

# MassDOT Innovation Conference

April 30 – May 1, 2024  
Worcester, MA



# AOT at MassDOT Innovation Conference

- 5 people from AOT attended the 2024 MassDOT Innovation Conference
  - Emily Parkany – Research Manager
  - Ashlie Mercado – Research Engineer
  - Demetrio Gagnon – Construction Contracts Manager
  - Alec Condil – Civil Engineering
  - Duane Wheeler – Data Analyst



# **What Happens at the MassDOT Innovation Conference**

# Plenary/Keynote Sessions

**LUNCHEON KEYNOTE-  
WORKING SESSION:  
12:15 PM - 1:45 PM**



## **Lead It: Building the Community Centered DOT**

Learn how state DOT leaders are taking action to develop more community centered transportation organizations. We will examine priorities of national DOT leaders, how current operations and planning issues are being addressed through empathetic leadership, and how agile management techniques can be leveraged to deliver customer-focused outcomes. This synthesis session combines the expo simulations and the challenges identified in our empathetic leadership workshop so that you're prepared to lead transformation in your organization.

**Moderator: Meghan Haggerty**, Chief Operating Officer, Massachusetts Department of Transportation

**Garrett T. Eucalitto**, Commissioner, Connecticut Department of Transportation

**Hayes Morrison**, Undersecretary/Acting Chief of Staff, Massachusetts Department of Transportation

**Kerri Woehler**, Deputy Assistant Secretary, Washington Department of Transportation

**Nate Higgins**, Director, Slalom



# Technical Sessions

- Wide range of topics!
- Many sessions happening at once
- Large attendance in all technical sessions
- Speakers from MassDOT, consulting, universities, etc.



