

Memorandum

Department of Public Works



TO: Michael O. Geisel, P.E.
City Administrator

FROM: James A. Eckrich, P.E. *JAE*
Public Works Director / City Engineer

DATE: October 23, 2018

Please forward to PPW for review and approval.

RE: 2018 / 2019 Snow Removal

MO Geisel 2018-10-24

The Public Works Department has once again made preparations for winter weather and our response to snow and ice storms. Salt has been ordered, trucks will soon be equipped with spreaders, and the annual “Winter Warmup” was held on October 24, 2018 at the Public Works Facility to train and refresh the employees who respond to these storms.

As part of this preparation, I want to bring two items to the attention of the Planning and Public Works Committee of City Council. First, Public Works Policy 33 (attached) will be followed again during the 2018 /2019 winter season. This Policy establishes the procedure Staff uses to remove snow and ice from the driveway aprons of qualifying residents. Those residents must have contacted the City in advance of the storm and provided evidence of a medical condition which limits their ability to remove snow. This Policy has been adopted on a trial basis, and will remain in effect until eliminated or permanently adopted by City Council. Storm events in recent years have been mostly ice, without large snow accumulations. Public Works Staff wants to monitor the impact of the policy during several large snow events prior to making a recommendation on whether to implement this policy permanently.

City Staff has also comprehensively reviewed the Priority Road List, formerly referred to as the “Hazard List.” These are streets (including bridges) which will receive treatment prior to snow / ice storms, when warranted, as determined by Public Works Staff. While all storms are different, the Priority Road List will be used by Public Works Staff throughout the winter season.

Action Recommended

No action is required regarding Policy 33. The Planning and Public Works Committee should consider the Priority Road List and vote to approve its use during subsequent snow / ice events. This matter does not need to be forwarded to the full City Council.

Snow Route Schedule – Supplement

Priority Road List

Revised June 21, 2018

These streets or areas shall receive treatment prior to snow / ice storms when warranted as determined by the Public Works Staff

Snow Map A

River Valley Drive	Hill
Ladue Road Bridge	Bridge
Greentrails Drive North (Stablestone to Forest Crest)	Hill
Cedar Bridge Road	Hill
Ladue Farms Road	Hill & Bridge

Snow Map B

Hog Hollow	Hill and Curve
Portico (Ladue to Chellington)	Hill
Greentrails South Drive (Cooperstown to White)	Hill
Glen Cove Drive (Glen Valley Court to Glen Valley Drive)	Hill

Snow Map C

West Drive	Hill
Los Padres	Hill
Hunters Hill	Hill

Snow Map D

Chesterfield Trails Drive	Hill
Greenleaf Valley Drive	Hill
Timberbluff Drive	Hill
Timberlake Manor Drive	Hill and Bridge
Yarmouth Point	Hill
Sycamore Manor Drive	Hill

Snow Map E

Claymont Estates Drive	Hill
Chateau Village Drive	Hill
Highland Forest Court	Hill

Snow Route Schedule – Supplement

Priority Road List

Revised June 21, 2018

Snow Map F

Isleview Drive (Baxter to Denwoods)	Hill
Claymont Estates Drive (Baxter to Denwoods)	Hill
Denwoods Drive (Isleview to Claymont Estates)	Hill
Strollways Drive (Isleview to Timber Hill)	Hill

Snow Map G

Old Clarkson Road Bridge	Bridge
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Snow Map H

Wilson Avenue	Hill
Eagle Bluff Drive	Hill and Bridge
Baxter Forest Ridge Drive	Hill

Snow Map I

Drummer Lane cul-de-sac (unless treated by Wildwood)	Hill
Wildhorse Parkway Bridge	Bridge
Bridgeway Drive	Hill
Bonhomme Ridge Court	Hill
Greycliff Drive	Hill

Conditions may warrant the treatment of additional streets, or fewer streets, depending upon many factors, including forecasted temperature and precipitation type. The existence of this list shall not restrict the Public Works Staff from treating additional streets, or fewer streets, as appropriate. For example, in certain conditions it may only be necessary to treat bridges. In other cases it may be necessary to pre-treat all primary streets.

Should it become necessary to permanently add streets to this list, the Public Works Director is authorized to do so, with notification to the City Administrator and City Council.

