VERMONT
AGENCY OF TRANSPORTATION
RESEARCH PROGRAM

2024 Transportation Research Board Annual Meeting

January 7-11, 2024

Washington, D.C.

AOT at TRB

- 6 people from AOT attended the 2024 TRB Annual Meeting
  - Emily Parkany – Research Manager
  - Ashlie Mercado – Research Engineer
  - Jayna Morse – Finance and Administration Division Director
  - Otis Ellms-Munroe – Environmental Planning Coordinator
  - Ashley Atkins – DMF Maintenance Manager
  - Mel Davis – Contract Administration/Construction Contracting

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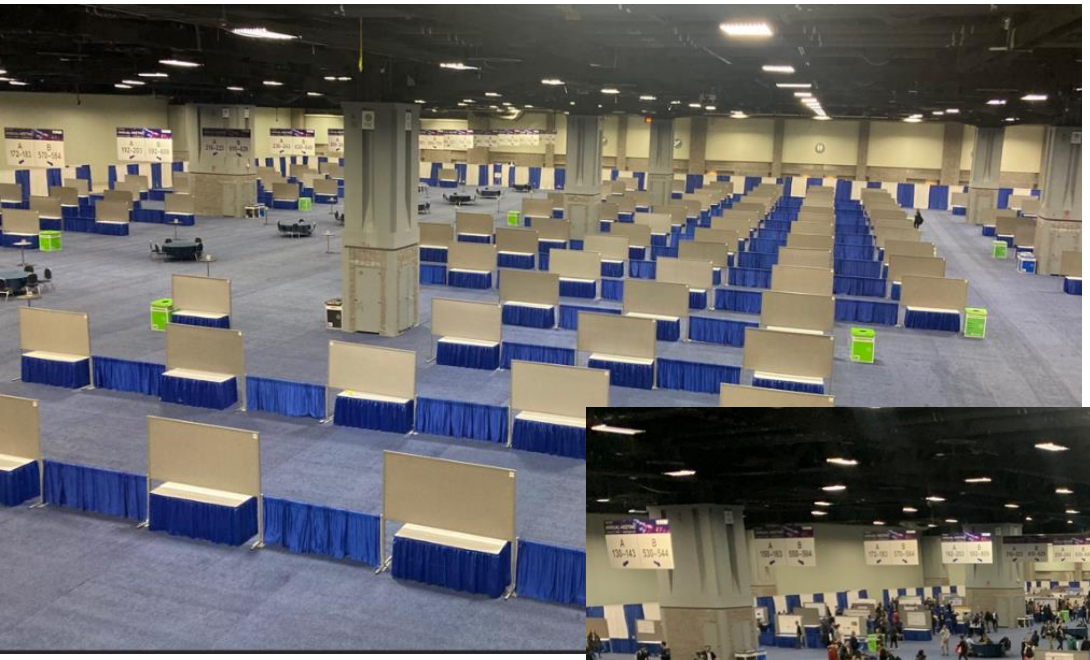
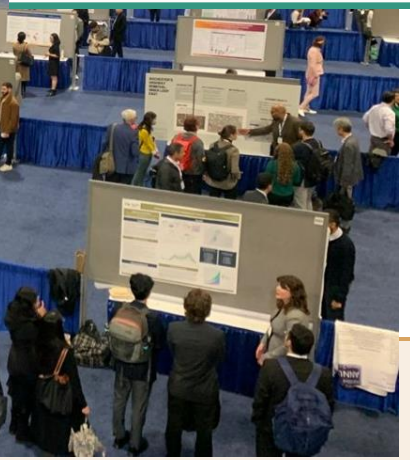
What Happens at TRB

Many Posters All Week!





