City of Orem

Department of Public Works

Snow and Ice Control Plan

Prepared By Maintenance - Street Section (Updated December 13)

Introduction

The City of Orem maintains 529 lane-miles of roadway. During winter months, it is essential to keep a network of roadways clear of snow and ice to provide for the safe and orderly movement of critical services and regular traffic.

This Snow and Ice Control Plan is managed by Orem City Public Works Streets/Storm Water Section and takes into consideration budget constraints, direction from the City Council, and feedback from Orem residents. Included in this plan are general guidelines and procedures for snow removal and ice control. This plan is not mandatory, it is discretionary and serves to outline the manner in which the Public Works Department directs City crews in solving the problem of snow and ice control both in ordinary and emergency situations. The guidelines and procedures outlined in the Snow and Ice Control Plan do not constitute a standard or regulation.

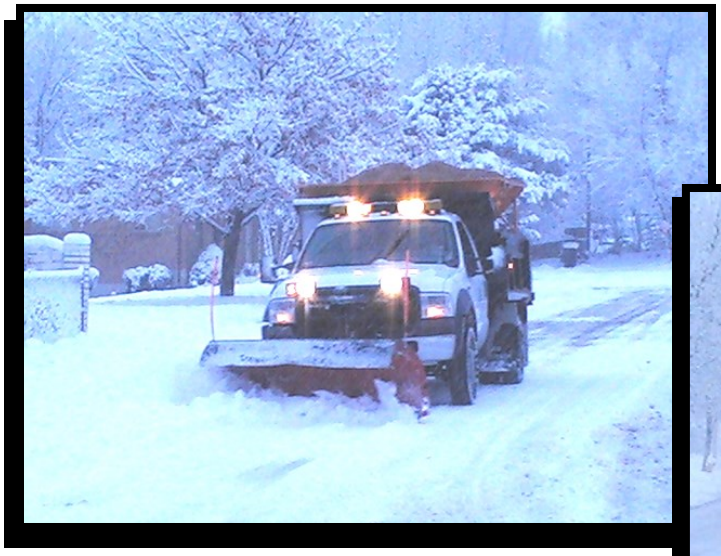
Under the direction of the City Council, the City of Orem does not maintain a bare pavement policy. A bare pavement policy means that streets will be plowed and salted to bare pavement within 24 hours of a snow or ice event. Under this plan, streets will be treated with plowing and spot salting depending on the intensity of the storm. If the storm is of high intensity or lengthy duration, efforts will be focused on high priority streets, therefore some secondary or lower priority streets may not receive immediate snow removal and/or ice control.

Purpose

The primary purpose of the Snow & Ice Control Plan is to organize snow removal and ice control efforts to ensure that safe travel routes are available during and after a snowstorm. Identifying Arterial and Secondary streets and streets that serve schools and hospitals is key to this plan. Classifying streets into priority 1, 2, and 3 identifies the order in which streets are plowed and treated.

Service Objectives (Goals)

- To have all designated streets in the Snow Removal Plan plowed and/or salted within 24 hours after a storm.
- To reduce the cost of snow removal through the acquisition and utilization of efficient equipment and proper salt usage.
- To divide the City into areas where one truck equipped with a plow and salt spreader can effectively provide snow removal services in each area.
- To divide crews and efficiently utilize the assigned personnel to ensure effective snow removal.
- To have a sufficient number of trained staff to operate all available snow removal equipment.



The Snow and Ice Control Plan

The Snow and Ice Control Plan is influenced by three factors: street priorities, storm classifications, and City resources. Street priorities define the order in which snow removal is performed throughout the City. Storm classifications are based on intensity, duration, rate of snowfall, temperature, and time of day. City resources include equipment, personnel, and technology related resources to help monitor a storm.

The goal of this plan is combine these factors into a set guidelines.

Street Priorities

Orem City's streets are assigned a priority number for snow removal. This priority number is primarily based on traffic volume, but also takes into consideration other factors. These factors include steep hills, emergency services, schools, commercial, industrial, and residential areas. The priority determines the order or emphasis snow removal is carried out within the City during and after a snow event. The higher priority is identified with a lower number.

Priority 1

These streets consist of high traffic volume (arterials), steep hills, and streets serving hospitals, fire stations, police stations, and schools. These streets makeup the minimum network which must be kept open to provide basic transportation.

Priority 2

These streets consist of residential collector streets (secondaries), bus routes, commercial or industrial areas, and streets with a moderate incline.

Priority 3

These streets consist of residential subdivisions and all other streets not classified as priority 1 or 2.

Throughout a storm event high priority streets must be kept open. During periods of heavy snowfall it may become necessary to repeat snow removal on high priority streets and delay snow removal on lower priority streets.

Non-City Streets

Snow removal is the responsibility of the streets owner or agency even though these streets are located within Orem boundaries.

