

吹雪から道路を守る防雪柵

Snow Fences for Protecting Roads from Snowstorms

防雪柵は、防雪板により柵前後（風上、風下）の風速や風の流れを制御して、道路の吹きだまり防止や視程障害緩和を図ることを目的としたものです。吹雪対策施設の中では最も多く利用されています。

防雪柵にはその形によって種類があり、気象条件、地形条件、周辺地の利用状況、道路構造等に応じて使い分けがされています。

Snow fences are designed to use snowbreak slats to prevent snowdrifts on the road and to mitigate poor visibility by controlling the wind speed and direction.

Of all the facilities against blowing snow, snow fences are the most frequently used.

There are several types of snow fence. Their use depends on the conditions, such as weather, topography, the land use of the surrounding area and the type of road structure.

防雪柵の開発

The development of snow fences

我が国では1880年代に、鉄道の吹雪対策のために使われたのが防雪柵の始まりです。道路用としては1961年に初めての防雪柵（吹きだめ柵）が試験され、北海道内の国道などに設置が始まりました。

吹きだめ柵は広い用地が必要なため、道路敷地に設置できる防雪柵として、1967年から北海道開発局建設機械工作所で吹き払い柵の開発が始まり、1969年以降国道に設置されました。

さらに北海道開発局土木試験所で、1981年から吹き払い柵の適用が難しい多車線道路向けの研究が始まり、1988年に吹き止め柵の設置が始まりました。

2009年現在では、北海道の国道では約340kmの防雪柵が設置されています。

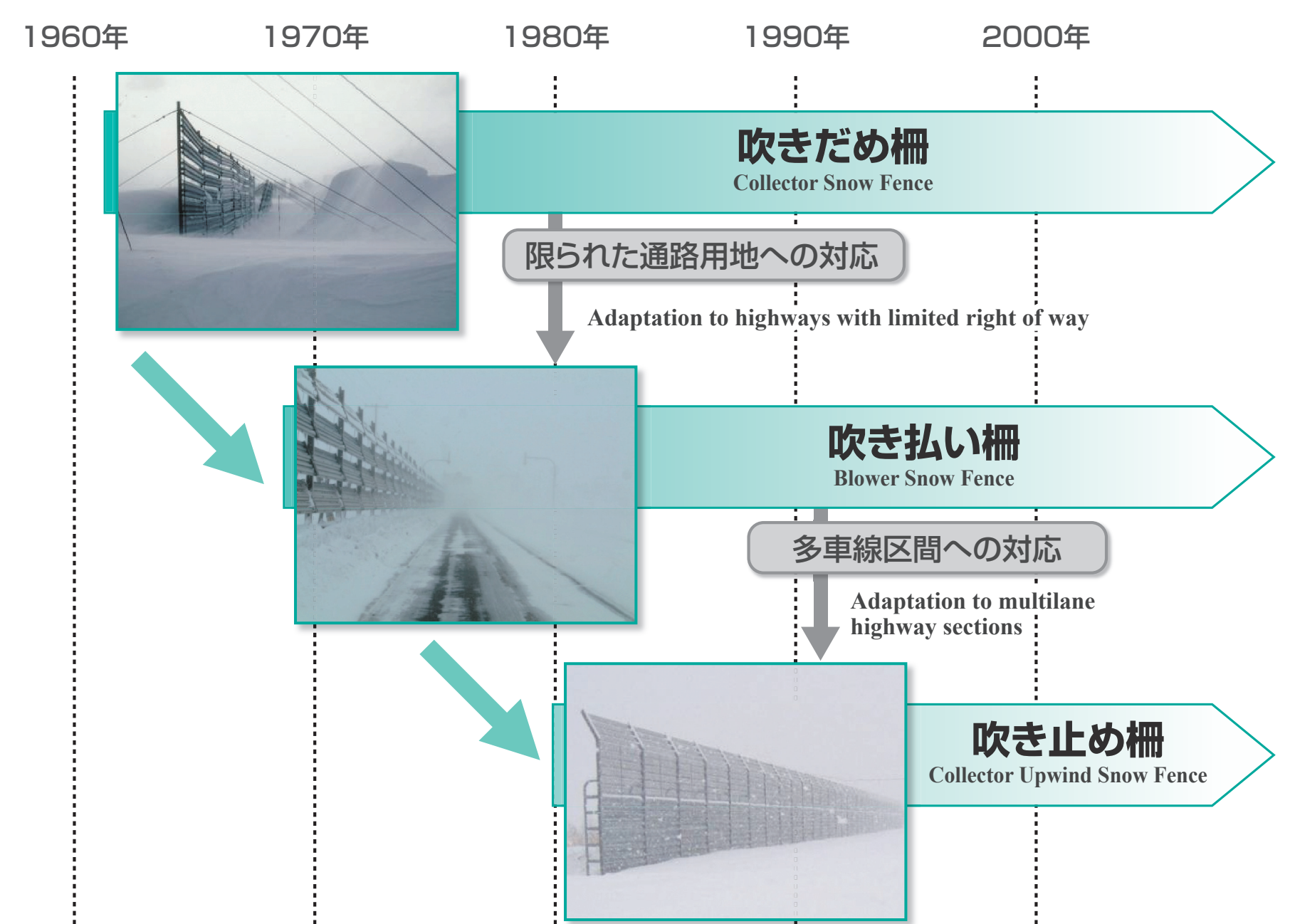
In Japan, snow fences were first developed in the 1880s as a snow control measure for railways.