THE UNIVERSITY OF VERMONT TRANSPORTATION RESEARCH CENTER

Evaluation of the Safety of Pedestrian Crossing Treatments in Small and Rural Communities

Parsa Pezeshknejad — Parsa.Pezeshknejad@uvm.edu
Dana Rowangould — Dana.Rowangould@uvm.edu
James Sullivan — TRBAM—24—04417 and P24-20026

1. Motivation

- Rural areas often lack adequate pedestrian infrastructure, leading to increased vulnerability.
- Higher speed limits and less driver awareness heighten the risk of pedestrian collisions in these environments.
- Rectangular Rapid Flashing Beacons (RRFBs) and LED-embedded signs are potential safety interventions.
- The effectiveness of these solutions in addressing rural pedestrian safety challenges is currently uncertain.
- Decision-makers need evidence-based insights to enhance pedestrian safety in rural contexts.

? Do RRFBs and LED-embedded signs improve pedestrian safety in rural areas?

2. Study design

Controlled before-after study:

We use a controlled before-after study design to evaluate the effectiveness of RRFBs and LED-embedded signs compared with traditional crosswalks in improving pedestrian safety. We evaluate driver and pedestrian behaviors using compliance and safety-related outcomes as surrogates for safety.

Vermont boundary and study locations

Rural communities in Vermont:

Vermont's rural context provides valuable insights into the effectiveness of interventions and treatment in similar settings.

3. Methods

Data collection and pairing

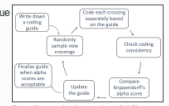
We form pairs of control and treatment locations to enhance the validity of the study and to capture the effect of the treatment on outcomes while controlling for other factors.

Video camera setup

Recorded video snapshot

Coding Process and Quality Assurance

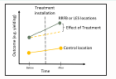
Our robust video coding technique involves reviewing videos and visually classifying quantitative measures of conditions and outcomes.
Two coders check intercoder reliability and iterate to create a coding guideline for use throughout the study.



Steps for creating intercoder reliability guideline

Statistical methods

Difference in difference:
Reveals causation and isolates treatment impact by comparing changes over time in treatment and control groups.



Difference in difference concept

Binomial logistic regression:
Considers the effect of multiple variables simultaneously for a better insights into their effects on the outcome.

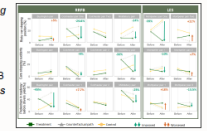
Variables included in the multivariate models

4. Findings

Difference-in-Difference Results

- *Yielding rate* improves only at RRFBs
- *Yielding rate* worsens at LESs.
- *Pedestrian wait time* improves only at RRFBs
- *Out-of-crosswalk crossing* greatly improves with both RRFBs and LESs.
- *Risky vehicle stopping position* shows mixed results
- The rate of *vehicles stopping suddenly* improves only for RRFB
- The rate of *Pedestrians stepping on the roadway soon* shows mixed results

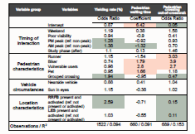
DID results for compliance outcome



DID results for safety outcomes

Multivariate Modeling Results

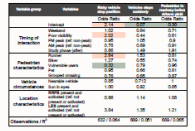
- *Treatment activation* only at RRFBs
- Pedestrian *wait times* are not significantly different for both RRFBs and LESs.
- *Out-of-crosswalk crossing* greatly improves (less frequent) with both treatments.



Logistic and OLS models of compliance

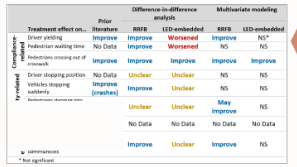
RRFBs and LESs show no significant effects on:

- *risky vehicle stopping*
- *vehicles stopping suddenly*
- *pedestrians stepping out of the crosswalk.*



Logistic models of safety

5. Key takeaways



Summary of the outcomes from literature, difference in difference and multivariate analyses

- RRFBs improve compliance and safety-related outcomes in small and rural communities, while LED-embedded signs only improve pedestrian compliance.
- Results are consistent across centrally located crossings and in rural to urban transition zones.

Acknowledgement

This study was funded by the Vermont Agency of Transportation (VTrans). The authors thank Jon Kaplan, Emily Parkany, and the VTrans Technical Advisory Committee for valuable input and guidance.

