

# **Town of Colchester SNOW AND ICE REMOVAL PLAN**



**Developed by the Colchester Public Works Department  
For the Town of Colchester  
Updated and Adopted on December 8, 2015  
By the:**

**COLCHESTER SELECT BOARD**

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***"Please Drive Safely"***

## **SECTION 1.0 - GENERAL**

### **1.1 Purpose and Need**

Snow and ice covered roads are more than an inconvenience. Vehicle mobility is reduced, and the potential for accidents increases. Besides substantial economic losses, accidents produce the likelihood of injuries and fatalities. Clearing snow and ice from roads through an effective winter maintenance operation may help reduce storm related accidents.

Mobility is imperative to our community. People need to travel to work, to shop, or go to church. Children must ride buses to attend school, sporting events, or other activities. Businesses must deliver goods and services. Controlling hazardous conditions created by winter storms as quickly as possible and keeping roads open is essential to maintaining public mobility.

Mobility for emergency vehicles is a priority too. During winter snow storms people still have heart attacks, law enforcement is needed, and homes catch on fire. Response time for paramedics, police, and fire fighters is measured in minutes and seconds when lives and property hang in the balance. Road crews need to strive toward keeping roadways as clear as possible to minimize any delays for emergency vehicles.

Snow and ice covered roads produce some hidden costs in terms of the environment and the economy. Clogged roads cause disruptions in the flow of traffic and reduced travel speeds, thereby increasing fuel consumption. There are other economic factors to be considered as well. People may be late for work; absenteeism may increase; goods and services may not be delivered and production may decrease. To minimize the negative effects inherent to winter storms, an effective snow and ice removal plan is necessary.

### **1.2 Goals and Objectives**

The primary goal and objective of the Town's Snow and Ice Removal Plan is to maintain safety and mobility on the Town's transportation system for motor vehicles and their operators that are properly equipped for travel in inclement weather conditions. The Town's transportation system consists of 91.91 miles of public roadways, 20.13 miles of private roadways and 41.9 miles of sidewalks and bikepaths. Additional goals and objectives include the following:

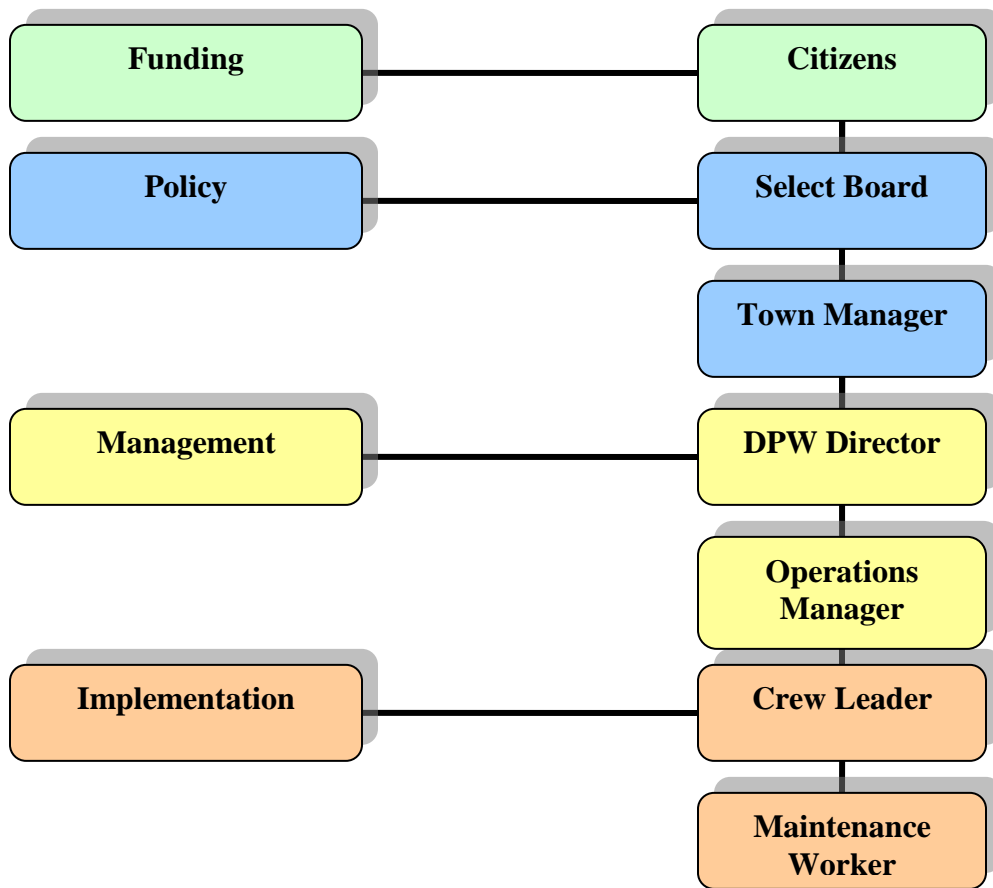
1. *Maintain mobility on the Town's transportation system within the fiscal constraints of the approved operating budget.* It is recognized that there are limitations to the Town's resources, and that these resource limitations may at times limit the Town's ability to meet this objective.
2. *Maintain mobility on the Town's transportation system while preserving and protecting the Town's natural resources.* It is recognized that some commonly accepted materials and practices associated with snow and ice removal operations are potentially harmful to natural resources, and that the use of these materials and practices may at times limit the Town's ability to meet this objective.