Non-City streets owners include: Utah Department of Transportation (UDOT), Utah Valley University (UVU), and private developments (residential, commercial, and industrial).

UDOT owned street within Orem boundaries include: State Street, 800 North, University Parkway, and Geneva Road.

Storm Classifications

During an average winter, the City will receive approximately 35 - 40 inches of snowfall. Orem is located in a unique area that can produce a wide range of different storm patterns and snow events. One factor that makes Orem unique is it is located southeast of the Great Salt Lake. Occasionally, winds from the Northwest with very cold arctic air rush over the Great Salt Lake and produce significant lake effect snow. In these instances, areas southeast of the Great Salt Lake, such as Orem, can receive large amounts of snow in very short periods of time.

Orem classifies each storm event depending on the following factors.

These factors include:

- Duration and Intensity
- Rate of snowfall
- Temperature
- Traffic volume

Class "A" Storms: These storms are of minor intensity and are handled with salt spreading on major streets and intersections. Storm snowfall amounts are less than 2.5 inches. The Street Section personnel can handle storms of this intensity usually within 12 hours or less after the storm subsides.

Class "B" Storms: These storms are of greater intensity requiring salt spreading units and snowplows to be used concurrently. Snow accumulation is greater than 2 inches but less than 5 inches. Section personnel will be alternated on a 12-hour shift until designated streets are considered safe for travel. Personnel are expected to have all work completed within 36 hours or less after the storm subsides.

Class "C" Storms: These storms are of greater intensity and long duration with the storm lasting more than 24 hours but less than 36 hours. Snow accumulations are greater than 5 inches, but less than 8 inches. Salt spreading units and snow plows will be used concurrently and personnel will be alternated in 12-hour shifts. Other City equipment may be called to assist. Personnel are expected to have all work completed within 48 hours or less after the storm subsides.

Class "D" Storms: These storms of extreme intensity and duration. These storms will have accumulations greater than 8 inches and last longer than 36 hours. Salt spreading units and snow plows will be used concurrently and personnel will be alternated in 12-hour shifts. The City will require all available equipment to participate and in extreme cases contractors may be hired to help. It is expected to take several days to complete all work necessary for storms in this category.

In all cases, freezing temperatures and large traffic volumes can delay snow removal operations.

An additional factor to consider is storm repetition. As a storm's life endures, it becomes necessary to redo many streets previously finished. These storms require all of the City's equipment to be engaged in keeping higher priority streets open. This reduces the opportunity for lower priority streets to be plowed.

The City of Orem Streets/Storm Water Section utilizes all its available resources to assist in snow removal. Appropriate equipment and properly trained personnel are the foundation for a successful operation.

Equipment

10-Wheel Dump

The Streets/Storm Water Section is equipped with 15 plow and salt spreading units. These units include five 10-wheel dumps and ten mid-size maintainers.

The five 10-wheel dumps are primarily responsible for keeping arterial roads open for traffic flow. Each unit is assigned a specific route to take care of during a snow event. After the snow has stopped, these units may be teamed up to clean and widen arterial roads.

The ten mid-size maintainer units are responsible for a variety of tasks. These smaller units can maneuver tight areas much better and can respond quicker to emergencies. Six of these units are equipped with 4-wheel drive and are assigned to roads with a steep slope. Others are used to maintain collector and secondary streets. Once these routes are open, these units are used in residential subdivisions.

Maintainer (GMC 5500)

Maintainer (Ford 550)

In addition, the Public Works Department has additional equipment that can be used to assist in snow removal if needed. This equipment consist of two backhoes with mounted plows, one mid-size maintainer with a plow and salting unit, and three plows mounted to pickup size trucks. This equipment is primarily used to clean City owned parking areas. Several backhoes, a motor grader, and two front-end loaders are also available in extreme cases.

Having the plows and salt spreaders on the roads as quickly as possible is essential once we have performed equipment safety checks and pre-trip inspections. The operators will immediately begin performing snow removal operation in their assigned areas unless directed otherwise by their supervisor.

Personnel

Ongoing training of employees in snow removal operations is essential to having a safe and successful snow removal season. Training includes classroom discussion and hands on operation. In preparation for winter, operators of snow removal equipment are gathered together to discuss priority roads, general practices (including proper use of salt), and safety issues. They are then given opportunities to load and unload equipment while performing thorough checks of all salt spreading and plow units. A new employee may spend several storms with another experienced operator before they have an opportunity to be assigned their own unit and area.

The Streets/Storm Water Section consists of 22 trained employees. Several of these employees have over 15 years experience in snow and ice control. In the event of a shortage of work force within the Streets/Storm Water Section, the Water Resource Division has people trained to operate snow removal equipment and is available for assignment on a temporary basis until the emergency or crisis is over.

