When the roads need to be plowed, the Department utilizes 25-30 pieces of town-owned equipment and upwards of 40-45 pieces of rented equipment to remove snow from streets and sidewalks.

DPW personnel are responsible for snow and ice removal on the parking lots of all town facilities.

The Town Manager, acting on long standing policies of the Board of Public Works, has adopted a "black road" policy to meet the high expectations of the residents of Hanover. This policy aggressively fights winter storm events to keep roads passable during storms and to achieve roads that are black and wet within 4-6 hours after the end of the storm.

The Director of Public Works, acting under the direction of the Town Manager, has the authority to prepare for and execute snow and ice control activities within the financial constraints set by the Town Manager and Town Meeting. Said activities shall be consistent with the policies of the Town Manager.

The sections that follow describe the DPW's anti-icing operations, plowing operations, and general winter snow and ice policies. This document is meant as a guide for interested parties to understand the Town's snow and ice operations as well as a series of policies to guide residents and DPW personnel through snow and ice events.

2. Pre-Season Preparations

2.1 Private Contractors

The DPW utilizes 40-45 pieces of rented equipment each time the roads need to be plowed. To meet this number, the DPW prepares a snow plow package each year in early September. This package includes the hourly rates for each class of equipment that have been set by the Town Manager as well as the various documents contractors must submit to become contract plow operators for the Town. Plow packages are sent to those contractors who have plowed for the Town in the past. In addition, packages are made available to anyone who requests such a package.

If the response of the plow contractor requests does not meet the Director of Public Works' expectations by mid October, the Department advertises for additional plows in local newspapers and recruits contractors to join its operation.

Returned plow packages are reviewed by office personnel, the Deputy Superintendent (field operations), and finally the Director of Public Works prior to being approved. The Town Manager authorizes the Director of Public Works to sign plow contracts on behalf of the Town.

2.2 Fleet Conversion

The Highway Division of the DPW begins conversion of the larger dump trucks in the snow and ice fleet to sanders in early October. All snow and ice equipment is then checked to ensure that the entire town fleet of 32 pieces of snow and ice equipment is available for use on or around November 1st of each year.

2.3 Chemical Inventories

The DPW typically uses 3,000-3,500 tons of road salt each year as well as 7,000-12,000 gallons of liquid anti-icing chemicals such as magnesium chloride. To ensure that adequate inventories of chemicals are on hand, the DPW purchases roughly 2,000 tons of salt at the start of the season. Roughly half of this is kept inside the Department's salt shed for ready access and an additional 1,000 tons is kept in an outdoor salt bin covered with a water proof tarp as a reserve supply. The months of January and early February are the peak season for salt usage and supplies tend to be low. The DPW tries to keep the inside supply at least 2/3 full by placing additional orders as the season progresses. Each round of salt consumes approximately 80-100 tons.

To minimize costs, the Town participates in the Commonwealth of Massachusetts' state bid for road salt.

Liquid deicing chemicals are purchased by bulk tanker on an as-needed basis.

2.4 Review of Sanding/Plowing Maps and Department Policies

The DPW's storm managers, the Director of Public Works and Deputy Superintendent (field operations), working with staff level storm incident managers, review the snow and ice policies as well as the sanding and plowing routes in October to prepare for the first snow and ice event. The previous year's operations are reviewed and plans are finalized for the upcoming winter season.

2.5 Assignment of a Storm Incident Managers

The Director of Public Works and Deputy Superintendent (Field Operations) assign an on-call storm incident manager during events to execute the Department's plowing and anti-icing operations. These incident managers are typically foreman level personnel who have received specialized training in the management of snow and ice related events. One or more incident managers may be assigned during a season or during a long duration event to ensure that the winter storm operations run smoothly and to ensure that fatigue does not result in bad decisions by the manager. The Director of Public Work or any senior manager (Deputy Superintendent) may at times be assigned as the storm incident manager.

3. Anti-icing Operation

3.1 Pre Anti-icing Operations

The Hanover DPW anti-icing operation begins when the road surfaces are determined to be hazardous by the Deputy Superintendent or his designee. During off hours the Police Department may advise the DPW of hazardous conditions, although it is the DPW's goal to be proactive and not wait for reports from the Police.