3. *Provide a higher level of service during peak demand traffic periods.* It is recognized that traffic volumes vary significantly over the course of any twenty-four hour period. The Town will attempt to manage its available resources to provide a higher level of service between the hours of 6:00am and 7:00pm when traffic volumes are typically at their highest.
4. *Implementation of snow removal operations consistent with established priorities.* Due to their function, higher traffic speeds, and higher volumes, primary arterial and collector roadways shall be given priority over local residential streets for all snow and ice removal operations.
5. *Strive toward established performance measures.* The following data indicates the general performance goals that the Department of Public Works strives for to complete each task. These estimated hours may vary significantly depending on storm conditions, traffic volumes, and the availability of resources.

Mobilization	1 hour
Plow major arterials	2 hours
Plow secondary roads	4 hours
Plow sidewalks	7 hours
Salt/sand major arterials	2 hours
Salt/sand secondary roads	2 hours
Blow sidewalks	48 hours

### **1.3 Organizational Structure**

Recognizing the far reaching circumstances associated with the Town’s snow and ice removal operations, the organizational structure as described in this section is based upon a holistic approach. The Town Manager, reporting to the Select Board, works collaboratively to develop both policy and funding plans based upon specific recommendations from the Director of Public Works. The Select Board ultimately adopts the program policy and then forwards supporting funding recommendations to the voting public. With funding authorization, the Director of Public Works assumes primary management responsibility for the Town’s snow and ice removal operations and works within the established funding and policy guidelines. The responsibility for daily operations is assigned by the Director to the department’s Operations Manager, who in turn, works with crew leaders and maintenance staff to implement the plan. A flow chart illustrating this organizational structure is illustrated below:



### 1.4 Management Philosophy

The management philosophy of our snow and ice removal plan is based upon a balance of the basic principles of public safety, cost containment, and environmental sensitivity. We recognize that the public safety of our residents, guests, and travelers is paramount. At the same time however, we acknowledge that the community has financial limitations which ultimately shape the level of service that is provided. Finally, we understand the environmental impacts from both excessive vehicle emissions and the use of de-icers and abrasives in a lakeshore community, and strive to limit these factors through our snow and ice removal program. Although we have no control over the weather, we can control the management of our program which involves the assessment of each action to be taken before, during and after a storm, and evaluate them against our basic management principles to ensure their consistency with our philosophy.

## **1.5 Management Approach**

This Snow and Ice Removal Plan identifies resources and procedural guidelines associated with the management of winter storms. These resources and guidelines serve as tools that are applied to complex and unpredictable weather conditions consisting of rapidly changing variables. Although preparation and planning are key elements of the plan, these steps alone can not ensure that a pre-determined plan will fully address the circumstances a winter storm may create. Consequently, working within the frame work of the plan, the Town will rely upon an adaptive management approach whereby management decisions may be made that involve revising the plan to produce the desired outcome. This adaptive management approach may result in variations of the basic operational phases of this plan in an attempt to maximize the efficiency and effectiveness of the Town's resources, and achieve to the greatest extent practical, the overall goals and objectives of this plan.

## **1.6 Personnel Policy**

This Snow and Ice Removal Plan incorporates by reference the Town of Colchester's Comprehensive Personnel Policy Manual as most recently adopted or amended by the Colchester Select Board. In the event of conflicting provisions between these two documents, the stricter shall prevail.

## **1.7 Disclaimer**

The Town of Colchester is dedicated to maintaining both mobility and safety on its transportation system. However, the Town of Colchester has a finite level of available resources to perform the tasks associated with its Snow and Ice Removal Program, and it is recognized that winter storms create rapidly changing weather conditions that are inherently dangerous, unpredictable, and uncontrollable, requiring independent judgment and decisions from Town employees. Consequently, the Town of Colchester makes no representation, or offers no guarantees, and assumes no liability that through the implementation of this Snow and Ice Removal Plan, the Town's transportation system will always be safe for public travel, and that there will not be incidents of property damage, injury or death related to road conditions. All individuals operating motor vehicles on Colchester Town roadways are encouraged to be mentally prepared for operating a motor vehicle in inclement weather conditions and do so at their own risk, and as well, ensure that their motor vehicle is mechanically and adequately equipped to operate in inclement weather conditions.

## **SECTION 2.0 – REGULATIONS AND POLICIES**

### **2.1 Ordinances**

#### Chapter 12 - Traffic - Article III, Parking, Standing and Stopping

Sec. 12-32. Parking without authorization on public grounds.

(a) *Designation of areas.* No automobile shall be parked without authorization on publicly owned land within the Town and including, by way of illustration and not limitation, public and municipal parking lots, drives and ways, including the highways of the said Town, between the hours of 10:00 p.m. and 6:00 a.m. from the 15th day of November in each year until the following 15th day of March.

(b) *Penalty.* Any motor vehicle parked in violation of subsection (a) shall be ticketed, which ticket shall constitute a penalty of five dollars (\$5.00) for the first violation. The penalty shall increase to fifteen dollars (\$15.00) for the second or subsequent violation within thirty (30) days of previous violation; said ticket is payable within three (3) days of the offense as provided for in Title 23, Section 1746, V.S.A. Any police officer of the Town and the Town Manager are hereby authorized to cause vehicles parked in violation of this section to be removed and the owner of any vehicle so removed shall be required to pay a reasonable towing charge not to exceed forty-five dollars (\$45.00) for such removal as well as storage charges not to exceed five dollars (\$5.00) a day and there is hereby imposed a lien against such vehicle so removed for the payment of the said towing and storage charges.