To be updated

Snow Route Schedule

Hazard Road List

Revised 1/24/2007

<u>Street Name</u>	<u>Map</u>
Greentrails Drive N.	A
River Valley Drive	A
Hog Hollow Drive	B
Portico Drive	B
Rainy Lake Drive	C
Swingley Ridge Road	C
West Drive	C
Brittania Drive	D
Chesterfield Trails	D
Deerhorn Drive	D
Greenleaf Valley	D
Timberlake Manor Pkwy (bridge)	D
Yarmouth Point	D
Chateau Village	E
Greenberry Hill	E
Isleview Drive	E & F
Claymont Estates Drive	F
Denwoods Drive	F
Strollways Drive	F
Old Clarkson Rd. (bridge)	G
Wilson Road	H
Eagle Bluff Ct. (bridge)	H
Drummer Lane	I
Wildhorse Parkway (bridge)	I

**CITY OF CHESTERFIELD
POLICY STATEMENT**

PUBLIC WORKS

NO. 33

SUBJECT Snow Removal for Private Driveways
within Public Right-of-Way

INDEX PW

**DATE
ISSUED** 8/4/2014

**DATE
REVISED** 5/1/2017

PURPOSE

The purpose of this policy is to establish procedures for the removal of snow windrows from residential driveway aprons resulting from City snow removal operations within the public right-of-way. Snow windrows can impede emergency access to private driveways whose owners are not capable of clearing their driveway approach.

POLICY

The City of Chesterfield will remove the snow accumulation from the driveway apron of a qualifying private residential driveway when the official snow accumulation exceeds two (2) inches during any single snow event. The snow accumulation will be measured at the City of Chesterfield City Hall in accordance with National Oceanic and Atmospheric Administration (NOAA) guidelines. The City of Chesterfield will begin snow removal operations on previously approved qualifying private residential driveways ONLY after completion of all snow and ice removal operations on public streets and at City facilities. Applications for this program must be received not less than fourteen (14) days prior to a storm event to allow for review, coordination and planning.

This program is only available to qualified resident owners with a certified medical need or disability.

QUALIFYING LOCATIONS

All private single family residential properties within the corporate limits of the City of Chesterfield in which the residents of the property have been diagnosed with a medical condition that limits their ability to remove snow.

PROGRAM REGISTRATION

All requests for driveway snow and ice removal service shall be submitted in writing to the City of Chesterfield. Residents may receive information and direction by contacting the City of Chesterfield Public Works Division, visiting City Hall, or accessing the forms on our website www.chesterfield.mo.us/forms and permits.

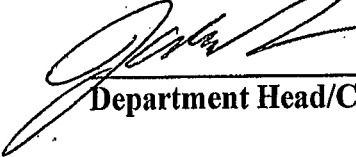
The applicant, at a minimum, shall provide the following information:

1. Property address.
2. Applicant's name and all appropriate contact information.
3. Supporting documentation verifying a medical condition or disability of all residents at that property which limits their ability to perform snow removal activities.

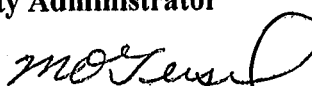
CITY LIABILITY FOR PROPERTY DAMAGE

The City of Chesterfield is not responsible for any property damage resulting from residential driveway snow and ice removal operations. All applicants for this service shall be required to sign a waiver of responsibility stating the City of Chesterfield is not responsible for damage during driveway snow and ice removal operations.

RECOMMENDED BY:

 3/1/2017 FPU Committee 3/27/2017
Department Head/Council Committee (if applicable) Date

APPROVED BY:

City Administrator Date
 5/1/2017
City Council (if applicable) Date

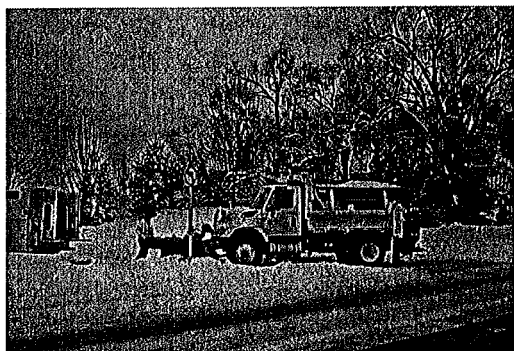
ANATOMY OF A STORM RESPONSE

Fortunately, the winter is behind us and snow / ice removal operations have concluded for the year. However, I want to use this time to provide information and editorial comments so that our snow and ice removal operations are clearly defined and in-line with the expectations of City Council and the Chesterfield Community.

The City's primary goal in responding to winter weather is to provide reasonably safe and passable streets. In order to achieve this goal and effectively manage both safety and expectations, it is important to establish a common understanding of both process and terminology.

The City of Chesterfield maintains approximately 176 centerline miles of public streets. We dispatch each truck and load all of our salt from one location, the Public Works Facility located at the intersection of Public Works Drive and Edison Avenue in Chesterfield Valley. The primary vehicles utilized in snow removal operations are 14 large (2.5 ton) trucks and two tandem trucks. The typical spreader on these trucks is capable of holding approximately seven tons of salt. The plows on these trucks are nominally eight feet wide.

