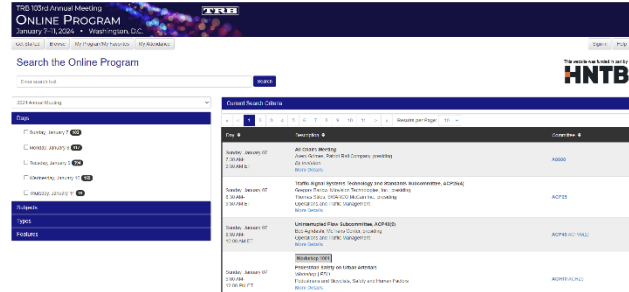




# Maintenance Research at the 2025 TRB Annual Meeting

## Resource Spotlight: Transportation Research Board 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 2025 Annual Meeting.



The [No Boundaries Transportation Maintenance Innovations pooled fund](#) has compiled links to selected posters, presentations and papers related to maintenance presented at the 2025 Annual Meeting. **Registration, attendance, and access to materials is free for employees of state DOTs and other TRB Sponsor organizations.** If you have trouble accessing the presentations, check with your DOT or other transportation library.

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## Asset Management

This section includes pavement management; bridge management; managing other assets; and management systems, data and processes.

### Maintenance Prioritization

#### **25-05294 AI and Satellite Assisted Real-Time Flood Mapping for Transportation Infrastructure Asset Management**

[Lectern Session](#)

Nasim Mohamadiazar, Ali Ebrahimian  
*Florida International University*

#### **25-02350 Asset Investment Planning and Optimization Methodology in Consideration of Asset Life Cycles: A Port Authority of New York and New Jersey Case Study**

[Poster Session](#)

Maurizio Morgese, Mahmoud Halfawy, Nick Hutton, Robert Kumapley, Ali Maher  
*CAIT; Infrastructure Data Solutions, Inc.; Rutgers University; Port Authority of New York and New Jersey*

#### **25-20551 Corps of Engineer’s Approach to Risk Assessment and Applicability to Highways**

[Lectern Session](#)

April Fontaine  
*U.S. Army Corps of Engineers (USACE)*

- 25-01237 Differentiated Maintenance Demand Analysis Based on Spatial Heterogeneity of Urban Pavement Performance**  
[Poster Session](#)  
Qian Gao, Yuchuan Du, Chenglong Liu  
*Tongji University*
- 25-20381 Economic Prioritization in Asset Management: Achieving Extended Goals**  
[Poster Session](#)  
Rimon Rafiah  
*Ekonomikr*
- 25-02262 Enhancing Road Maintenance Prioritization: Single Index Screening and Unified Pavement Assessment Metric Integration**  
[Lectern Session](#)  
Saroch Boonsiripant, Ponlathap Lertworawanich, Auckpath Sawangsuriya, Kuljira Jinakub  
*Kasetsart University*
- 25-21545 Equity in Asset Management: An Example from Maricopa Association of Governments**  
[Lectern Session](#)  
Brian Rubin  
*Maricopa Association of Governments*
- 25-02443 Evaluating the Robustness of Maintenance Decision Support System Maintenance Forecasts Using Connected Vehicle Data**  
[Lectern Session](#)  
Gregory Brinster, Jairaj Desai, Myles Overall, Christopher Gartner, Rahul Suryakant Sakhare, Jijo Mathew, Nick Evans, Darcy Bullock  
*Purdue University; Indiana Department of Transportation*
- 25-20615 Incorporating Equity into Transportation Asset Management: Status and Recommendations from Professionals**  
[Poster Session](#)  
Fawzi Khalife, Mehmet Ozbek, Rebecca Atadero, Erin Arneson  
*Colorado State University; Colorado State University, Fort Collins*
- 25-04065 Inequity Averse Pavement Maintenance and Repair Budget Allocation Incorporating Gini Index and Social Vulnerability**  
[Lectern Session](#)  
Md Al Amin, Randy Machemehl  
*Texas Department of Transportation; University of Texas, Austin*
- 25-00108 Long-Term Maintenance Decision Making and Case Application of Highway Asphalt Pavement Combined with Risk Assessment**  
[Poster Session](#)  
jiuda huang, enyu wang, chao han, wuju wei, shouxin wang,  
*JSTI GROUP; Zhengzhou University*

**25-20591 Michigan DOT Transportation Asset Management Data Assessment: An Implementation of the Digital Application of the NCHRP 08-115 Guidebook**

[Lectern Session](#)

Lina Chapman, William Duke

*Michigan Department of Transportation; Spy Pond Partners, LLC*

**25-00860 Multi-Objective Optimization of Maintenance, Repair, and Rehabilitation Schedule Considering Greenhouse Gas Emissions**

[Poster Session](#)

Lamiya Chowdhury, S. Ilgin Guler, Shelley Stoffels

*McCormick Taylor Inc; Pennsylvania State University*

**25-03010 Multi-Objective Optimization Method for Integrated Roadway Asset Maintenance and Rehabilitation Considering Traffic Impacts**

[Poster Session](#)

Siyuan Meng

*University of Massachusetts, Amherst*

**25-02135 Multi-Uncertainty and Rejecting Maintenance Are Necessary in Project-Level Maintenance Decision Making**

[Poster Session](#)

Tianqing Hei, Tao Ma, Zheng Tong, Siqi Wang

*Southeast University*

**25-20590 PennDOT's Asset Management Journey**

[Lectern Session](#)

Justin Bruner

*Pennsylvania Department of Transportation*

**25-21431 Quantifying the Relationship Between Extreme Weather Risks and Network Performance for Highway Assets**

[Lectern Session](#)

Lauren Gardner

*Vanderbilt University*

**25-01716 A Review and Classification of Multi-Criteria Decision-Making Methods for Highway Asset Management**

[Poster Session](#)

Cristina Pronello, Yiyao Xu

*Politecnico di Torino, Italy*

**25-05324 A Transportation Asset Management Framework Based on Geospatial Building Information Model**

[Lectern Session](#)

Ali Taheri, John Sobanjo,

*Florida A&M University-Florida State University; Florida State University*

**25-00323 WBS-Based TF-CM: A Novel Approach for Measuring Highway Maintenance Project Similarity Based on Budget Items' Structural and Physical Features**