The on-call storm incident manager is typically on the road 2-3 hours before the anti-icing operation to monitor road and air temperatures and weather conditions. The storm incident manager, if acting under authorization of the Deputy Superintendent and Director of Public Works, has full authority to make the decision to begin operations and will notify the Deputy Superintendent and the Director of Public Works of the decision to mobilize.

3.2 Mobilization

At the first sign of snow or ice, trucks will be dispatched to assigned routes.

Typical anti-icing operations require nine trucks to cover approximately 90 miles of road. The process takes approximately four hours. The DPW's priority is to cover the main roads first, followed by secondary roads and subdivisions.

3.3 Anti-icing Operations

Application rates of materials are based upon temperature, expected amount and type of precipitation, and duration of the storm. Salt, while effective at higher temperatures is limited in its ability to melt ice at lower temperatures. Lower temperatures require a heavier application rate as well as the addition of a pre-wetting agent. As such, the Hanover DPW utilizes a liquid magnesium chloride (MgCl) solution which is effective at much lower temperatures, to pre-wet the salt as it leaves the sander. The approximate application rates are as follows:

28-32 degrees	Salt is applied
28 degrees and below	Salt and magnesium chloride solution are applied

Average round: MgCl application:	approx 1,880 pounds per center lane mile approx 6-8 gallons per ton of salt
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Specific weather conditions as well as a review of the effectiveness of a chemical may result in the adjustment of the application rates by the storm incident manager.

The application rate will stay in effect only as long as the anti-icing materials are available. In the event of a shortage of material, application rates and priorities will be revised accordingly.

In late night or early morning hours, road conditions may deteriorate do to low traffic volume. Deicing chemicals rely on vehicular traffic to help spread the material across the road. Lack of traffic may result in ineffective application of material. The DPW will actively monitor road conditions and make proper chemical application before the traffic volume increases.

3.4 Demobilization

Based upon the effectiveness of the anti-icing operation and a review of the condition of the roads in consultation with the Deputy Superintendent, the storm incident manager will make the final decision on demobilization at the end of the storm.

3.5 Accountability

The Town Manager will set snow and ice policy and refer complaints and criticisms to the Director of Public Works for resolution. The Town Manager may, after consultation with the Board of Public Works and Director of Public Works, hear and attempt to resolve complaints from residents that cannot be resolved by the Director of Public Works. The Town Manager will provide feedback to the Director of Public Works on the Department's performance in meeting the snow and ice policy.

The Director of Public Works will monitor winter weather conditions, consult with the Deputy Superintendent (field operations) regarding anti-icing operations, and notify the Town Manager as needed during large storm events to inform him of the status of storm management activities. The Director of Public Works will attempt to investigate and resolve complaints from residents. The Director of Public Works will review written storm reports, evaluate the overall effectiveness of the operation, and meet with the Deputy Superintendent to discuss the operation and ways we can improve performance.

The Board of Public Works will advise the Town Manager and the Director of Public Works regarding the concerns of the Town's residents on issues regarding the setting of snow and ice anti-icing policies. The Board of Public Works shall refer complaints and criticisms to the Director of Public Works for resolution. In the event the Director of Public Works cannot resolve complaints from residents, the Board of Public Works may hear and attempt to resolve said complaints, offering recommendations to both the Director of Public Works and the Town Manager for final resolution. The Board of Public Works will provide feedback to the Director of Public Works on the Department's performance in meeting the Town's snow and ice anti-icing policies.

The Deputy Superintendent (field operations) will monitor winter weather conditions and anti-icing operations as needed and report major issues to the Director of Public Works. The Deputy Superintendent (field operations) will attempt to investigate and resolve complaints from residents referred to him. The Deputy Superintendent (field operations) will review records submitted to him by the storm incident manager and will submit a

written storm report to the Director of Public Works within 36 hours of the end of the anti-icing operation

The storm incident manager will maintain detailed storm records to include:

- Time Cards
- Materials used
- Equipment used, including the name of the operator
- Equipment condition and availability
- Snow totals and duration of the storm
- Log of activities prior to, during, and immediately after the storm

The storm incident manager will turn in storm management worksheets to the Deputy Superintendent within 24 hours of the conclusion of the storm.