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Workshops and Lectern Sessions

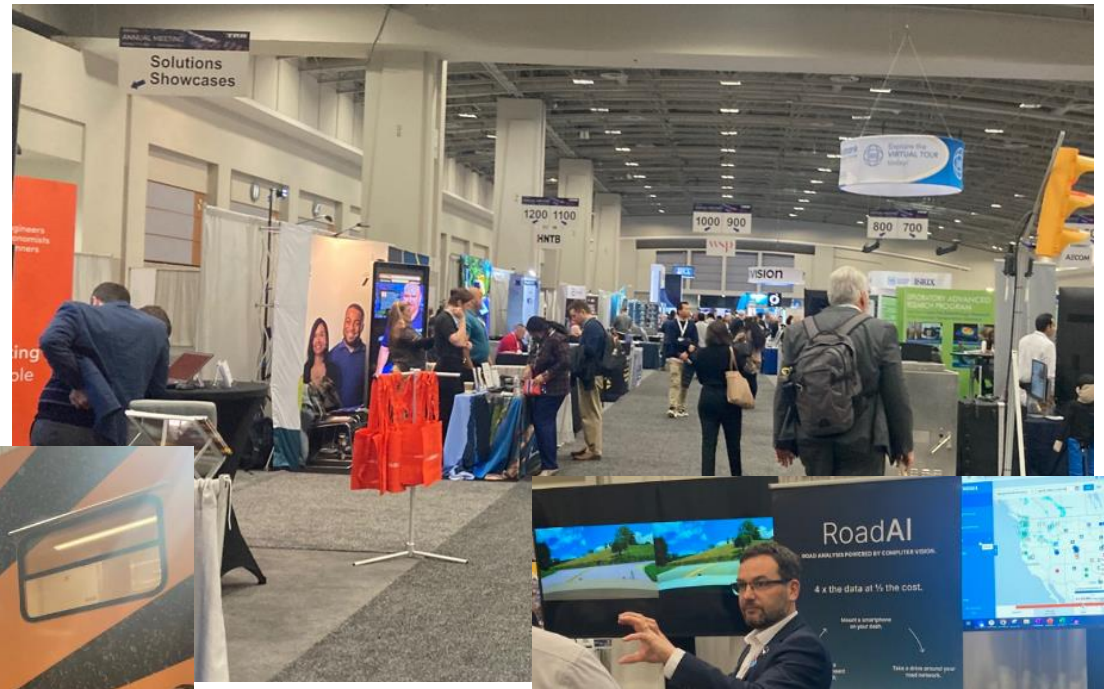
Workshops

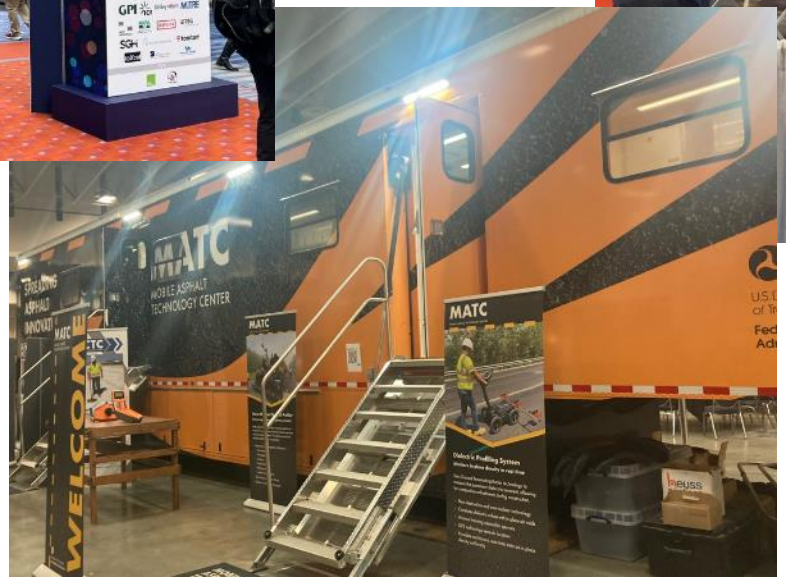
- More interactive, engaging attendees in some form of creative activity
- Participant training, development of a research agenda around a specific topic, or some other product or deliverable, etc.
- Typically outcome driven where the conversation leads to a product or defined content

Lectern Sessions

- Presenting papers that went through peer review process and were accepted by committee
- Speakers invited to presentation on a topic for which they are an expert without needing to prepare a paper for review
- Papers and speakers are organized around a common theme

Exhibit Hall: nearly 200 exhibits!





