

**Session Report**

Date: 07/02/2022

Authors of these conclusions: Zoltan Pasztor, HUN, zoltan.pasztor@kifu-kar.hu

**TECHNICAL SESSION WS 1.1 AVALANCHE AND SNOW CONTROL  
MONDAY, FEBRUARY 7 09:00 AM - 10:30 AM (CALGARY)**

**1. KEYWORDS**

avalanche, snow control, extreme weather, winter road services, maintenance for road and infrastructure

**2. PRESENTATION OF THE SESSION**

During extreme winter events, standard response plans may no longer be valid. These events can have significant consequences for society. In many countries, there are roads in areas with extreme conditions such as mountain passes requiring convoys, roads in open areas exposed to snow drift and roads vulnerable to avalanches. However, extreme weather conditions can also happen anywhere; examples include heavy snowfall, freezing rain, extreme cold, fast changing weather conditions, fast increasing temperature and melting snow that can cause landslides or flooding. In this session the effect of avalanches on transportation are analysed. Stabilization and controlling of avalanches are one major part in securing traffic safety during extreme winter conditions.

**3. PROGRAMME OF THE SESSION**

Session Chair: Øystein LARSEN, Member of PIARC TC 3.2, Norway

Session Organiser: Øystein LARSEN, Member of PIARC TC 3.2, Norway

Session Secretary: Zoltan PASZTOR, member of PIARC TC 3.2, Hungary

Person	Organisation, Position...	Title of the presentation
Mr John Morrall	Canadian Highways Institute Ltd, Canada	Avalanche Stabilization and Winter Maintenance for the Trans-Canada highway (IP0017)
Mr Yukinobu Sugihara	Nagaoka University of Technology, Japan	Optimum control of far-infrared melting heater for snowbank depth control (IP0067)
Mr Riba Porrás Sergi*	Nivorisk-COEX-Govern d'Andorra	Specific control of snow avalanches affecting the Andorran road network, through retrospective, geomorphological analyzes and numerical modeling of the different avalanche corridors in the principality of Andorra (IP0384)
Mr Masanao Yamamoto	East Nippon Expressway Co., Japan	Disaster management and cooperation among concerned organizations under historical

		snowfall with 2,100 vehicle stuck on Kan-etus Expressway (IP0281)
--	--	---

\*Mr Sergi can't attend to the session, so his presentation was cancelled

**4. TECHNICAL FINDINGS AND DEBATE**

Keep on the traffic flow is a priority in many aspects on major highways like the Trans Canada Highway. Since 2015, TCH managers have taken several measures to reduce the avalanche risk on mountainous sections as part of a comprehensive programme. As a result, the number of hours closed is decreasing and the effectiveness of existing avalanche control equipment is increasing. The complex approach of this programme is a good example for other operators of motorways crossing similar areas.

The entrance of the Shibahara (Yuzawa, Japan) tunnel heavy snow poses risks to road users. In the past, large amounts of snow were removed by hand during heavy snowfall. With the automatic infrared heating devices shown by this presentation, the amount of snow can be controlled without human intervention. The presented simulation model is suitable to help other similar sites to determine optimal energy use and intervention conditions.

Kan-etsu highway has similar importance in Japan as the Trans Canadian Highway presented earlier. In December 2020 the heaviest snowfall was observed which caused closure of a section of the road for more than two days. After that, the operator NEXCO-East and the authorities worked on recommendations and developed an action plan to prevent similar incidents. The events and these recommendations are useful for operators of similar motorways in other countries. In several countries climate changing and weather changing on winter is a big issue and requires new responses and approaches.

**5. RECOMMENDATIONS FOR DECISION MAKERS, FOR PIARC OR FOR INTERNATIONAL ORGANISATIONS**

We suggest keeping on focus this topic and try to involve other countries to share their experiences and compare them.

**6. PREPARATION OF THE SESSION**

This session was planned, designed and organised as follows.

- Øystein LARSEN, N
- Zoltan PASZTOR, H