Each operator of a snow plow and/or spreader unit, will use their best judgment of the existing conditions and will take any appropriate action(s) necessary to provide snow and ice control for the safe movement of vehicular traffic.

Monitoring

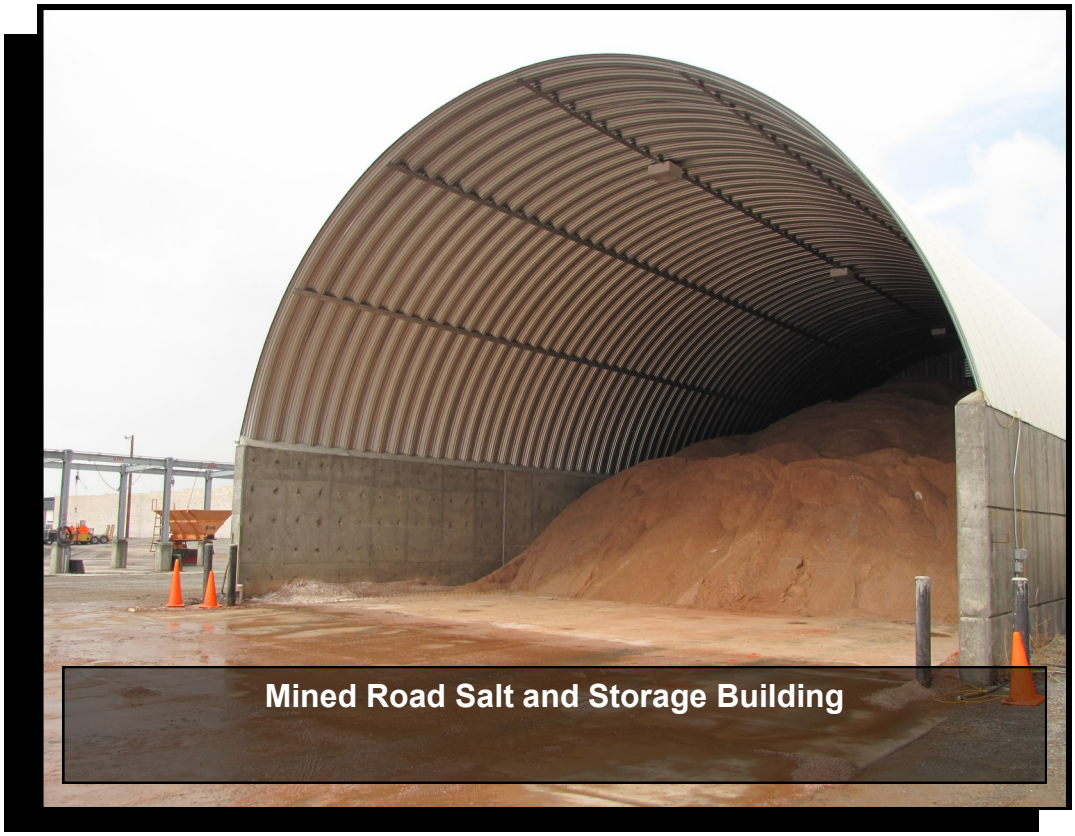
Monitoring road conditions can be very challenging because of the unique storm patterns that can pass through Orem's boundaries. For example, it is not uncommon for both Orem's south bench and north hills to have several inches fall while the center part of the city has little to no snowfall. The Streets/Storm Water section takes advantage of the traffic camera system in place to help with this effort. Several key areas are monitored through a live video stream loop to help determine appropriate locations to dispatch units.

Weather monitoring is done both online and with the help of local television forecasts. When a storm is in the forecast, preparations are made to make sure all equipment is ready for dispatch. Throughout a storm event, observations of both satellite and radar loops from online resources are monitored to get a better indication of what impact the storm may have.

Good Housekeeping (Best Management Practices)

Environmental impacts for air quality and ground water are of extreme concern for Orem. Choosing appropriate materials and storing them properly helps keep negative impacts to the environment at a minimum while still providing safer travel through Orem.