2024 TRBAM – Wednesday January 10

Lectern Session 4077

Chair's Plenary Session

Wednesday, January 10 1:30 PM- 3:00 PM ET
Convention Center, Ballroom ABC
Lectern | PDH

Diane Gutierrez-Scaccetti, New Jersey Department of Transportation

Sponsored by:
Executive Committee (E0000)

Fireside Chat: Mental Wellness of Transportation Construction Workers and Transportation Professionals at Large
Sharareh (Sherri) Kermanshachi, Penn State Harrisburg
Travis McCarthy, Sundt Construction, Inc. P24-21468
Peter Tateishi, Associated General Contrators of California
Diane Gutierrez-Scaccetti, New Jersey Department of Transportation
Carol Lewis, Texas Southern University

https://youtu.be/aYX7Qaln-kA

Unscheduled remarks from DOT Secretary Pete Buttigieg

This session was recorded. Watch at: https://www.youtube.com/watch?v=aYX7Qaln-kA (starting at 1:15:45)

Slide taken from Research peer at CDOT

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Research Section

Emily Parkany and Ashlie Mercado

Open Innovation – Transportation Agencies' Engagement with the Private Sector to Advance Innovation Workshop

- Organized by AJE35 Research Innovation Implementation Management Committee Chaired by Emily
- 5 speakers gave US and European examples of public and private working together on innovation
- 75 minutes of discussion: takeaways and participant challenges→ **procurement**
- Workshop Summary

AASHTO Research Advisory Committee Winter Meeting

- Representatives from all states
- Strong emphasis on research needs and research management

AASHTO RAC Winter Meeting Agenda

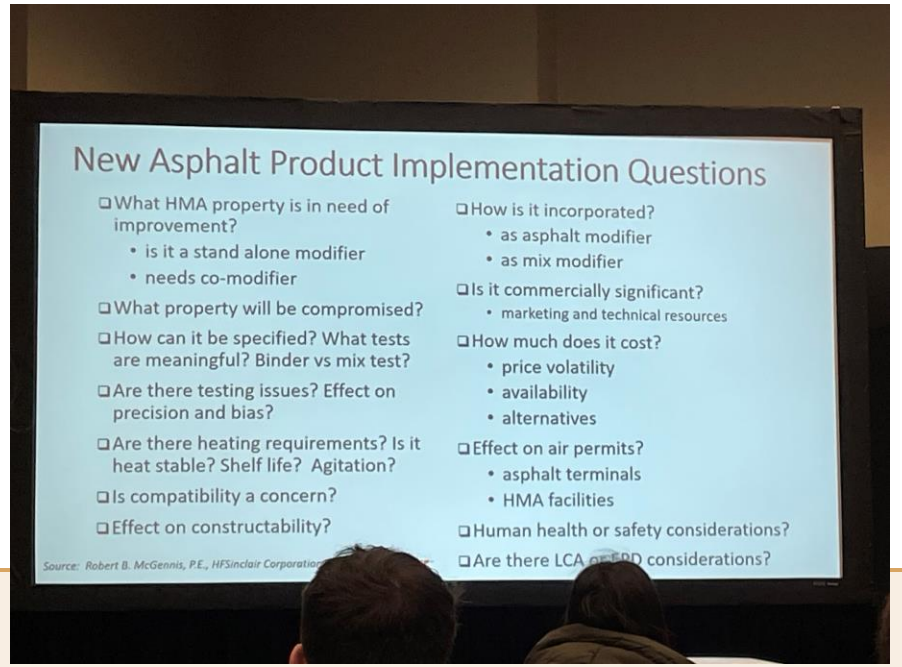
2024 Transportation Research Board Annual Meeting
Sunday, January 7, 2024
6:00 – 8:00pm, EST
Convention Center, Room 202A, Washington, DC

