

July 11, 2019

To: Members  
Public Works and Infrastructure Committee

Re: Snow Fence Program

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RECOMMENDATION

1. That the continuation of the Snow Ridge Program be endorsed.
2. That item MN19-5 be removed from the List of Outstanding Items for the Public Works and Infrastructure Committee.
3. That this report be forwarded to the July 29, 2019 meeting of City Council for approval.

CONCLUSION

By continuing with the current Snow Ridge Program, the City of Regina (City) will continue to provide an effective method to address blowing snow on rural roads on the outskirts of the city, newly developed open areas and known trouble spot locations. This method has proven successful in reducing costs, while still providing the same benefit as a snow fence.

Administration will continue to look at cost effective and innovative solutions to address drifting snow through the use of methods such as living snow fences and/or other mitigation measures in collaboration with other departments and private landowners.

BACKGROUND

At the April 29, 2019 meeting of City Council Motion *MN19-5* was passed:

*“That Administration prepare a report for Public Works and Infrastructure Committee for Q2 of 2019 that identifies the costs, implications and options for implementing snow fencing to commence in Q4 of 2019.”*

Historically, the City’s winter maintenance staff would install wooden snow fences at various locations throughout the community. These locations were generally on the rural roads on the outskirts of the city, newly developed open areas, or known trouble spot locations where the snow drifts would affect traffic flow. These locations were selected based on service requests and historic data. Winter Maintenance staff would conduct a pre-season site inspection to check if the snow fences or alternate solutions would be required to mitigate the concern of roads and intersections getting blown-in by snow.

Over the past few years, the Roadways & Transportation Department had transitioned much of the snow fence locations to snow-windrowing (ridging) locations for operational savings and efficiencies. In 2017, as part of the budget discussions, a decision was made to discontinue the Snow Fence Program due to the effectiveness of the snow ridges. Winter Maintenance crews have been continuously servicing and monitoring the identified trouble-spots through a dedicated crew and taking immediate steps to ensure safe winter driving conditions on these roads.

## DISCUSSION

After several years of trials and careful analysis of pros and cons of installing snow fences, Administration adopted an innovative solution of creating snow ridges in open areas as opposed to erecting snow fences. Snow ridges provide the same benefits as snow fences in terms of reducing the amount of snow blown onto roadways.

As mentioned in *PW114-19* and *PW115-21*, this method of using snow ridges rather than snow fencing proved to be quite successful, reducing installation and removal expenditures. The total cost saving was approximately \$47,000 per year in labour only.

The process of installing snow fences prior to the winter season and uninstalling them during spring uses considerable staffing resources; this typically involves multiple crews and several weeks to complete. In the spring there is often delays in the removal of snow fences due to frozen and/or wet ground conditions. This requires crews to frequently check the sites for safe conditions to uninstall the fencing and posts.

The one advantage snow fencing has over snow ridge barriers, is at the start of the winter season, or winters with little snow accumulation, they act as barrier when these conditions do not allow for the proper construction of snow ridges.

Additional information regarding the pros and cons for snow fences versus snow ridges are described in Appendix A to this report.

With either method, be it snow fence or snow ridge, during extreme windy conditions the snow could still be blown over a barrier and fill the roads and intersections, requiring services of winter maintenance. During these conditions, the roads may still need to be temporarily closed due to reduced/zero visibility and for maintenance until safe winter driving conditions are restored.

Enhanced snow plowing has proven to be an effective solution in favour of installing snow fences or snow ridges on certain locations; such as areas where the barrier is higher than the adjoining road surface. As a past and current practice during windy conditions, City crews are assigned to previously identified trouble spots to clear snow mechanically, regardless of whether the locations having Snow Fences or Snow Ridges installed. Furthermore, Service Regina staff are trained to contact the on-call winter supervisor to inspect and assign units as required when informed of a blocked or impassable road condition.

**Weather Conditions – February - March 2019:**

During February and early part of March, Regina observed daily extreme cold warnings; temperatures dipped into the minus 40s, with frigid wind chills. There were continuous wind gusts ranged from 60 kilometer per hour to 74 kilometer per hour on several days and some of these days were accompanied by snow precipitation as well. In accordance with Environment and Climate Change Canada, the last time Regina saw conditions similar was in 1939.

With following the Winter Maintenance standard practice, crews were continuously deployed to address these challenges. Some sections on Courtney Street had to be closed to traffic for a few hours in early March due to blowing snow, poor visibility and icy conditions. Some other road sections that experienced similar challenges during these months were around Ring Road and in the Lakeridge areas. During these types of conditions, closures may be required to ensure safe winter driving conditions with the aim to provide emergency response access, maximise connectivity and minimize response times.

**Options**

**Snow Ridge Program with Timely Maintenance of Trouble-spots – Recommended Option**

Administration continues to create snow ridges on rural roads on the outskirts of the city, newly developed open areas, or known trouble spot locations where the snow drifts would affect traffic flow. For the list of locations, see Appendix B to this report.

The following is the breakdown of the typical snow ridge lengths created between November and March annually, in the last three seasons:

<b>City Zone</b>	<b>Snow Fence length requirements to replace all Snow Ridge locations across the city</b>
NE	3000m
SE	3000m
SW	1600m
NW	1800m
Total	9400m (approx. 30,000ft)

The annual costs associated with creating snow ridges on trouble spots is approximately \$8,000 per season. Creating and maintaining snow ridges is generally not a very expensive activity. Additional information regarding costing can be found in Appendix C to this report.