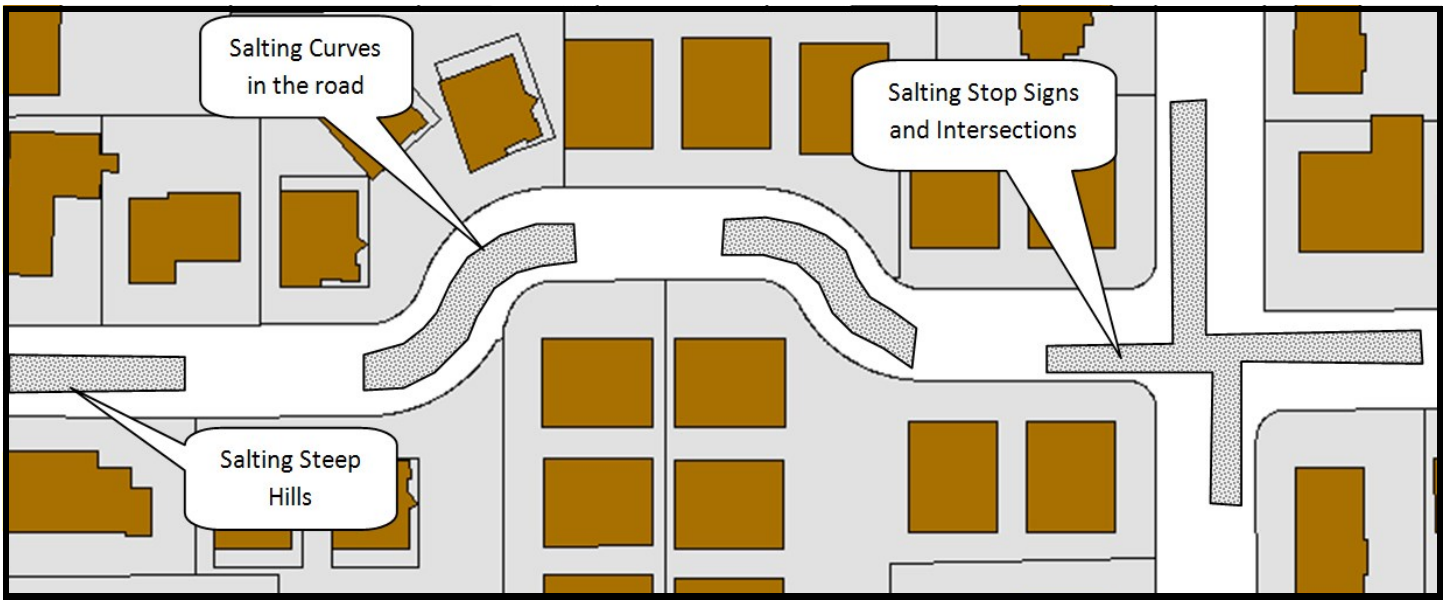
Orem no longer uses a salt/sand mixture due to the air quality impacts and additional cleanup related to the use of sand. Sand use can generate particulate matter which is a major source of winter air pollution. The use of sand on streets also impacts storm drains and creates an additional burden for street sweeping, drain cleaning, and catch basin maintenance. Research has found that the proper use of mined road salt can provide both traction and the melting power needed for quality service without the need for this additional work.



Mined salt contains a natural blend of trace minerals that can provide traction and melting power at temperatures well below freezing while lowering the negative impacts on the environment caused by sand. Mined salt also melts at temperatures lower than that of white salt. By using this material, Orem's operators can use less material to accomplish this essential service.

Appropriate steps to store material and clean equipment are also taken. The use of a salt storage building in conjunction with wash stations, equipment racks, and a impervious retention basin is critical for cleaning, storing, and containing equipment and material. All water run-off from storage and cleaning is contained onsite in in an impervious retention basin. The catch basin is designed not to allow water to seep into the ground, rather using natural evaporation as a filter to return clean water to the environment.

Operators are trained in a technique called “spot salting”. Spot salting is salting intermittently in areas of intersections, hills, and curves. This technique relies on vehicular traffic to track the material down the road. Orem has found this technique to sufficiently provide a high quality of service to its citizens while still minimizing environmental impacts that overuse of road salt can cause.



Impervious Retention Basin

Equipment Rack and Wash Stations

Keeping negative impacts to the environment to a minimum while still providing safer travel through Orem is essential to the City’s plan.

General Practices

Because each storm event is different, there is no standard plan of attack for snow and ice control that can be followed as a firm recipe. The years of experience City employees have in snow removal and ice control operations are extremely important in the implementation of this critical work. Their experience in a variety of demanding situations is an essential ingredient to an effective winter road maintenance effort.

The following are some examples used only as general guidelines for implementing snow removal operations determined by storm classification and affected area:

Example 1:

7 to 8 Units (Mainly used for nighttime use)

- 2 – 10 wheel dumps assigned to arterials and secondaries
- 5 to 6 maintainers assigned to designated critical spots and subdivisions

Example 2:

9 to 10 Units

- 4 – 10 wheel dumps assigned to arterials and secondaries
- 5 to 6 maintainers assigned to designated critical spots and subdivisions

Example 3:

11 to 12 Units

- 4 – 10 wheel dumps assigned to arterials and secondaries
- 1—10 wheel dump assigned to Center Street
- 6 to 7 maintainers assigned to designated critical spots and subdivisions

Example 4:

13 to 15 Units (All Units)