5:30 pm **Informal Networking**
6:00 pm **Welcome & Introductions** – Cameron Kergaye (15 min)
6:15 – 7:00 pm **Task Force Updates (10 minutes each)** (Cameron Kergaye)
7:00 – 7:20 pm **Region Updates (5 minutes each)** (Jarrod Stanley)
7:20 – 7:50 pm **Peer Exchange Updates (5 Minutes each)** (Tyson Rupnow/Cindy Smith
7:55 pm **2024 Summer Meeting Announcement – Region 3** (Jen Harper)
8:00pm **Adjourn**

Lectern Session: Implementation of Asphalt Binder Papers

- Organized by AJE35 Research Innovation Implementation Management Committee
- Session featured four research presentations and five respondents (four from state DOTs and an asphalt binder supplier)

- Asphalt binder supplier said, “If implementation is a 100 step process, then you are on Step 16”



TRB State Representatives and State DOT CEO Lunch

- Ashlie is our VT TRB State Representative. This was her first year at TRB and first time attending the lunch.

TRB State Representatives and State DOT CEO Lunch

Tuesday, January 09 12:00 PM- 1:30 PM ET
Marriott Marquis, Shaw & LeDroit Park (M3)
By Invitation

Avery Grimes, Patriot Rail Company

Sponsored by:
Technical Activities Council (A0000)

AJE35 Research Innovation Implementation Management Committee (RIIM)

- Emily is the chair of RIIM
- This committee explores research and innovation processes and life cycles, from formulating needs through conduct of research and development efforts to technology transfer and implementation activities
- Committee meeting had a full agenda, including sub-committee updates and breakouts, and a "*Why Elevator Speeches Don't Work and What You Should Do Instead*" presentation

Research Innovation Implementation Management Committee

Tuesday, January 09 8:00 AM- 12:00 PM ET
Marriott Marquis, Liberty Salon K (M4)

A. Emily Parkany, Vermont Agency of Transportation

Sponsored by:
Standing Committee on Research Innovation Implementation Management (AJE35)

Lectern Session: Implementation of Workforce Development Papers

- Organized by AJE35 Research Innovation Implementation Management Committee
- Emily filled in to present “A Living Case Study: Plight of A New American Seeking Employment in the U.S. Architecture, Engineering, and Construction Industry”

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Artificial Intelligence and Workforce Development

Jayna Morse

What can AI do for you and to you? Perspectives from DOT leaders.

- Varying levels of artificial intelligence use
- Concerns with risks to organization, developing policy, working within executive orders
- Recognition of capability building needs
- Cost of investing, cost of not investing
- The human factor is irreplaceable

AJE-15: Standing Committee on Workforce Development & Organizational Excellence

Discussed proposed research topics

- Career path / track development for technical workers
- Recruitment & retention

Developed high level research needs statements

- Workforce strategies – How do we build & retain a technical workforce under today's pressures?

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The Intersection of Climate Resilience and Freight Resilience

Otis Ellms-Munroe

Scott Kelley
U.S. Coast Guard Bridge Program

James McDonald
HNTB

Paul Clark
HNTB (formerly FDOT)

Suseen Indrakanti
Cambridge Systematics

Otis Ellms-Munroe
Vermont Agency of Transportation

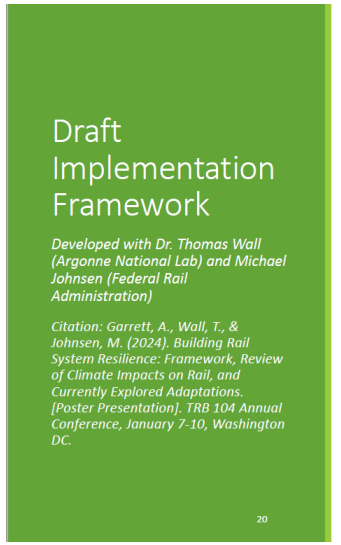
The Vermont Transportation Resilience Planning Tool (TRPT)