[Poster Session](#)

Xuelian Wu, Xiaoli Shi, Maria Postorino, Xiaotian Gong  
*Chang'an University; University of Bologna*

**Pavement Management**

**25-20180 Algorithm-Driven Predictive Modeling for Maintenance Highway Asset Management: Enhancing Decision Making in Washington State**

[Poster Session](#)

Kishor Shrestha  
*Washington State University*

**25-00867 Classification Algorithms for Identifying Unrecorded Maintenance in Pavement Management Systems**

[Poster Session](#)

James Bryce  
*West Virginia University*

**25-20613 Comparative Analysis of Flexible Pavement Preservation Methods Using Pavement Performance Models**

[Poster Session](#)

Alireza Sassani, Omar Smadi, Sara Arezoumand  
*Iowa State University*

**25-06415 Deep Learning Pipeline for Modeling Pavement Cracks with an Imbalanced Data Set**

[Poster Session](#)

Andrew Scouten, Haitao Gong, Jelena Tesic, Feng Wang  
*Texas State University, San Marcos; Texas State University*

**25-01515 Fiber Optic Axle Load Monitoring for Asphalt Pavement Maintenance Management**

[Poster Session](#)

Yi Hu, Tijun Jiang, Qun Yang  
*Tongji University*

**25-02808 A GIS-Based, Machine Learning Approach for Model Inventory Roadway Elements Surface Type Classification from Aerial Imagery**

[Poster Session](#)

James Bryce  
*West Virginia University*

**25-20593 Integrating Climate Change and Flooding Considerations into Pavement Management Models**

[Lectern Session](#)

Pedro Serigos  
*Cambridge Systematics, Inc.*

**25-02395 Introduction of Maintenance Modification Factor for Highway Maintenance Benefits–Cost Analysis**

[Poster Session](#)

Teng Wang, Mohammad Majidi, Reg Souleyrette  
*Kentucky Transportation Cabinet*

**25-00901 Large-Scale Pavement Management Considering Reliability and Traffic Dynamics**

[Poster Session](#)

Abhishek Kumar Prajapati, S. Ilgin Guler  
*Pennsylvania State University*

**25-00723 A Matrix Completion Approach for Imputing Missing Pavement Condition Data and Its Impact on Pavement Performance Prediction**

[Poster Session](#)

Linyi Yao, Zhen Leng, Fujian Ni  
*Hong Kong Polytechnic University; Southeast University*

**25-05452 Multimodal Perception-Guided Intelligent Pavement Crack Detection Approach: A Novel Combining Vision and Semantic Supervision Framework**

[Poster Session](#)

Tiandong Xu, Chen Zhang,  
*Northeast Forestry University; University of Florida*

**25-05892 Network-Level Pavement Management Based on Safety Evaluation and Friction Demand Analysis: An Illinois Case Study**

[Poster Session](#)

Run Hu, Babak Asadi, Ramez Hajj, Erwin Kohler, Yanfeng Ouyang, Priscilla Tobias, Hao Wang  
*University of Illinois, Urbana-Champaign; pavmnts.com; Arora and Associates, P.C.; Rutgers University, New Brunswick*

**25-01477 Noise Reduction Performance and Maintenance Time of Porous Asphalt Pavement**

[Poster Session](#)

Gang Xu, Chunxi Li, Xiaojin LU, Xianhua Chen  
*Southeast University*

**25-03810 A Novel Diagnosis Method of Pavement Distress Combining Knowledge Graph and LLMs**

[Poster Session](#)

Peilong He, Qun Yang  
*Tongji University*

**25-04834 Optimizing Design and Maintenance: A Pathway to Decarbonizing Concrete Pavements' Life Cycle**

[Poster Session](#)

Haoran Li, Miaomiao Zhang, Hessam Azarijafari, Randolph Kirchain  
*Massachusetts Institute of Technology*

**25-20168 Optimizing of MassDOT's High Performance Asphalt Overlay Mixtures**

[Poster Session](#)

Austin Sanders, Walaa Mogawer

*Massachusetts Department of Transportation; University of Massachusetts, Dartmouth*

**25-04313 Optimizing Pavement Maintenance: A Machine Learning Approach for Classifying and Forecasting Patch Area Using Multi-Layer Perceptron Model**

[Poster Session](#)

Waleed Aleadelat, Bernard Boakye, Khaled Ksaibati

*University of Wyoming*

**25-01272 Optimizing Pavement Maintenance and Rehabilitation Strategies for Large-Scale Pavement Networks: A Case Study of Wyoming**

[Poster Session](#)

Sayla Prova, Mayzan Isied, Mena Souliman

*University of Texas, Tyler*

**25-01120 Overall Pavement Skid Resistance Evaluation Based on Laterally Uneven Friction Coefficient Distribution**

[Poster Session](#)

Zihang Weng, Yuchuan Du, Zhen Leng, Difei Wu, Chenglong Liu

*Hong Kong Polytechnic University; Tongji University*

**25-00392 Particle Swarm Optimization for Cost-Effective Decision Making in Pavement Management Systems**

[Poster Session](#)

Serdal Terzi, Sebnem Karahancer, Ekinhan Eriskin, Bekir Aksoy, Osamah Salman,

*Suleyman Demirel University*

**25-00075 Pavement Performance Analysis for Overweighted Trucks in Texas**

[Lectern Session](#)

Danilo Inoue, Christian Sabillon-Orellana, Jorge Prozzi

*University of Texas, Austin*

**25-02657 Pavement Rehabilitation Training for Frontline Employees Through Virtual Reality Simulation of Field Conditions**

[Poster Session](#)

Yu-Ting Huang, Tarutal Ghosh Mondal, Mohammad Jahanshahi, Shirley Dyke, Tommy Nantung, Matt Kraushar

*Purdue University; Indian Institute of Technology, Bhubaneswar; Indiana Department of Transportation*

**25-00442 Probability Based Pavement Asset Management in Ireland**

[Lectern Session](#)

Ray McGowan, Alan O'Connor, Kieran Feighan, Stephen Smyth,

*Transport Infrastructure Ireland; Trinity College, Dublin; PMS Pavement Management Services, Ltd.*

**25-00067 Quantifying the Impact of Waste Collection Vehicles on Local Pavements in California**

[Poster Session](#)