- 4 – 10 wheel dumps assigned to arterials and secondaries
- 1—10 wheel Dump assigned to Center Street
- 8 to 10 maintainers assigned to designated critical spots and subdivisions

Example 6:

Maintainers Only (subdivision cleanup)

- 1 to 10 Maintainers

The crews will continue to treat and plow the streets in their assigned area until traffic is flowing safely. If the storm continues, the operators will remain in the same pattern until the storm subsides. When conditions improve, the operator will begin to plow streets and intersections in their area enough for two passable lanes on local and collector streets. Arterials will be plowed to the white lined shoulder. Operators are trained when plowing streets to keep the width to a minimum unless future and larger storms are predicted within the next 24 to 48 hours. If larger storms are predicted in the near future, it may be necessary to pile the snow higher on

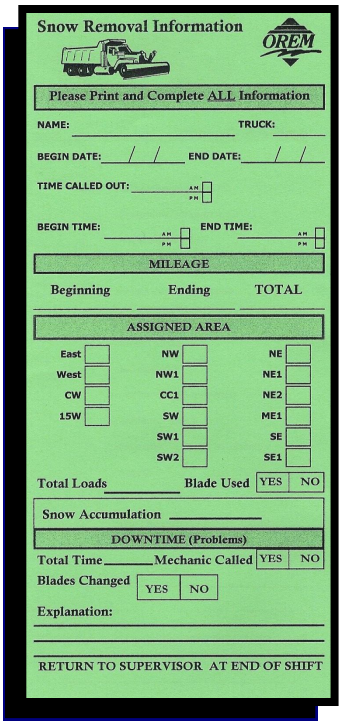
the shoulder making room for anticipated new snow accumulations. Unless absolutely necessary City operators try to avoid widening more than necessary to expedite snowmelt.

One of the City's major problems with snow and ice removal are snowdrifts caused by the constant canyon winds during the winter months. A snow storm may leave only a couple of inches of snow, but the winds cause some extreme drifting. Especially in the areas near the mouth of Provo Canyon and on the east side of the City. This results in extra time and work keeping high priority streets clear in these areas.

Our operators work around the clock to keep City streets open and passable. Street/ Storm Water personnel are busy doing everything possible to improve winter driving conditions.

Reporting

Collecting and keeping accurate records pertaining to snow removal operations is essential. The information gathered improves future decisions in this crucial work. A snow removal information card (as seen to the right) is filled out daily by each operator assigned for duty. Information collected includes the following:


Snow Removal Information

OREM

Please Print and Complete ALL Information

NAME: TRUCK:

BEGIN DATE: / / END DATE: / /

TIME CALLED OUT: AM PM

BEGIN TIME: AM PM END TIME: AM PM

MILEAGE

Beginning Ending TOTAL

ASSIGNED AREA

East NW NE
West NW1 NE1
CW CC1 NE2
15W SW ME1
SW1 SE
SW2 SE1

Total Loads Blade Used YES NO

Snow Accumulation

DOWNTIME (Problems)

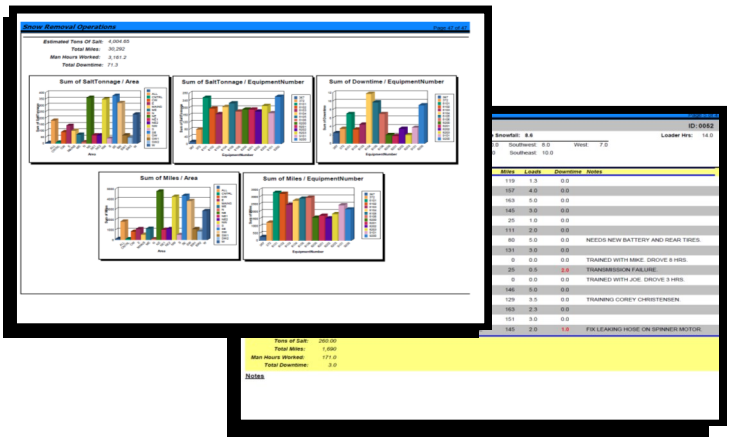
Total Time Mechanic Called YES NO

Blades Changed YES NO

Explanation:

RETURN TO SUPERVISOR AT END OF SHIFT

- Unit Number
- Salt usage
- Lane Miles Driven
- Hours worked
- Average snow accumulation
- Equipment Downtime
- Plow usage



This information is then compiled into a database and a monthly report is generated. Proper evaluation of this information ensures the City is doing everything possible to be fiscally responsible and to provide its citizens a high quality of service.

CITY ORDINANCES PERTAINING TO SNOW REMOVAL

16-1-3. Obstructing streets and sidewalks.

It shall be unlawful to obstruct any street or sidewalk or any portion thereof in such a way that vehicular or pedestrian traffic cannot pass or must make a detour around the obstruction. This provision shall not apply, however, to work being done in a street or sidewalk with a lawful permit.