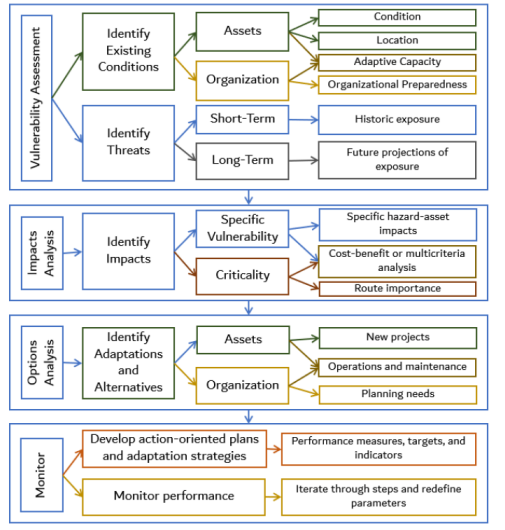
- Background – Vermont context & Tropical Storm Irene
- TRPT scoring methodology
- Agency and partner use
- Ongoing development & next steps

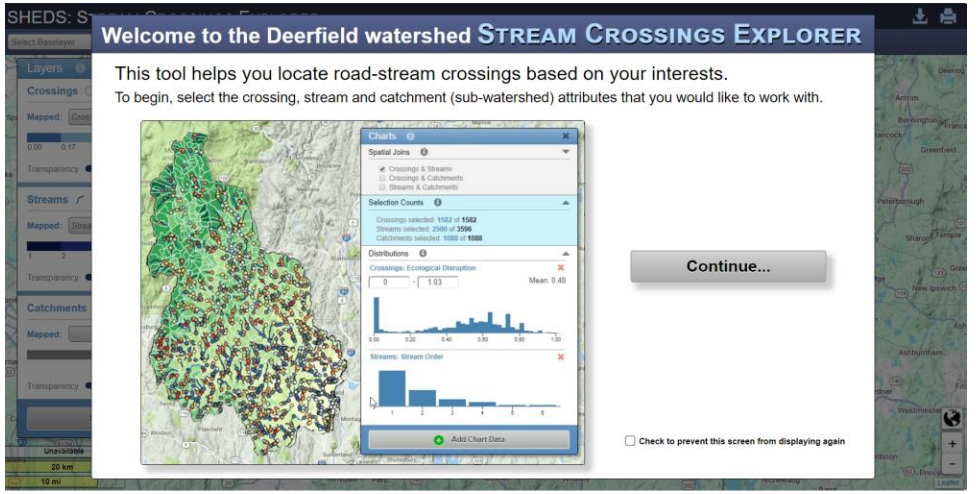
- TRPT: [Transportation Resilience Planning Tool | Agency of Transportation (vermont.gov)]

Takeaways

- Building Rail System Resilience
- Massachusetts Stream Crossing Explorer
- Automated Floodwater Extent Detection
- Highway Embankment Slope Stability Under Climate Change–Induced Extreme Rainfall Patterns
- Optimizing the Location and Configuration of Disaster Resilience Hubs Under Transportation and Electric Power Network Failures







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Rapid Responses to Disasters in Rural and Public Lands