#### Chapter 13 - Streets and Sidewalks - Article III, Snow and Ice Removal

Sec. 13-29. Dumping ice and snow in public areas.

(a) Placing prohibited without permission. No person, by their own act, or through their agents or employees, shall throw, put, push, or otherwise deposit snow, or ice, in the following public areas without written permission from the Director of Public Works or his/her designated representative.

- (1) On the paved or traveled portion of any public street;
- (2) On any Town sidewalk.

(b) Restrictions may accompany permission. In granting written permission under the previous section, the Director or his/her representatives may impose such restrictions as are necessary to protect the safety and welfare of the public, and such permission may be revoked at any time.

Chapter 1 - General Provisions

Sec. 1-9. General penalty; violations.

Civil Ordinance Violations Jurisdiction.

Enforcement of Civil Ordinance Violations

(1) A civil penalty (a fine not more than that allowed by law) may be imposed for a violation of a civil ordinance. Each day the violation continues shall constitute a separate violation. On all first offenses, the municipal officer shall issue a warning notice. After the first offense, if the violation continues, the municipal officer will issue a "municipal complaint". The following penalties will be assessed for all municipal complaints:

First offense	Warning notice
Second offense	\$50.00
Third and subsequent offenses	\$100.00
Waiver fee (second offense)	\$25.00
Waiver fee (third and subsequent offenses)	\$50.00

Sec. 13-30. Mailboxes.

No person shall construct and/or place a mail receptacle within the public right-of-way which does not meet all requirements including proper dimensions, heights, and distance from the road, as described by the United States Postal Service.

**2.2 Policies**

Emergencies - In the event of an unforeseen combination of circumstances, or an urgent need for assistance that calls for immediate action to protect the health or property of a citizen, the Town shall attempt to plow any road in order to protect and serve a citizen of Colchester.

Material Usage - At the discretion of the Town, de-icers may be used to control ice and snow accumulations on the roads when temperatures exceed 20 degrees Fahrenheit, and de-icers, abrasives or a combination of these materials when temperatures are below 20 degrees Fahrenheit.

Road Conditions - Although the Town shall strive to maintain safe driving conditions on the roadways to the greatest extent possible within the limitations of its resources, the Town can not keep roadways continuously free of ice and snow, and offers no guarantee and/or assumes any liability that roads will always be free of ice and snow, and present no hazard to the traveling public.

Sidewalk Conditions - Although the Town shall strive to maintain safe walking conditions on the sidewalks to the greatest extent possible within the limitations of its resources, the Town can not keep sidewalks continuously free of ice and snow, and offers no guarantee and/or assumes any liability that sidewalks will always be free of ice and snow, and present no hazard to the traveling public.

Hours of Work - The Town will strive to provide the highest possible level of service practical during peak traffic hours, while protecting all Town employees involved within the Town's snow and ice removal program. To ensure this condition, the Town may manage it's human resources by discontinuing snow and ice removal activities during the hours of 10:00 p.m. and 4:00 a.m. Snow and ice removal activities will only take place during these hours, which may include single operator patrol, when in the opinion of the Director of Public Works, or his designee, the work can be performed without exhausting the Town's available resources or placing the public and/or the Town's employees in danger, or if the work is considered necessary to avoid a condition where roadways are impassable to emergency services.

Complaints - The Town shall investigate any and all complaints received regarding the Town's snow and ice removal operations. If the situation can be corrected or improved it will be addressed at the first opportunity. If the complainant leaves a name and/or telephone number and request that they are contacted, they will be contacted by a public works representative within 24 hours from the time received.

Mail Boxes – The Town will investigate any reported damage to mail boxes caused by the Town's snow removal operations. If the investigation concludes that the damage was caused by the Town's snow removal operations, and that the mail box was properly positioned in accordance with U.S. Postal Standards, the Town will replace it in kind.



## **SECTION 3.0 - RESOURCES**

### **3.1 Town Equipment**

The following equipment is available for snow and ice removal operations. All equipment is located at the Public Works Garage on Blakely Road.

Plow Trucks:	6 (35,000 GVW trucks equipped with front plow, wing plow and computerized material spreader.)
One Ton Trucks:	2 (Equipped with front reversible plow and material spreader.)
Grader:	1 (Equipped with underbody plow and wing plow.)
Loader:	1 (Equipped with front bucket.)
Sidewalk Tractors:	2 (Equipped with front V-plow and blower)

### **3.2 Contract Equipment**

The Town of Colchester does not have a contract with any local contractors for snow removal equipment, nor is any contractual equipment reserved or committed to the Town of Colchester. The following lists of contactors do have various pieces of snow removal equipment that have been made available to the Town in the past, and may be available on an as needed basis.

All Seasons Excavating	(802) 655-3976
A. Marcelino & Company	(802) 862-6383
Engineers Construction	(802) 863-6389
Ormond Bushey & Sons	(802) 872-8110

### **3.3 Communications**

All equipment listed in section 3.1 is equipped with two-way radio systems. All systems are accessible to the Colchester Police Department and Public Works base stations. A base station is located in the Public Works office at 781 Blakely Road. There is also a base station located at the Public Works Maintenance Facility at 711 Blakely Road.

The Director of Public Works and the Department's Operations Manager also have two-way radios in their vehicles. These vehicles are designated as command vehicles within the Town's Emergency Operations Plan, and are equipped with multi-agency capability. The Director of Public Works, Operations Manager and the Highway Crew Leader also carry cellular phones.

