

Transportation Research Quarterly

Providing highlights of MassDOT's transportation research activities and other helpful information

2026 Summer

Focus on Research

The MassDOT Research and Technology Transfer Program supports the transportation research needs of MassDOT, the MBTA, and the broader Commonwealth community by advancing applied research that improves the safety, performance, and efficiency of the transportation system.

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2026 - Projects kicked off this Spring

Evaluation of Transit Signal Options

Project Kick off: May 20th

This project is to assess the operational and safety impacts of alternative transit signal displays and inform recommendations to be incorporated in state and national transit signal design guidelines.

Alternative Constituent Materials for Use in Low-Carbon Cement Concrete – Part II

Project Kick off: May 15th

MassDOT needs performance-based guidance to implement low-carbon concrete while maintaining durability, safety, and service life under Massachusetts exposure conditions, including deicing salts, freeze-thaw cycling. The objective of this project is to evaluate emerging binders, admixtures, and alternative constituent materials as lower-carbon alternatives to traditional cementitious systems for MassDOT highway concrete

Speed Management Countermeasure Selection and Process Guidance

Project Kick off: March 24th

This project aims to develop methods and guidance in three areas: 1. Develop a method to systemically identify current and future areas of speed concern 2. Create guidance for the selection of speed management countermeasures given particular roadway and context conditions 3. Create guidance about how to execute a municipal speed management program and implement speed management countermeasures

2026 Research Implementation Survey Report

2026 Research Implementation Survey Report

To better understand how research projects translate into real-world practice, the Massachusetts Department of Transportation (MassDOT) Research, Development, and Technology Transfer (RD&T) Program conducted an implementation survey of Project Champions (PCs). These individuals, typically MassDOT and MBTA staff, play a central role in advancing, applying, and optimizing research outcomes within their respective divisions. The findings present an encouraging picture. Many research projects are actively implemented or used in practice, and some have directly influenced design standards, specifications, and operational decision-making. At the same time, the results highlight important gaps in how implementation and return on investment are tracked and measured. Key findings include:

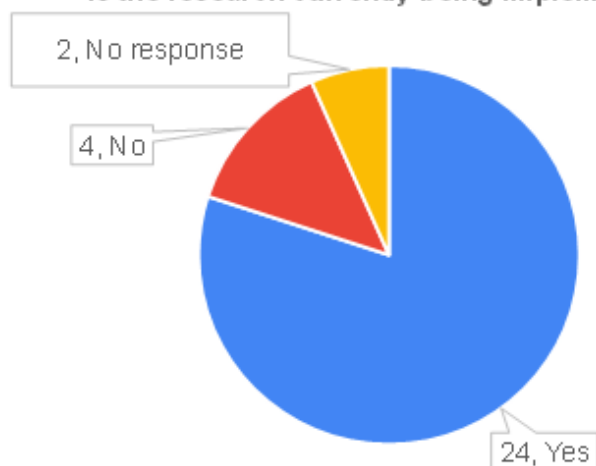
- Many research projects have been implemented or actively used, often shortly after completion
- Research frequently informs updates to standards, specifications, and internal practices
- Follow-up efforts, including additional research phases, are common and often necessary
- Return On Investment (ROI) is widely perceived but not consistently measured or documented

Many respondents reported that research outcomes are either currently being implemented or actively used in practice. In several cases, respondents indicated that findings are not only implemented but routinely applied in day-to-day operations. Many respondents indicated that implementation began during the research process or immediately following project completion. Many respondents reported that research has led to changes in:

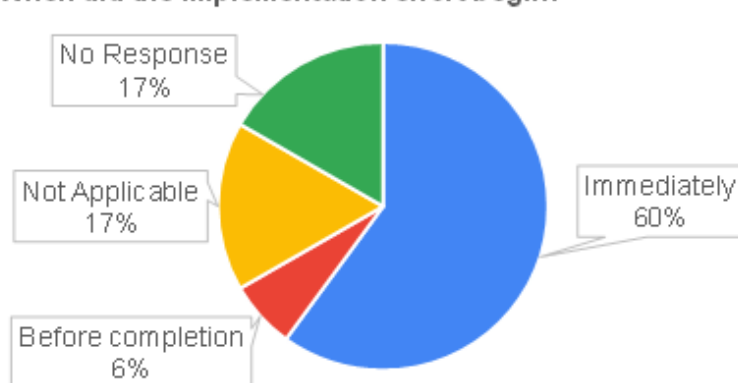
- Design practices
- Technical specifications
- Standards and guidelines

This demonstrates that research is not only generating knowledge but actively shaping how MassDOT operates. Implementation barriers tend to be practical rather than conceptual, including technical constraints, funding limitations, and organizational challenges. The survey results suggest that the RD&T Program is delivering practical, applied value. Research is not only being completed but actively used, influencing agency practices and supporting decision-making. In conclusion the RD&T Program is achieving its core mission of supporting applied, impactful research. The survey confirms that research investments are translating into real-world benefits across MassDOT.

