MICHIGAN DEPARTMENT OF TRANSPORTATION

LIVING SNOW FENCE

What is a living snow fence?

A living snow fence is a strategically planted windbreak consisting of multiple rows of plants designed to reduce blowing and drifting of snow. The fence forms a wind barrier which slows winds and causes snow to drop in and downwind of the plantings. Living snow fences are permanent and more cost-effective than structural barriers and can provide a wide array of benefits beyond snow control. A traditional slatted snow fence service life is 7-20 years, while a living snow fence can be functional for 40-50 years. The living snow fence concept has been around for many years and was first used to protect and control winds and drifting of snow along railroad lines in the early 1900s.

Benefits include:

- Reduced winter maintenance costs
- Increased safety and driver visibility
- Provide wildlife and pollinator habitat
- Reduced soil erosion
- Sequesters carbon
- Improved landscape aesthetics

DESIGN

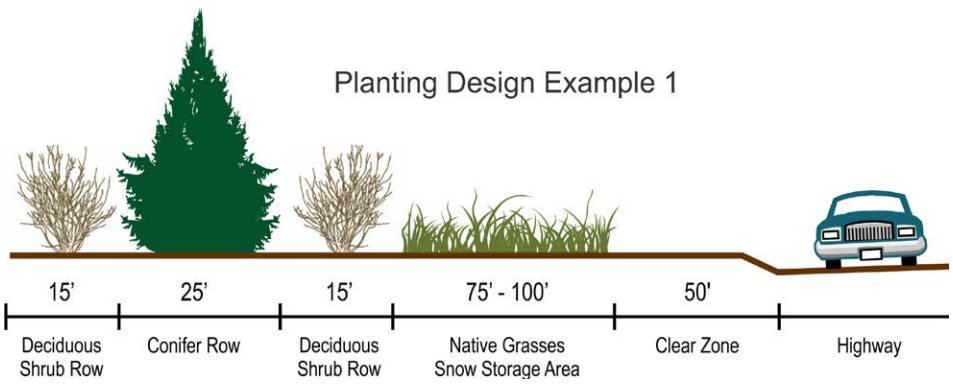
It's important to put the right plant in the right place, therefore, living snow fences must be well-planned and properly located to achieve the wide array of benefits they offer.

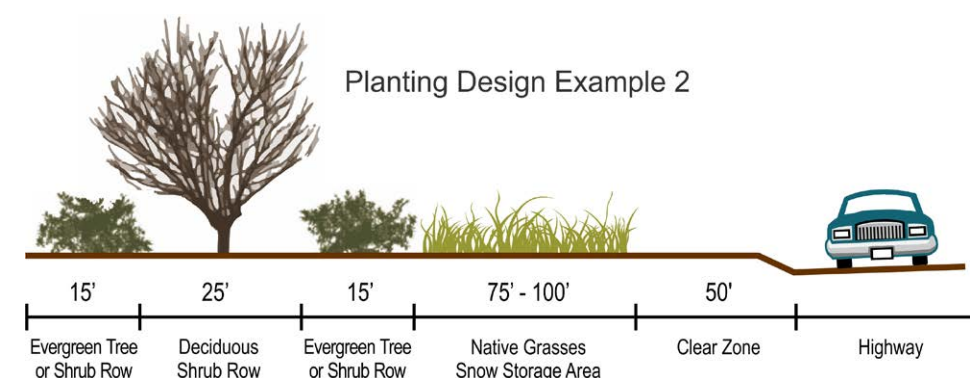
Location - Living snow fences should be placed parallel to the traveled roadway and as perpendicular to prevailing winds as possible. The location of the living snow fence in relation to the distance from the road is critical. Living snow fences should be designed so that they have adequate snow storage within and downwind from them to avoid piling snow on the roads. Barriers placed too close to the road can result in drifts accumulating on the road. Typical road setbacks range from 100 to 300 feet to allow for maximum snow storage capacity.

Length - To mitigate drifting problems at the ends of the snow fence, the length should extend beyond the area to be protected.

SPECIES SELECTION

A combination planting of multiple species of conifers, shrubs and low-growing broadleaf trees will provide the most benefit. When planting more than one row, a different species for each row should be selected to diversify the planting. Generally, small shrubs should be planted 4-6' apart, medium shrubs and small evergreens 6-8' apart, and large trees 12-15' apart. This will allow proper space for plants to mature. Also, consider planting shrubs and trees that are smaller in diameter and size for quicker establishment with lower mortality rates. See Planting Design Examples below.





It is important to select species that are suitable for the existing site conditions to ensure long term survivability. Location, soil type, water needs, sun and shade requirements, site topography, and current and potential land uses should all be considered when choosing suitable plant species.

Listed below are suggested snow fence species for Michigan Roadsides. Please consult the Roadside Development unit for your specific site conditions and recommendations.

EVERGREEN TREES:


Picea abies


Picea glauca


Pinus nigra

Picea abies, Picea glauca, Picea omorika, Picea pungens, Pinus heldreichii, Pinus nigra

BROADLEAF TREES:


Celtis occidentalis


Gymnocladus dioicus


Syringa reticulata

Acer spp., Amelanchier spp., Betula spp., Catalpa spp., Celtis occidentalis, Crataegus spp., Corylus colurna, Gymnocladus dioicus, Liquidambar styraciflua, Liriodendron tulipifera, Malus spp., Nyssa sylvatica, Platanus spp., Quercus spp., Syringa reticulata, Tilia spp., Ulmus hybrids

SHRUBS:


Cornus


Forsythia


Juniperus

Aronia spp., Cornus spp., Diervilla spp., Forsythia spp., Juniperus spp., Lonicera spp., Rhus spp., Salix spp., Syringa spp., Viburnum spp.

