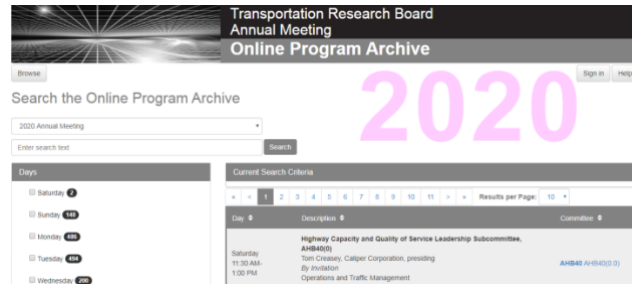




Winter Maintenance at the 2020 TRB Annual Meeting

Resource Spotlight: TRB Annual Meeting Online Portal

If you're searching for the latest research on a transportation topic, don't forget to visit the [TRB Annual Meeting Online portal](#). The portal includes paper abstracts, posters and presentation materials from the 2018-2020 Annual Meetings.



Below we've compiled a list of papers related to winter maintenance that were presented at the 2020 Annual Meeting. Presentation materials are free to download for employees of state DOTs and other TRB Sponsor organizations. If you have trouble accessing these materials, check with your DOT or other transportation library.

Equipment and Facilities

20-04525 Standards-Based Testing and Performance Evaluation of Highway Salt and Sand Spreader Systems

[Poster](#) | [Abstract](#)

Wilderich White, Ty Lasky
University of California, Davis

20-00146 Snow and Ice Breakers for Sustainable Winter Road Maintenance: Field Performance and Potential Benefits

[Presentation](#) | [Abstract](#)

Taimur Usman, Liping Fu, Max Perchanok, Chaozhe Jiang
University of Waterloo; CIMA+

20-04340 Optimizing Maintenance Facility Locations in Minnesota

[Poster](#) | [Abstract](#)

William Holik, Paul Anderson
Texas A&M Transportation Institute

Materials

20-05050 Before-and-After Empirical Bayes Evaluation of Achieving Bare Pavement Using Anti-Icing on Urban Roads

[Presentation](#) | [Abstract](#)

Maged Gouda, Karim El-Basyouny
University of Alberta

20-00039 Stability and Metastability of Mixed Chloride Brines to Precipitation

[Presentation](#) | [Abstract](#)

Scott Koefod
Cargill Salt Group

20-00147 Ice Penetration with Sodium Formate: The Effect of Temperature and Pre-Wetting

[Presentation](#) | [Abstract](#)

Mateusz Trzaskos, Alex Klein-Paste
Norwegian University of Science and Technology

20-03892 Winter Maintenance Field Evaluation of Salt Brine Applications

[Presentation](#) | [Abstract](#)

Boris Claros, Madhav Chitturi, Andrea Bill, David Noyce
University of Wisconsin, Madison

20-04988 De-Icing Application of Snow and Ice Control Chemicals: Side-by-Side Field Comparison

[Abstract](#)

William Lawson, Ken Rainwater, James Surles, W. Jackson
Texas Tech University

20-00583 Chemical Frost Protection of Road Surfaces: A Laboratory Investigation

[Presentation](#) | [Abstract](#)

Janne Siren Fjærestad, Alex Klein-Paste, Johan Wåhlin
Norwegian University of Science and Technology; Norges Teknisk-naturvitenskapelige universitet; Statens vegvesen

Pavements and Bridges

20-05097 Bridge Deck De-Icing with Geothermal Energy Pile: An Innovative Strategy to Expand Feasibilities for Different U.S. Regions

[Abstract](#)

Chanjuan Han, Xiong Yu
Case Western Reserve University

20-03104 Investigation on De-Icing Property of Steel Wool Fiber Reinforced Asphalt Mixture by Induction Heating

[Abstract](#)

Rui Xiong, Kehong Li, Fang Yang
Chang'an University; Yunnan Communications Investment & Construction Group Co., Ltd.

Performance and Management

20-03865 Comparing the Safety and Mobility Benefits of Alternative Winter Road Maintenance Standards

[Abstract](#)

Yizhou Cai, Chris Bachmann, Liping Fu, Taimur Usman
University of Waterloo

20-04235 Dashboards for Real-Time Monitoring of Winter Operations Activities and After-Action Assessment

[Abstract](#)

Jairaj Desai, Jijo Mathew, Woosung Kim, Mingmin Liu, Howell Li, Jeffrey Brooks, Darcy Bullock
Purdue University; Indiana Department of Transportation

20-05097 A Smart Salting System That Incorporates Road Managers' Judgments into an Automated Process Toward Safe, Efficient Winter Road Maintenance and Management

[Abstract](#)

Tomonori Ohiro, Toru Hagiwara, Kiyoshi Takakura, Hiromi Nakamura, Yasushi Hanatsuka
Nexco-Engineering Hokkaido Co., Ltd.; Hokkaido University; East Nippon Expressway Co., Ltd., Bridgestone Corp., Japan

Snow Fences

20-03278 A Case Study of Snowdrift Trapping Efficiency of a Living Snow Fence Determined from a Transverse Measurement of Snow Depth Profiles

[Abstract](#)

Toshimitsu Sakurai, Wataru Takahashi, Manabu Kaneko, Hirotaka Takechi, Joji Takahashi, Yasuhiko Ito, Masaru Matsuzawa
Civil Engineering Research Institute for Cold Region; Public Works Research Institute

Snowplow Route Optimization

20-03560 Optimized Route to Clear Diverging Diamond Interchange Using Discrete Optimization Method

[Presentation](#) | [Abstract](#)

Jun Liu, Yan Qi, Na Cui, David Berger
Southern Illinois University, Edwardsville; University of Jinan; Monte Vista Associates, LLC

20-02494 Optimizing Snowplow Routes Using All-New Perspectives: Road Users and Winter Road Maintenance Operators

[Poster](#) | [Abstract](#)

Shuoyan Xu, Tae J. Kwon
University of Alberta

Technology, Information Systems and Connected Vehicles

20-05444 Use of Space-Time Semivariogram Models Toward Developing Guidelines for a Region-Wide RWIS Network Implementation

[Presentation](#) | [Abstract](#)

Simita Biswas, Tae J. Kwon
University of Alberta

20-00730 Exploring Weather-Related Connected Vehicle Application for Improving Winter Travel

[Presentation](#) | [Abstract](#)

Yaqin He, Michelle Akin, Xianming Shi
Wuhan University; Washington State University

20-04776 Real-Time Snowy Weather Detection Based on Machine Vision and Vehicle Kinematics: A Non-Parametric Data Fusion Analysis Protocol

[Abstract](#)

Elhashemi Ali, Md Nasim Khan, Mohamed Ahmed
University of Wyoming; Federal Highway Administration

20-04308 Vision for Road Visibility Inspection Using Driving Video Images Recorded by On-Board Video Camera

[Presentation](#) | [Abstract](#)

Yasuhiro Nagata, Toru Hagiwara, Yuki Nakamura, Yasuhiro Kaneda, Naoki Matsuoka, Sho Takahashi, Hiroshi Hoshino
Hokkaido Development Engineering Center; Hokkaido University; Hokkaido Weather Technology Center; Civil Engineering Service Co., Ltd.