Is the research currently being implemented?



When did the implementation effort begin?



2026 Research Project Portfolio Analysis

2026 Project Portfolio Report

During Federal Fiscal Year 2026 (FFY 2026), the RD&T Program undertook a comprehensive initiative to inventory completed research projects and evaluate overall program performance. This effort represents a significant step toward strengthening program transparency, improving internal decision-making, and aligning future transportation research investments with demonstrated needs and outcomes.

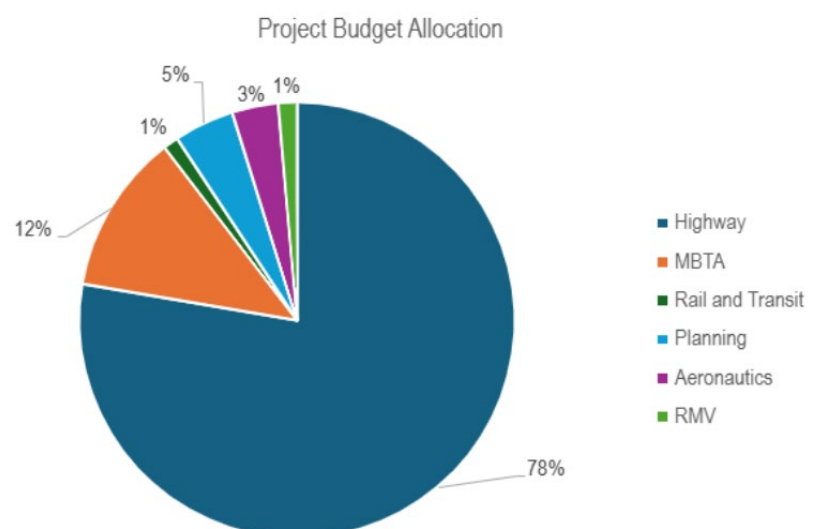
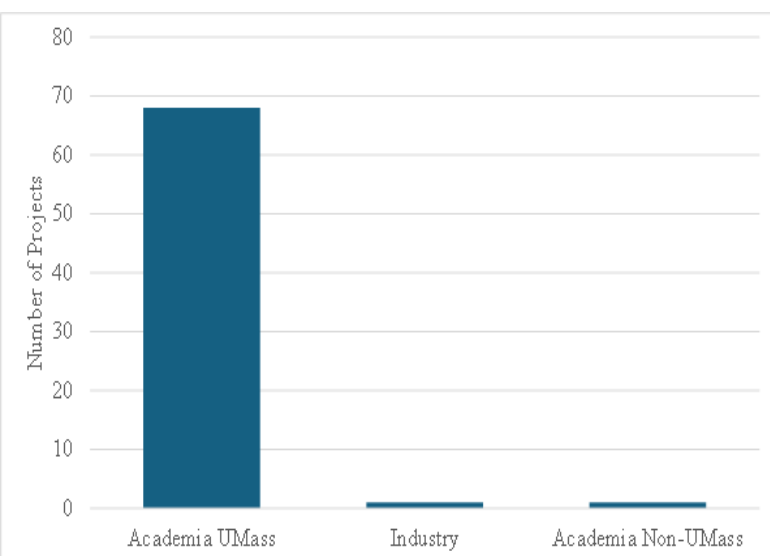
The findings indicate a research project portfolio, characterized by:

- Consistent project sizing and duration
- A strong emphasis on infrastructure and materials research
- Heavy reliance on a core group of academic researchers
- Frequent use of schedule extensions as a delivery mechanism

The MassDOT Research, Development, and Technology Transfer (RD&T) Program represents a mission-aligned research portfolio that consistently delivers applied value to the Commonwealth's transportation system.

The emphasis on infrastructure, particularly in pavement materials, structural performance, and system operations, reflects a necessary focus on maintaining and improving the Commonwealth's critical transportation assets. The increasing presence of technology-driven projects signals a gradual but important shift toward modernization and innovation. This trend positions the RD&T Program to play a key role in supporting future-ready transportation systems, where data, automation, and predictive tools become increasingly central to decision-making. Automated and predictive tools have already shown improvements in productivity but require increased planning and investment during this transition.