(Ord. No. 661, Revised, 04/10/90)

16-1-6. Clearing sidewalks.

A. Generally. The owners, occupants, tenants, and lessees of all real property shall keep the public sidewalks, curbs, and gutters abutting the property free from debris, dirt, rocks, weeds, snow, and ice.

(Ord. No. 661, Revised, 04/10/90; Ord. No. O-09-0023, Amended 10/27/2009)

B. Snow and ice. Snow and ice removed from sidewalks, curbs, gutters and driveways may be placed in the street as long as such placement complies with Sections 16-1-3 and 23-2-3(A)(1) & (3), does not obstruct the vision of drivers, and does not cover or impede access to a fire hydrant, storm drain, sump, or inlet. Snow and ice in parking lots shall be contained on site and not be placed in the street.

(Ord. No. 661, Revised, 04/10/90; Ord. No. O-09-0023, Amended **10/27/2009)**

Frequently Asked Questions (FAQ's)

1. Why wasn't my street plowed?

This is one of the most common questions received at Public Works and most of the time we find it is because of one of the following reasons:

a. **Is this street maintained by Orem?** We commonly find these inquiries tend to be roads within Orem's boundaries, however they are not maintained for the following reasons:

Orem does not maintain UDOT owned roads.

Roads maintained by Utah Department of Transportation (UDOT):

State Street, 800 North, University Parkway, and Geneva Road

Please send your comments to **UDOT** at **(801) 227-8000**

Orem does not maintain Utah Valley University (UVU) owned roads.

1200 West from 800 South to Sandhill Road, Roads around UVU

Orem does not maintain roads in Private Residential Developments (PRD), Commercial, or Industrial Developments.

Please review map identifying these areas

b. **Was there room for a Plow and Salt spreading unit to maneuver on this road?**

Often, we are called back to a road, cul-de-sac, or dead end to find there are too many cars parked on the street for the unit to maneuver safely. We train our operators in the safe operations of snow removal and give them the authority to make safety decisions. If you find there are cars parked along the road, contact your neighbors and help move parked cars off the road to make the road safe for our operators to enter.

