



City of Cambridge
Department of Public Works

Owen O'Riordan, Commissioner

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December 6, 2017

TO: Louis DePasquale
City Manager

FROM: Owen O'Riordan
Public Works Commissioner

Re: *Awaiting Report AR-17-114 update the City Council on the plan for snow removal relating to the new bike infrastructure in Cambridge.*

Executive Summary

In response to the above awaiting report, it is recognized that over the past several years there has been an increased focus on building and creating safer bike facilities across the City and such need to be properly maintained throughout the year. All snow storms are different and the response to each event will vary accordingly. There are numerous variables that must be considered as a response program is prepared, be it in terms of the snow type and volume anticipated, the antecedent conditions and the availability of snow salting, plowing and removal resources.

Such being the case, our practice is not to guarantee a certain level of performance in response to a storm but rather to provide a prioritization on how we generally approach snow and ice clearance during and after winter events. The primary focus during a snow event is to ensure that emergency vehicles can access all properties throughout the City. Presuming such access is accomplished satisfactorily, within a couple of days resources are then focused on a thorough opening of transit facilities, bus stops and adjacent sidewalks and pedestrian crossings within the City.

Over the past three years, additional attention has been brought to bear on addressing safety concerns on traditional bike lanes. While these facilities are generally addressed during the course of typical road salting and plowing events, it is not untypical for such facilities to be narrowed and further compromised through sloughing and when neighbors dig out around their cars etc. DPW has deployed smaller equipment to get closer to cars and better push back this snow after snow events but also recognizes as snow becomes "hardpacked" this effort is more challenging both from a plowing perspective as well as from an equipment control perspective.

Obviously as new raised cycle tracks and protected bike lanes have come on line, the City's operational departments responsible for maintaining such facilities during the winter months are challenged to ensure adequate resources are available and in operation to make these facilities as safe as possible as soon as possible after winter storm events. No representation is made that such are safe to ride on during the course of a snow storm itself.

Overview of Cycling Infrastructure in Cambridge

Over the past several years there has been an increased focus on building and creating safer bike facilities across the City and such need to be properly maintained throughout the year. Over the past two decades numerous new separated bike facilities have been created. Separated bike facilities were built parallel to Fresh Pond Parkway

and Concord Avenue in 2001. Raised bike facilities were built on Vassar Street, east and west between 2005 and 2010. The Concord Avenue facility between Fresh Pond Parkway and Blanchard Road was built in 2012. The raised facilities on both Binney Street and Western Avenue have been built in the past five years as have those adjacent to Flagstaff Park, Galileo Galilei Way and North Point Park.

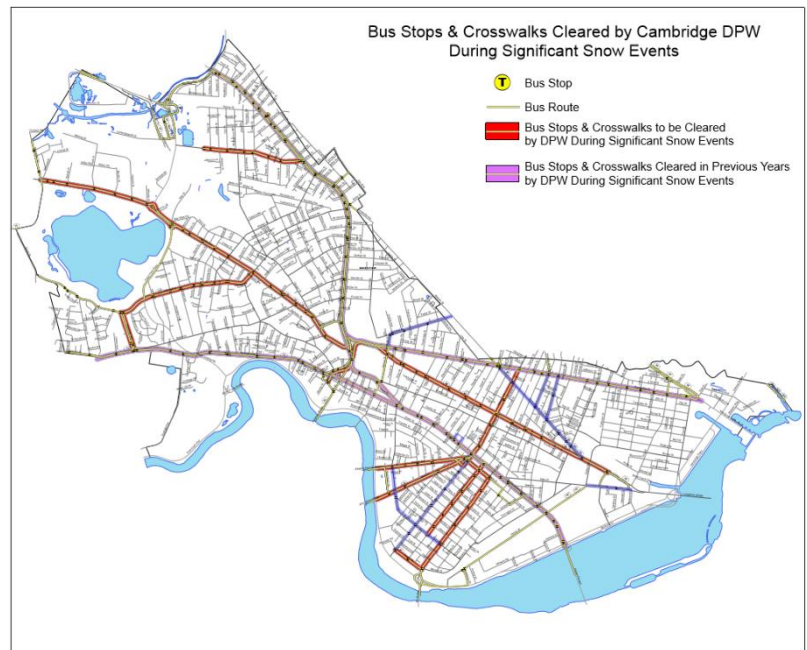
Over the past two to three years approximately 1.5 miles of additional at grade separated facilities have been created across the City, starting with Ames Street and then Cambridge Park Drive and then the two pilot facilities on Massachusetts Avenue at Lafayette Square and the Harvard Law School. More recently facilities have been created on Cambridge Street between Quincy Street and Inman Square, on Massachusetts Avenue between Throwbridge Street and Bow Street, a small section of Broadway at Draper Labs and finally that which was created late this summer on Brattle Street between Guglielmo Plaza and Mason Street.