Sharlan Dunn, Debaroti Ghosh

*Brigham Young University; Nichols Consulting Engineers*

**25-01689 Research on Noise Reduction Performance and Decay Behavior of Porous Asphalt Mixtures Under Blockage Conditions**

[Poster Session](#)

Hailiang Liang, Chunxi Li, Gang Xu, Xianhua Chen

*Southeast University*

**25-04065 Research on the Improved Prediction Model of Pavement Minor Maintenance Quantity Under Small Sample Data**

[Lectern Session](#)

Xinfang Guan, Hongchao Zhang, Xiyu Zhang

*Tongji University*

**25-01326 Spatio-Temporal Analysis of Pavement Roughness Using Connected Vehicle Data for Asset Management**

[Lectern Session](#)

Jijo Mathew, Jairaj Desai, Rahul Suryakant Sakhare, Jeremy Hunter, Darcy Bullock

*Purdue University; Indiana Department of Transportation*

**25-05180 Updated Methods for Identification of Road Surface Type Using Machine Learning–Enabled Remote Sensing**

[Poster Session](#)

Colin Brooks, Reid Sawtell, Dana Redhuis, Susan Janiszewski, Anthony Chavez, Vanessa Barber, Richard Dobson, Jeremy Graham, Tim Colling, Nick Kozsykowski, Audrey LaCost, Grant Deljevic, Abby Jenkins, Mike Toth, Austin Himmelein

*Michigan Tech Research Institute; Michigan Technological University; State of Michigan; Michigan Department of Transportation*

**25-20549 Vulnerability of Highways from Damaged Non-Highway Assets**

[Lectern Session](#)

Vanessa Bateman

*U.S. Army Corps of Engineers (USACE)*

**25-02391 Which Impacts Matter for Pavement Management Decisions?: Quantifying Social Sustainability Based on a Capability Approach**

[Lectern Session](#)

Jessica Boakye, Egemen Okte

*University of Massachusetts, Amherst*



## **Bridge Management**

### **25-02019 Bridge Condition Forecasting via Temporal Graph Convolution Networks and Non-Destructive Evaluation**

[Lectern Session](#)

Mozhgan Momtaz, Hoda Azari  
*Federal Highway Administration (FHWA)*

### **25-04767 Determination of Hierarchy of Input Parameters for Service Life Modeling of Concrete Structures Against Chloride-Induced Corrosion**

[Lectern Session](#)

Zafrul Khan, Ahmad Alhasan, Rodrigo Antunes  
*Applied Research Associates, Inc.; City of Gainesville (FL)*

### **25-02940 Evaluation of Network-Level Condition of Bridge Ends Using Localized International Roughness Index**

[Poster Session](#)

Xiaoyang Jia, Di Zhu, Mark Woods  
*Tennessee Department of Transportation; Applied Pavement Technology, Inc.*

### **25-04323 Life-Cycle Cost Evaluation for Very Early Strength Latex-Modified Concrete Bridge Deck Overlay: A Case Study**

[Lectern Session](#)

Yogiraj Sargam, Ping Lu, Kejin Wang  
*CarbonCure Technologies; Federal Highway Administration (FHWA); Iowa State University*

### **25-04499 Remote Structural Health Monitoring and Finite Element Analysis for Performance Assessment of Aging Steel Plate Girder Railroad Bridge**

[Lectern Session](#)

Ishwarya Srikanth, Joshua Jackson, Rahman Abdallah, Nicholas McNulty, Husky Ohonwa, John Flint  
*EXP U.S. Services Inc*

### **25-20204 Safe and Cost-Effective Reduction of Load Postings for South Carolina Bridges**

[Lectern Session](#)

Terry Swygert, Li Ai  
*South Carolina Department of Transportation; University of South Carolina*

## **Managing Other Assets**

### **25-05327 Advancing Retaining Wall Inspections: Comparative Analysis of Drone-LiDAR, Pix4D vDoc, and Traditional Transport Layer Security Methods for Enhanced Structural Assessment**

[Lectern Session](#)

Max Wondolowski, Alexandra Hain, Sarira Motaref, Karen Dedinsky, Michael Grilliot  
*University of Connecticut; University of Washington*

**25-20313 Applying Transportation Asset Management to Traffic Signals**

[Lectern Session](#)

Jospeh Gregory  
*Federal Highway Administration (FHWA)*

**25-04340 Development of a Geotechnical Asset Management for Slopes**

[Lectern Session](#)

Andrew Zimmerman, Robert Parsons, Stacey Kulesza, Jie Han  
*University of Kansas; Texas State University*

**25-20592 District DOT's Tunnel Asset Management System Technology Assessment and the Use of GIS**

[Lectern Session](#)

Sean Burke  
*GeoDecisions, a Division of Gannett Fleming*

**25-05019 Guardrail Condition Assessment for Supporting Safety Analysis Through Mobile LiDAR**

[Lectern Session](#)

Qing Hou, Chengbo Ai, Michael Knodler  
*University of Massachusetts, Amherst*

**25-02193 Identifying a Threshold for the Detailed Inspection of Traffic Signal Mast Arm Welds**

[Lectern Session](#)

Ryan Fries, Srisha Devkota, Anne Werner  
*Southern Illinois University, Edwardsville*

**25-06241 Integrating InSAR and LiDAR for Effective Monitoring of Geotechnical Assets**

[Lectern Session](#)

Rakesh Salunke, Sadik Khan, Rahul Biswas, Ian La Cour  
*Jackson State University; Mississippi Department of Transportation*

**25-01223 A Novel Block-Level Approach for Tunnel Lining Crack Detection**

[Lectern Session](#)

Pei Niu, Lei Kou, Feng Guo  
*Shandong University*

**25-20590 PennDOT's Asset Management Journey**

[Lectern Session](#)

Justin Bruner  
*Pennsylvania Department of Transportation*

**25-20314 Traffic Signal Condition Assessment: Cabinet and Control Components**

[Lectern Session](#)

Ryan Fries  
*Southern Illinois University, Edwardsville*

## Management Systems, Data and Processes

### **25-20347 Continuous Improvement in Asset Management: Guiding Vision, Resources, and Scalable Practices**

[Lectern Session](#)