## **Innovation of Asset Management: Management, Inspection, and More! - Junior Ballroom**

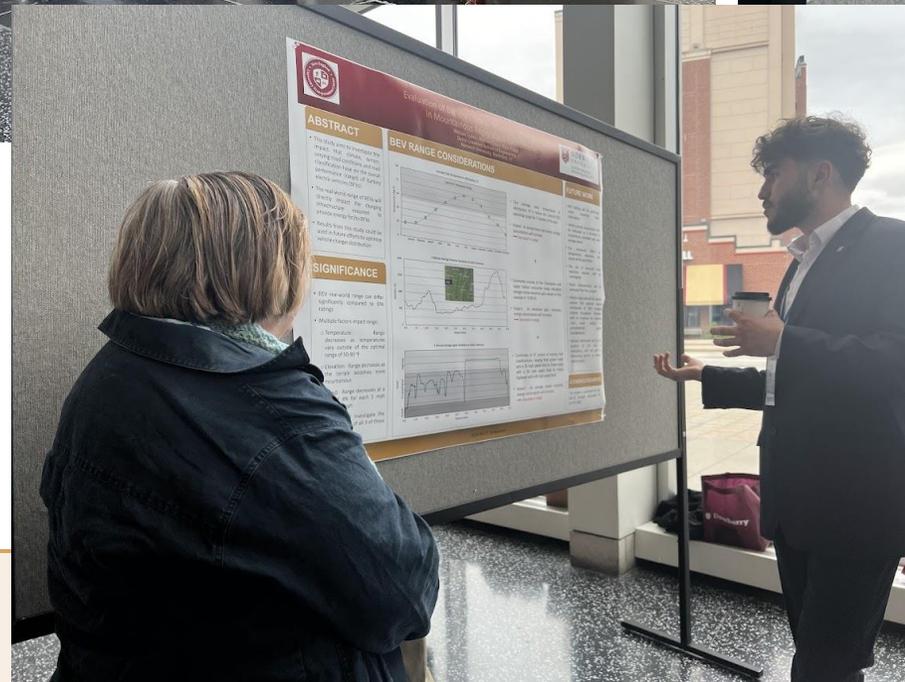
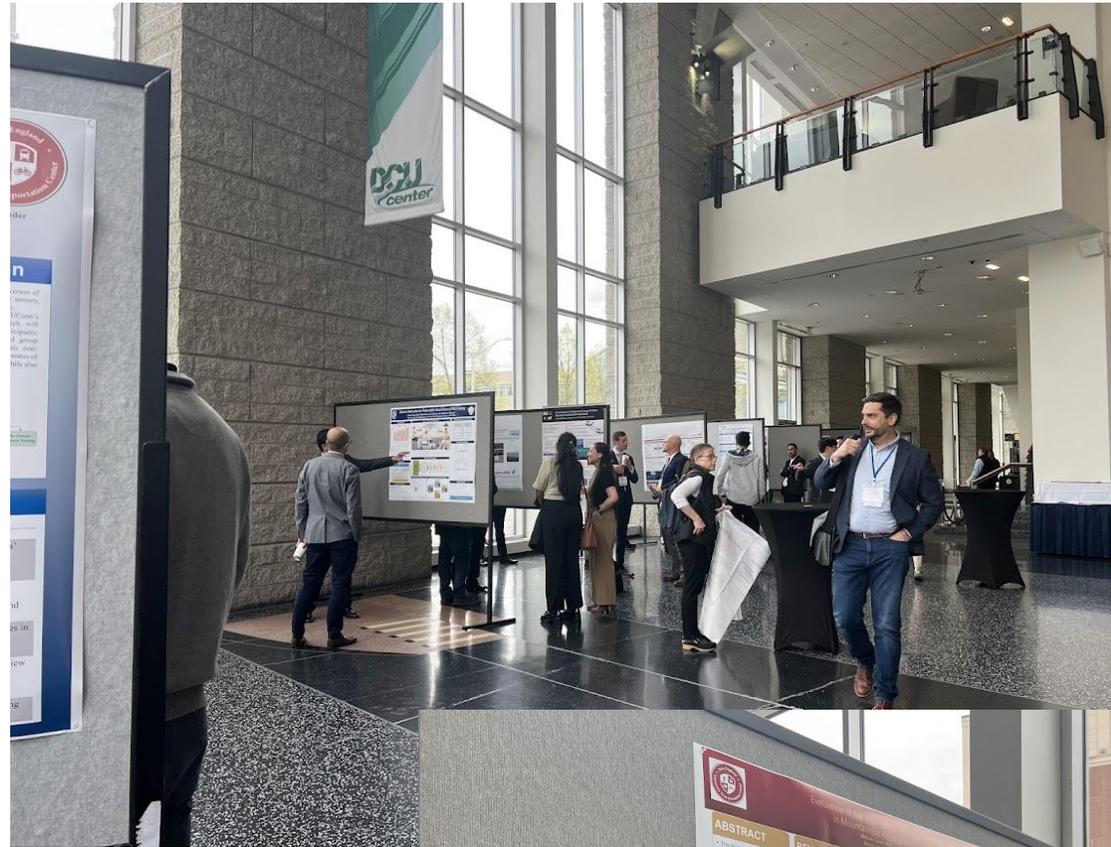
From ancillary structure inspection to pavement and sidewalk condition assessment, asset management has advanced in recent years through geospatial and intelligent data collection technologies. This session will highlight the benefits of utilizing GIS to improve mapping and management of ancillary inspection contracts, as well as the advancement of LiDAR technology to improve the data quality for pavement and sidewalk conditions. Attendees will learn where this data is stored, how to access it, and examples of how to use it moving forward.

## **The Strengths and Weaknesses of Concrete - Room E**

This session will showcase the advancements and the challenges endured with regards to concrete. Ultra-high-performance concrete (UHPC) is an extremely durable material with excellent mechanical properties, due to its ultra-high compressive strength. To achieve this performance, UHPC must be carefully formulated with precise and optimized quantities of certain construction materials to create a composite material. MassDOT and City of Boston are exploring multiple infrastructure applications that can incorporate UHPC in lieu of conventional concrete.

# Posters

- Many topics and projects!
- Researchers in person to talk about poster and answer questions
- UMass, UConn, UMaine, MIT, etc.