The first road snow fence was a collector snow fence, which was created and tested in 1961, and installation started on national highways in Hokkaido.

Because collector snow fences require a large land area for installation, in 1967, the development of the blower snow fence, which is able to be installed in the existing right of way, was initiated at the Construction Machine Plant of the Hokkaido Regional Development Bureau. The installation of blower fences on national highways started in 1969.

Research to develop a new type of fence that can be installed on multi-lane highways, where it is unfeasible to install blower snow fences, was initiated by the Civil Engineering Research Institute of the Hokkaido Regional Development Bureau in 1981. The installation of collector upwind snow fences started in 1988.

A combined length of about 340 km of snow fences was installed on national highways in Hokkaido as of 2009.



▲吹きだまりから視程障害への目的の変化に応じた防雪柵

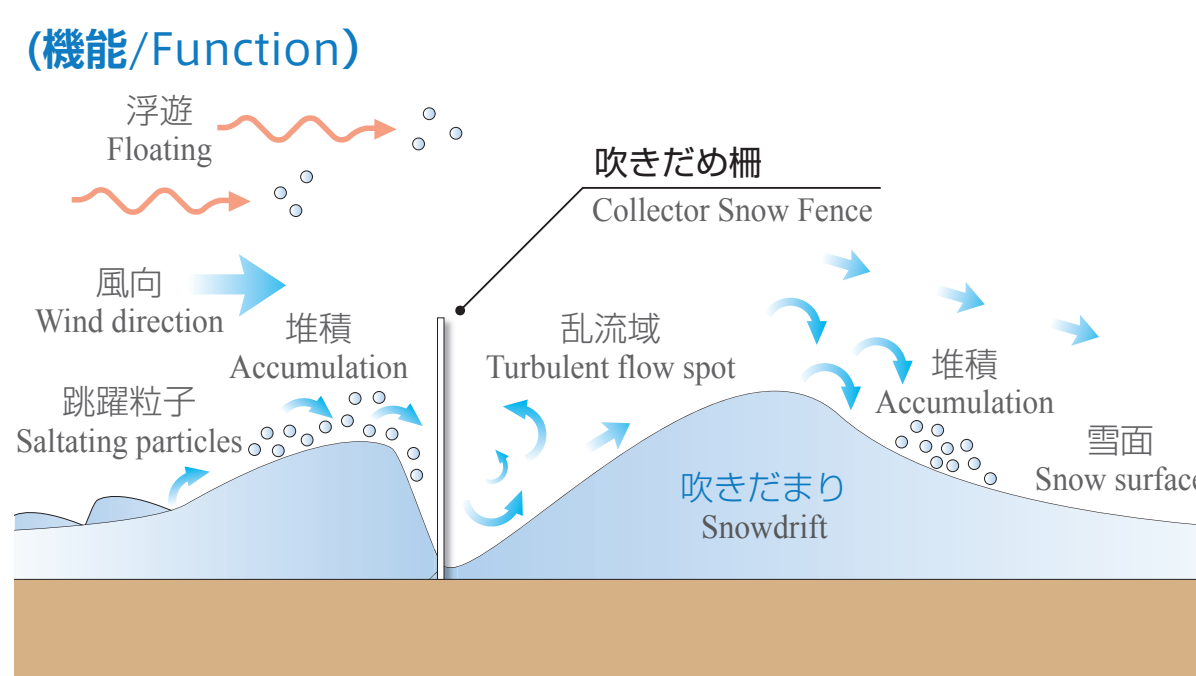
Snow fences have been changed in response to the shift in objectives from snowdrift control to poor visibility mitigation.