### **3.4 Personnel**

- (8) Truck Drivers
- (2) Heavy Equipment Operators
- (1) Sidewalk Plow Operator
- (2) Mechanics

### **3.5 Materials**

Road Salt: 1,750 tons (200 ton storage capacity.)

Road Sand: 3,500 tons

All materials are located at the Public Works Maintenance Facility.

### **3.6 Weather Services**

The primary advanced notification source for approaching winter storms is the internet, accessed from the Operations Managers Office and the Public Works Maintenance Facility. Selected sites are monitored on a regular basis where detailed forecasts and computer modeling are evaluated. These sites are as follows:

[www.intellicast.com](http://www.intellicast.com)

[www.weather.com](http://www.weather.com)

[www.erh.noaa.gov/btv/index.php](http://www.erh.noaa.gov/btv/index.php)

As the storm enters the region, monitoring of these sites continues utilizing Doppler radar tools. Additionally, the National Weather Service at the Burlington International Airport is contacted where public works managers can speak to staff Meteorologist to discuss and interpret real time weather data specific to the Town of Colchester.

### **3.7 Fuel**

The Town's fuel depot is located at the Public Works Maintenance Facility. All snow removal equipment is fueled at this facility. The facility has two separate permitted underground storage tanks which hold 10,000 gallons of unleaded fuel, and 10,000 gallons of diesel fuel. The fueling system can only be accessed through the use of a coded access card assigned to each piece of equipment. Access to the fueling system also requires the operator to enter basic usage information related to the equipment. The system then electronically transfers this information to the Department's Computerized Preventative Maintenance Program in support of overall equipment maintenance programs.

### **3.8 Equipment Maintenance**

The Department has two full time mechanics who work out of the Public Works Maintenance Facility. This is a full service maintenance facility with two double stack service bays. The mechanics are fully trained to perform all routine maintenance and repair of both diesel and gas powered equipment. Capabilities include computer diagnostics, electrical and hydraulic systems, welding and equipment fabrication. The Department also maintains a service vehicle which allows most of these services to be performed in the field if necessary. During off hour storm events, mechanics will be called in on an as needed basis by either the Highway Crew Leader or the Operations Manager. During severe storms, the Operation Manager may elect to call in mechanics on a standby basis. For efficiency, normal routine work is performed by the mechanics while operating under standby conditions.

## **SECTION 4.0 – INTER-AGENCY COORDINATION**

### **4.1 Colchester Police Department**

During regular working hours, or other times when snow removal operations have been implemented, the Police Department advises the Public Works Department of hazardous road conditions. It is the responsibility of the Public Works Department to have management control over all snow removal operations at all times. In response to communications from the Police Department advising of hazardous road conditions, the Highway Crew Leader in charge shall evaluate the situation, may consult with the Operations Manager, and then determine the appropriate response.

During non-working hours, the Highway Crew Leader shall rely on notification from the Police Department that precipitation has begun, or that in their opinion, driving conditions are becoming hazardous. Notification will be made by the Police dispatch utilizing either a direct dial to the Crew Leader's residence or their cellular phone. Updated contact numbers and schedules are provided to the Police Department on November 1 of each year. After notification is received, the Crew Leader shall evaluate each situation, may consult with the Operations Manager, and then determine the appropriate response.

In each case, the evaluation may include, but may not be limited to, time of day, day of week, special events, temperature, snow intensity and characteristics, weather forecasts, availability of resources, and whether the situation can be improved consistent with the Department's basic management principles. In the event the Police Department is not satisfied with the decision, the Police may contact the Director of Public Works who will assess the situation, may consult with the Town Manager, and then make a final decision.

The Department of Public Works shall keep the Police Department fully advised on the status of the snow and ice removal operations, as well as any plans that will be implemented in response to the storm that may have an impact on road conditions.

### **4.2 Colchester Fire Departments**

Fire fighting during freezing weather often results in ice accumulations along portions of the transportation system. The Department of Public Works closely monitors fire scenes to ensure that these sections of roadways are properly treated with de-icers during and following a fire event. In the event that the response by the Fire Department to a scene is prevented or significantly hindered by poor road conditions, the Public Works Department will divert the necessary equipment from its normal routing to facilitate the response by fire equipment.

### **4.3 Colchester Rescue Department**

In the event that the response by the Rescue Department to a scene is prevented or significantly hindered by poor road conditions, the Public Works Department will divert the necessary equipment from its normal routing to facilitate the response by rescue equipment.

#### **4.4 Colchester School District**

The School District relies primarily on bussing to accommodate their student transportation needs. The current arrangement is with a private contractor. Road conditions are an important consideration when the School District decides to close schools due to unfavorable weather conditions. Upon request, the Public Works Department shall provide to the School District, or their transportation contractor, any available information that will assist them in their decision process. Information may include, but may not be limited to road conditions, weather forecasts, and any plans that will be implemented in response to the storm that will have an impact on road conditions. The Department of Public Works shall not provide recommendations on school closures. This responsibility lies solely with the School District.

#### **4.5 Colchester Water Departments**

Water line breaks during freezing weather often result in ice accumulations along portions of the transportation system. The Department of Public Works closely monitors these scenes to ensure that these sections of roadways are properly treated with de-icers during and following a water break.