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MAINTENANCE AND MANAGEMENT

Proper care of the living snow fence is critical to its long term functioning. Once planted, trees and shrubs will need regular watering and weed control until the plants are properly established. Once established, weed control, supplemental watering, insect and disease control, and replanting may be needed on a periodic basis.

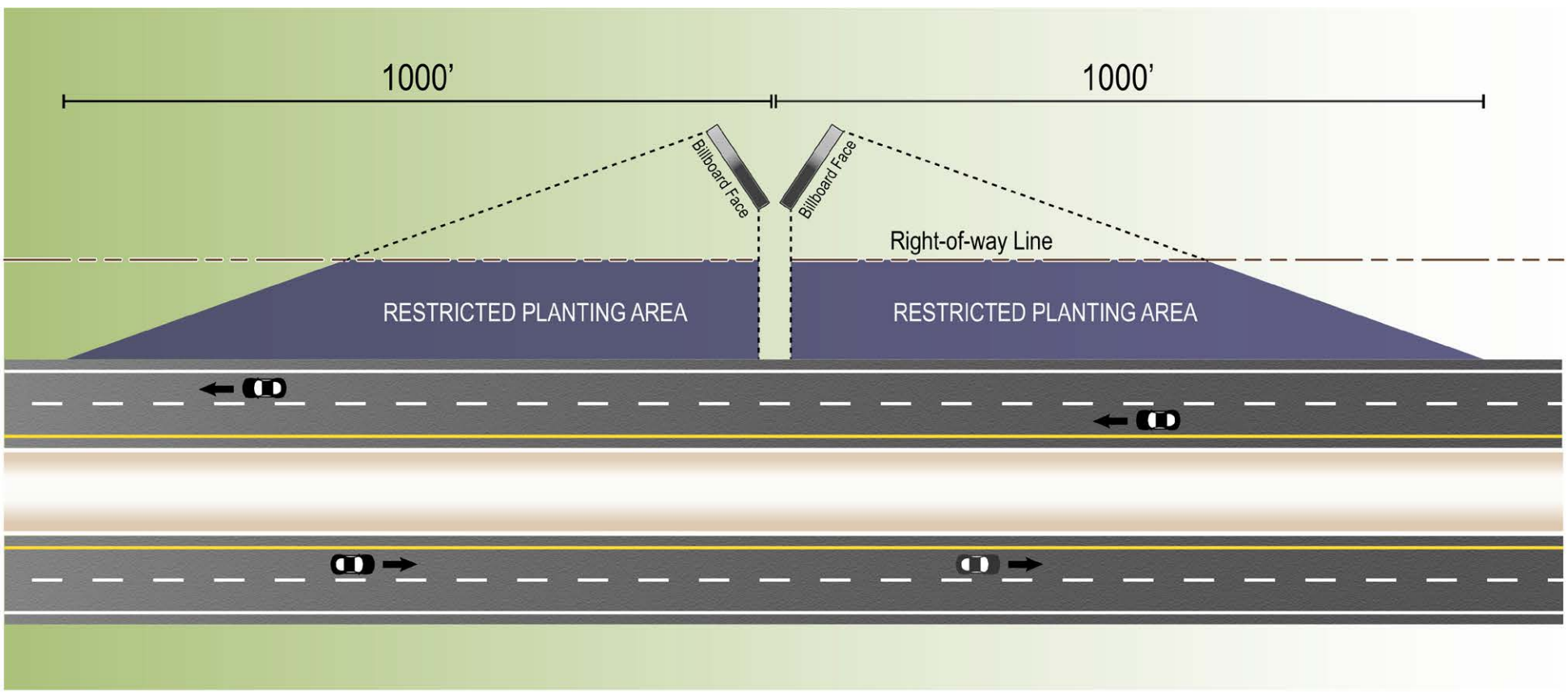
OTHER CONSIDERATIONS

- When planting evergreens, consider planting multiple species to avoid risks associated with planting a conifer monoculture. In recent years many of the evergreen species growing along Michigan's roadsides have seen a decline due to disease. Read more about diseases affecting conifers at MSU Extension pages: *MSU Spruce Decline and MSU_Diplodia_Tip_Blight_Management*
- Avoid unintended consequences. All plantings in the Right of Way must take into consideration environmental review and outdoor advertising concerns. Public Act 106 of 1972, Sec. 11a. (12) states that the department shall not plant or authorize to be planted any vegetation that obstructs, or through expected normal growth will obstruct in the future, the visibility within the billboard viewing zone of any portion of a billboard sign face. See attached MDOT Restricted Planting Area graphic.
- Recent research by the Minnesota DOT has found that shrub willows make for effective, and Inexpensive snow fences. The study focused on planting native shrub willows along a stretch of U.S. Highway 14 in Waseca, Minnesota to evaluate the costs and benefits of using these species. What they found was that the native shrub willows outperformed traditional species used for living snow fences at a fraction of the cost. See technical summary: *Shrub Willows Make for Effective, Inexpensive Snow Fences in Minnesota*

MDOT Restricted Planting Area

Public Act 106 of 1972, Sec. 11a. (12)

The department shall not plant or authorize to be planted any vegetation that obstructs, or through expected normal growth will obstruct in the future, the visibility withing the billboard viewing zone of any portion of a sign face subject to this act.



MDOT
Michigan Department of Transportation

Additional information on snowdrift control and living snow fence can be found in MDOT's Vegetation Manual: *MDOT_Roadside_Vegetation_Manual.pdf*