We supplement our snow removal efforts with a number of 1 ton and 1.5 ton trucks. These smaller trucks are generally used by supervisors or when a larger truck is not operating properly (i.e. has broken down). The smaller



trucks have a significantly smaller payload (salt hauling capacity), smaller plows, are lighter and less powerful. These trucks are especially useful when addressing smaller areas, including cul-de-sacs and narrow streets.

While we maintain our trucks in excellent condition, truck breakdowns during snow operations are unavoidable. Keep in mind that during snow removal operations these trucks are loaded to their maximum capacity, driven continuously, and operated at maximum horsepower when pushing snow, all during extreme weather conditions.

During winter weather response, our City is separated into 9 regular snow routes. These snow routes are contained within the City's "Snow Maps". Simple division demonstrates that each route contains a little over 19.5 centerline miles of Chesterfield roadway. Because each street has at least two lanes of traffic, there are at least 39 lane miles in each snow map. This does not include the distance across State, County, or even City streets that a specific



truck has to travel to get to their specific route multiple times in a shift as they go to and from the Public Works Facility for fuel, salt, or maintenance. During these trips, our snow plows encounter the same traffic congestion, stalled cars, stop lights and other delays as every other vehicle, thereby delaying progress. Equally as important, drivers are required to stop their truck frequently for safety; i.e. check their plow blades, lights, spreader, and other equipment.

The designated snow routes are rigidly defined. Each maintenance employee has a Snow Map book which has detailed maps and written turn by turn instructions. Supervisors are as consistent as possible when assigning maintenance employees to specific routes. Each employee is, therefore, familiar with their route and knows of specific difficulties, hazards, or unusual nuances in their assigned route. Something as simple as a manhole in the street that is set slightly above or below street level can be a tooth rattling surprise if a driver is unaware that it is there.

The Snow Maps break streets into two categories, Primary and Secondary. Secondary streets are typical subdivision streets. Primary Streets are those streets which have been specifically identified by City Staff (and approved by City Council) as collector roads or roads with high levels of traffic. City Staff has also identified a list of locations that are specifically hazardous due to grade, drifting, freezing, lack of shoulders or curvature. These are commonly referred to as "Hazards".

We break our maintenance staff into two crew shifts. A "Day" shift and a "Night" shift. Each shift alternates, month by month. The Day Shift is 8am to 8pm, and the night shift is 8pm to 8am.

There is no such thing as a typical storm. Each storm presents its own unique challenges with intensity, traffic, timing, temperature, moisture, and duration. Public Works management staff closely monitors future forecasts, salt storage, and equipment conditions as the supervisors make individual decisions on when to spread salt and what application rate to use. Snow fighting is not brain surgery, but it involves substantial planning and many components. It is certainly more complicated than dropping a plow and driving.

During most storms, our first priority is to treat the Primary streets and the Hazards. We will typically mobilize our response prior to the actual start of any winter precipitation. If the event does not begin as a rain event, we will generally pre-salt the streets. We do this to try and get a thin salt layer on the pavement to prevent the snow and ice from bonding to the pavement. We first

pre-salt Primaries and Hazards, and then make a decision as to whether we should pre-salt the secondary or subdivision streets. During pre-salt operations, without dropping a plow, our drivers can typically salt the streets in four hours, with two drivers in each snow route.

Once snow starts to fall and accumulate, the drivers will drop the plows and begin snow plowing. Once a plow is dropped, the pace of the operation slows dramatically. A much higher degree of care is required and a tremendous amount of damage can be done by a plow traveling too fast. It should be understood that the snowfall typically starts and begins to accumulate during pre-salt operations. Generally we cannot pre-salt the entire City prior to snowfall beginning. Pre-salting too far in advance of a snow is less effective as salt can wash away and dissipate due to wind and traffic.

As the snow begins to accumulate, we transition from a pre-salt routine, to full scale snow removal operations. Once accumulation begins, we pull the truck from its location in the secondary streets to monitor and maintain the primary and hazard streets.

Once the primary and hazard streets are in reasonably good condition, or if traffic makes concentrating on primaries ineffective, we begin "opening up" our secondary streets. "Opening up", simply means that an operator makes a single pass down the street, the width of one plow blade from the center of the street. The driver progresses continuously, without backing up or attempting to clear snow from cul-de-sacs islands or intersections. On some streets, there will be a path going in, and a path coming out. On other streets, there will only be one path because the driver does not need to re-trace the route to progress through the map. Once again, realize that this initial "opening up" occurs while the snow continues. So, while a plow may have opened up a street early in the storm, it will frequently cover back over and appear as if it were never touched by a plow if the snowfall continues.