#### **4.6 Vermont Agency of Transportation**

The Vermont Agency of Transportation, through the District #5 Maintenance Facility located at Exit 17 in Colchester, is responsible for all state and federal highways within the Town of Colchester. These include Rt. 2, Rt. 2a, Rt. 7, Rt. 15 and I-89. Although both the state and the Town have their respective snow and ice removal responsibilities, both agencies are willing to assist the other in an emergency situation if possible. Because these state highways are an important component of the Town's overall transportation system, the state is advised of any dangerous road conditions that are encountered on these roadways by the Town.

## SECTION 5.0 – ADMINISTRATIVE PROCEDURES

### 5.1 Storm Preparation

Upon arrival of a winter storm, driving conditions deteriorate rapidly, requiring a rapid response from the Town's snow and ice removal program. To improve the readiness and reliability of the Town's resources, careful preparations are made for each storm. Although there are many preparatory steps to be considered, certainly the development of a management plan is one of the most critical.

A management briefing between the Operations Manager and the Highway Crew Leader will take place to evaluate weather data and other storm variables, as well as the availability of resources when winter storm events are predicted. In the event of major winter storms, the Director of Public Works may also participate in this planning process. In any case, the Highway Crew Leader's goal is to implement a specific management strategy developed for each storm that is matched to the variables expected from the event. Contingency plans may also be developed to accommodate various outcomes that are not consistent with the expected event.

The 10 year mean snowfall average in Colchester, Vermont is approximately 80 inches. Snowfall accumulation alone however, cannot be the only judge of costs, public perceptions, hardships, and other problems associated with winter weather. The following information outlines some of the more significant winter weather variables that are considered during the planning process for each storm.

**Moisture Content:** Depending on climatic conditions, the moisture content of snow may vary significantly. From the standpoint of snow and ice removal operations, the less moisture there is in the snow, the better. As the moisture content increases, several negative effects begin to develop.

- (a) A high moisture content indicates that there is a significant amount of water in the snow. The water accelerates the dilution of the de-icers applied to the roadway, and thereby, reduces the effectiveness of the de-icers. Subsequently, increased de-icing becomes necessary which increases the cost of the storm.
- (b) Water can be thought of as a lubricant. Subsequently, the higher the moisture content in the snow, the more slippery the roads will become.
- (c) High moisture contents add mass or weight to the snow. As the moisture content increases, the snow becomes increasingly more difficult to push with the plows. This results in slower plow speeds, increased fuel consumption, and increased wear on the equipment.

- (d) High moisture contents allow the snow to bond more easily to both the roadway and to itself. Under traffic, the snow is packed down on the roadway, and becomes difficult and expensive to remove.
- (e) Winter storms that produce snow with high moisture contents are typically referred to as "wet storms". These types of storms are often followed by cold fronts resulting in rapidly falling temperatures. Under these conditions, it becomes imperative that accumulated snow be removed as soon as possible to avoid freezing.

**Timing:** The period of time in which snow fall occurs is critical. With storms that occur during the off peak traffic hours, such as 7:00 p.m. to 4:00 a.m.; major arterial roads can usually be sufficiently cleared before peak traffic times. However, when storms develop during peak traffic hours, significantly more cars will be impacted by poor road conditions. The morning and evening commuting hours are the worst time for storms to develop.

**Duration:** The storm duration refers to the length of time snowfall continues. Generally, the faster a storm comes in and leaves the better. Three inches of snow that falls in 24 hours may cost twice as much as twelve inches of snow that falls in 8 hours. Storms of long duration increase salt use, equipment, and labor hours. Storms of extended duration severely tax available resources to maintain the roads over a prolonged period of time.

**Freezing Rain:** Freezing rain occurs when warm upper level air masses ride over colder air near the surface. As precipitation begins within the warm air in the form of rain, it eventually falls through the colder air near the surface, causing it to freeze. This weather condition presents the most hazardous driving conditions encountered during winter storms. This type of weather condition requires significant amounts of de-icers and abrasives to keep the roads passable.

**Blowing Snow:** Blowing snow occurs when high winds are present in open areas. Winds blow snow onto the roads creating isolated areas of poor road conditions. These conditions can exist for extended durations long after precipitation has ended.

**Intensity:** The intensity is a measure of how fast the snow is falling or accumulating. With storms of high intensity, the rate of accumulation may exceed the rate in which the equipment can remove the accumulated snow from the roadway within established performance parameters. Under this condition, snow removal efforts may fall behind, and roadways may become obstructed with snow.

In addition to assessing the various weather variables, ensuring that the necessary resources are available and in place is critical to the successful implementation of the management plan. All equipment should be fully prepared to execute the management plan. This should include such things as mechanical readiness, fueling, the attachment of plow equipment, pre-loading with sand or de-icers, and storage of equipment inside to ensure quick starts in inclement weather conditions. Sufficient materials should be on hand such as salt, sand, fuel, tire chains, wiper blades, and repair parts. All operational staff should be advised of the approaching event, and be adequately rested and prepared. Field preparations should be made to avoid any impediments to the operation. This may include such things as adequate snow storage areas, the removal of any barriers or obstructions, or the clearing of key drainage structures when heavy rains are expected.

## **5.2 Activation of Plan**

Activation of the Town's Snow and Ice Removal Plan is defined by the deployment of resources that directly mitigate poor road conditions. As outlined later in the Operations Section of this plan, this point is referred to as Phase 3. The plan is activated when in the opinion of the Department of Public Works; road conditions have become, or are expected to become hazardous, and can reasonably be improved through the activation of the plan.