**Snow Fence Program**

To establish a Snow Fence Program, the City would need a plan to cover approximately 30,000 feet of the open areas around known trouble-spots. To cover this stretch, The City would require the purchase of approximately 600 snow fences (4 feet by 50 feet) and approximately 3,600 fence posts (6 posts per fence) would be required, in addition to the related hardware.

The following costs would be incurred:

- Material cost: The initial cost to procure the above material will be approximately \$100,800.
- Periodic replacement cost: Due to regular wear/tear and usage, the fence material may need replacement every three to four years. Ongoing replacement costs estimated at least 10 per cent of fencing would be required annually adding another \$10,000 annually for a Snow Fence Program.
- Storage cost during summer: The fence and posts removed during spring would take premium space for the purpose of safe storage.
- Annual installation/ removal labour cost: The Snow Fence Program would cost the City approximately \$50,000 in labour per year.

## **Other Options**

The incidents of snow blowing into the intersections and roads around the open areas can be further mitigated by adopting some or all of the following cost-effective ways at the development stage. Some of the below alternatives have been piloted by various jurisdictions:

### **a) Enhanced Residents' Awareness About the Snow Ridge Program**

A focused awareness program could be initiated to educate residents about the benefits of the Snow Ridge Program and how to request adding new areas or changing existing snow ridge plans. A dedicated winter supervisor could oversee the snow ridge program including the service requests coming from public on this topic.

### **b) Living Snow Fences**

Living snow fences could include strategically planting of trees, shrubs, wildflowers and native grasses, as well as stacked bales of hay, along roads or outer sections of the neighbourhoods that are prone to blowing and drifting conditions. This option has been successfully tried and/or implemented by several municipalities in North America including the Region of Peel.

Properly designed and placed, these living barriers trap snow as it blows across fields, piling it up before it reaches a road or community. In Regina, there are some open areas or parks where appropriate vegetation could help replace temporary wooden snow fences.

Administration can also explore the possibility of living snow fences in fields or open areas on the outskirts of the city where no development is planned in the near future.

Not all current snow ridge locations can be replaced by this option as this option may require a long-term commitment from the property owners and developers and may not be always feasible. This option should be considered only if the locations are going to be maintained as an open area for the next several years.

This option would however require more research and working with other departments within the City as well as owners of the fields or open areas.

c) **Outsourcing the Snow Fence Program for Supply and Install**

Administration has never outsourced the Snow Fence Program to a 3rd party, but this possibility has been recently explored.

Research has shown that several fence suppliers and/or installers in Regina have moved away from the snow fencing business in the last few years. Only two suppliers/installers returned with the request for a quote. The quoted prices by two respondents were \$1.50 per ft and \$6.70 per ft, plus taxes.

As per the minimum quote received, hiring a 3rd party to supply/install snow fences for the known trouble spots would cost \$45,000 annually. This cost would include installing, removing and storing the fence and posts. There will be additional costs above this such as staff time for coordination, safety inspections, quality audits, contract management, arranging locates, as well as liability costs associated with claims. Details of the contract, such as the minimum guaranteed amount, would still need to be determined as well.

***Pilot Study Option:*** Under this option, a pilot study could be conducted on a small section around the open areas in order to test the benefits or drawbacks of outsourcing a Snow Fence. This study could be performed during 2019/ 2020 winter season on a small stretch around Courtney Street between 9th Avenue North and Armor Road. A maximum of \$11,000 could be utilized from the Winter Maintenance operation budget towards this trial.

**RECOMMENDATION IMPLICATIONS**

**Financial Implications**

There are no budget implications to the recommended option.

A Snow Fence Program would cost the City approximately \$50,000 in labour per year, with an initial one-time capital cost to procure fencing materials at approximately \$100,800. There would also be costs associated with replacement, inventory management and storage. Annual replacement costs are estimated at \$10,000 per bringing the annual costs to a total of \$60,000.

The cost for the Living Snow Fences would vary depending on buy in from landowners and other service areas to support a program like this. Although these costs could vary, a Living Snow Fence Program may only see initial start-up costs. A program like this would also need to be supported by a communications plan to educate residents.

The cost associated with outsourcing to a 3rd party could be approximately \$45,000 annually, with additional costs as described in Option C. To conduct a pilot study to check the benefits or drawbacks of outsourcing snow fencing, \$11,000 would be a sufficient amount. The winter maintenance operation budget can be the source of this fund.

These estimates are based on the existing trouble spots. After the Snow Fence Program was gradually replaced by snow ridges over the years and ultimately discontinued.

Environmental Implications

The Snow Ridge Program would reduce the City's dependence on single use plastic fencing.

Policy and/or Strategic Implications

The recommended approach of a Snow Ridge Program, is consistent with *The Official Community Plan, Bylaw No. 2013-48* (OCP), specifically:

*Section D9, Goal 2- Health and Environmental Impacts, 11.9, "Ensure city roadways are able to provide all- season emergency response access, maximise connectivity, and minimize response times."*

The current Winter Maintenance Policy does not include snow fencing as part of the policy.

Other Implications

None to this report.

Accessibility Implications

Both snow ridges and snow fencing, along with alternative options provide accessible streets during the winter months.

COMMUNICATIONS

Information related to the Snow Ridge or Snow Fence Program, dependant on Council approval, will be included on the City's seasonal maintenance webpage.

DELEGATED AUTHORITY

The recommendation contained within this report requires City Council approval.

Respectfully submitted,



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Respectfully submitted,



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