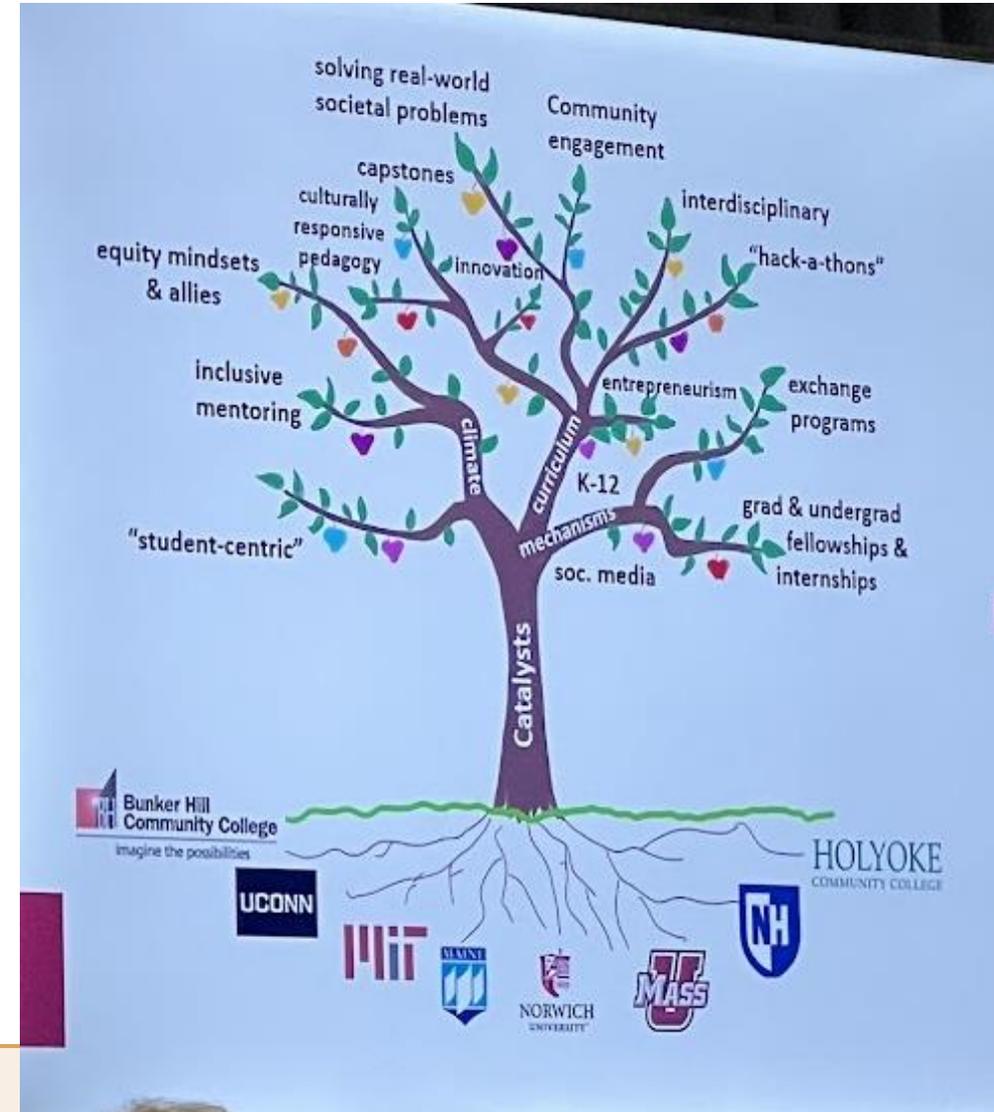


# Exhibits!



# New England University Transportation Center Symposium

- Emily and Ashlie attended Symposium and Advisory Board meeting (4/29 & 4/30)
- 6 universities and 2 community colleges throughout New England
- Includes Norwich U
- Focused on SAFETY





# Emily Parkany

Research Manager

# NE UTC Keynote: Three "Es" of Planning: Ethics, Equity, Empathy

- Jason DeGray (former student!)
- Toole Consulting



# Value of Conversations

- Guy at lunch wants to build a wildlife crossing (for turtles) based on a NH DOT research project
- We started asking an exhibitor questions and then realized we had exchanged emails the week before
- An exhibitor from last year is the PI of the NCHRP project where I Chair the panel
- Norwich U is researching EV battery performance and EV charging station placement and provides CyberSecurity training



**NORWICH**  
UNIVERSITY™

# Smiley Faces Come from Worcester, MA!

---

- Back in 1963, Worcester resident and commercial artist Harvey Ball invented the smiley face. In 1999, Ball created World Smile Day to encourage kindness and combat the over-commercialization of the smiley face. The day falls on the first Friday of October.