The authority to activate the plan shall vary depending upon the level of deployment. The Operations Manager and Highway Crew Leader are authorized to activate Phases 3 – 6 of the Snow and Ice Removal Plan. Phases 7 and 8 must be authorized by the Director of Public Works.

## **5.3 Monitoring and Management Decisions**

Ongoing monitoring of storms in progress, and subsequent management decisions are critical activities of the overall plan. The characteristics of the storm and the condition and availability of resources are monitored throughout the storm event, and measured against the management plan that was developed for the storm. Because of the inherent unpredictability of weather events, and numerous other circumstances beyond the departments control, management decisions are often required that involve revising the plan to produce the desired outcome. This adaptive management approach may result in variations of the basic operational phases of this plan in an attempt to maximize the efficiency of the Town's resources. This process is the responsibility of the supervisor in charge of the storm, who may consult with their supervisor before making a decision. Although the Highway Crew Leader is considered the first line of supervision, both the Operations Manger and Director of Public Works may assume responsibility at any time. The level of supervision is determined by factors such as, but not limited to, the severity of the storm, availability of resources, overall roadway conditions, the level of resource deployment, or the general overall complexity of the operations.

## **5.4 News Releases**

All news releases to newspapers, radio, and television will be provided by the Director of Public Works, or his designated representative. It will be the responsibility of the Operations Manager and Highway Crew Leaders to supply accurate information so that reports can be made to the public. The department shall be responsive to inquires from the media, and shall endeavor to keep the media informed if there is information that will benefit the residents and traveling



public within the Town of Colchester.

## **5.5 Records**

The Operations Manager shall be responsible for maintaining all records related to the Town's snow and ice removal operations. These records shall include all weather forecast information, labor, materials and equipment used during the storm and a log of events that document the times that various actions were taken by the Town. This information will be entered into a Storm Activity Log Sheet and be retained within the Public Works Departments files for a period of 5 years. (A sample of the Storm Activity Log Sheet is located in Section 7.0 – Appendix.)

## **5.6 Accident Procedures**

When an employee or other person has been injured or there has been damage to Town or private property while on the job, a properly completed accident report must be submitted within twenty-four (24) hours of the accident. The employee's supervisor and Department Head shall be responsible for signing and forwarding the properly completed report to Human Resources. Human Resources will report the incident to the Town Manager. If an employee is injured in a work related accident, he or she should follow the procedures for worker's compensation as outlined in the Town's Comprehensive Personnel Policy Manual. Any accident or incident which involves any piece of Town equipment and a private motor vehicle or individual, shall be reported to the Police Department immediately, regardless of the amount of damage.

## **5.7 Damage Claims**

In the event that any departmental employee is contacted by an individual making a claim against the Town of Colchester associated with private property damage or personnel injury, or any individual associated with, or inquiring about a claim against the Town of Colchester, the employee shall make no representation or express any opinion relative to the claim, and immediately forward the claim to Human Resources.

## SECTION 6.0 – OPERATIONS

### 6.1 Equipment Procedures

Equipment Fueling: Operators shall utilize the card system at the Public Works Maintenance Facility for fueling. All cards shall be coded to record fuel consumption, as well as odometer or hour meter readings for preventative maintenance purposes. For equipment that is equipped with hour meters, operators shall enter the hour meter readings into the fueling system each time fueling occurs. For all other equipment, operators shall enter odometer readings at the time of fueling. For equipment that is powered by diesel engines, only diesel fuel shall be used for fueling. All gasoline powered equipment shall use only gasoline. All equipment being fueled shall have all motors and electrical systems turned off. No burning cigarettes or other sources of ignition shall be allowed within a 50 ft. radius of the fueling facility. Any problems encountered during fueling operations, including accidental spills of fuel, shall be reported to the Operations Manager immediately.

Equipment Inspection: Inspection of equipment by the operator shall be done daily. Inspection shall include all applicable items on the Operator Daily Equipment and Safety and Security Checklist. Any and all damage and/or service requirements shall be reported to the Garage Foreman or his/her appointed designee on a service request form as soon as possible.

Equipment Greasing: All equipment requires greasing at regular intervals. These include daily, intermediate, and full service greasing. Greasing procedures are outlined in the equipment greasing file located in the Garage Foreman's office within the Public Works Garage.

Equipment Cleaning: The operator of the equipment shall be responsible for keeping the equipment cleaned inside and out. Special attention should be given to properly removing all de-icing agents from the equipment after use.

Energy Conservation: To minimize fuel consumption and harmful environmental impacts, any unnecessary idling of equipment shall be avoided. When operating equipment, the quickest and most direct route should be used whenever possible. All operators shall drive within the legal speed limits and shall avoid any unnecessary excessive acceleration.

Equipment Operations: All equipment operators shall be knowledgeable of all operating and safety requirements and must have valid appropriate licensing before operating any Town equipment. Equipment shall not be unnecessarily abused at any time and shall be operated within design performance ranges at all times. Equipment should not be used for purposes that it was not designed for. Wearing of all safety belts and harnesses provided is required at all times. Whenever equipment is backed into or out of the garage, a second employee should guide the operator from a safe vantage point. If a second employee is not available, the operator shall walk to the rear of the vehicle and visually inspect the area before attempting to back the equipment up.

Tarps: All trucks that are equipped with tarps are required to cover all loads before traveling over the roadway. After trucks have been loaded with material, operators shall take reasonable

measures to ensure that no loose material exists on the vehicle that could potentially become dislodged while traveling over the roadway.