Robert Kumapley

*Port Authority of New York and New Jersey*

### **25-20192 Development of a Geotechnical Asset Management Collection and Rating Program for MoDOT**

[Poster Session](#)

Aine Mines

*Landslide Technology*

### **25-20348 From Guidelines to Greatness: Leveraging Existing Guidance for Efficient Knowledge Management in Asset Management**

[Lectern Session](#)

Patrick Cowley

*Utah Department of Transportation*

### **25-20850 In Search of a Multimodal Asset Management Maturity Model**

[Lectern Session](#)

Matt Versdahl

*Washington State Department of Transportation*

### **25-20350 Lessons Learned from Implementing a New Enterprise Asset Management System, Leveraging Big Data, and GIS to Automate and Improve Workflows**

[Lectern Session](#)

John Fasana

*Washington County (OR)*

### **25-20346 Leveraging Institutional Knowledge to Strengthen Asset Reliability and Life-Cycle Management**

[Lectern Session](#)

Catherine Peele

*North Carolina Department of Transportation*

### **25-02589 An Overview of the Current State of Practice of Ancillary Asset Data Within State DOTs**

[Poster Session](#)

Amin Khoshkenar, Hala Nassereddine, Bassam Ramadan, Rachel Catchings, Gabriel Dadi  
*University of Kentucky; Kentucky Transportation Center*

### **25-20143 Talking to Data: Developing a GPT for Asset Management**

[Poster Session](#)

Matt Versdahl

*Washington State Department of Transportation*

## Bridge Preservation and Rehabilitation

This section includes repair methods, preservation practices and bridge inspection.

### Repair Methods

#### **25-20202 New Bridge Deck Fascia Repairs**

[Poster Session](#)

Michael Townley

*Michigan Department of Transportation*

### Preservation Practices

#### **25-01970 First Complete Ultra-High Performance Concrete Overlay on Cable-Supported Bridge Adds Decades to Deck Service Life**

[Lectern Session](#)

Michael McDonagh, Shekhar Scindia, Sam Boukaram, Abate Tewelde, Andy Foden,  
*WSP; Delaware River and Bay Authority; HNTB*

#### **25-03060 Impact of Concrete Sealer and Salt Usage on Concrete Bridge Deck Rating in Wisconsin**

[Lectern Session](#)

Michael McDonagh, Shekhar Scindia, Sam Boukaram, Abate Tewelde, Andy Foden,  
*WSP; Delaware River and Bay Authority; HNTB*

#### **25-04323 Life-Cycle Cost Evaluation for Very Early Strength Latex-Modified Concrete Bridge Deck Overlay: A Case Study**

[Lectern Session](#)

Yogiraj Sargam, Ping Lu, Kejin Wang

*CarbonCure Technologies; Federal Highway Administration (FHWA); Iowa State University*

#### **25-02157 Preservation of Post-Tensioned Concrete Girders Using Multimodal Nondestructive Testing and Evaluation**

[Lectern Session](#)

Arezoo Imani, Marisol Tsui Chang, Shane D Boone, Annette Adams  
*BDI; Virginia Department of Transportation*

#### **25-00927 Protective Coatings for Concrete to Enhance the Durability of Transportation Infrastructure**

[Lectern Session](#)

Jesse Doyle, Jennifer Jefcoat, Stephanie Wood, Charles Weiss, Craig Rutland  
*U.S. Army Corps of Engineers (USACE); U.S. Air Force Civil Engineer Center (USAFCEC)*

#### **25-04575 Systematic Evaluation of the Effectiveness of Coating and Sealer Materials for Protecting Bridge Substructure Concrete Against Moisture and Chloride Ingress**

[Lectern Session](#)

Anol Mukhopadhyay, Abhijit Mistri, Pravin Saraswatula  
*Texas A&M University Transportation Institute*

## Bridge Inspection

### **25-06029 Automated Drone-Based Bridge Coating Inspection Using Ultrawide Band Sensors and Vision-Based Machine Learning**

[Lectern Session](#)

Yiming Liu, Frank Jalinoos  
*Federal Highway Administration (FHWA)*

### **25-04549 Automated Structural Component Recognition for Bridge Inspection Using Scribble Annotations**

[Lectern Session](#)

Chenyu Zhang, Ke Li, Zhaozheng Yin, Ruwen Qin  
*Stony Brook University*

### **25-21462 A Day-to-Day Traffic Load Evolution Model for Bridge Structure Safety Prediction After an Unexpected Network Change**

[Lectern Session](#)

Zhen Yang, Ruiping Zheng, Xiaojin Ji, Zhe Gong  
*Key Laboratory of Road and Traffic Engineering of the Ministry of Education; Tongji University*

### **25-00658 Data-Enabled Joint Condition Assessment of Bridges with Integral Abutments and Tied Approach Slabs: LTIP Award Winner**

[Lectern Session](#)

Shadi Azad  
*Iowa State University*

### **25-02263 Development of a Vehicle-Mounted Infrared Inspection Technology for Bridge Decks with Asphalt Overlay**

[Lectern Session](#)

Shungo Matsui, Shuhei Hiasa  
*West Nippon Expressway Company*

### **25-03590 Evaluation and Load Rating of an Aging and Impact Damaged Steel Girder Bridge: A Case Study**

[Lectern Session](#)

Mohd Mezanur Rahman, Nur Yazdani, Eyosias Beneberu, Khadiza Binte Jalal  
*CONSOR Engineers; University of Texas, Arlington; HNTB Corporation*

### **25-03378 Loosening Mechanism of Clamp Bolt Pre-Tightening Considering Main Cable Creeping for Suspension Bridges**

[Lectern Session](#)

Chenghong Shi, Peng Fei Zhang, Xiang Xu, Yuan Ren, Hua Kai Zheng, Zhao Yuan Guo, Wen Zhe Zhong  
*CCCC Highway Consultants Co., Ltd; Southeast University*

**25-02248 Non-Contact Cable Force Identification Method Using 3D Laser Point Cloud Data**

[Lectern Session](#)

Yanjie Zhu, Tong Zhou, Wen Xiong  
*Southeast University*

**25-20276 Nondestructive Total Stress Measurement in Steel Using Acoustic Birefringence**

[Lectern Session](#)