4. Plowing Operation

4.1 Pre-plowing Operations

The Director of Public Works and Deputy Superintendent (field operations) will monitor weather conditions and assess department readiness when plowing operations are likely. The on-call storm incident manager will monitor the snowfall rate in the field and notify the Deputy Superintendent before there is 2 inches of accumulation on the roads. The Deputy Superintendent will make the determination on calling in plows by the time there is 2 inches to 3 inches of accumulation on the road. In the absence of the Deputy Superintendent, the Director of Public Works will make the determination.

4.2 Mobilization

All Town plows will be called first, then the contractors. The storm incident manager will adjust plow routes as necessary, accounting for the town and contracted equipment that is available, to properly maintain 90 plus or minus miles of roads and Town facilities with approximately 60-70 pieces of equipment.

The Deputy Superintendent will notify the Director of Public Works of the decision to mobilize equipment. The Deputy Superintendent will call for a police detail to handle parking violations, based on the estimated snow total and duration of the storm.

4.3 Snow Removal Operations

The storm incident manager will direct the snow removal operation and monitor all plow route conditions, redirecting equipment as needed, to maintain passable road conditions during the duration of the storm. He or she may be assisted by other supervisory personnel.

The Director of Public Works and Deputy Superintendent will be on-site during the duration of the storm to periodically evaluate all aspects of the snow removal operation during its progress to ensure that town policies and standards are being met, providing guidance to the highway foreman as necessary. The Deputy Superintendent and Director of Public Works will deal with complaints that arise during the event, monitor the physical condition of the snow plowing crew, monitor radar and weather reports during the storm, and make the final decision on demobilization at the end of the storm.

Once plows have been called in, the plowing operation will be continuous for the duration of the storm to keep roads open and to keep accumulation on the road to a minimum. Plow operators are expected to continue with their routes for the duration of the storm, taking breaks as needed for food, fuel, and rest. Plow operators are expected to operate their vehicles in a safe manner, not to exceed 20 miles per hour, and to notify the storm incident manager when they feel they must take a break to prevent an unsafe driving condition due to operator fatigue. The storm incident manager, Deputy

Superintendent, Director of Public Works, and other supervisory personnel will monitor operator fatigue during the duration of the storm.

After 6 inches of accumulation the DPW can not guarantee road conditions to be completely passable until approximately 4 to 6 hours after the end of the storm. When snow totals exceed 12 inches, extended periods of time may be needed to achieve the Town's "black road" policy.

Some events may exceed the ability of the Town's forces and contractors to obtain the desired "black road" conditions on all roads within the normal time goals. The Director of Public Works and Deputy Superintendent will monitor weather conditions and the plowing operation as a whole. In some cases, additional work by a road grader as well as multiple applications of deicing chemicals may be necessary to remove ice pack from the roadway surface. The Department will make reasonable efforts to obtain the services of such equipment. However, since this equipment is in short supply and not routinely used, there may be a delay in obtaining the services of a grader for final cleanup until one becomes available.

4.4 Storm Cleanup Prioritization and Emergency Access

The DPW puts all roads at the highest priority during and after a storm. Town facilities, with the exception of Police headquarters and fire stations, follow in priority after the roads. Police headquarters and the Town's fire stations are plowed on a regular basis as part of an active plow route to keep these facilities open for emergency access for the duration of the storm. Other facilities are on an active plow route, but emphasis is placed on public safety facilities first.

The DPW will begin clean-up of the sidewalks on Route 139, Pleasant Street, and Cedar Street approximately 24 to 36 hours after road cleanup has been completed, depending on equipment availability. Other sidewalks will be considered on a case by case basis depending on equipment availability.