Ashley Atkins and Mel Davis

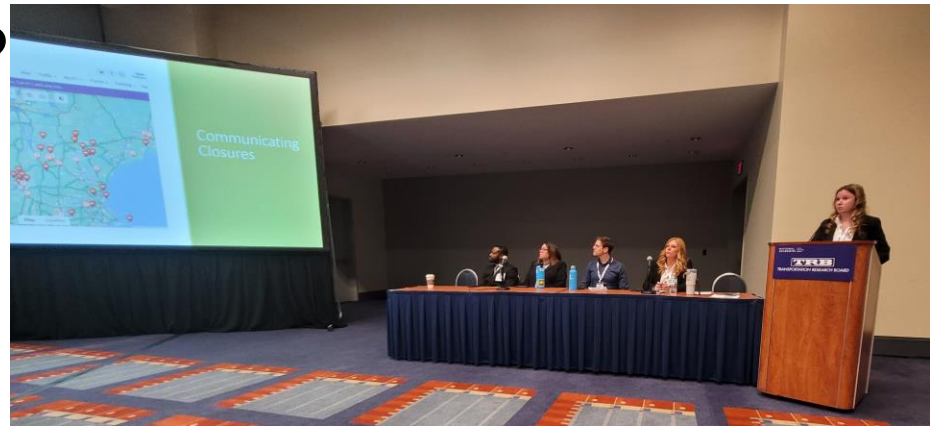
Vincent Ziols
U.S. Fish & Wildlife Service

Emmanul Yartey
US Dept. Of Agriculture

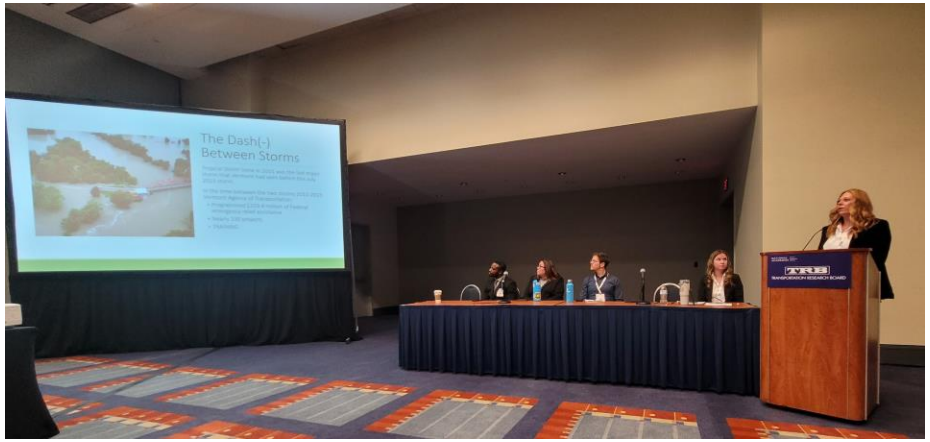
Amanda Thorpe
U.S. Forest Service

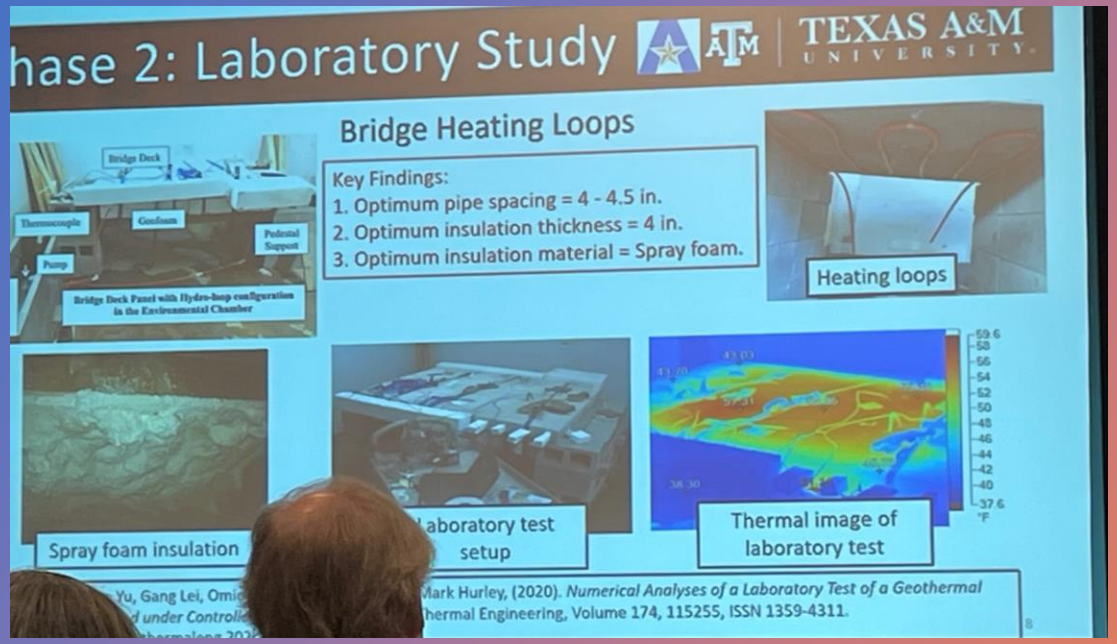
Ashley Atkins & Mel Davis
Vermont Agency of Transportation