Hao Wang, Danny Xiao, Xiao chen  
*University of Wisconsin, Platteville; Rutgers University*

**25-02362 Numerical Modeling of the BEAST Specimen Considering Delamination Scenarios**

[Lectern Session](#)

Peter Grubits, Maurizio Morgese, John Braley, Raffaele Cucuzza, No Marco Domaneschi, Majid Movahedi Rad, Ali Maher  
*CAIT; Rutgers University*

**25-04268 Reconfigurable Machine Learning Tool for Image-Based Bridge Inspection and Management**

[Lectern Session](#)

Kevin Lai, Zhenhua Shi, Genda Chen  
*Missouri University of Science and Technology*

## Culvert and Drainage Systems Maintenance

**25-21289 Culvert Asset Management Program**

[Poster Session](#)

Ximena Martinez Gutierrez  
*New Mexico State University*

**25-20550 Geotechnical Asset Management for Louisiana: Phase II (Culverts)**

[Lectern Session](#)

Gavin Gautreau  
*Louisiana Department of Transportation and Development*

**25-04643 Real-Time AI Visual Analytics for Infrastructure Asset Management: A Case Study on Real-World Roadside Drainage Systems**

[Poster Session](#)

Gavin Gautreau, Adrian Burde, Hamed Tabkhi, Sepehr Sabeti  
*Leidos, Inc.*

## Equipment and Facilities

### **25-05259 3D Coverage Trajectory Planning Problem with Safety Constraint for Automated Lawn Mower: Exact and Heuristic Approaches**

[Poster Session](#)

Hang Zhou, Peng Zhang, Zhaohui Liang, Hangyu Li, Xiaopeng Li  
*University of Wisconsin, Madison*

### **25-00254 Research on Driver Acceptance of Automatic Truck Platoon Based on Extended Transportation Asset Management**

[Poster Session](#)

Wenyuan Yang, Kaidi Liang, ZhenDong Qian, Jinliang Yu, Zhenning Qian  
*Southeast University; Nanjing University*

## Work Zones and Maintenance Worker Safety

### **25-05656 An Attention-Based, Multi-Context Convolutional Encoder-Decoder Neural Network for Work Zone Traffic Impact Prediction**

[Poster Session](#)

Qinhua Jiang, Xishun Liao, Yaofa Gong, Jiaqi Ma  
*University of California, Los Angeles*

### **25-21068 Automated Audible TMA Alert System**

[Lectern Session](#)

Neema Jakisa Owor, Linlin Zhang  
*University of Missouri, Columbia; University of Missouri*

### **25-03514 To Balance or Not to Balance?: Applying a Machine Learning Technique to Oversample Severe Injury Crashes in Work Zones**

[Poster Session](#)

Muhammad Adeel, Asad Khattak, Sabyasachee Mishra, Diwas Thapa  
*University of Tennessee, Knoxville; University of Memphis*

### **25-21067 Camera-Assisted Automated Flagger Assistance Devices**

[Lectern Session](#)

Emilio Ronaldo Calderon, Aiden Gray, Keith Kobayoshi  
*Oregon State University*

### **25-20959 Conditional Automated Traffic Flagger**

[Lectern Session](#)

Alexa Baruela, Emily Dahbura, Eamon Haverty, Charles Tuckfield  
*Oregon State University*

**25-03884 Development of a Remote-Controlled, Truck-Mounted Attenuator System for Enhanced Active Incident Management**

[Poster Session](#)

Shraddha Sagar, Charles Brown, Maynard Factor, Nithin Agarwal,  
*University of Florida*

**25-03842 Driver Comprehension of Driveway Assistance Devices for Work Zones: Evidence from a Nationwide Survey**

[Poster Session](#)

Vahid Bahrami, Austin Detweiler, Sagar Keshari, Nischal Gupta, Jordan Hankin, Meghna Chakraborty, Timothy Gates, Peter Savolainen  
*Michigan State University; Hubbell, Roth and Clark, Inc.; UNC Highway Safety Research Center*

**25-21066 DrumSense: An Intelligent Platform to Enhance Work Zone Safety and Data Collection**

[Lectern Session](#)

Seth Wilder  
*North Carolina State University*

**25-06263 Effect of Speed Feedback Mechanism on Speed and Headway Distributions in Long Work Zones**

[Poster Session](#)

Pawan Neupane, Sabyasachee Mishra, Jason Quicksall  
*University of Memphis; Tennessee Department of Transportation*

**25-03888 Effect of Speed Feedback Trailer Positioning Relative to the Work Area Within Freeway Work Zone Lane Closures**

[Poster Session](#)

Sakar Pahari, Sagar Keshari, Myles Overall, Sarah Premo, Md Shakir Mahmud, John Racine, Timothy Gates, Peter Savolainen  
*Michigan State University; Purdue University; VHB*

**25-05517 Evaluating Driver Response to a Speed Feedback Trailer at Median Crossovers Within Freeway Work Zones**

[Poster Session](#)

Sakar Pahari, Sagar Keshari, Sarah Premo, Magdalena Cavka, Myles Overall, Md Shakir Mahmud, John Racine, Timothy Gates, Peter Savolainen  
*Michigan State University; Purdue University; VHB*

**25-06101 A Framework for Estimating Dynamic Critical Threshold and Conflict Probability Using Time to Collision Measure at Selected Work Zones on Urban Roads**

[Poster Session](#)

Kishan Chaudhari, Vishal Patel, Shriniwas Arkatkar, Dipak Rathwa  
*Maharaja Sayajirao University, Baroda; Sardar Vallabhbhai National Institute of Technology, Surat*



**25-21050 High-Fidelity Immersive Virtual Reality Environments and Real-Time Human Sensing for Advancing Roadway Work Zone Safety**

[Lectern Session](#)

Fatemeh Banani Ardecani,  
*University of North Carolina, Charlotte*

**25-00952 Implementation of Virtual Reality Technologies in Immersive Training for Work Zone Workers**

[Poster Session](#)

Rama Kolla, Alvaro Lazaro Aguilar, Zhengyu Wang, Pei-Sung Lin, Redwan M. Alqasemi,  
Emmeth Duran, Peter Hsu,  
*University of South Florida; Florida Department of Transportation*