The RD&T Program not only supports current operational needs but also lays the groundwork for a more resilient, efficient, and innovative transportation system. Transportation research findings influence design standards, specifications, and operational decision-making within MassDOT. With targeted improvements and continued strategic alignment, it is well positioned to deliver even greater value in the years ahead.



News and Events

Patrick McMahon Wishing Him the Best in Retirement

Patrick McMahon of the Office of Transportation Planning Research group is retiring at the end of June after a 37-year, 7-month career at MassDOT. Here is a quick Q&A with Patrick, who used to deliver plans of 10 Park Plaza as a bike messenger in the 70s and early 80s.

Looking back on the research projects you've managed, what has been the greatest challenge you've encountered?

My biggest challenge for a research project was negotiating how to contract with USGS.

Under Federal law USGS cannot enter into cost reimbursable contracts. We decided to use a Lump Sum contract, and it took months to determine the deliverables and what we would pay for each of them.

In your experience, what is the one critical factor that consistently determines the success of a research project?

The one critical factor that determines the success of a Research Project is having a good PC who is vested in its success.



If you were to pick one completed research project (it can be, but it doesn't have to be one that you were a project manager for) that most clearly shows the value of research to the general public, which one would you pick as an example?

About 20 years ago we did a Warm Mix Asphalt (WMA) project that showed WMA to be a superior product in most of our use cases.

What was MassDOT like when you started? How has it changed?

When I started here most employees did not have computers. Looking back, it seems almost absurd that we could actually do our jobs.

Favorite stories at MassDOT?

None of my favorite stories could be published in a MassDOT Newsletter.

Favorite project to work on?

My favorite project was Automated Detection of Bicyclist and Pedestrians In an Urban Area.

News and Events

Northeast Transportation Research Consortium New York State DOT–Vermont AOT 2026 Research Peer Exchange

MassDOT research attended NTRC peer exchange hosted by New York State DOT and Vermont AOT. In the exchange of ideas, the topics discussed were: Sharing research from other states and NCHRP Internally, research workforce development, and setting up external research contracts.

- New York State
- Vermont
- Connecticut
- Maine
- Delaware
- Pennsylvania
- Massachusetts
- Maryland



— massDOT — Innovation Webinar Series

Northeast Collaborative to Improve Work Zone Safety

June 18, 2026

The project team from UMassSafe at the University of Massachusetts Amherst conducted a comprehensive examination of work zone safety practices, crash trends, and driver experiences across nine Northeast states. The webinar will cover three core components. First, a State of the Practice Synthesis drawing on key informant interviews with DOT personnel from all nine states, comparing practices across twelve topic areas including temporary traffic control, enforcement, training, speed management, and technology adoption. Second, a Regional Crash Data Analysis examining work zone fatal and non-fatal crash trends from 2018 to 2022

Development of a Visualization, Sharing, and Processing Platform for Large-Scale Highway Point Cloud Data May 21, 2026

This study presents the development and validation of a web-based platform designed for the visualization, sharing, and processing of large-scale LiDAR point cloud data tailored to the operational needs of MassDOT. Leveraging open-source technologies, particularly Potree, the platform addresses key challenges associated with the management of high-resolution 3D spatial data, including data size, format complexity, and limited accessibility. This webinar discussed a scalable and extensible framework for modernizing LiDAR data utilization in transportation applications.

[Click here for the webinar recording](#)

Railroad Grade Crossing Profile Data Collection and Modeling

April 23, 2026

This webinar will discuss the accuracy and practicality of multiple LiDAR-based approaches for generating accurate vertical profiles at grade crossings to support railroad safety analysis. Datasets produced by different methods are compared using an automated slope measurement algorithm. The results show that different methods can yield significantly different outcomes. Therefore, it is important to select appropriate hardware and data collection practices to ensure data quality. Based on the comparison, recommendations are provided regarding hardware selection and data collection protocols.