防雪柵の種類

Types of snow fences

防雪柵には大きく分けて「吹きだめ柵」、「吹き払い柵」、「吹き止め柵」の3種類があります。このほか、谷からの吹き込みを防ぐ「吹き上げ防止柵」があります。

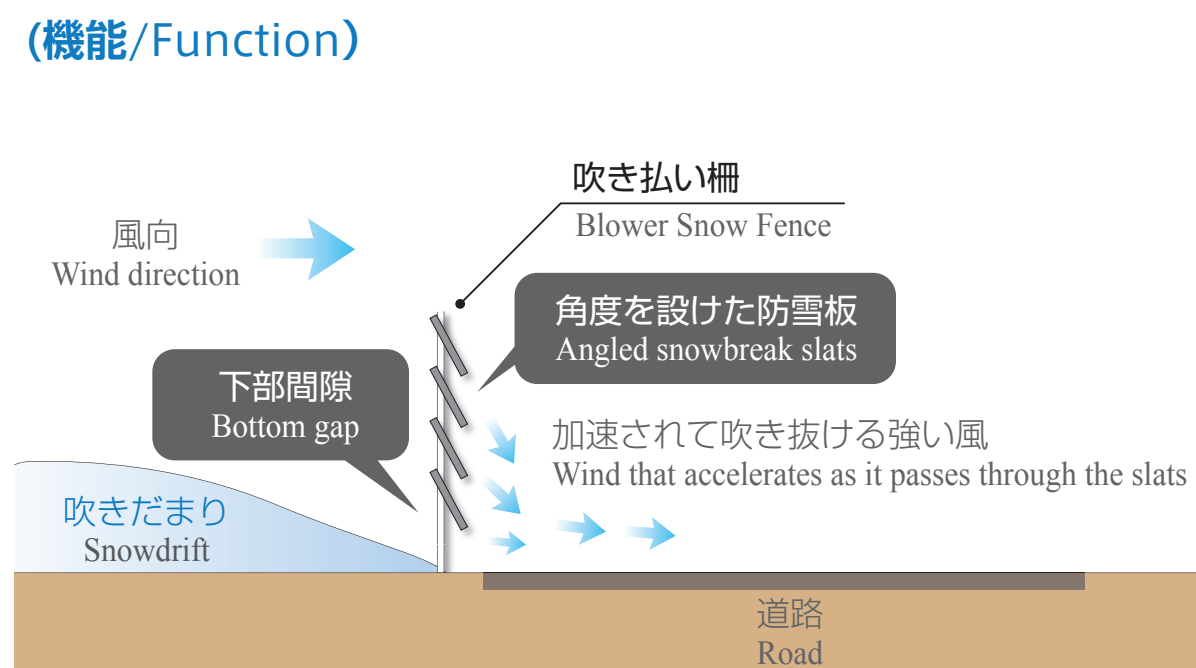
There are three major types of snow fences: collector snow fences, blower snow fences, and collector upwind snow fences. In addition to these three types, "solid barriers" for preventing snow from blowing onto the road from valleys are also used.