## 6.2 Salting Procedures

Required Resources: (6) 35,000gvw plow trucks with operators.  
De-icers as required.

Salting operations should begin very early on in a storm with the most effective and efficient times being just moments before the roads become slippery. The optimal temperature range for use is above 20 degrees Fahrenheit. The effectiveness of salt begins to decline rapidly below these temperatures. Operators are responsible for assigned routes, which are salted in a priority sequence. Although the sequencing may change from one storm to another depending on storm variables, the priority is generally dictated by factors such as steep grades, curves, intersections, and traffic volumes. Salt rates, as well as methods of application, will be determined by the Operations Manager and Highway Crew Leader depending on the severity and conditions of the storm. Once determined and programmed salt application rates are continually monitored and controlled by on-board computer systems within each truck. Typical salting situations are as follows:

MAJOR ARTERIALS: Suggested Salt Application Rates  
(Rates may vary with conditions.)

Normal Storms: 500 lbs. per 2 lane mile (Beginning of storm)

Freezing Rain: 300 lbs. per 2 lane mile (During storm, windrowed)

Post Storm: 300 lbs. per 2 lane mile (After storm)

Heavy Wet Snow: 800 lbs. per 2 lane mile (Beginning of storm)

Compacted Wet Snow: 800 lbs. per 2 lane mile (After storm)  
(Temperature dropping)

SECONDARY ROADS:

Freezing Rain: 300 lbs. per 2 lane mile (During storm, windrowed)

Post Storm: 300 lbs. per 2 lane mile (After storm, Temp. above 32 F.)

Compacted Wet Snow: 800 lbs. per 2 lane mile (After storm, Temp. above 32F.)  
(Temperature dropping)

***Special Note:*** Post storm and compacted wet snow salting should be done in conjunction with plowing if necessary to remove any residual snow and ice.

### 6.3 Sanding Procedures

Required Resources: (6) 35,000gvw plow trucks with operators.  
(2) One ton trucks with operators.  
Abrasives as required.

Sand is used as an abrasive and is considered an alternative to de-icers when storms, weather conditions, or road conditions do not favor the use of road salt. Typical situations where sand would be used are as follows:

Gravel Roads: Sand is the only material that is used on gravel roads. De-icers thaw the frozen gravel, which causes the road bed to become unstable. Because sand does not act as a de-icing agent, it is not applied at the beginning of a storm. Sand is typically applied to gravel roads after they have been plowed, or when ever they become slippery on a post storm basis. During periods of freezing rain, the rain easily washes the sand off the roadway, which requires frequent re-applications of sand.

***Special Note:*** Under storm conditions where a transition from snow to rain occurs, and accumulated snows do not prevent roads from being traveled, the Operations Manager or Crew Leader may avoid removing the snow until the rain has stopped. The snow has some absorption qualities which absorb the rain. If gravel roads are plowed off, the rain quickly turns the surface to ice.

Major Arterials: Sand may be used during and after storms to improve poor driving conditions when temperatures are below 20 degrees Fahrenheit. Sanding during storms should only occur after plowing.

Secondary Roads: Sand may be used after storms to improve poor driving conditions when temperatures are below 20 degrees Fahrenheit.

### 6.4 Plowing Procedures

Required Resources: (6) 35,000gvw plow trucks with operators.  
(2) One ton trucks with operators.  
(1) Motor Grader with operator.  
(2) Sidewalk plows with operators.

Plowing operations may be used to remove accumulating snow from the roadways following the applications of de-icers. Plowing is the most cost effective way of removing accumulated snow from the roadway, and is also the most favorable environmental approach. It provides a smooth driving surface for motorists.

Typical situations where plowing would be used are as follows:

Major Arterials: Plowing will usually begin on the major arterials when accumulations reach approximately 2". While snow is continuing to accumulate, plowing of major arterials should continue during normal snow removal hours.

Secondary Roads: The plowing of secondary roads usually will begin after accumulations have stopped, and/or all of the major arterials have been cleared. If accumulations of snow on secondary streets begin to exceed 6" then secondary streets may be plowed in conjunction with major arterial plowing. Under these conditions, secondary streets will be plowed as they are reached during the major arterial plowing process, and may not receive multiple passes to clear snow from curb to curb. In the interest of time and maintaining adequate clearing of major arterials, only a sufficient width to allow vehicles to pass will be cleared on secondary streets.

Gravel Roads: Gravel roads shall be treated generally as major arterials during a plowing operation.

*Special Note:* Special care must be taken in plowing gravel roads when they are soft. This typically occurs in the early and late portion of the winter when the road bed is not frozen. This can also occur during mid-winter thaws. To avoid damage to the roadway, the equipment, and the operators, gravel roads should be plowed with one ton dump trucks or the grader under these conditions.

Sidewalks: Although sidewalks are considered an important component to the overall transportation system, there are distinctly different risks associated with the use of snow covered sidewalks versus snow covered roadways. Accordingly, the following guidelines have been developed for the winter maintenance of the Town's sidewalk system. Depending upon conditions, it may become necessary to deviate from these guidelines as conditions require.

#### General Goals

The department shall strive to achieve the following goals within the fiscal constraints of the approved operating budget:

- Maintain mobility on the Town's pedestrian system.
- Provide increased priority to high pedestrian traffic areas such as around schools while school is in session, or other highly used pedestrian areas such as, but not limited to, the Route 15 sidewalks.
- Provide highest level of service during periods of highest use.
- Provide service as efficiently as possible.