Congested Cul-de-sac

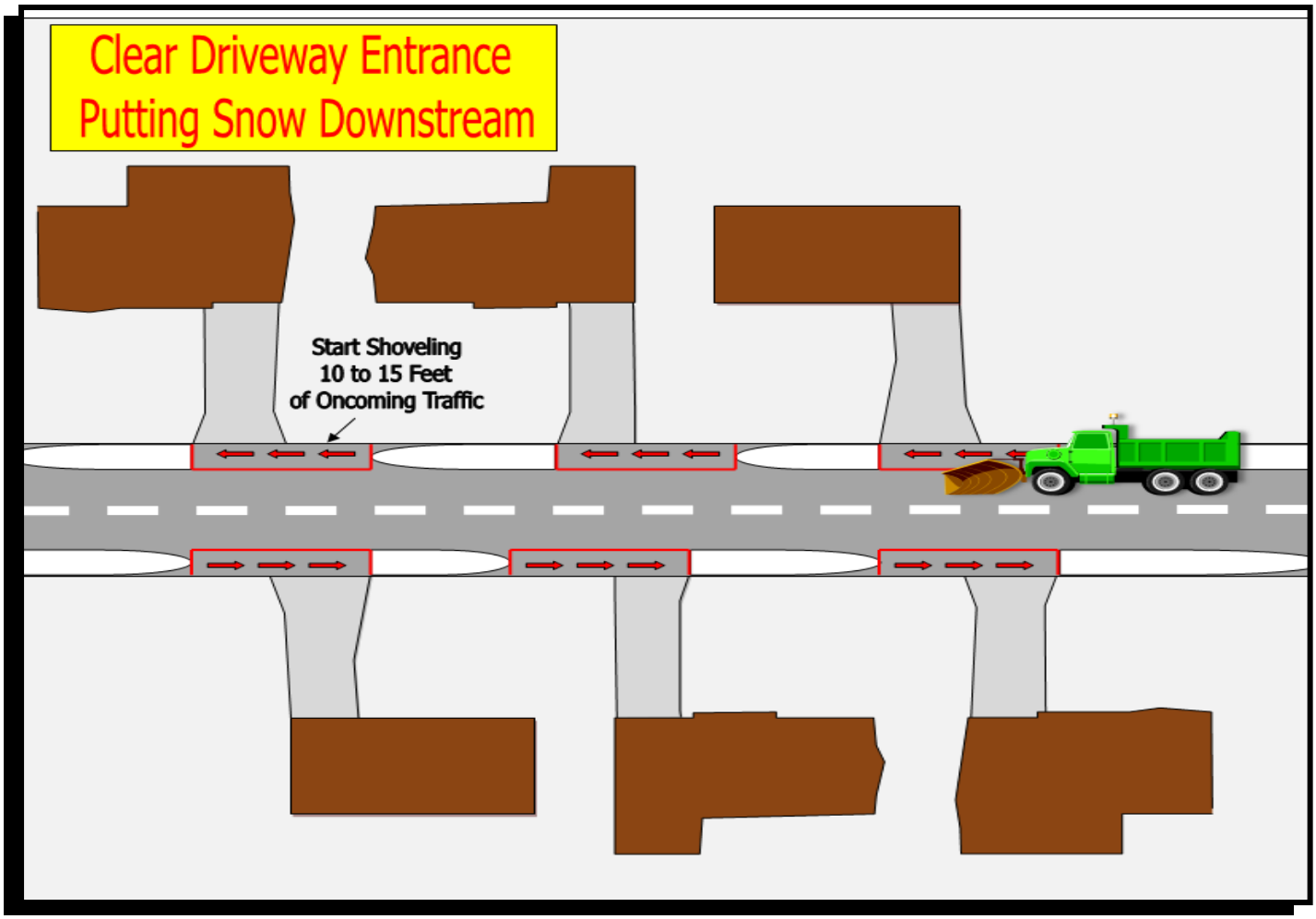
Compacted and Frozen Ice

c. **Is the road compacted and covered with ice?**

Our crews try to respond to each storm as quickly as possible, however sometimes traffic compacts the snow and low temperatures cause a layer of ice to form on the road before we can get there. Because our plows are gravity weighted, they are not capable of applying down pressure to peel ice up. Once the ice has formed, the only thing we can do is remove the new snow accumulation, apply salt, and wait for mother nature to help melt the ice. This could take several days.

2. Why do the plows always push snow into my driveway entrance?

For a resident this can be quite annoying, but unfortunately it cannot be helped. The snow must be removed from the travelled portion of the road. When the City receives a heavy snowfall, plows have to continue to make several passes until the roadway is safe to travel. This causes snow buildup along the edge of the roadway. As you shovel , do not throw the snow out onto the roadway as you may create a hazard for another vehicle, and if an accident were to occur you might be held liable. Using the following technique shown below will help avoid this situation by clearing your driveway entrance properly.



Property owners/residents are responsible for clearing and maintaining driveway entrances, side-walks, and access to mailboxes. Snow from driveway, sidewalk clearing, or mailbox access should not be pushed into the roadway. Place the snow on private property or well beyond the outside shoulder and travel lanes.

3. What can the City do to get the public to shovel their sidewalks?

City ordinance requires property owners, occupants, tenants, and lessees to keep sidewalks free from ice and snow. We try to follow up on all sidewalk complaints but it takes a number of people to enforce them. If you see an un-shoveled walk that is dangerous to pedestrians please call your neighborhood preservation officer at (801-229-7057).

4. When are the snowplows deployed and how long are they out?

During regular scheduled working hours, the Public Works Department, with assistance from Public Safety, will monitor street conditions and be responsible for analyzing street conditions and determining when to begin snow removal. During off-duty hours, Public Safety and the Streets Field Supervisor will monitor street conditions. When snow starts to accumulate upon roadways, the Streets Field Supervisor will dispatch units in the affected areas. These units will stay working until all work is completed. If the work takes longer than 12 hours to complete new operators will be called out. Dispatching units quickly is the key to a successful snow removal operation.

5. Why do you always plow snow against my car?

The City must remove the snow from the travelled portion of the road. The plow operator cannot push the snow away from the parked cars into the oncoming traffic. That would create a hazard and liability. Snow is always pushed away from the oncoming traffic towards the gutter. When heavy snowfalls are predicted, residents are asked not to park on the roads. Keeping cars off the street will help reduce the chance of plowing in parked vehicles. This minimizes the chance of damaging vehicles and allow for a more efficient plowing operation.

6. What if I have a medical emergency?

Call 911 if you have a medical, fire, or police emergency. Under their direction it is our first priority to provide access to emergency sites for medical, fire, or police response.

