



**XXIV<sup>th</sup> World  
Road Congress  
Mexico 2011**  
Mexico City 2011.

## **XIII<sup>th</sup> International Winter Road Congress**

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# XIII<sup>TH</sup> INTERNATIONAL WINTER ROAD CONGRESS



**8-11 February 2010**  
**Quebec City,**  
**Canada-Quebec**

**6 different topics**

**30 oral sessions and 3 poster sessions**

**114 oral presentations**



# **1 WINTER SERVICE PLANNING, MANAGEMENT AND IMPLEMENTATION**

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- Overview of National Strategies and Policies
- Winter Maintenance Management Methods
- Interaction Between Road Users and Agencies
- Challenges of Contracting



# CONCLUSIONS TOPIC 1

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- Taking road users and other customers into consideration and reinforcing collaboration between actors is becoming more and more important
- Countries have different situations and solutions. Each country should determine its own optimum approach for winter service. One can, however, learn from others
- The expertise and status of Winter Service should be actively developed in the future



## 2 SAFETY AND MOBILITY IN WINTER

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- Accident and Traffic Flow Analysis
- Optimized Driver Information for Better Road Safety
- Special Traffic Problems and Solutions in Wintertime
- Sustainable Winter Maintenance in Road Tunnels



# CONCLUSIONS TOPIC 2

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- Under winter road conditions, accident risk becomes very high, especially for special traffic like buses, cyclists and pedestrians
- Winter Maintenance has a great safety effect
- Optimized Driver information and support can help, also block dispatching for HGV's in extreme situations
- Road Tunnels have special problems in wintertime which have to be solved



# 3 WINTER SERVICE INFORMATION SYSTEMS

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- Information tools to the manager/operator; tools for the interface between meteorology and road management.
- Data management/data processing. Example – Maintenance Decision Support Systems.



# CONCLUSIONS TOPIC 3

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- New approaches to the way road condition and current weather data is obtained including the use of in-car technologies.
- Innovation in weather forecasting and road condition forecasting provides better information to road users, allowing them to make better travel choices.
- Day-to-day operations and long term planning will improve with the development and wider scope of decision support systems.





# 4 SNOW AND ICE CONTROL TECHNIQUES AND TECHNOLOGIES

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- Innovative Techniques and Technologies
- The Environment and Snow Control
- Techniques for the Application of Deicing Chemicals
- Measurement of Pavement Surface Condition
- Analysis of the Spread Rate of Chemical Deicers
- Prevention or Dealing with Snow/Ice



# CONCLUSIONS TOPIC 4

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- Improvements in equipment, techniques, and materials are moving towards more sustainable practice.
- Technology advances are contributing to new materials and advanced methods.
- Continued advances in understanding of the behavior of the pavement surface during snow/ice is important.



# 5 Winter service and sustainable transport

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- **Salt and Road Right-of-Way**
- **Alternatives to Salt and Salt Quality**
- **Salt, Snow: Sustainable Options**
- **History of Maintenance in Various Countries**



# CONCLUSIONS TOPIC 5

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- The extent of the impact of de-icing salt has been identified
- Reduction of CO<sub>2</sub> in winter road maintenance will be one of the critical study themes in the future.
- De-icing salt alternatives need to fulfill two conditions: be effective and practical.
- Less corrosive effects of salt alternatives need to be more carefully assessed to use.
- Winter road management needs to consider roadside landscape, including greenery.



# 6 Winter service and climate changes impacts

## Conclusions

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- Climate changes impacts on winter service is very hard to predict.
- Bearing capacity of winter roads can be a problem for the forest industry because of shorter winters and more frost and thaw cycles.
- Some countries have made vulnerability analysis of the road network which indicates that there can be problems with permafrost and ice roads.
- But, we need to know more how climate changes will impact our road network. Lack of models.



## ■ Proceedings of the World Road Congresses

The documents issued on the occasion of the last three **World Road Congresses** are available on CD-ROM and can be purchased at the PIARC Secretariat.

In 2011, the proceedings of all World Road Congresses from the first one that was held in Paris in 1908 to the most recent one, will be available in the PIARC virtual library on this website.



Proceedings of Paris 2007

- [XXIIIrd World Road Congress, Paris \(France\), 2007](#)  
Still available:
- [XXIIInd World Road Congress, Durban \(South Africa\), 2003](#)
- [XXIst World Road Congress, Kuala Lumpur \(Malaysia\), 1999](#)

## ■ Proceedings of the International Winter Road Congresses



Pre-proceedings of Quebec 2010

Proceedings of [Quebec International Winter Road Congress, February 2010](#) are available.

The documents issued on the occasion of the last two **International Winter Road Congresses** are available on CD-ROM and can be purchased at the PIARC Secretariat:

Still available:

[XIIth International Winter Road Congress, Turin-Sestriere \(Italy\) 2006,](#)

[XIth International Winter Road Congress, Sapporo \(Japan\) 2002](#)

## ■ The next PIARC International Winter Road Congress

[XIVth International Winter Road Congress, Andorra la Vella](#)



# WELCOME TO NEXT PIARC WINTER CONGRESS

**ANDORRA**  
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**XIV CONGRÈS  
INTERNACIONAL  
DE VIABILITAT HIVERNAL**  
del 4 al 7 de febrer del 2014



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