



# INFORMATION REPORT

<b>TO:</b>	Chair and Members General Issues Committee
<b>COMMITTEE DATE:</b>	February 7, 2018
<b>SUBJECT/REPORT NO:</b>	Snow Fencing Overview (PW18017) (City Wide)
<b>WARD(S) AFFECTED:</b>	City Wide
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<b>SUBMITTED BY:</b>	Betty Matthews-Malone, P.Eng. Director, Roads & Traffic Public Works Department
<b>SIGNATURE:</b>	

## **Council Direction:**

As a follow up to the January 17, 2018 General Issues Committee, staff were asked to provide a report on the City's present snow fencing policy and process, and the possible use of living fences for snow drift control.

## **Information:**

On June 29, 2011 Council approved PW11050 "City of Hamilton Roadside Snow Fence Policy". The Policy is attached as Appendix "A" to Report PW18017.

The Policy states that the City will limit the use of snow fencing to locations where it offers optimum reduction of drifting snow onto neighbouring roadways at a reasonable cost in comparison to other snow clearing techniques such as winter patrol roadway monitoring. Patrol operations monitor identified locations and when weather conditions indicate the potential for snow drifting, dispatch winter control equipment to address conditions through plowing operations.

The report states that existing locations, established prior to the 2011 Policy would continue to receive the traditional wood slat and post snow fencing installation. The report recognized that the number of sites could be reduced if adjacent land use changed, resulting in reduced drifting.

The Policy states that all new locations would be serviced using the patrolling and plowing process. Sites where drifting is occurring are monitored during the winter

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season. Observations from monitoring are used to review the locations needs and the effectiveness of operational responses. Where snow fencing has the potential to offer optimum reduction of drifting snow at a lower cost, compared to other snow clearing techniques, it can be considered.

The Policy ensures operational considerations are included in the decision whether or not to install snow fence at any new locations. The City also may continue the use of snow fencing for locations where it is the most reasonable and cost-effective alternative.

### **Science of snow fencing**

Snow fencing is a tool used by municipalities to assist with controlling blowing snow in areas of chronic drifting. Where drifting is a persistent problem, snow fences can assist in reducing winter road maintenance costs associated with plowing operations. Snow fencing forces the wind to go around/over or through the fence causing the wind to lose energy and speed. The reduction of wind speed allows the suspended snow particles to fall before drifting onto the road. Snow fence involves the installation of physical buffers such as wood slats or plastic webbed fencing on lands adjacent to roadways.

Snow fencing requires many considerations. These include;

- Prevailing wind direction.
- Adjacent land use and topography, on both sides of the road.
- The geometry of the road being affected.
- The amount of snow to be controlled referred to as the “Fetch” area
- The proposed fence’s height, length, quantity, staging and location in relation to the road and the effected land.
- The availability of snow storage, both on the windward and leeward sides of the fence. Insufficient storage on the windward side of the fence will only increase the amount of snow being deposited on the leeward side of the fence. Insufficient storage on the leeward side will encourage the deposit of the suspended snow onto the roadway.
- The impact the snow fence installation may have on the land. For example, tile drainage systems on agricultural land may be damaged by the installation of the traditional wood slat and post snow fence.

Snow fences must be properly designed and installed at specific locations relative to the roadway to be effective. Incorrectly installed snow fence can increase the frequency and severity of the snow drift onto the road. Risk management considerations require a consistent approach to snow fencing. Consistent practice regarding the use of snow fence helps defend legal questions around why one site may have been selected over another.

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Snow fence installation is a labour intensive activity. Installation typically begins in late autumn and continues for several weeks to cover the required locations. Additional labour may be required throughout the winter season for snow fence maintenance. Snow fences are removed in mid-spring at or near the end of the winter control season. The time period associated with the removal will vary based upon the length of the season and the depth of the frost received that year.

### **Living Snow Fence**

The ‘living’ snow fence is an option that is being used by several municipalities and road authorities throughout North America. Living snow fence involves the planting of vegetation, typically a row or multiple rows of corn stocks, trees or shrubs near roadways. This vegetation acts as a snow fence barrier and prevents snow from drifting onto the adjacent roadways. The living snow fence design and installation process is similar to the process involved with snow fence installation where advanced planning and engineering is required in order to ensure that the proper planting materials are installed in the right location.

Benefits of a living snow fence include the economic advantage of a useful life of 50 years or more, and a decrease in cost per meter over the standard snow fence installation. As with regular snow fence, they can improve road safety, conserve energy expended on snow plowing, and can also beautify local landscape and create wildlife habitat through the establishment of vegetation.

The City of Ottawa has a program encourages landowners who plant corn to participate in its Alternative Snow Fencing Program. Participating landowners leave six (6) to 12 rows of standing corn parallel to the road. Landowners are paid an amount based on the market value per tonne of the unharvested corn, the yield of tonnes per acre, and the actual acres standing and for spring clean-up work.

The Region of Peel also has a program where property owners are encouraged to participate. The Region works with the property owner to pick the appropriate trees and shrubs, provides a planting plan, provides the materials and does the planting. To qualify for this program the property must front the west or north side of a regional road, have approximately 30 metres of set back from the right of way and currently have a wooden snow fence(s) installed in the winter.

Both programs require a long-term commitment from the property owner and the Municipality to be successful. The installation of the living snow fence does not necessary eliminate the need of snow fencing. Fencing may still be required until trees and shrubs have matured to the designed height.

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During the rural snow drift review, prepared for the 2011 report, many of the property owners identified were approached on a random basis and asked if they would be interested in a living snow fence program. There was very limited interest from those property owners. It should be noted that many of the City's existing snow fence locations are within the urban area of the City of Hamilton. Many of these locations are owned by the Public or Catholic School boards as well as City's parks and cemeteries.

Land development has also created a situation where lands are cleared of their existing vegetation and unattended until construction is started. These lands can remain vacant over the winter months and they can result in snow drifting onto the roadway. Roads and Maintenance staff will be approaching Planning staff for the potential consideration of a clause within the City's Subdivision agreements where developers are required to install snow fencing or leave vegetation in place prior to the winter months; similar to the requirement of silt fencing being installed prior to construction.

### **Summary**

Road patrol and snow plowing remain the primary service delivery method for dealing with drifting snow. Snow fencing is used for locations where it proves to be the most reasonable and cost-effective alternative as per the existing Policy.

If you require further information please contact Bob Paul, Manager of Roads and Maintenance at extension 7641.

### **Appendices and Schedules Attached**

Appendix "A" – Roadside Snow Fence Policy