[Click here for the webinar recording](#)

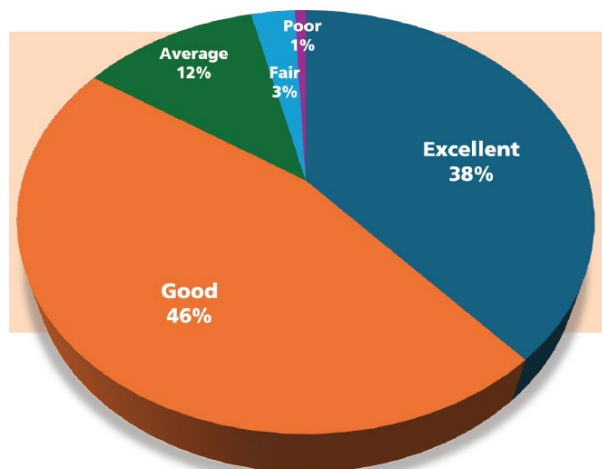
News 2026

massDOT Transportation Innovation CONFERENCE

The Annual Transportation Innovation Conference took place May 5th and 6th at the DCU Center in Worcester. A total of 1,762 people registered for the conference. People registered for the conference from 25 states, the District of Columbia, Ontario, and Saskatchewan, and there was no remote attendance option.

The conference included 31 podium sessions, a research poster session, a tech and data hub in the exhibit hall, and 109 sponsors/exhibitors. MassDOT Bicycle and Pedestrian Program Coordinator Pete Sutton served as the conference's Master of Ceremonies.

Highlights of the conference included: the lunchtime keynotes by Philip Eng, the interim Massachusetts Secretary of Transportation and Massachusetts Bay Transportation Authority (MBTA) General Manager, and by Jonathan Gulliver, MassDOT Undersecretary and Highway Administrator, and a morning plenary with Samantha Silverberg, MassDOT Undersecretary of Transportation Policy.



Overall Conference Experience

BY THE NUMBERS

1762
TOTAL
REGISTRATIONS

HIGHEST SESSION ATTENDANCE

192 STREETS FOR EVERYONE: INNOVATIVE APPROACHES TO SAFER, SMARTER, AND MORE CONNECTED URBAN MOBILITY

180 UTILIZING MACHINE LEARNING METHODOLOGIES TO EXTRACT ASSETS FROM ENGINEERING DESIGN PLANS INTO GIS FEATURES

170 ACCELERATED BRIDGE REPLACEMENT OVER ACTIVE RAIL: LESSONS IN DESIGN-BUILD COORDINATION AND DELIVERY

76%*
ATTENDED
BOTH DAYS

51%
PRIVATE SECTOR
MADE UP THE
LARGEST GROUP OF
REGISTRATIONS

83%*
HAD AN
FAVORABLE
EXPERIENCE

The podium sessions with the highest attendance were on Streets for Everyone: Innovative Approaches to Safer, Smarter, and More Connected Urban Mobility. Utilizing Machine Learning Methodologies to Extract Assets from Engineering Design Plans into GIS Features, and Accelerated Bridge Replacement Over Active Rail: Lessons in Design-Build Coordination & Delivery. At least 14 (45%) of the 31 podium sessions were at or close to room capacity, indicating that they were of great interest to conference attendees.

In the post-conference survey, 76 percent of the 135 respondents indicated that they attended both days, and 83 percent said that overall, they had a favorable — either “Excellent” or “Good” — experience at the conference.

Research Projects at a Glance

Recently Completed MassDOT Research

Date Completed

- [Environmental Scan of Community Transit Needs Among Older Adults in Massachusetts](#)

June 2026

In Progress MassDOT Research

Start Date

- [3D-Printed Lattice-Based Structures for Next Generation Bridge Bearings and Bridge Isolation Bearings](#)

April 2023

- [Cracks of Low-P Rapid Set Concrete in Deck Repairs: Analysis, Prevention, and Alternatives](#)

December 2024

- [Development of a Salt Spreader Controller Program Using Machine-Sensed Roadway Weather Parameters II](#)

February 2025

- [Advanced Technologies and Data Analytics for Safe, Smart, and Efficient Transportation \(ASSET\)](#)

April 2025

MassDOT Research Scheduled to Start

Anticipated Start Date

- Performance Evaluation of Valmont Dampers for Traffic Signal and Sign Structures

July 2026

- 3D Printing of Ultra-High-Performance Concrete for Automated Construction and Repair of Resilient Transportation Infrastructure

July 2026

- Drone-in-a-Box: Enhancing Public Safety and Environmental Monitoring on Cape Cod

June 2026

Additional Resources

[Transportation Research and Information Database \(TRID\)](#) is a comprehensive bibliographic database containing more than 1.2 million records of transportation research.

[Research in Progress \(RiP\) Database](#) contains information on more than 13,000 current or recently completed federally-funded transportation research projects.

[AASHTO Publications](#) include the most accepted technical guides, specifications, and manuals of the industry.

Contact Us

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