# Ashlie Mercado

Research Engineer

# Empathy, Ethics, Equity

- Saw the Three E's throughout entire conference
- Empathy at the Intersection interactive exhibit



## Experience It: "Empathy at the Intersection" Experiential Exhibit (Both Days)

Participate in different hands-on activities that invite you to view an intersection from a new perspective. You will have the opportunity to put on the Age Gain Now Empathy Suit (AGNES) (on 4/30 only) to experience limited mobility and vision impairment associated with aging as you try to cross the street. Apply your skills in the "Look Both Ways" VR driver simulation to test your reaction time in an urban environment. Gain perspective on high-vision and conventional truck cabs. Discover the difference in visibility of vulnerable road users offered from the driver's seat and learn about current research on vehicle design.

# Connectivity, Vulnerability, Human-Centered

- Innovations to connect people; bike/ped, land use, intersection designs, etc.
- Safety: recognizing vulnerabilities that many face in day-to-day life





# Demetrio Gagnon

Construction Contracts Manager

# EV Charging and Microgrids

## DoD Installations Microgrid Opportunities

Microgrids have the opportunity to provide long duration backup power to DoD installations, but can present operational challenges.

### Benefits

- Improved efficiency
- More opportunities for redundancy
- Opportunities for large scale renewables
- Improved situational awareness
- Faster response time with automated load pickup and load shedding

### Microgrid at MCAS Miramar

### Challenges

- Operational complexity compared to building-level generators
- More difficult to troubleshoot
- Single points of failure at centralized generation
- Dependent on distribution system reliability
- Lack of interoperability, and standard adoption

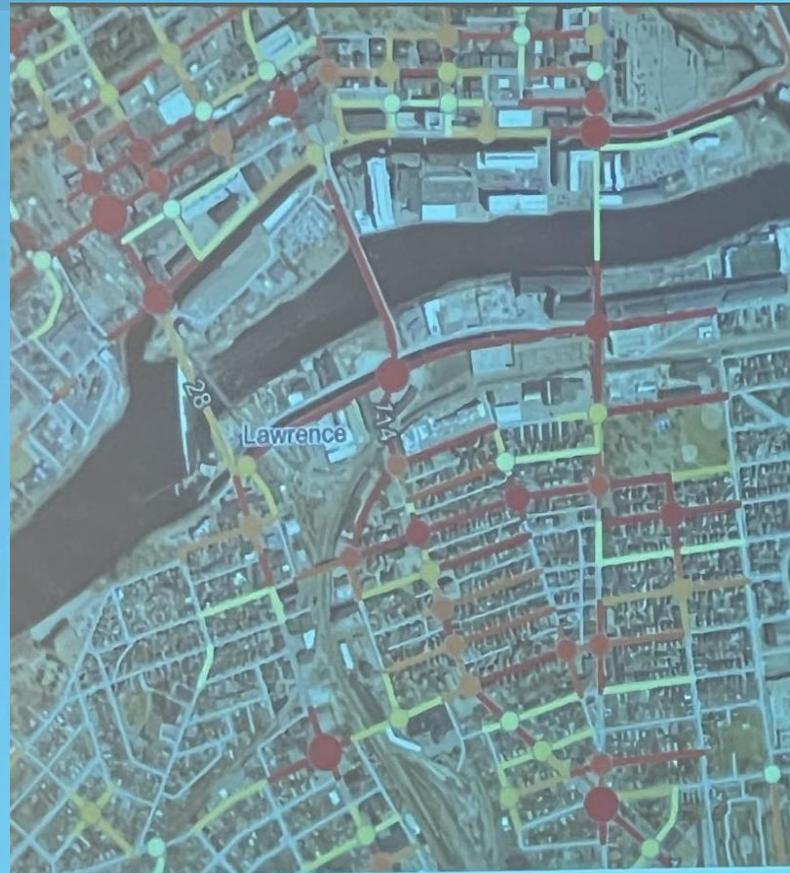
Grids and Microgrids - 7  
A. Weathers | 01 May 2024

\* Example load profile generated with ReOpt

LINCOLN LABORATORY  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

# Safe Streets for All

- Reduce speeding opportunities through signal timing.
- Behavioral is the hardest to change.