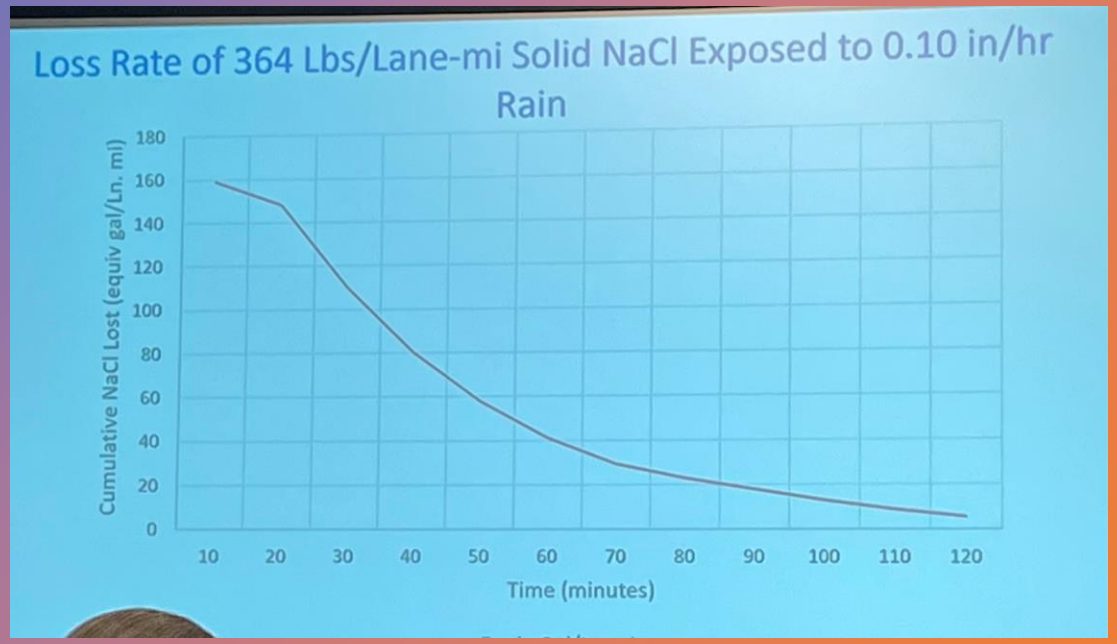
Vermont Response & Recovery 2023 July Flooding



- Review of Vermont & Maintenance Responsibility Breakdown
- Visual Tools - *TMC, NewEngland 511, & Damage Dashboard*
- History and comparison of the Irene Flooding vs. July Event
- "The Event"
  - *Details of the extensive rain, Emergency Declaration, TICC Activation*
  - *Incident Management*
  - *Emergency Contracting*
  - Lessons Learned
- AMAZING FEEDBACK!







To name a few..

- Geotechnical Modeling and Monitoring: Where Prediction and Reality Meet
- Designing the Transportation Agency of the Future
- Advancements in Winter Maintenance
- The intersection of Climate Resilience and Freight Resilience
- Workforce Development: Challenges and Solutions
- Automated Vehicle Testbeds and Weather Applications
- Transportation Leaders Ask: What Can Artificial Intelligence Do for Me and to Me?

Highlights

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Off Hours