**25-20957 Improving Roadway Worker Safety Using Temporary Rumble Strips and Barrel Cover**

[Lectern Session](#)

Gagan Gupta, Sagar Keshari, Sakar Pahari  
*Michigan State University*

**25-04855 Investigating the Contributing Factors to Crashes with and Without the Presence of Work Zone Workers Using Machine Learning Techniques**

[Poster Session](#)

Isaac Baah, Mohamed Ahmed  
*University of Cincinnati*

**25-21070 Multi-Tiered Traffic Control and Safety System for Construction Zones Using Temporary Asphalt Text, LiDAR, and Work Zone Intrusion Monitoring**

[Lectern Session](#)

Quinn Packer, Manmohan Joshi, Haimanti Bala, Prakash Ranjan, Sepehr Golrokh Amin  
*University of Connecticut*

**25-21069 Safeguarding Roadside Workers: Innovating Work Zone Safety**

[Lectern Session](#)

Jean Paul Talledo Vilela, Marc Issa  
*Virginia Polytechnic Institute and State University*

**25-05148 Sensor-Based Intrusion Hazard Detection with Low False Alarm in Highway Work Zones**

[Poster Session](#)

Ayeneu Yihune Demeke, Israt Sharmin Dola, Moein Younesi Heravi, Inbae Jeong, Youjin Jang,  
Chau Le  
*North Dakota State University*

**25-21072 Smart Wrist Band and LED Helmet Integrated to Speed Detector LED Screen**

[Lectern Session](#)

Ernest Nsong Asiedu, Tonghui Li, Md Roknuzzaman, Li Quan  
*Auburn University*

**25-20365 Speed Enforcement in Work Zones and Synthesis on Cost–Benefit Assessment of Installing Speed Enforcement Cameras on the INDOT Road Network**

[Poster Session](#)

Darcy Bullock, Daniel McCoy, Jijo Mathew, Jairaj Desai  
*Purdue University; Indiana Department of Transportation*

**25-20958 Temporary Smart Speed Bumps and Wearable Haptic Feedback Devices for Work Zone Safety: University of Illinois Urbana-Champaign**

[Lectern Session](#)

Dewan Tanvir Ahammed  
*University of Illinois, Urbana-Champaign*

**25-21071 Use of Rectangular Rapid-Flashing Beacons in Improving Worker Safety**

[Lectern Session](#)

Hellen Shita  
*Florida International University*

**25-05751 Vehicle-to-Infrastructure Work Zone Communication Through Pavement Signage Coded on Road Surface**

[Poster Session](#)

Apidej Sakulneya, Jeffery Roesler  
*University of Illinois, Urbana-Champaign*

**25-21064 Virtual Reality Integrated Training Programs for Enhancing Work Zone Safety**

[Lectern Session](#)

Zhu Qing  
*University of Missouri*

**25-05807 Work Zone Assistant: Customized ChatGPT for Work Zone Planning and Operations**

[Poster Session](#)

Zhu Qing, Praveen Edara  
*University of Missouri; University of Missouri, Columbia*

## Pavement Monitoring and Evaluation

This section includes detecting, evaluating and monitoring pavement distress; and performance management.

### Detecting, Evaluating and Monitoring Pavement Distress

**25-01762 Assessing the Road Pavement Roughness Using a Smartphone’s Accelerometer**

[Poster Session](#)

Ahmed Elgendy, Hassan Abdelwahab, Elhashemi Ali  
*Cairo University*

- 25-03316 An Automated 3D Crack Severity Assessment Using Surface Data for Improving Flexible Pavement Maintenance Strategies**  
[Poster Session](#)  
Zhe Li, Jiupeng Zhang, Mehran Eskandari Torbaghan  
*Chang'an University; University of Birmingham*
- 25-02396 Automated Road Condition Analysis Using Cost-Effective RGB-D Sensors**  
[Poster Session](#)  
Yu-Ting Huang, Mohammad Jahanshahi, Nikkhil Sankar  
*Purdue University*
- 25-02917 Decision Framework to Determine the Maintenance Strategy Based on Both Structural and Functional Conditions of Asphalt Pavements**  
[Poster Session](#)  
Bongsuk Park, Cheng Zhang, Seonghwan Cho, Tommy Nantung, John Haddock  
*Montana Technological University; Purdue University; Indiana Department of Transportation*
- 25-01537 Deep Learning–Based Automatic Detection of Pavement Layers Using Ground-Penetrating Radar**  
[Poster Session](#)  
Ali Fares, Tarek Zayed, Nour Fares, Kyrillos Ebrahim, Abdul-Mugis Yussif, Chenqin Xiong, Sherif Abdelkhalek  
*Hong Kong Polytechnic University*
- 25-21281 Deep Learning to Detect Roadway Distress**  
[Poster Session](#)  
Ziliang Wang  
*California State Polytechnic University, Pomona*
- 25-00742 Deep Learning Framework for Infrastructure Maintenance: Crack Detection and High-Resolution Imaging of Infrastructure Surfaces**  
[Poster Session](#)  
Nikhil M Pawar, Jorge Prozzi, FENG HONG, Surya Congress  
*University of Texas, Austin; Texas State University; Michigan State University*
- 25-03179 Developing a Framework for a Pothole Management Program**  
[Poster Session](#)  
DingXin Cheng, Pablo Raigoza, Devin Cheng, Eulises Lopez, Jaime Raigoza  
*Cornell University; California State University, Chico*
- 25-21320 Development and Testing of a Prototype Erbium-Doped Lithium Tantalate–Based Sensor for Infrastructure Crack Detection and Measurement**  
[Poster Session](#)  
Alejandro Barrera  
*University of Texas, Rio Grande Valley*