Operational Priorities During Snow Events

All snow storms are different and the response to each event will vary accordingly. There are numerous variables that must be considered as a response program is prepared, be it in terms of the snow type and volume anticipated, the antecedent conditions and the availability of snow salting, plowing and removal resources. Such being the case, our practice is not to guarantee a certain level of performance in response to a storm but rather to provide a prioritization on how we generally approach snow and ice clearance during and after winter events.

The primary focus during a snow event is to ensure that emergency vehicles can access all properties throughout the City. With larger snow storms, such may result in Emergency Parking Bans (EPB) where parking is forbidden on numerous routes across the City. The primary activity during this time is **plowing** and pushing snow back to the curb so that we are maximizing the width of street, addressing severe public safety issues and continuing to provide access for emergency vehicles. This operation provides for a circumstance where normal traffic and parking activity can be restored as soon as possible.

Presuming such access is accomplished satisfactorily, within a couple of days resources are then focused on a thorough opening of transit facilities, bus stops and adjacent sidewalks and pedestrian crossings within the City. Much of this effort involves **removing** snow from sidewalks and from the adjacent curb line. In parallel to these efforts, additional crews are busy opening pedestrian routes to public buildings, schools and vehicular access to school parking lots. At this time, the Department of Public Works is responsible for snow clearing of 23 miles of sidewalk. Obviously, for exceptional storms or when events occur immediately after each other, our approach gets modified, but the primary focus continues to be directed towards emergency access and addressing significant public safety situations.



Over the past three years, additional attention has been brought to bear on addressing safety concerns on traditional bike lanes. While these facilities are generally addressed during the course of typical road salting and plowing events, it is not untypical for such facilities to be narrowed and further compromised through sloughing and when neighbors dig out around their cars etc. DPW has deployed smaller equipment to get closer to cars



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and better push back this snow after snow events but also recognizes as snow becomes “hardpacked” this effort is more challenging both from a plowing perspective as well as from an equipment control perspective.

Obviously as new raised cycle tracks and protected bike lanes have come on line, the City’s operational departments responsible for maintaining such facilities during the winter months are challenged to ensure adequate resources are available and in operation to make these facilities as safe as possible as soon as possible after winter storm events. **No representation is made that such are safe to ride on during the course of a snow storm itself. To the extent that cyclists are on the street both during and immediately after snow events all traffic needs to recognize that they need to share the road.**

Traditional On Street Bike Lanes

As has been indicated, during EPB storms every effort is made to push snow back to the curb line to the maximum extent possible. Even with an EPB in place, accumulated snow volumes can make it difficult to push snow close to the curb line. This situation will cause cars to park further from the curb, encroaching into the bike and travel lanes causing a gradual narrowing of the street and further forcing cyclists into the vehicular travel way.



Because our ability to remove and store snow is limited, we only perform snow removal when we get significant narrowing of a streets which limit the ability for public safety vehicles to respond to emergency situations.