7. Who is responsible for the clearing of wheelchair ramps?

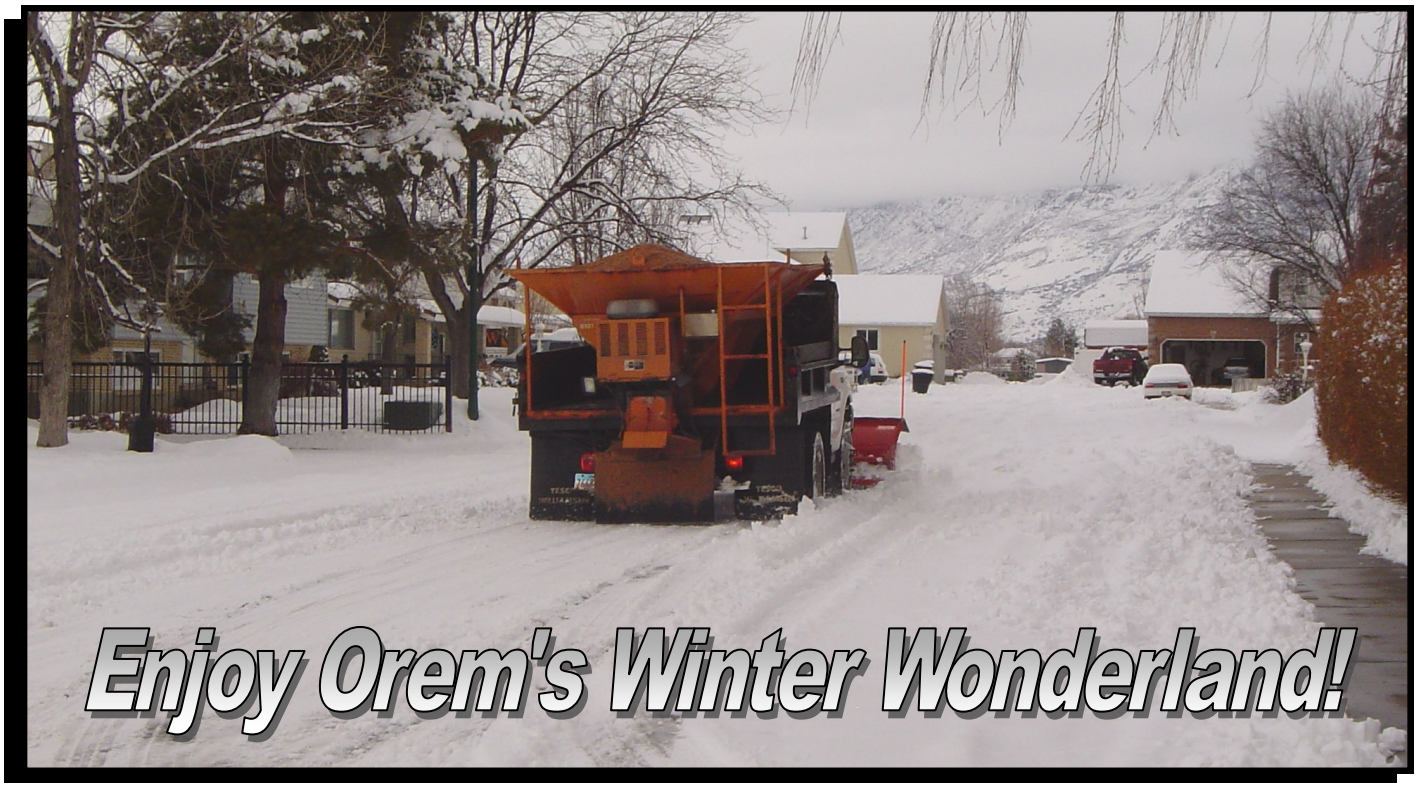
The abutting property owner is responsible to clean the wheelchair ramp up to the edge of the pavement.

How Can You Help?

The City of Orem's goal is to provide an expedient and efficient snow removal operation during winter snowstorms. City road crews continue to strive towards providing a high level of service for its citizens during these hazardous road conditions. Depending on the size of the storm, hazardous road conditions may remain for several hours. For example, a class "D" storm can take as much as 48 hours to clear roads for safe commuting and transportation once the storm has subsided. To help expedite clearing roadways from snow and icy conditions, the City of Orem is asking for your help.

You can assist in our snow removal operations in several ways...

- Always park your vehicle off the street. Vehicles left in the roadway create unnecessary obstacles for snow removal operators to work around and can slow the process of properly clearing the road.
- Travel at a safe distance from snowplows at all times to avoid damage to your car. Do not try to pass these vehicles.
- Please be patient if you are required to wait behind a piece of snow removal equipment.
- Make certain that your speed is reasonable for conditions.
- Advise your children to never play near or in a snow berm near the roadway.
- Exercise extreme care and caution when driving in adverse and inclement weather. Your safety and the safety of other motorists and pedestrians is the highest priority!
- Limit and restrict travel unless absolutely necessary during severe weather. Remember, in most cases roads will be cleared and safer within 24 hours of a storm.
- Do not attempt to stop a snow removal vehicle or obstruct its path.
- If you can, please help your neighbors who are elderly or disabled by shoveling their sidewalks and driveway.
- Keep obstructions such as portable basketball hoops, trashcans, and toys off the street and sidewalks at all time during snow removal.
- **Please Buckle Up For Safety, and ...**



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