The DPW will respond with equipment to Police and Fire calls when requested at all times during a storm. The storm incident manager, Deputy Superintendent, and Director of Public Works will monitor police and fire frequencies to facilitate timely service for emergency calls. The DPW will assist all other Town departments on an as-needed basis in order of priority. The priority of calls will be determined by the Director of Public Works, Deputy Superintendent, or storm incident manager.

The DPW is not responsible for snow left in front of driveways or mailboxes as a result of sidewalk or roadway clearing snow and ice operations.

The DPW's policy is to clear the full width of the paved surface of streets. Widening of streets and intersections may take place in the days following initial storm demobilization to improve sight lines and provide adequate road widths for future storms and emergency access.

4.5 Demobilization

Based upon the effectiveness of the snow removal operation and a review of the condition of the roads in consultation with the Director of Public Works, the Deputy Superintendent will make the final decision on demobilization at the end of the storm.

4.6 Accountability

The Town Manager will set snow and ice policy and refer complaints and criticisms to the Director of Public Works for resolution. The Town Manager may, after consultation with the Board of Public Works and Director of Public Works, hear and attempt to resolve complaints from residents that cannot be resolved by the Director of Public Works. The Town Manager will provide feedback to the Director of Public Works on the Department's performance in meeting the snow and ice policy.

The Director of Public Works will notify the Town Manager as needed during large storm events to inform him of the status of storm management activities. The Director of Public Works will attempt to investigate and resolve complaints from residents. The Director of Public Works will review written storm reports, evaluate the overall effectiveness of the operation, and meet with the Deputy Superintendent to discuss the operation and ways that the department can improve performance.

The Board of Public Works will advise the Town Manager and the Director of Public Works regarding the concerns of the Town's residents on issues regarding the setting of snow and ice policies. The Board of Public Works shall refer complaints and criticisms to the Director of Public Works for resolution. In the event the Director of Public Works cannot resolve complaints from residents, the Board of Public Works may hear and attempt to resolve said complaints, offering recommendations to both the Director of Public Works and the Town Manager for final resolution. The Board of Public Works will provide feedback to the Director of Public Works on the Department's performance in meeting the Town's snow and ice policies.

The Deputy Superintendent will notify the Director of Public Works at the start of the plowing operation with an oral report of expected operations and on-going during the storm with updates as to the progress of the clean-up operation. The Deputy Superintendent will attempt to investigate and resolve complaints from residents referred to him. The Deputy Superintendent will review records submitted to him by the storm incident manager and will submit a written storm report to the Director of Public Works within 36 hours of the end of cleanup operations.

The storm incident manager will maintain detailed storm records to include:

- Time Cards
- Materials used
- Equipment used, including the name of the operator
- Equipment condition and availability

- Snow totals and duration of the storm
- Log of activities prior to, during, and immediately after the storm

The storm incident manager will turn in storm management worksheets to the Deputy Superintendent within 24 hours of the conclusion of the storm.

As snow and ice control is an essential emergency function of Town operations all other employees of the DPW and Facilities Departments who are normally assigned snow and ice responsibilities shall monitor winter weather conditions, stay in communication with storm managers and supervisors, including answering phone calls from managers and supervisors after hours, and respond when notified to their assigned facility to commence their snow and ice control activities. All personnel shall remain on the job until released by the Director of Public Works, Deputy Superintendent (Field Operations) or their designee.

5. Winter Snow and Ice Policies

5.1 Objects in the Street Layout

During snow plowing operations, some mailboxes, fences, signs, and other objects in the street layout may become damaged. Most of the damage is caused by the weight of the snow coming off of the plow and hitting the object. It is uncommon for a plow to physically strike an object, but it does occasionally happen.

The DPW is not responsible for any damage to property or objects located in the street layout that occurs during snow removal operations.

5.2 Vehicles Parked in the Street Layout

Pursuant to Hanover Town Bylaw 6-2 section 7, vehicles that are parked in the street layout that are interfering with the snow removal operation will be removed at the owner's expense.