(特徴/Characteristics)

- 数枚の防雪板を、板同士と地面との間に間隙を設けて設置される。
- 柵の前後に吹きだまりを形成させる。
- 道路から離れて設置されるため、広い用地が必要。

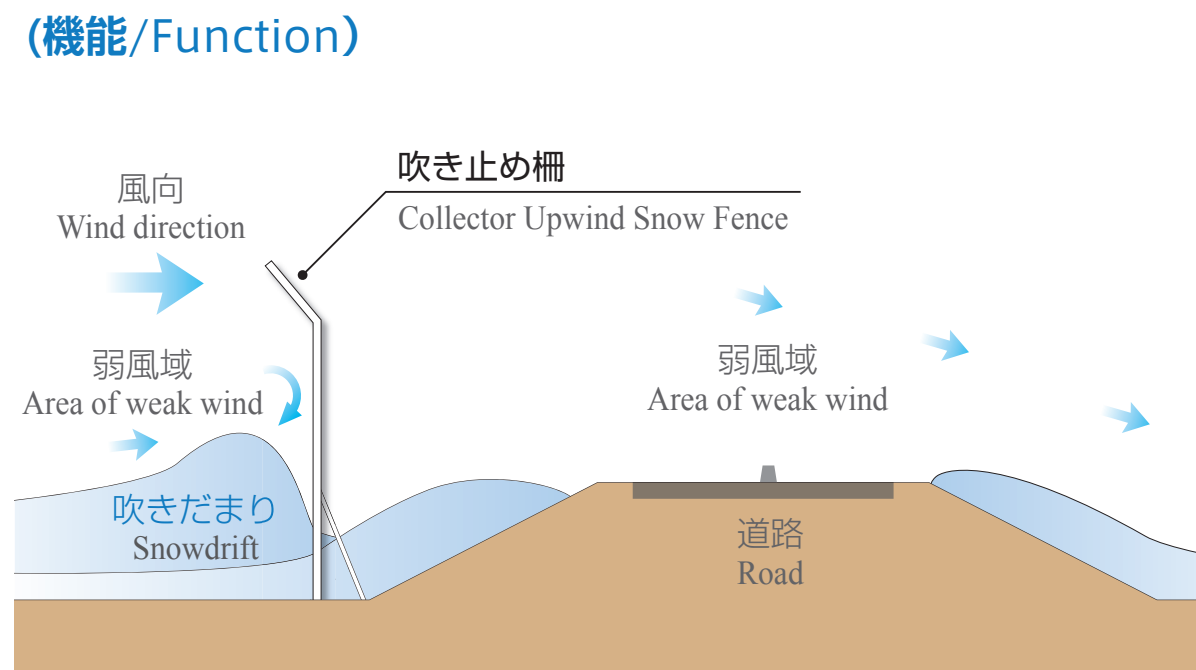
- Several snowbreak slats are attached such that there are gaps between them. There is a clearance between the bottom slat and the ground surface.
- Snowdrifts form on both sides of the fence.
- A wide area of land is necessary for installation, because the fence needs to be installed some distance from the road.



(特徴/Characteristics)

- 柵の下部空隙から加速されて吹き抜ける強い風で道路上の雪を吹き払うことによって、視程障害を緩和する。
- 下部空隙の確保が必要なため、積雪が少ないところに設置される。
- 路側に設置される。
- 広幅員道路の利用不可。
- 主に視程障害対策として利用される。

- Poor visibility is mitigated by the strong winds that blow through the bottom gap of the fence to blow away the snow on the road. The wind speed is accelerated by its passage under the fence.
- Installation of this type of fence is limited to areas where the snow depth is low, because it is necessary to secure sufficient clearance at the bottom of the fence.
- The fence is installed at the roadside.
- The fence is not for roads with great width.
- The fence is mainly used as a poor visibility countermeasure.



(特徴/Characteristics)

- 吹きだめ柵を改良し、柵高を高く、下部空隙をなくしたものの。
- 主に柵風上に吹きだまりを形成する。
- 吹きだまり防止と視程障害緩和の両方に対応する。
- 広幅員道路に利用可能。

- The collector upwind snow fence was created as an improvement on the collector snow fence. The height is greater than that of the collector snow fence, and the bottom gap was eliminated.
- The fence creates a snowdrift mainly on the upwind side of the fence.
- The fence is used to keep snowdrifts from forming and to mitigate poor visibility.
- It can be installed on roads with great width.