- 25-21506 Development of Deep Learning Models for Distress Detection in Coastal Regions**  
[Poster Session](#)  
Carlos Sanchez  
*Texas State University*
- 25-05053 Development of a Time-Series Deep Learning Model for E-Scooter Road Anomaly Identification**  
[Poster Session](#)  
Nayeon Kim, Yongil Jung, Tai-jin Song  
*Chungbuk National University*
- 25-02489 Efficient Mechanistic-Empirical Analysis of Traffic Speed Deflectometer Device Data for Network-Level Pavement Evaluation**  
[Lectern Session](#)  
Eyoab Zegeye, Lev Khazanovich, Eleanor Smith, Michele Lanotte, Shongtao Dai  
*Minnesota Department of Transportation; University of Pittsburgh; Michigan State University*
- 25-04727 Exploring Cost-Effective LiDAR Solutions for Pothole Detection and Quantification: A Low-Point-Density Approach**  
[Poster Session](#)  
Ali Faisal, Suliman Gargoum  
*University of British Columbia*
- 25-05057 Exploring the Root Causes of Wide Thermal Cracks in the Southwestern Region of United States**  
[Poster Session](#)  
Saed Aker, Awais Zahid, Masih Beheshti, Hasan Ozer  
*Arizona State University; Arizona State University, Tempe*
- 25-02585 Fundamentals of Network Evaluation of Pavement Texture Using Computer Vision Techniques**  
[Poster Session](#)  
Mohammad Fakhreddine, Imad Al-Qadi, Mani Golparvar-Fard  
*University of Illinois, Urbana-Champaign*
- 25-00911 A Generative Approach to Generalize Deep Learning Models for Pavement Distress Segmentation**  
[Poster Session](#)  
Abhishek Kumar Prajapati, S. Ilgin Guler  
*Pennsylvania State University*
- 25-02420 Identification and Classification of Road Surface Defects Through Specialized Signals and Machine Learning**  
[Poster Session](#)  
Korkut Kaynardag, Daisuke Oshima, Fikret Catbas  
*i-Probe Inc.; University of Central Florida*

**25-02916 Intelligent Pixel-Level Segmentation of Pavement Sealed Cracks Using CycleGAN-Based Domain Adaptation**

[Poster Session](#)

Yiming Li, Jiang Chen, Hong Lang, Jinsong Qian  
*Tongji University*

**25-04825 Multispectral Satellite Data for Pavement Maintenance Decision Making: Assessing Its Value in Partially Observable Stochastic Environments**

[Poster Session](#)

Mahyar Shahri, Sung-Hee Kim  
*University of Georgia*

**25-00388 A Novel Framework for Diagnosing Asphalt Pavement Distress Causes Based on Knowledge Graph and Case-Based Reasoning**

[Poster Session](#)

Siqi Huang, Junqing Zhu, Tao Ma, Zheng Tong  
*Southeast University*

**25-02349 Solving Class Imbalance in Pavement Crack Data Using Conditional Wasserstein Generative Adversarial Networks with Gradient Penalty**

[Poster Session](#)

Afshin Shahrestani, Ali Faisal, Suliman Gargoum  
*University of British Columbia*

**25-05054 Weighting Variables for Condition Indices Using Subjective Data Framework**

[Poster Session](#)

Abdallah Al-Hamdan, Yazan Alatoom, Inya Nlenanya, Omar Smadi  
*Iowa State University*

**Performance Management**

**25-03081 Analysis of Rubber Pavement Texture Contact Characteristics for Friction Prediction with Polishing Effect**

[Poster Session](#)

Xiaoyu Zhang, Hao Wang, Thomas Bennert  
*Rutgers University*

**25-01471 Comparing Network-Level Structural Measures Impact on Pavement Performance Models**

[Lectern Session](#)

Bryan Smith, Brian Smith  
*Virginia Department of Transportation; University of Virginia*

**25-02465 A Data Fusion Method to Enhance the Applicability of Multi-Vehicle Cooperative Perception in Smartphone-Aided Ride Quality Monitoring**

[Poster Session](#)

Wangda Guo, Jinxi Zhang, Dandan Cao, Lei Nie  
*Beijing University of Technology*

**25-04238 Developing a Neural Network–Based Model for Predicting Skid Resistance in Asphalt Pavements**

[Poster Session](#)

Bishal Karki, Mayzan Isied, Mena Souliman  
*University of Texas, Tyler*

**25-02229 Friction Performance Models for Network-Level Pavement Friction Management**

[Poster Session](#)

Hongbin Xu, Jorge Prozzi  
*University of Texas, Austin*

**25-01091 Integrating Spatial and Attention Mechanism in Convolutional Neural Networks for Friction Coefficient Prediction**

[Poster Session](#)

Zihang Weng, Chenglong Liu, Yuchuan Du, Zhen Leng, Difei Wu  
*Hong Kong Polytechnic University; Tongji University*

**25-06175 A Machine Learning Framework for Transportation Asset Management**

[Poster Session](#)

Mohammad SafariTaherkhani, Narjes Shayesteh, Kaveh Farokhi Sadabadi  
*University of Maryland, College Park; University of Maryland*

**25-04414 Modeling the Safety Impacts of Pavement Characteristics Using Continuous Pavement Friction Measurement Data to Support Pavement and Safety Management in Florida**

[Poster Session](#)

Huiqing Lyu, Zhengyu Wang, Pei-Sung Lin, Qing Lu, Emmeth Duran, Guangming Wang  
*University of South Florida, Tampa; Florida Department of Transportation*

**25-04940 Pavement Performance Prediction Models Based on Deep Learning Physics–Informed Neural Network**

[Lectern Session](#)

Ali Taheri, John Sobanjo, Michael Elwardany  
*Florida A&M University-Florida State University; Florida State University*

**25-04543 Precision Assessment of Automated Pavement Condition Data Collection Using Annual Rating Data**

[Poster Session](#)

Xiaohua Luo, Gauri Mahajan, Feng Wang, Haitao Gong, FENG HONG, Jueqiang Tao  
*Texas State University, San Marcos; Texas State University*

**25-03047 Predicting Asphalt Pavement Friction Using Texture-Based Image Indicator**

[Lectern Session](#)

Bingjie Lu, Xiaoyu Zhang, Hao Wang, Thomas Bennert  
*Rutgers University*

**25-20483 Predicting Roadway Washout Locations During Extreme Rainfall Events**

[Poster Session](#)

Barbara Doll, Jack Kurki-Fox  
*North Carolina State University*

**25-02469 Predictive Modeling of Skid Numbers on High-Speed New Mexico Interstate Highways Using Machine Learning**

[Poster Session](#)

B S Pushpendue Biswas, Md Saddam Hossain, Muhammad Tasnim Alam, Rafi Tarefder  
*University of New Mexico, Albuquerque; University of New Mexico*