5.3 Unaccepted Streets

The DPW will plow unaccepted streets that meet the current standards of the department. Specifically, these streets must have received their final coat of asphalt and all drainage and utility structures must be level with the finished pavement so as not to create a hazard to Town plows or personnel. The DPW is not responsible for damage to infrastructure on unaccepted streets that may result from snow removal operations.

As a service to residents, the Town will apply deicing chemicals to all unaccepted streets that have occupied houses.

The DPW will monitor snow removal operations on occupied streets that do not meet existing town standards to ensure that minimal access is available to emergency equipment if needed. The Town may perform a minimal level of snow removal on said streets if in the opinion of the Deputy Superintendent or Director of Public Works such action is necessary to ensure public safety. If action is taken, the developer of the unaccepted street may be billed for such services.

5.4 Transfer Station Operations

The DPW will actively remove snow from Transfer Station during snowstorms. Access to the Transfer Station by the public will be suspended until the facility has been declared safe by the Director of Public Works or his designee.

5.5 Brush Pile and Compost Pile Operations

The Ames Way brush pile and compost operation will be closed to the public during and after snow and ice operations until the facility is deemed safe by the Director of Public Works or his designee.

5.6 Access to Non-school Town Facilities

The Director of Public Works and Deputy Superintendent will actively monitor all town facilities during snow plowing operations and will advise the Town Manager and relevant town department heads on the status of such facilities. Depending on the safety of such facilities, access to these facilities may be delayed or suspended by the Town Manager or his designee until said time that the facilities have been deemed safe to reopen.

5.7 Snow Removal on School Properties

The DPW performs snow removal activities on school properties. Such activities will be prioritized by the Director of Public Works in consultation with the Superintendent of Schools, considering the overall public safety and access needs of the Town as a whole.

6. Public Communication

6.1 Goals

The Department's goal is to keep the public informed on the status of operations during snow and ice events. Information on minor events will typically be posted through the the DPW's twitter (@HanoverDPW) and Facebook accounts (Town of Hanover, MA DPW). Residents are urged to follow these two accounts for regular up-to-the minute postings. The DPW (www.hanoverdpw.org) and Town (www.hanover-ma.gov) websites will be updated during major events.

6.2 Newspaper and Cable Communications

The Department will utilize traditional local media to educate the public on the Town's snow and ice activities. This will include an annual legal advertisement informing residents of certain snow and ice policies.

6.3 Website Postings

The Department will utilize the snow and ice page of the DPW's website (www.hanoverdpw.org) to provide information on road conditions, plowing operations, and the status of the Transfer Station and other Town facilities during major snow and ice events. Postings to this website are subject to the availability of local broadband internet service. Residents are advised to check the dates of any posting and to refresh their browser regularly to ensure that they are receiving the most up-to-date information each time they check the web sites.

6.4 Social Media Postings

The Department will post updates on on-going snow and ice operations through the DPW's Twitter account (@HanoverDPW) and Facebook accounts (Town of Hanover, Ma DPW). Residents and business are advised to follow these accounts for the most current information.

6.5 Public Feedback

The primary focus of the department during snow and ice events is to enhance public safety. Emergency situations should be communicated to the Town's Emergency Communication Center (dial 911).

Residents and businesses are advised that the DPW's storm response extends past the end of the precipitation. Depending on the size and nature of the event, operations may extend round-the-clock for multiple days or during scheduled hours for one or more days after the end of the primary precipitation event. Patience is requested.

Residents are urged to communicate their non-emergency concerns or feedback to the DPW through the following channels. Response to resident and business concerns shall be through the most appropriate channel as defined by the Director of Public Works. Residents and businesses are advised to provide their full contact information including name, address, telephone, and email as well as a clear description of their concern to facilitate follow-up by department personnel. When possible, pictures of the concern are requested and may be provided in person, through email, or through the YourGov application:

Telephone: 781-826-3189

Fax: 781-826-8915

Regular storm email: (storms@hanoverdpw.org).

Twitter: @HanoverDPW

Facebook: Town of Hanover, Ma DPW

YourGov application: The DPW's YourGov application allows residents to report storm damage via the internet or through a free smartphone application. Residents are urged to visit the home page of the DPW's website for details