2012 International Conference on

Winter Maintenance and
Surface Transportation Weather

Coralville Marriott Hotel and
Conference Center

Coralville, Iowa
April 30 - May 3, 2012

Sponsored by

Transportation Research Board
of the National Academies

In cooperation with

Iowa Department of Transportation
American Association of State Highway and Transportation Officials

Federal Highway Administration
U.S. Department of Transportation
PRELIMINARY PROGRAM
Transportation Research Board

2012 International Conference on Winter Maintenance and Surface Transportation Weather

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Coralville, Iowa
April 30 - May 3, 2012

Monday, April 30, 2012

11:00 a.m. – 5:00 p.m.  Registration and Information

Session 1
1:00 p.m. – 2:30 p.m.  Welcome
Max S. Perchanok, Ontario Ministry of Transportation, presiding

- TBD, Local or University Rep
- John F. Adam, Chief Engineer and Highway Division Director, Iowa Department of Transportation
- TBD, Federal Highway Administration

Keynote Address:
Winter Maintenance and Meteorological Communities Collaboration and Synergy:
Accomplishments and Future Opportunities, Leland D. Smithson, American Association of State Highway and Transportation Officials

Charge to Conference Participants:
Identification of gaps in knowledge, understanding and practices, and development of Research Needs Statements (RNS) to address these issues.

2:30 p.m. – 3:00 p.m.  Break

Session 2
3:00 p.m. – 5:00 p.m.  Environmental Stewardship and Sustainability
Torgeir Vaa, Norwegian Public Roads Administration, presiding

Impact of Climate Change on the Use of Anti- and De-icing Salt in Sweden (WM-STW12-167), Anna K. Arvidsson, Göran Blomqvist and Gudrun Öberg, Swedish National Road and Transport Research Institute (VTI)

Sustainable Winter Maintenance and a 22 inch Blizzard: A Case Study (WM-STW12-139), Wilfrid Nixon, University of Iowa; R. Mark DeVries, McHenry County Department of Transportation, Illinois

Identification of Salt Vulnerable Areas: A Critical Step in Road Salt Management (WM-STW12-163A), Andrew Betts, Nandana Perera and Bahram Gharabaghi, University of Guelph, Ontario

Measuring Sustainability in Winter Operations (WM-STW12-155), Wilfrid A. Nixon, University of Iowa

5:00 p.m. – 6:30 p.m.  Reception, Cash Bar
Tuesday, May 1, 2012

7:30 a.m. – 5:00 p.m.  Registration and Information

7:00 a.m. – 8:00 a.m.  Continental Breakfast

Session 3A
8:00 a.m. – 10:00 a.m.  **Road Safety under Winter Conditions**
Tina M. Greenfield, *Iowa Department of Transportation*, presiding

- **Application of Collision Prediction Models for Quantifying the Safety Benefit of Winter Road Maintenance** (WM-STW12-101), Taimur Usman and Liping Fu, *University of Waterloo, Ontario*; Luis F. Miranda-Moreno, *McGill University, Quebec*; Max S. Perchanok, *Ontario Ministry of Transportation*

- **Registration of Road Vehicle Rescue Actions as a Basis for Traffic Safety Measures** (WM-STW12-111), Torgeir Vaa and Per Brandli, *Norwegian Public Roads Administration*

- **Diagnosing Hazardous Road Surface Conditions Through Probe Vehicle as Mobile Sensing Platform** (WM-STW12-127), Jinhwan Jang and Namchul Baik, *Korea Institute of Construction Technology*

- **Safety Impacts of Winter Weather on Iowa’s Rural Primary Highways** (WM-STW12-113A), Zachary Hans, Neal Hawkins, Inya Nlenanya and Steve Lavrenz, *Center for Transportation Research & Education, Iowa State University*

Session 3B
8:00 a.m. – 10:00 a.m.  **Decision Support Systems: Present and Future**
Amy E. Burlarley-Hyland, *DBi Services LLC*, presiding

- **Intelligent Transportation Solutions (ITS) and Support System for Winter Maintenance (SSWM) – for Road Maintenance** (WM-STW12-104), Jörgen Bogren and Torbjörn Gustavsson, *Göteborg University, Sweden*

- **Geospatial Weather Decision Support for Transportation Applications** (WM-STW12-112), Jeremy Duensing, *Telvent DTN*

- **The Present and Future of Practical Road Weather Decision Support Research** (WM-STW12-164), Michael B. Chapman and Sheldon Drobot, *National Center for Atmospheric Research*


