

# **PUBLICITY ACTIVITIES FOR SAFE DRIVING ON EXPRESSWAYS IN WINTER**

Mitsuhiro Kotani and Hiroshi Nakao

Maintenance Planning Division  
Hokuriku Branch, Japan Highway Public Corporation  
TEL: +81-25-243-4106/FAX: +81-25-243-4237

Email: Mitsuhiro\_Kotani@gw.japan-highway.go.jp, Hiroshi\_Nakao@gw.japan-highway.go.jp

## **Introduction**

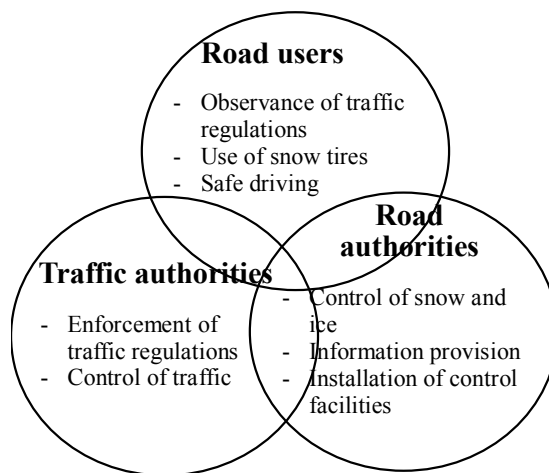
The Hokuriku Branch of the Japan Highway Public Corporation (JH) manages an extended total of 680 kilometers of sections of five expressways, i.e., the Hokuriku, Kan-etsu, Ban-etsu, Joshin-etsu, and Tokai-Hokuriku expressways. On all of these expressways, meteorological conditions are extremely severe in winter, as the area has the heaviest snowfalls and coldest temperatures in Japan. For this reason, assurance of safe and sure transport in winter is a key mission of the Branch. As the authority in charge of managing expressways in this area, the Branch has done what it can and taken a variety of measures to this end in both "hard" aspect (e.g., establishment of tire-chain bases, and installation of permanent equipment for the supply of thawing agent) and "soft" aspect (e.g., Snow Removal Dispatch scheme). These measures are aimed at preventing closure as much as possible and shortening the duration of any closure in order to curtail its impact minimum.

Expressway network formulation links to a broadening physical scope of economic activities, and made it possible for vehicles to travel from areas with no snowfall to those with heavy snow within a short time. This, in effect, magnifies gaps among drivers in respect of familiarity with driving on wintry roads, and resulted in an increasing the number of accidents and other troubles due to improper driving, by drivers who are not accustomed to driving in the snow.

In our Branch, we consider that assurance of safe and sure driving in winter cannot be done by any road authority alone; it requires understanding and cooperation of expressway users. In response to the situation described above, the Branch therefore initiated new activities of information provision and publicity to raise drivers' consciousness of driving risks in snow and to promote proper vehicle outfit and safe driving in winter. This paper outlines these activities and describes their future orientation, which is based on the results of an evaluation of effectiveness obtained through a questionnaire survey and other studies.

## **1. Assurance of Highway Transport in Winter - Current Status and Issues**

Figure 1 shows the target vision for assurance of highway in winter. As seen in the figure, vision resides on the balanced interaction of three parties: road users, traffic authorities, and road authorities. These parties must fulfill their own duties and responsibilities of their respective roles. Only as much effort by all three parties aiming to the widest possible elimination of the disruption caused by snow and ice, safe and sure highway transport in winter can be assured.



**Figure 1 Tripartite Cooperation Among Road Users, Traffic Authorities, and Road Authorities**

The expansion of the expressway network has broadened the physical scope of economic activities including freight and passenger transport, and made it possible for vehicles to travel from snowless areas to areas with heavy snow within a short time. This is, in effect, magnifying gaps among drivers in respect of familiarity in driving in snow, and also resulting in an increasing accidents and other trouble owing to a lack of such familiarity. In addition, relatively warm temperatures and small snowfalls in recent winters have changed drivers' attitudes toward wintertime surfaces; drivers are beginning to seek better surfaces even in winter. Furthermore, the trend toward lifestyles keyed by around-the-clock activity evidenced such as the spread of convenience stores chain can be translating into an increase in expressway traffic at night. As a result, when snow is most apt to fall, a concomitant increase in accidents on nighttime roads in winter weather can be observed.