## What is a High Injury Network?

- Mapping of corridors where high numbers of people have been killed or severely injured in traffic crashes
- Help focus resources in areas that will have the most impact
- Emphasize equity and vulnerable road users

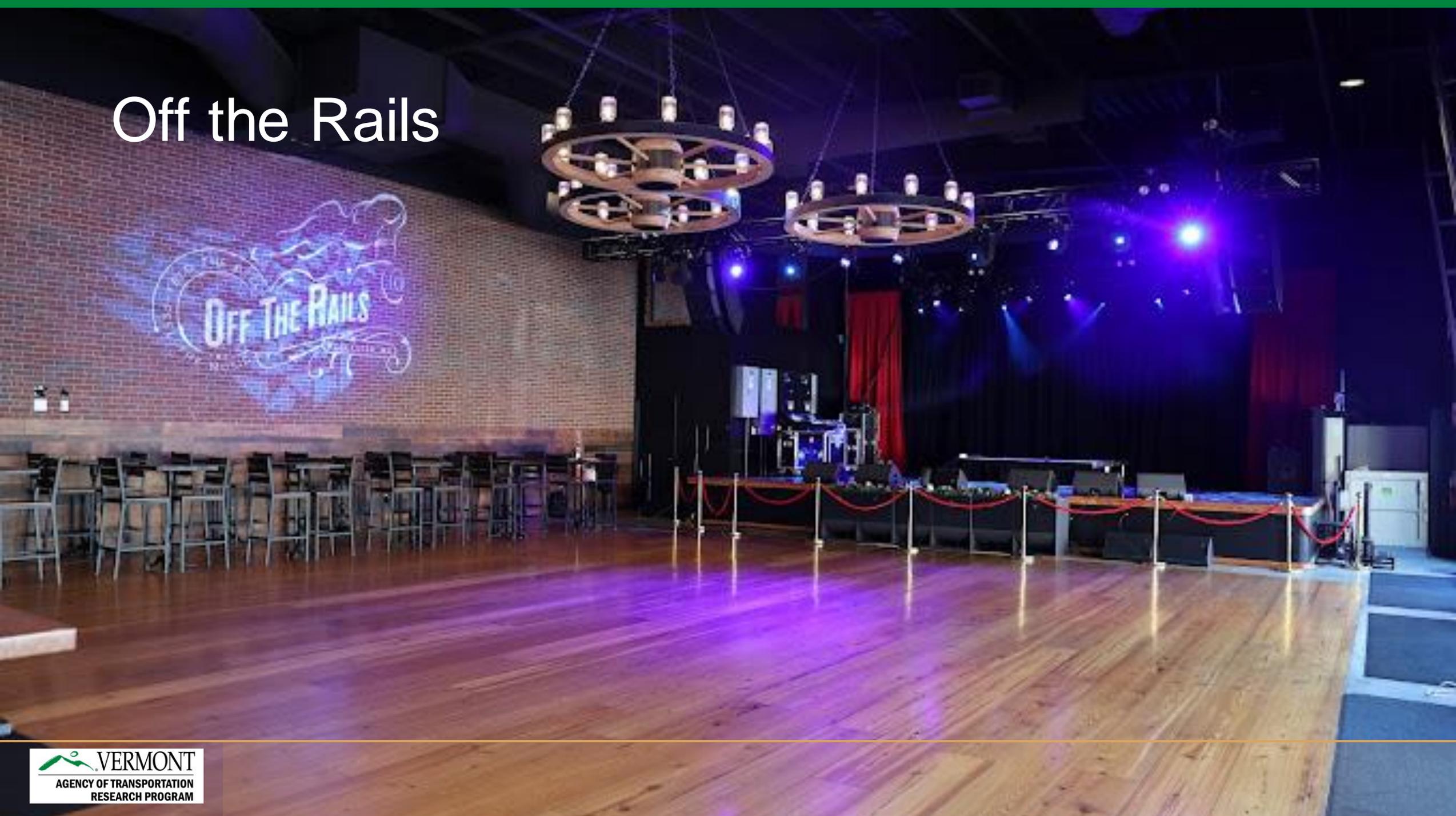
massDOT

MVPC

BETA

U.S. Department of Transportation  
Federal Highway Administration

# Off the Rails





# Alec Condil

Civil Engineer 3

# Putnam Bridge – Wethersfield to Glastonbury CT

- The four-lane bridge opened in 1959 and is 2,393 feet long. On an average day, the bridge carries 54,200 vehicles. Carries RT3 over the Connecticut river.