10:00 a.m. – 10:30 a.m.  Break

Session 4A
10:30 a.m. – Noon  **Winter Surface Friction Improvement and Standards**
Jan Å Ölander, *Swedish Transport Administration*, presiding

- **Side Friction as a Parameter in Optimizing Winter Road Operations** (WM-STW12-110), Torgeir Vaa and Ivar Hol, *Norwegian Public Roads Administration*

- **Potential of Using Warm Wetted Sand for Skid Control on Walkways and Bike Paths** (WM-STW12-108), Anna Niska, *Swedish National Road and Transport Research Institute (VTI)*

- **Trafficability of Heavy Vehicles on Inclines** (WM-STW12-109), Torgeir Vaa and Ivar Hol, *Norwegian Public Roads Administration*
Friction and Side Friction – Comparing Measuring Equipment with Passenger Cars (WM-STW12-146A), Dagfin Gryteselv, SINTEF Road and Railway Engineering; Terje Giaær and Torgeir Vaa, Norwegian Public Roads Administration

Session 4B
10:30 a.m. – Noon  Blowing and Drifting Snow
Chris Albrecht, Institute for Transportation at Iowa State University, presiding

Revision of the Highway Snowstorm Countermeasure Manual - Focus on Snowbreak Woods (WM-STW12-131), Manabu Kaneko, Takashi Watanabe and Masaru Matsuzawa, Civil Engineering Research Institute for Cold Region, Japan; Yasuhiro Ito, Snow Avalanche and Landslide Research Center, Japan


Operational Blowing Snow Modeling: Benefits for the End User (WM-STW12-114A), Leon F. Osborne, Jr., Benjamin W. Hershey and John J. Mewes, Meridian Environmental Technology, Inc.

Noon – 1:00 p.m.  Lunch

Session 5A
1:00 p.m. – 3:00 p.m.  Measuring and Forecasting Pavement Surface and Subsurface Conditions
Noriyuki Sato, California State University, Chico, presiding

Model to Forecast Short- and Long-Term Prediction of Road Surface Temperature in South Korea (WM-STW12-102), ChoongHeon Yang, Duk-Geun Yun and Jung Gon Sung, Korea Institute of Construction Technology

Measuring and Predicting Soil Temperature and Moisture Content Beneath Nova Scotia’s Highways: One Year of Observations and Forecasts (WM-STW12-122), Benoit Pouliot, Paul Delannoy, Phil Woodhams, and Shawn Allan, AMEC Earth & Environmental; Olga Kidson, Nova Scotia Transportation and Infrastructure Renewal

An Evaluation of a Simulation of Sub-Pavement Conditions as They Affect the Implementation and Removal of Seasonal Load Restrictions (WM-STW12-136), Robert D. Hart, Leon F. Osborne, Jr., and John J. Mewes, Meridian Environmental Technology, Inc.; Mark A. Askelson and Jennifer L. Hershey, University of North Dakota

Session 5B
1:00 p.m. – 3:00 p.m.  Innovations in Winter Maintenance Equipment
Kathy M. Ahlenius, Wyoming Department of Transportation, presiding

Potential Impacts of a Multi-Purpose Snow Removal Instrument on Snow Removal (WM-STW12-103), Woo Hoon Jeon, Choong Heon Yang and In Su Kim, Korea Institute of Construction Technology; Jun-Seok Oh, Western Michigan University

Factors for Consideration in Selecting Snow Plow Cutting Edges (WM-STW12-143), Wilfrid A. Nixon, University of Iowa

Synthesis and Best Practices for Performance Evaluation of Snow and Ice Plows (WM-STW12-156A), Souhail Elhouar and Enad Mahmoud, Bradley University-Peoria, Illinois

Benefits of Implementing AVL Technologies in Wisconsin for Winter Maintenance Operations (WM-STW12-157), Kelvin R. Santiago-Chaparro, Madhav Chitturi, Todd Szymkowski and David A. Noyce, University of Wisconsin–Madison
3:00 p.m. – 3:30 p.m.  Break

Session 6
3:30 p.m. – 5:00 p.m.  Climate Trends and Large-Volume Snow Control
John P. Burkhardt, Indiana Department of Transportation (Retired), presiding