**25-05136 A Predictive and Precision Pavement Maintenance Methodology Utilizing Multi-Temporal Pavement Images**

[Poster Session](#)

Zhongyu Yang, Jordan Fung, Hoang Ho, Yichang Tsai  
*Georgia Institute of Technology*

**25-04647 Two-Step Deep Learning Model for Pavement Friction Evaluation Using 8K 0.1-MM 3D Texture Data**

[Poster Session](#)

Guolong Wang, Kelvin Wang, Guangwei Yang  
*Montana State University, Bozeman; Virginia Polytechnic Institute and State University*

**25-04445 UPDAPS-Detour: A Mechanistic-Empirical Flexible Pavement Analysis Tool to Evaluate the Effect of Detour Traffic on Pavement Performance**

[Poster Session](#)

Farhad Abdollahi, Muhammed Kutay, Michele Lanotte, Peng Chen, Bora Cetin  
*Genex Systems | Turner-Fairbank Highway Research Center; Michigan State University*

**25-04135 Using Roughness and Rutting Data to Quantify the Effectiveness of Pavement Preservation Treatments**

[Poster Session](#)

Tyler Somers, Xiomara Sanchez  
*EXP Services Inc.; University of New Brunswick*

**25-05947 Utilizing Drone Technology for Pavement Surface Condition Evaluation at Truck Weigh Stations: A Case Study from the State of Virginia**

[Lectern Session](#)

Ali Zalghout, Jalen Rich, Connor Evanski, Tim Miller, Jonathan Groeger, Hafeez Ullah, Nick Mazzenga  
*Transconomy; Kimley-Horn and Associates, Inc.*

## Pavement Repair and Rehabilitation Methods

This section includes papers on pothole patching; and chip seals, slurry seals and surface treatments.

### Pothole Patching

#### **25-20178 Asphalt Pavement Pothole Repair for Enhanced Performance and Environmental Sustainability**

[Poster Session](#)

Hao Wang

*Rutgers University*

### Chip Seals, Slurry Seals and Surface Treatments

#### **25-01276 Aggregate Retention Performance and Bleeding Susceptibility of Reclaimed Asphalt Pavement Modified Chip Seal: A Laboratory Investigation**

[Lectern Session](#)

Servan Baran, Mayank Sukhija, Erdem Coleri

*Oregon State University*

#### **25-04935 Development of Specification for Chip Seal Construction Quality Assurance Based on Laser Texture Scanner**

[Lectern Session](#)

Juan Pinto, Haifang Wen, Kevin Littleton

*Washington State University*

#### **25-02010 Mix Design Performance Evaluation of Micro-Surfacing with Reclaimed Asphalt Pavement**

[Lectern Session](#)

Deepesh Gupta, Rajiv Kumar, Ankit Sharma

*Central Road Research Institute New Delhi; Colorado School of Mines*

#### **25-05676 Performance of Stone Interlayers for Reflective Cracking Mitigation: The Louisiana Experience**

[Lectern Session](#)

Qiming Chen, Jun Liu, Zhongjie Zhang

*Louisiana Transportation Research Center (LTRC); Louisiana Department of Transportation and Development*

#### **25-04604 Quality Assurance of Chip Seals Using Macrotexure Metric**

[Lectern Session](#)

Norovbanzad Tsogt-Ochir, Gerardo Flintsch, Edgar de León Izeppi, Ilker Boz

*Virginia Polytechnic Institute and State University; Virginia Transportation Research Council*



**25-00779 Rehabilitation Strategy of Degraded Concrete Pavement in Tunnel Based on Falling Weight Deflectometer and Fatigue Analysis**

[Poster Session](#)

Tatsuo Nishizawa, Takahiro Nakayama, Akinori Komatsubara, Yoshihito Nitto, Kenichi Ishihara  
*Ishikawa National College of Technology; Central Nippon Highway Engineering Nagoya Co., Ltd.,*

## Roadside Maintenance

**25-03487 The Clear Zone Abroad: An International Comparison of Roadside Tree Management**

[Lectern Session](#)

Ellen White, Robert Noland  
*State University of New York, ESF; Rutgers University*

**25-20167 Conserving Pollinators and Identifying Roadside Management Strategies**

[Lectern Session](#)

Julie Hausknecht  
*Idaho Transportation Department*

**25-21288 Developing Enzyme-Induced Carbonate Precipitation to improve its feasibility of erosion control on sloping ground**

[Poster Session](#)

Ellen White, Robert Noland  
*State University of New York, ESF; Rutgers University*

**25-21452 Digital Twin Roadside Vegetation Management and Real-World Verification**

[Poster Session](#)

Emilia Marmolejo  
*New Mexico State University*

**25-20304 From Risk to Asset: Transforming the Perception of Rights-of-Ways and Their Uses with the Rights-of-Way as Habitat Working Group**

[Lectern Session](#)

Caroline Hernandez, Dan Salas  
*University of Illinois, Chicago*

**25-01358 Implementation of Monarch Butterfly Roadkill Mitigation Measures**

[Lectern Session](#)

Carl Bierman  
*Texas A&M Transportation Institute*

**25-02734 Improving Highway Safety and Efficiency: Field Evaluation of New Debris Removal System**

[Poster Session](#)

Yaobang Gong, Sayantan Tarafdar, Xianfeng Yang  
*University of Maryland, College Park*

**25-20175 Improving Roadway Debris Clearance for CHART Responders**

[Poster Session](#)

Xianfeng Yang

*University of Maryland, College Park*

**25-21448 Mapless Obstacle Avoidance in Sparse Outdoor Environments Using Deep Learning with RGB Camera Input**

[Lectern Session](#)

Nathan Sprague

*Purdue University*

**25-20166 Optimizing Wildlife Structure Size: A Meta-Analysis of Literature to Determine Optimal Wildlife Crossing**

[Poster Session](#)

Stephen Cohn

*Colorado Department of Transportation*

**25-21448 Tools and Technology for Roadside Vegetation Asset Management**

[Lectern Session](#)

Cheryl Daniels, Angela Burdell

*Davey Resource Group*

## Workforce

**25-20595 Workforce Development: Best Practice Considerations for Asset Management Practitioners**

[Lectern Session](#)

Eric Rensel

*Rensel Consulting, LLC*