Winter Maintenance at the 2024 TRB Annual Meeting

Resource Spotlight: TRB Annual Meeting Online Portal

If you’re searching for the latest research on a transportation topic, be sure to visit the TRB Annual Meeting Online Program. The program includes papers, posters and presentation materials from the 2024 Annual Meeting as well as the previous three meetings.

Below we’ve compiled selected links to the posters, presentations and papers related to winter maintenance presented at the 2024 Annual Meeting. Registration, attendance and access to materials are free for employees of state DOTs and other TRB Sponsor organizations. Sign in to the Online Program to access all the resources shown here.

If you have trouble accessing this information, check with your DOT or other transportation library.

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Equipment and Facilities

24-01731 Model-Scale Investigation of Snow Flow Dynamics and Cast Characteristics of Snowplows
Lectern Session
Alex Klein-Paste, Oda Aspevold
Norwegian University of Science and Technology (NTNU)

Materials

24-00680 Dilution Rate of Solid NaCl Anti-Icers Under Freezing Rain Conditions
Lectern Session
Scott Koefod
Cargill Salt Group

24-04140 Implementation of Salt Stockpile Inventory Using LiDAR Measurements
Poster Session
Justin Mahlberg, Haydn Malackowski, Mina Joseph, Yerassyl Koshan, Raja Manish, Zach DeLoach, Ayman Habib, Darcy Bullock
Purdue University, Indiana Department of Transportation

Infrastructure, Pavements and Bridges

24-20220 Artificial Intelligence and Roadway Friction Modeling
Lectern Session
Curtis Walker
National Center for Atmospheric Research (NCAR)

24-20203 Correlation Between Floating Car Data and Road Weather Information Implemented for Winter Road Maintenance Follow-Up by Monitoring the Road Friction
Lectern Session
Sofia Sollén
Lulea University of Technology
24-02270 Design and Implementation of a Full-Scale Shallow Geothermal Bridge De-Icing System in North Texas
Lectern Session
Aditya Deshmukh, Alireza Fakhrabadi, Gang Lei, Xinbao Yu, Anand Puppala
Texas A&M University, The University of Texas at Arlington, Texas A&M University College Station

24-02450 Enhancing Winter Road Maintenance with Explainable Artificial Intelligence: Shapley Additive Explanations Analysis for Interpreting Machine Learning Models in Road Friction Estimations
Poster Session
Xueru Ding, Tae Kwon
University of Alberta

24-20093 The Future of Road Weather: Transportation Perspective
Lectern Session
Richard Nelson
American Association of State Highway and Transportation Officials

24-04855 Multi-Functionalization of Rumble Strips for Improving Snowplow Resistance of Retroreflective Pavement Markers
Poster Session
Savitha Srinivasan, Md Al Amin, Mike Rung, Raissa Ferron
University of Texas, Austin; Texas Department of Transportation

24-02960 Predicting Winter Road Surface Conditions Using a Data-Driven Approach
Poster Session
Jeswin Wilson, Bo Yuan, Ali Amadeh, David Orr, Ke Zhang,
Cornell University, Cornell Local Roads Program

24-01414 Unveiling the Black Box Through Explainable Artificial Intelligence for Winter Road Surface Conditions Prediction
Lectern Session
Mingjian Wu, Tae Kwon
University of Alberta

24-02117 A Winter Pavement Temperature Prediction Model Based on Transfer Learning and Long- and Short-Term Memory Neural Networks
Poster Session
Shumin Bai, Bingyou Dai, Zhen Yang, Wencheng Yang, Yuwei Fang, Feng Zhu
Tongji University, Kunming University of Science and Technology, National Engineering Laboratory for Surface Transportation Weather Impacts Prevention, Nanyang Technological University
Technology, Information Systems and Performance Management

24-04940 Developing a Prototype of a Digital Twin for Winter Road Maintenance
   Poster Session
   Yasuhiro Nagata, Toru Hagiwara, Sho Takahashi, Masahiro Yagi, Genki Ooi
   Hokkaido Development Engineering Center, Hokkaido University

24-20218 Performance of a Winter Road Maintenance Decision-Support System
   Lectern Session
   Shawn Truelson
   DTN, LLC

24-20219 Performance Metrics for Winter Operational Planning
   Lectern Session
   Gregory Jones
   Federal Highway Administration (FHWA)

24-20221 Use of Probe Speed Data to Assess Winter Maintenance Effectiveness
   Lectern Session
   Dave Huft
   South Dakota Department of Transportation

24-02888 Using Connected Vehicle Data to Assess the Impact of Winter Road Maintenance Operations on Traffic Safety
   Lectern Session
   Minsoo Oh, Jing Dong-O’Brien
   Iowa State University

24-01390 Using Explainable Artificial Intelligence for Enhanced Understanding of Winter Road Safety: Insights with Support Vector Machines and Shapley Additive Explanations
   Poster Session
   Zehua Shuai, Tae Kwon, Qian Xie
   University of Alberta