Measures Against Avalanches in Which the Phenomena of Snow Sliding Through Supporting Surfaces of Snow Bridges Occurs (WM-STW12-130), Hiroki Matsushita, Masaru Matsuzawa, Osamu Sakase and Hiroshi Nakamura, Civil Engineering Research Institute for Cold Region, Japan
Implementing Winter Climate Studies for Transportation Projects in Ontario, Canada (WM-STW12-121), Steven McArdle, Patrick Grover and Neil Hellas, 4DM, Inc.
Recent Trends in the Changes in Snowfall and Snow Depth in Japan, and Their Impact on Snow Control Measures (WM-STW12-107), Masaru Matsuzawa, Yusuke Harada, Masayo Ueda and Hiroki Matsushita, Civil Engineering Research Institute for Cold Region, Japan; Yasuhiko Ito, Snow Avalanche and Landslide Research Center, Japan

Wednesday, May 2, 2012

7:30 a.m. – 5:00 p.m.  Registration and Information
7:00 a.m. – 8:00 a.m.  Continental Breakfast

Session 7A
8:00 a.m. – 10:00 a.m.  Winter Maintenance Policy and Management
Masaru Matsuzawa, Civil Engineering Research Institute for Cold Region, presiding
Weather or Not? State Liability and Road Weather Information Systems (RWIS) (WM-STW12-151), Jaime Rall, National Conference of State Legislatures
Implementing PennDOT’s Winter Services Strategic Plan (WM-STW12-158), Charles C. Goodhart and Bonnie J. Fields, Pennsylvania Department of Transportation; Robert J. Vance and Michael S. Renz, Vance & Renz, LLC; Mary W. Treisbach, Consultant; Barbara T. Harder, B. T. Harder, Inc.
Winter Storm Responses: Adverse Conditions Communication/Coordination Plan 2008 (WM-STW12-150A), Paul Keltner, Wisconsin Department of Transportation

Session 7B
8:00 a.m. – 10:00 a.m.  Data Networks and Quality
Roemer M. Alfelor, Federal Highway Administration, presiding
New Methods to Quality Check Road and Weather Observations for Vehicle Data (WM-STW12-117), Daniel Koller, Benjamin W. Hershey, John J. Mewes and Anthony K. McClellan, Meridian Environmental Technology, Inc.


**Session 8A**

**10:30 a.m. – Noon**

Delivery Approaches and Performance Measures

Max S. Perchanok, *Ontario Ministry of Transportation*, presiding


Research Programs for Winter Road Maintenance in the Third Medium-Term Plan of the Public Works Research Institute of Japan (WM-STW12-129), Motoki Asano, Masayoshi Watanabe, Masaru Matsuzawa, Masayuki Kumagai and Yuji Yanagisawa, *Civil Engineering Research Institute for Cold Region, Japan*

Performance Measures and Prediction Models Applied to Management of Henan Provincial Highways (WM-STW12-160), Li Ningyuan, *Changsha University of Science and Technology, China*; Wei Wang, *Henan Vocational and Technical College of Communications, China*

**Session 8B**

**10:30 a.m. – Noon**

Optimizing Winter Maintenance Materials

Joseph Brett Althouse, *Occidental Chemical Company*, presiding

Combined Use of Chemicals for De-icing and Dust-Binding of Paved Roads – Possibilities and Problems (WM-STW12-137), Mats Gustafsson and Göran Blomqvist, *Swedish National Road and Transport Research Institute (VTI)*; Wolfgang Hafner, *Magistrat der Landeshauptstadt Klagenfurt am Wörthersee, Austria*

Alternative Approaches to Measuring Deicer Ice Melting Capacity – Optimization of Test Accuracy and Precision (WM-STW12-145), Scott Koefod and Jessica Adkins, *Cargill Salt*; Michelle R. Akin, *Western Transportation Institute, Montana State University-Bozeman*

Residual Salt and Road Surface Wetness – Comparison of Field Techniques (WM-STW12-140), Göran Blomqvist and Mats Gustafsson, *Swedish National Road and Transport Research Institute (VTI)*

**Noon – 1:00 p.m.**

Lunch

**Session 9A**

**1:00 p.m. – 3:00 p.m.**

Winter Mobility and Maintenance Performance

Richard J. Nelson, *Nevada Department of Transportation*, presiding

Quantifying the Mobility Effects of Winter Snow Events and the Benefits of Winter Road Maintenance (WM-STW12-165), Garrett Donaher, Liping Fu and Taimur Usman, *University of Waterloo, Ontario*; Max S. Perchanok, *Ontario Ministry of Transportation*