Currently, road closures in winter are generally triggered by traffic accidents. In many cases, the closure duration is lengthened by the difficulty of subsequent snow and ice control work due to the post-accident clean-up and influence of the resulting vehicle back-up. Also there are many closures cases in which result when a vehicle wears only ordinary tires that are not equipped with chains even though chain requirements are imposed, and the car fails to climb grades and block following traffic.

In its role as the road authority, the Branch takes various steps to secure the flow of traffic in winter. It must cope with a host of adverse "given" conditions on the driver side with an extremely destabilizing effect, including the low awareness of the risks of snowy and icy roads, failure to outfit vehicles properly for winter road condition, lack of safe driving, and failure to observe traffic regulations. The steps taken by the Branch are being negated by those drivers who have a low awareness of snow risks or are unfamiliar with driving on wintry roads. This is making it more difficult to assure transit when snow is falling.

As noted above, the assurance of safe and sure highway transport in winter requires balanced cooperation by the road authorities, traffic authorities, and drivers. The present situation, however, is one of imbalance; drivers are not properly outfitting their vehicles for winter and have an insufficient awareness of the importance of safe driving on wintry surfaces. It should also be added that the Branch activities have not been fully adequate as regards information provision, publicity, and consciousness-raising for drivers. In response, the Branch decided to launch a program of publicity and education aimed at raising driver consciousness, including the provision of materials to help drivers who have been made aware of risks to decide whether or not they should attach chains to their tires.

## 2. Publicity and Education Activities Aimed at Raising Driver Consciousness

The Branch's past publicity and education activities for drivers have essentially been confined to dissemination of leaflets on safe driving during the traffic safety weeks in spring and autumn; there have been almost none specifically for assuring highway transport in winter. For the reasons noted above, however, it decided to begin developing full-fledged publicity and education activities aimed at raising driver consciousness in the area in fiscal 1997.

- (1) Study of traffic accidents on the Kan-etsu expressway (between Minakami Interchange and Nagaoka Junction)

In preparing plans for the publicity and education activities, the Branch studied traffic accidents on the Kan-etsu expressway in winter in order to determine the proper targets of the activities and so make them more effective and efficient. For the purpose of this study, the Branch totalized and analyzed data on traffic accidents which occurred under the condition as road surfaces covered with snow, slush, etc. The results are shown in the table below.

**Table 1 Characteristics of Occurrence of Accidents in Winter on the Kan-etsu Expressway (Minakami IC - Nagaoka JCT)**

Time	Day of the week	Saturday
	Time of day	4:00 - 5:00 PM / late-night
Place	Inter-IC sections	Minakami – Yuzawa
Driver attributes	Sex	Male
	Age	Teens / 20s
	Region of vehicle registration	Kanto region
	Type of vehicle	Full-size passenger car
Situation	Presence/absence of casualties	Absence of casualties (mostly minor damage)
	Special traffic regulations at the time of occurrence	Chains required for vehicles without snow tires / additional speed limitation ( 50 km/h Max)
Causes	Type of tires in times of application of the chain requirement	Ordinary tire
	Speed at time of occurrence	Excess speed
	Direct cause	Improper operation of steering wheel and brake

The results of the study may be summarized as follows: traffic accidents on the Kan-etsu expressway in winter tended to occur from 4:00 to 5:00 PM or late at night on Saturday, and to be caused by male drivers in their teens or 20s driving vehicles registered in the Kanto region with ordinary tires when such tires were required to have chains attached, owing to misoperation of the steering wheel or brake because of excessive speed.

## 2-1 Publicity for Safe Driving in Winter

### (1) Publicity program

In light of the aforementioned findings, the Branch identified young drivers from relatively snow-free parts of the Kanto region as the main targets of the publicity and education activities, and formulated the program shown below.