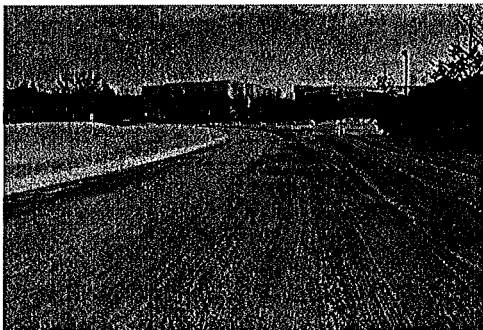
As an informational aside, it should be noted that the Public Works Department utilizes GPS tracking technology to locate, trace, and identify truck locations throughout the storm. We know where everybody is, and where they have been. Due to their disciplined adherence to their maps, we also know where they will be!

As the storm dictates, a driver may be directed to leave the secondary streets and return to address the primaries multiple times during the storm. As each truck leaves their prescribed route to either 1) return to the primaries, 2) return to the Public Works Facility for fuel or salt, or 3) has an equipment

failure, they note the location they had progressed in their map, so that they or their shift replacement can re-start where they left off. Communication is critical, frequent, and continuous. Typically, it is very difficult to get completely through the full route to “open up” during any single 12 hour shift. The pace of the operation simply takes longer than 12 hours to get completely through a route within one shift.

Once the snow stops, the operation continues, realizing that we now have to “re-open” all the streets that we had “opened up” previously, while the snow was still falling. At this time, depending on traffic, time of day, and weather conditions, it may be prudent to address the primary or hazard streets to clear them curb to curb.

Once we have opened, and/or re-opened the entire 176 miles of streets, we begin to clear the streets of snow. Basically, in the first pass of this phase, we attempt to get one full plow width on each side of the centerline of the street. In essence, we are creating two lanes on each street. During this phase, you still have triangular wedges at intersections, in front of cul-de-sacs, and windrows of snow as the plow turns from one street to another. More than one pass through a route may be required during the “Push Back” process, depending on the depth of the snow, width of the street, and the effectiveness of the prior processes and weather.



It should also be clear that although we plow, that does not necessarily mean the pavement is clear or clean. If it is a wet snow, typically you can plow down to bare pavement. But if it is cold, dry, or icy; you plow the snow but may leave a layer of snowpack or ice. Decisions are made to salt more extensively to break up the snow or ice depending on a variety of factors.

Once we have completed the “push back” operation, we move into a “clean-up” mode. Clean-up mode is the slowest and most laborious effort in the process. During clean-up operations, trucks push the snow closer to the curb, clear the snow from the corners and centerline at intersections, push the wedge of snow at the front of cul-de-sacs into the island, clear snow around the inside curb of cul-de-sacs and clear entire traffic lanes. There is an extensive amount of stopping and backing of the plow trucks.



During this phase, crews go back to areas where parked cars did not allow snow to be plowed, and residents or business owners have plowed snow from driveways into public streets, Clean-up operations of even a moderate storm can take multiple shifts and\or multiple days depending up the weather and amount of snow.



The important thing to remember about the clean-up operation is that what you leave on the pavement is the canvas for the next snow event. Accumulated snow in the curb line affects delivery of mail, collection of trash and recyclables, and with repetitive storms, traffic lanes are narrowed.

Once clean-up is complete, the City will remove windrows from the driveway approach (in public right of way) of properties which have qualified for the windrow removal program. These residents must have a qualifying medical condition which does not allow them to clear their own driveways. Residents can sign up for this by contacting the Public Works Department in advance of the winter season. There are currently 220 residences which have signed up for the windrow removal program. Please note this program currently exists as a trial program, and has not yet been implemented by City Council on a permanent basis.

I hope this memorandum has been informative. I am proud of the snow removal work performed by the City maintenance crews. However, we are only as good as our most recent storm response. Accordingly, we take each storm threat seriously, and plan accordingly. As detailed above, there are lot of factors involved: 176 miles of public streets, 16 large trucks, extensive travel to\from the Public Works Facility, loading salt, getting fuel, checking equipment, and remembering safety. Snow fighting can be a dangerous business and I would not want our snow removal efforts to compromise the safety of any person, or to unnecessarily damage equipment.

As is always the case, thank you for your support and encouragement regarding the City's snow removal efforts. If you ever have any questions, please contact me.

James A. Eckrich, P.E.
Public Works Director / City Engineer