



**Highway Maintenance Manual**  
**Chapter 06 Winter Maintenance**  
**Section 15 Snow Removal**  
**Subject 42 Living Snow Fence**

**Bureau of Highway Maintenance**  
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## **1.0 Background**

Drifting and blowing snow can cause problems for highways and drivers. Drifts can refreeze on pavements to form dangerous conditions for vehicles and accumulate to make the road conditions hazardous for travel. Blowing snow can cause dangerous visibility issues, including whiteouts. The installation of drift control results in a 25-62% reduction in winter related crashes in blowing and drifting segments of roadway.<sup>1</sup>

Plowing snow is expensive in terms of labor, fuel, and equipment. It costs up to 100 times more to plow than trapping snow with snow fences.<sup>2</sup> [HMM 06-15-40](#), Drift Prevention, addresses controlling blowing and drifting snow. A living snow fence, designed to match snow transport, will last for decades, and will control drifting snow in a cost-effective manner.

The department has traditionally planted rows of trees and shrubs to act as living snow fence. Living snow fence has advantages over commercial wood slat or polyethylene snow fence because it is (a) not put up and taken down annually, (b) relatively long-lasting, (c) almost maintenance free once established and, (d) more aesthetic.

## **2.0 Location**

Living snow fence is desirable in areas where right of way widths are adequate to provide snow storage and where soil conditions allow. Living snow fence is normally planted within the right of way limits but may be planted off the right of way when an agreement can be reached with the abutting landowner. Living snow fence plantings should be planned and developed in accordance with roadside vegetation management plans and Procedure 27-20-5 of the Facilities Development Manual and in cooperation with the Bureau of Highway Maintenance landscape architects.

## **3.0 Design**

[FDM 27-20-05](#) discusses design considerations for living snow fences, including the impact of various site conditions on the dynamics of drifting snow.

[FDM 27-20-05 Figure 5](#) lists plant species suitable for use as living snow fence.

Generally, living snow fence should consist of several rows of deciduous shrubs and/or evergreen trees. The number of rows is based on design and planting space available. Deciduous shrubs are preferred statewide. Evergreen trees may be used in the northern half of the state, but rows of evergreen trees should only be used in conjunction with rows of deciduous shrubs, with the shrub row(s) located nearest the roadway. Deciduous shrubs should be planted 4 feet apart in rows that are 3 to 4 feet apart. Evergreen trees should be planted 8 feet apart in rows that are 6 feet apart. Plant spacing should be staggered from row-to-row.

Living Snow Fence should be designed as to not create a drift that exceeds the right of way width available. Also, the design should allow for a space of at least 5 feet between the right of way fence and the first row of plants to allow space for future maintenance operations.

Living snow fence design should consider the viewing distance of existing outdoor advertising signs as specified in [SS. 84.305\(2\)](#). If there is a need for living snow fence in those areas, exercise care to avoid selecting vegetation whose mature height may obscure the view of the sign face. However, in certain locations, design

<sup>1</sup> [ISE 2017 study](#)

<sup>2</sup> [SHRP-W/FR91-106](#)

constraints, or sign heights may require the use of vegetation that could obscure the sign face to maintain the safety of the traveling public.

Do not plant vegetation that is capable of growing to a trunk diameter of greater than four inches in the clear zone. See [HMM 07-10-05](#), Woody Vegetation Control, for a description and dimensions of clear zones.

Evergreen trees are not recommended for snowdrift control. They should be used only in exceptional cases when shrubs are not appropriate. The bureau of highway maintenance landscape architects should be consulted prior to such plantings.

The Bureau of Highway Maintenance (BHM) landscape architects should be consulted for design guidance.

#### **4.0 Planting**

Plants to be used for living snow fences may be obtained either from the Department of Natural Resources (DNR) or from private nurseries. DNR plants are seedlings or transplants and vary in height up to approximately 12 to 15 inches or more and must be purchased in minimum lots of 1000 (graded) or 3000 (bulk). Check the [DNR web site](#) for species availability and cost. In order to assure the desired species are available, orders should be placed in late October or early November. Delivery can be expected mid- to late April the following spring.

Seedlings and transplants may also be purchased from private nurseries but will cost more than those purchased from the DNR. Larger plant sizes are available as nursery stock. Common size ranges are 12 – 15 inches, 15 –18 inches and 18- 24 inches in height.

Plants obtained from the DNR are typically planted using county highway personnel and equipment. A tree planter may be available on loan from the DNR, depending on timing and demand. The advantage of using DNR plants planted by the county highway provider is the initial cost. A disadvantage of doing this type of large-scale planting with the county highway provider is the success of the planting will depend on adequate rainfall until the plants become established unless the county highway provider has the time and equipment necessary to water effectively.

A second option is to hire a landscaping contractor through the normal bid letting process. Although more expensive, a let contract has the advantage of requiring the contractor to provide care and replacements during the establishment period as described in [Section 632.3.19](#) of the Standard Specifications for Highway and Structure Construction, thereby assuring a higher rate of success. Because of the larger size of the nursery stock and the greater likelihood of successful establishment, a snow fence planted under contract may become effective in stopping snow more quickly than the smaller DNR plants.

Refer to the Department website on [Roadsides](#) for more information on planting seedlings and transplants.

#### **5.0 Replacement**

Gaps in the snow fence seriously affect the trapping efficiency and storage capacity of the snow fence. Therefore, plants that die should be replaced as soon as practical.

#### **6.0 Record Keeping**

For plantings accomplished by a method other than a let contract, develop a sketch of the area to be planted. Use the most recent highway construction plan sheet(s) as a base. Include stationing for the beginning and end of the planting area. Show any breaks in the planted area. Also include the number of rows, the species planted and the number of each, as well as the date planted. Provide a copy to the BHM landscape architects for record keeping in living snow fence database. Regional records management staff should enter “As Built” plans or sketches into DOTView with a “landscape” tag.

## **7.0 Permitting**

Per section [84.305 \(6\)\(b\)](#) of state statutes, the department may impose any condition or restriction on a permit issued under this section that the department customarily imposes in connection with work performed on highway rights-of-way. The department customarily prohibits the trimming or removal of living snow fence for work performed on highway rights of way.