**Table 2 Plans for Publicity for Safe Driving in Winter (FY1997 - 2000)**

	Selection of FM radio (in consideration of young drivers)
Broadcasting stations	Selection of broadcasting stations covering the Tokyo, Aichi, Osaka, and Hokuriku regions in order to reach drivers from relatively snowless regions who are unfamiliar with snow risks on the road
Broadcasting days	Broadcasting on weekends (in light of the accident study)
Broadcasting format	Mini-broadcasting (five-minute segments) and commercials (20-second spots)
Personality	Use a single personality who is popular to youth and would win their empathy in order to have the greatest impact on listeners (use in events, radio programs, posters, goods, etc.)
Occasion	Repeated use (e.g., insertion of a message about traffic safety and control measures in winter by the same personality between tracks on pop music CDs and tapes)
Events	Staging of events at urban venues that are likely to attract newspaper coverage and participation by youth as well as in expressway service areas; implementation of games and questionnaire surveys about traffic safety by female campaign assistants
Visits to newspaper companies	Courtesy visits to newspaper companies with campaign workers to publicize events (as a result, articles on events were carried by more than ten newspapers)

### (2) Effects of the publicity

The Branch implemented an unprecedentedly large-scale program of publicity for traffic safety and countermeasures for conditions in winter. The effects for raising consciousness of snow risks among drivers for the stated purpose of preventing accidents and other troubles in winter were checked through the implementation of a questionnaire survey at events and other forums. The findings of the survey, which are shown in Table 3, indicate that, some 1,500 persons gained a renewed sense of the need for properly outfitting vehicles for winter through the activities each year.

**Table 3 Questionnaire Survey Results**

Number of respondents	1,400 - 1,500 per year
Respondent attributes	The number of respondents was divided fairly evenly between male and female; most were in their 20s or 30s; about 50 percent were from the Kansai area, and 30 percent, from the Kanto area; the remaining 20 percent were from the Hokuriku area; almost all owned ordinary passenger cars.
Understanding of the explanation	First place: need for vehicles outfit for winter Second place: safe driving

**2-2 Driving Experience of Wintry Roads**

The publicity activities described above apparently drew the attention to drivers of snow risks. They presumably motivated conscientious and experienced drivers to outfit their vehicles properly and exercise caution when driving on wintry roads. Generally, however, the young drivers from the Kanto or other regions with relatively little snow had little experience of driving on wintry roads, and it was thought that they may not have understood how the misoperation of steering wheels and brakes could lead them to accidents. It is also possible that drivers who understand explanations on paper may not be able to keep their composure and take the right driving action when they actually encounter difficult conditions. To give drivers a recognition of the need for chains and snow tires, the Branch therefore established a special winter driving course in the Tanigawadake parking area (off the Niigata-bound lane). The course allows drivers to get first-hand experience of steering and braking on wintry roads, and was designed for the use of drivers coming from the direction of the Kanto area and stopping at the parking area. The Branch has allocated two vehicles at the area, one with ordinary tires and one with studless snow tires. Drivers could take test-drives in each type to experience differences in vehicle behaviors depending on different kinds of tires.

The course was opened in fiscal 1998, and has been used by roughly 120 drivers per year. Questionnaire surveys conducted after the test drive indicated that the course gives drivers a renewed recognition of the need for proper outfit of vehicles for winter and for safe driving on winter roads.



**Figure 2 Winter Driving Course**

**2-3 Provision of Road Meteorological Information (Actual and Forecast) by the Internet**

The aforementioned study showed that, in many cases, accidents and other kinds of trouble were caused by driving of vehicles on wintry surfaces with ordinary tires not equipped with chains. It was, reasoned that, even if drivers were given a good appreciation of the need for winter outfitting through

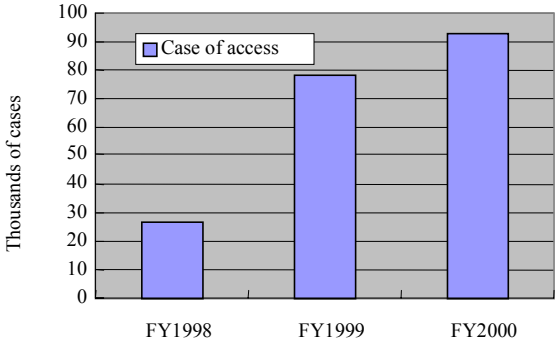
the publicity and an experience at the driving course, there was little information enabling them to decide when to switch to snow tires or to use tire chains. As such, the Branch decided to provide information on meteorological conditions (both actual and forecast) along expressways through the Internet so that drivers could acquire such information in advance of their departure and judge whether to switch to snow tires or to use tire chains when making their travel plans.

The provision is based on meteorological forecasts obtained on a daily basis from the Japan Weather Association by fax and the Micos online system for use in snow and ice control work. The information is recompiled for ready comprehension by road users and then displayed on the Branch's website. It is automatically updated twice a day (at 10:00 AM and 5:00 PM, when the forecasts are made) on the basis of data sent by the Association via the Micos repeater.