- DOT Contract 0053-0175 was awarded to Mohawk Northeast, Inc. of Plantsville, Connecticut, on February 13, 2013, at a cost of \$30,297,746.60 and is scheduled to be completed in May 2015. The Putnam Bridge, officially the William H. Putnam Bridge, is DOT Bridge No. 0417.

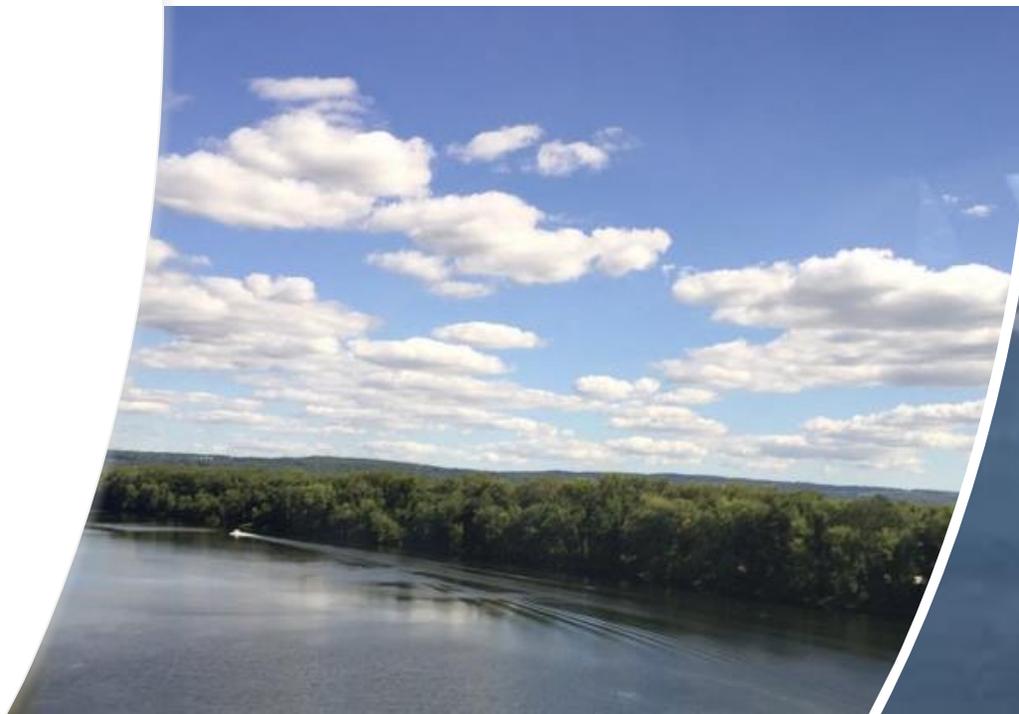
# Bike and Walking Trail

The Putnam Bridge Trail Connection gives bicyclists and pedestrians a new option of crossing the Connecticut River without needing a motor vehicle, linking the active communities of Wethersfield and Glastonbury,” **Governor Lamont said.** “We anticipate that people will find this trail to be a convenient way of getting to work, exploring local shops and restaurants, or just enjoying a scenic recreational opportunity – all while being able to leave the car at home.”