#### Regular Time Operating Guidelines

- Sidewalks shall be plowed whenever conditions can be improved

- by plowing (generally greater than 1”).
- Plowing shall not commence when temperatures are expected to rise, resulting in the melting of any accumulated snow within 24 hours.

#### Overtime Operating Guidelines

- Sidewalks shall be plowed when total accumulations have reached 3 or more inches, with plowing beginning at 4:00 AM.
- Plowing shall not commence when temperatures are expected to rise, resulting in the melting of any accumulated snow within 24 hours.

#### Additional Operating Guidelines

- Whenever practical, sidewalk plowing will commence as close as possible to the end of a storm to avoid the need for repeated plowing.
- When any amount of wet snow has accumulated on the sidewalks and temperatures are expected to fall sharply, resulting in the freezing of wet snow, plowing shall proceed at any time to avoid this condition.
- Storms with significant snow accumulations or high moisture content may result in the need to deviate from these guidelines.

## **6.5 Operational Phases**

The department’s Snow and Ice Removal Plan is organized into a total of eight operational phases. Each step involves a different level of activity or deployment of resources, depending upon the advancement of the storm and its relative severity. Generally, more significant storms will require a higher operational phase.

Phase 1 – Planning: Phase 1 involves pre-storm planning intended to develop a specific strategy for managing the expected storm event. This phase also involves the assessment and preparation of various resources that will be required to implement the management strategy. Phase 1 operations are outlined in more detail in Section 5.1 *Storm Preparation*.

Phase 2 – Pre-Storm Monitoring: Phase 2 involves the deployment of one supervisor to monitor the early developmental stages of a storm, and the resulting road conditions. The objective of this phase is to anticipate deteriorating road conditions and facilitate a rapid response to the event, or, alternatively, to identify a deviation from a predicted event, and thereby avoid an unnecessary deployment of resources. Storm monitoring in general is discussed in more detail within Section 5.3 *Monitoring and Management Decisions*.

Phase 3 – Advanced De-icing: Phase 3 involves the application of de-icers at the very onset of precipitation. The objective of this phase to create a salt brine on the road surface to prevent the snow from bonding to the pavement, and to reduce the number of accidents which are most common during the first hour of precipitation while motorists are attempting to adjust to rapidly

changing driving conditions. Phase 3 is typically the first operational step for most storm events. Phase 3 utilizes the procedures outlined in Section 6.2 *Salting Procedures*.

Phase 4 – Arterial Plowing: Phase 4 involves the scraping and plowing of accumulating snow along arterial and collector roadways within the Town’s overall transportation system. The objective of this phase is to maintain safety and mobility along the portions of the transportation system carrying the majority of all traffic volumes, by removing accumulating snow and ice from the roadways, subsequent to advanced de-icing. Depending upon storm conditions and road surface types, de-icers and/or abrasives may be applied concurrently with this phase. Phase 4 utilizes the procedures outlined in Section 6.4 *Plowing Procedures for Major Arterials* with an equipment deployment consistent with Section 6.2 *Salting Procedures*.

Phase 5 – Full Scale Plowing: Phase 5 involves plowing of accumulating snow along all roadways under the Town’s responsibility. The objective of this phase is to maintain safety and mobility along the portions of the transportation system carrying the majority of all traffic volumes, and as well to provide access to all lower functional local roadways along the transportation system and the Town’s pedestrian network. To ensure that plowing operations keep pace with snow accumulations, roadways are cleared only to the necessary width to allow vehicles to safely pass. Depending upon storm conditions and road surface types, de-icers and/or abrasives may be applied concurrently with this phase. Phase 5 utilizes all of the procedures and resources outlined in Section 6.4 *Plowing Procedures*.

Phase 6 - Post Storm Clean Up: Phase 6 involves both plowing and material application activities following the end of precipitation. The objective of this phase is to restore the roadways travel width and surface condition to the extent practical. Phase 6 utilizes all of the procedures and resources outlined in *Sections 6.2 - 6.4*.

Phase 7 – Contractual Assistance: Phase 7 involves the use of contractual snow removal equipment to assist in clearing snow accumulations from the Town’s transportation system. This phase can only be implemented with authorization by the Director of Public Works. The Director may authorize this phase when in his opinion, the Town’s resources are incapable of maintaining the Town’s transportation system to an acceptable level of functionality. For purposes of this phase, functional is defined by an overall roadway condition that does not unreasonably impede the Town’s ability to deliver emergency services, or threaten the overall public health and safety of the community. Resources associated with this phase are located in Section 3.2 of the plan.

Phase 8 – Disaster Declaration: Phase 8 involves a wide spread weather related disaster that has resulted in a State emergency declaration by the Governor, and then subsequently, a Federal Disaster Declaration by the President. Operating under this phase, and/or with the expectation of proceeding to this phase, special administrative protocols and procedures will be implemented in support of state and federal assistance. These protocols and procedures relate primarily to increased efforts associated with record keeping, to include detailed tracking of all disaster related costs, photo documentation, and attendance to any and all applicant briefings scheduled by state or federal officials. While under this phase, it is recognized that there may likely be resources that would otherwise be unavailable to the Town. These include, but may not be limited to, the Vermont Army National Guard, or the full or partial reimbursement for

contractual assistance. Close contact must be maintained through the Vermont Agency of Transportation and the Vermont State Emergency Management Office while operating under this phase. Additionally, while under Phase 8, the Director of Public Works may elect to recommend activation of the Town's Emergency Operations Plan and open the Town's Emergency Operations Center.