Information provision through the Internet commenced in fiscal 1998. The steady increase in access since then indicates the strong need for such information among motorists.



**Figure 3 Provision of Meteorological Information Through the Internet**



**Figure 4 Cases of Access for Information on Meteorological Conditions Along Expressways**

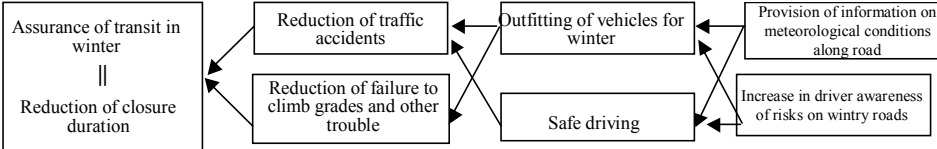
**2-4 Publicity Through the Mass Media**

The Branch has also taken steps for publicity through mass media. For example, it prepared a video setting forth the outfitting of vehicles for safe and pleasant driving on expressways in winter and the mode of collecting related information. Entitled "For Safe and Pleasant Driving on the Hokuriku and Kan-etsu Expressways in Winter," the video was distributed to driver's license centers for use in

instruction at the time of license renewal. It also cooperated in the production and broadcasting of a documentary TV program portraying its snow and ice control measures and related work in winter.

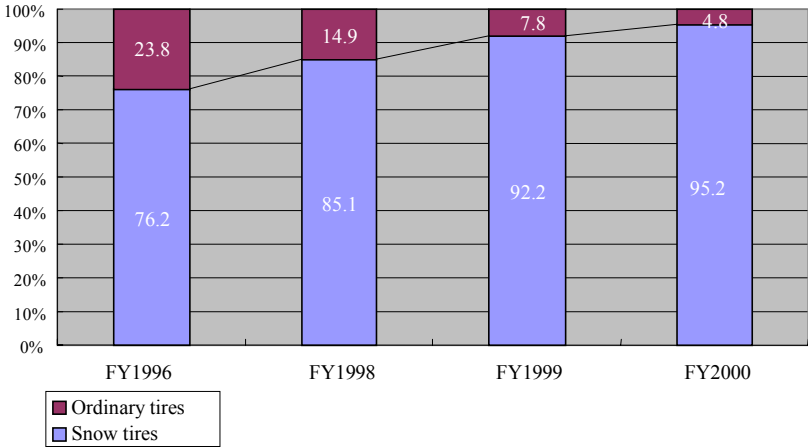
**3. Evaluation of Effects**

The ultimate objective of these efforts is assurance of safe and sure road transport in winter. A major aim in this connection is reduction of the duration of closure. As such, effectiveness should be checked by comparison of closure durations before and after the program. This duration involves a variety of factors, including weather conditions, traffic circumstances and road conditions, and does not allow a direct comparison without qualification. As shown in Figure 5, the provision of information on meteorological information is anticipated to enhance driver awareness of risks on wintry roads and so motivate them to outfit their vehicles properly and drive safely on them. This, in turn, should lead to a reduction in the incidence of traffic accidents and trouble such as failure to climb grades, and thereby reduce the duration of road closures. The Branch consequently made a comparative study of factors such as the rate of use of snow tires in order to check the effectiveness of the program.



**Figure 5 Diagram of the relationship between publicity efforts and assurance of transit in winter**

Figure 6 shows the trend of the rate of using snow tires from fiscal 1996, before the program was implemented, to fiscal 2000. The program is thought to have made some contribution to the increase in this rate beginning in fiscal 1997, when the activities were launched.



**Figure 6 Trend of the Snow Tire Rate (Based on a 24-hour Survey in Mid February at the Yuzawa IC)**

**Conclusion**

While the Branch has always stressed the necessity of the understanding and cooperation of drivers and traffic authorities for assuring safe and sure highway transport in winter, it has not always taken as fully sufficient approaches to this end. Efforts by the Branch designed to win such understanding and cooperation described in this paper are thought to be vital in the future .

The raising of driver consciousness of snow risks on wintry roads will take a long time, and activities of publicity and education must be promoted on a long-term basis. As the road authority, the Branch intends to attain the aim of assuring safe and sure highway transport in winter through balanced collaboration with the Branch, other road authorities, traffic authorities, and drivers as the ideal situation.