## New trail boosts access to Connecticut River in Hartford County

Filling in the gaps to the Putnam Bridge Trail Connection offers walkers and bikers an active mode of transportation to safely cross the Connecticut River and explore the Greater Hartford area,” **Commissioner Eucalitto said.** “Thank you to Governor Lamont, state legislators, and our local partners and advocates for supporting this project from the planning to construction phases. This collaborative effort demonstrates the need to build alternative routes for all road users to decrease injuries and fatalities on our roadways.”



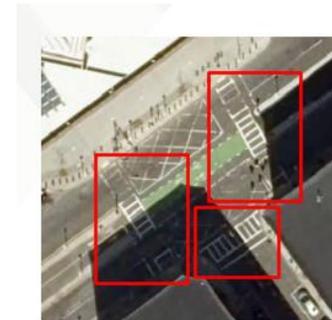
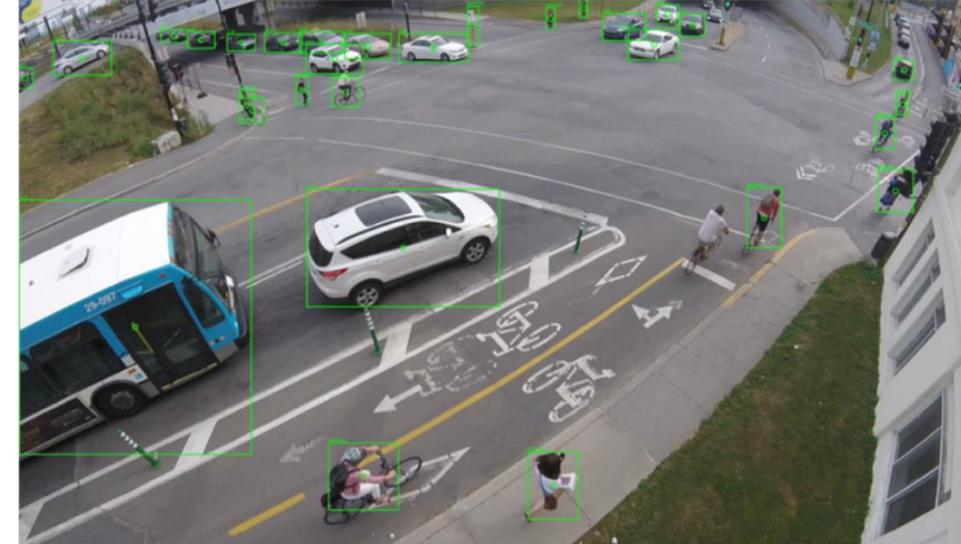


# Duane Wheeler

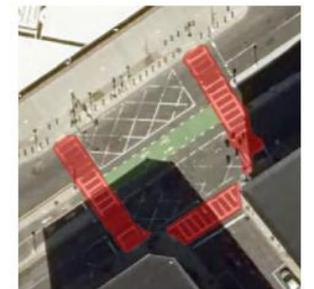
Data Analyst III

# Combining the use of Geographic Information Systems and Artificial Intelligence

- Miovision leads in traffic detection in the state of Massachusetts, with their AI cameras, which are spread throughout the entire state, they can easily understand demands at an intersection by visualizing how many cars pass a specific intersection at a given time and day. They can also prioritize pedestrian safety by categorizing crosswalks by type and location to better inform safety interventions.
- Massachusetts has combined the use of GIS and has integrated that into their construction management system. They can pick a contract and select a construction project that will be visually displayed on a map. This map displays the exact area where construction is taking place as well as give information as to which materials and items are being used and where they are being used. This is achieved through different layers on the map.



Detection



Segmentation

# Interactive Exhibits

- Many interactive exhibits within the MassDOT conference such as the virtual reality driving simulation "Look Both Ways" tested my reaction time with tight turns and obstacles to look out for. With this experience I was able to view traditional truck cabs and high-vision from a cabin view angle. It made me realize how truck drivers view other road users.