An exception to this rule is Hampshire Street. Last year in recognition of the large number of cyclists using the Hampshire Street, DPW, Traffic and the Police Department sent a letter to neighbors along the street indicating that if snow accumulation narrowed the street such that the bike lanes were not traversable parking would be removed overnight for two nights while snow was removed from the street. Given the nature of last winter season, this procedure was only required on one occasion and neighbors were greatly cooperative. It is expected that a letter alerting neighbors to the same circumstance will be sent to the Hampshire Street community this year.

Raised Cycle tracks:

The Vassar Street facilities are maintained by MIT, the Binney Street facilities are maintained by Alexandria and the Northpoint Facility is maintained by Divco West. The remaining raised cycle track facilities are maintained by the City. While no guarantee can be made to maintain these facilities both during and *immediately* after snow events, as a practical matter, such need to be addressed throughout storms (most particularly during wet snow events) to ensure that they remain open after the event. Our practice is to plow these facilities as needed during and after storms, otherwise, they can become very problematic when snow becomes compacted making it more difficult for plows to move the material to one side. With compacted snow we typically need to re-salt the areas several times to break up the snow pack before it can be plowed. The Western Avenue facility is built with pervious asphalt, thereby reducing the potential for icing and reducing the extent to which it needs to be salted during smaller events.



Protected bike lanes:

As with raised bike facilities, protected bike lanes are generally maintained by vehicles with 4 to 6 foot **plows**. At this time, the City has eight such pieces of equipment (Holders) and we rent additional small pieces equipment, to the extent such are available, during the winter to supplement the eight in-house pieces. These vehicles are used on sidewalks, pathways and bike paths throughout the City. This year with the substantial increase in protected bike lanes throughout the City some of this equipment will be used to plow these cycling facilities.

The Cambridge Street and Massachusetts Avenue facilities are relatively narrow and we expect to treat these facilities with the holders with their 6/4 ft. plows and salting trailers. It is expected that windrows will form at the edge of the stanchions as well as the curb edge. Because of the physical layout/grading of our streets icing becomes more likely and therefore requires more attention, thus we anticipate having to salt bike lanes on a more frequent basis. Similarly, depending on the degree of snow accumulation, parking may occasionally need to be banned from these street segments so as to allow for snow removal to ensure adequate vehicular access through these sections. Parking bans to remove snow generally happen overnight, thus minimizing the impact on businesses and allowing for a safer and more efficient cleanup. To provide for efficient access and snow removal from bike lanes when the need arises, some of the flex posts will be removed before the onset of winter.



The Brattle Street cross section is different to the Cambridge and Massachusetts Avenue cross sections and will require the replacement of the existing posts with posts that can be taken in and out depending on the weather throughout the winter. It is expected that in advance of snow storms where accumulating snow can be expected parking adjacent to the posts as well as the posts themselves will need to be removed. This allows for snow to be plowed to the curb and for parking to be recovered quickly without having to deal with a windrow in the middle of the street. This process will also reduce the extent to which snow removal events will need to be scheduled on Brattle Street, but may result in the slight narrowing of the bike lane as winter moves along.



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The Best Laid Plans....



It needs to be recognised that while every precaution is taken in preparation for our winter weather events, the City cannot make any commitment to being able to maintain bicycle facilities in the event of blizzard or large accumulating snow storms. It is indeed a possibility that the City may chose to remove flex-posts in advance of larger events on both Massachusetts Avenue and Cambridge Street as well as on Brattle Street. In those instances where posts are not removed, we will do all we can to limit damage to the flex post equipment recognizing the difficulty

snow plowing and removal equipment may have in getting into some of these spaces and will likely cause damage. Public Works will work with Traffic, Transportation & Parking to determine if permeant or temporary delineators will be replaced after these events.

Communication

As has been the case over the last number of years, the Department of Public Works together with the City Manager's Office, the Traffic, Parking and Transportation Department, The Police Departments and the Emergency Management Department will work to ensure that up to date information is provided about winter weather events and whether snow emergencies, city wide parking bans or bike lane parking bans are declared in the City. Information will be relayed via social media, The City's web site and through **Code Red** telephone communication systems.