Winter Performance Measurement Using Traffic Speed Modeling (WM-STW12-161), Tina Greenfield and Matt Haubrich, *Iowa Department of Transportation*; Mark Kaiser, Zhengyuan Zhu, Daniel Fortin and Jing Li, *Iowa State University*
Weather and Friction Data Collection for Winter Road Performance Evaluation (WM-STW12-128), Roberto A. Tokunaga, Makoto Kiriishi, Tetsuya Takada and Naoto Takahashi, Civil Engineering Research Institute for Cold Region, Japan; Tatsuya Yamazaki, Hokkaido Regional Development Bureau, Japan

Simulating Winter Maintenance for Performance Measurement (WM-STW12-118), John J. Mewes, Jeffrey Kuntz and Benjamin W. Hershey, Meridian Environmental Technology, Inc.

Session 9B
1:00 p.m. – 3:00 p.m. Road Weather Data Management
Leland D. Smithson, American Association of State Highway and Transportation Officials, presiding

Using Clarus Data for Disseminating Winter and Other Weather-Related Alerts (WM-STW12-152), Roemer M. Alfelor and Paul A. Pisano, Federal Highway Administration; Doug Galarus, Western Transportation Institute, Montana State University; David Yohanan, Telvent USA Corporation

Clarus System (WM-STW12-168A), Brenda Boyce, Mixon/Hill, Inc.

Clarus Multi-State Regional Demonstrations: Summary of Evaluation Results and Lessons Learned (WM-STW12-123), Deepak Gopalakrishna and Chris Cluett, Battelle; Kevin Balke, Texas Transportation Institute; Paul A. Pisano, Federal Highway Administration

Evaluating the Quality and Value of Road Weather Information (WM-STW12-142), Roemer M. Alfelor and Paul A. Pisano, Federal Highway Administration; Leon F. Osborne, Jr. and Robert D. Hart, Meridian Environmental Technology, Inc.

3:00 p.m. – 3:30 p.m. Break

Session 10
3:30 p.m. – 5:00 p.m. Future Opportunities for Transportation and Meteorological Collaboration
Wilfrid A. Nixon, University of Iowa, presiding

Panel Discussion:
Jan Å Ölander, Swedish Transport Administration
Leland D. Smithson, American Association of State Highway and Transportation Officials
Max S. Perchanok, Ontario Ministry of Transportation
Leon F. Osborne, Jr., Meridian Environmental Technology, Inc.

Thursday, May 3, 2012

7:30 a.m. – 11:00 a.m. Registration and Information

7:00 a.m. – 8:00 a.m. Continental Breakfast

Session 11
8:00 a.m. – 10:00 a.m. Weather Information to Improve Driver Decisions
Leon F. Osborne, Jr., Meridian Environmental Technology, Inc., presiding

Subjective and Objective Assessment of Winter Driving Environment (WM-STW12-126), Naoto Takahashi, Tetsuya Takada, Makoto Kiriishi and Roberto A. Tokunaga, Civil Engineering Research
Institute for Cold Region, Japan; Shigeru Kamiyama, Hokkaido Regional Development Bureau, Japan

CARS-CAP Automated Weather Reporting (WM-STW12-125), Peter Davies, Kristin Virshbo and Dane Unruh, Castle Rock Associates

A Study on Provision of Winter Road Snowstorm Information to Road Users (WM-STW12-132), Hirotaka Takechi, Masaru Matsuzawa, Toshiro Kawanaka, Hiroshi Nakamura and Manabu Kaneko, Civil Engineering Research Institute for Cold Region, Japan

Tomorrow’s Forecast: Informed Drivers (WM-STW12-105), Sheldon Drobot, Michael B. Chapman, Amanda Anderson and Brice Lambi, National Center for Atmospheric Research; Paul A. Pisano and Gabriel Guevara, Federal Highway Administration

10:00 a.m. – 10:30 a.m. Break

Session 12
10:30 a.m. – 11:30 a.m. Conference Summary
Max S. Perchanok, Ontario Ministry of Transportation, and Wilfrid A. Nixon, University of Iowa, presiding

Acknowledgements

TRB Committee AHD65 on Winter Maintenance

TRB Committee on Surface Transportation Weather

Conference Program Committee
Max Samuel Perchanok and Wilfrid A. Nixon, Co-Chairs, Roemer M. Alfelor, Arthur L. Handman, Masaru Matsuzawa, Jan Å Ölander, Leon F. Osborne, Jr., Leland D. Smithson