2026 MassDOT Research Implementation Survey Report

Research and Technology Transfer
Office of Transportation Planning
Massachusetts Department of Transportation

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Phillip Eng, Interim Secretary and Chief Executive Officer

Executive Summary

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 survey provides a structured look at how research investments are used and carried out after project completion, the extent to which findings influence agency practices, and the overall value delivered to MassDOT. It also sheds light on barriers that may delay or limit implementation and identifies opportunities to strengthen the connection between research and operational outcomes.

Overall, 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
- Implementation barriers tend to be practical rather than conceptual, including technical constraints, funding limitations, and organizational challenges

These results confirm that the RD&T Program is delivering applied research across MassDOT. However, they also point to clear opportunities to improve implementation tracking, performance measurement, and long-term impact evaluation. Strengthening these areas will allow the program to better demonstrate its value and support more consistent, scalable outcomes.

1. Introduction

The RD&T Program is designed not only to generate knowledge, but to ensure that research findings are applied in ways that improve transportation system performance across the Commonwealth. The ultimate success of the program depends on whether research moves beyond reports and into practice.

Recognizing this, the program initiated a targeted survey of Project Champions associated with completed research projects over approximately the past decade. These individuals are uniquely positioned to assess implementation because they are directly involved in applying research findings or integrating them into agency processes.

This survey represents an important first step toward building a more structured and data-driven approach to evaluating research impact. While previous efforts have focused on project delivery, this initiative shifts attention to outcomes, adoption, and long-term value. The objectives of this effort were to:

- Assess the extent to which research is implemented
- Understand how and when implementation occurs
- Identify barriers and challenges
- Evaluate the impact on policies, standards, and practices
- Gather insight into return on investment
- Identify opportunities to strengthen implementation and tracking

This report summarizes the survey approach, presents key findings, and outlines recommendations for improving how the RD&T Program measures and supports research implementation.

2. Survey Design and Response Overview

2.1 Survey Design

The survey was intentionally designed to be concise and focused, balancing ease of response with the need to gather meaningful insights. It consisted of a series of short-answer questions covering six core areas:

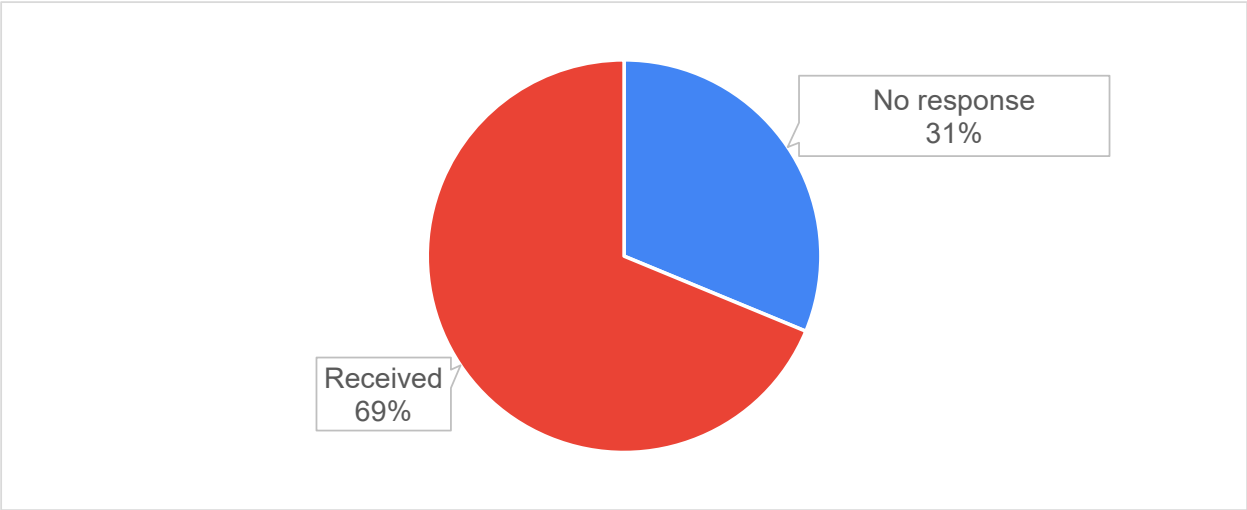
- Implementation status
- Timing of implementation
- Barriers and challenges
- Impact on standards and practices
- Return on investment
- Follow-up efforts

Respondents were explicitly encouraged to provide input, including if the research had been implemented. This approach ensured that the survey captured both successes and limitations, providing a more complete and balanced perspective.

2.2 Distribution and Participation

The survey was distributed to Project Champions associated with previously completed research projects.

- Initial distribution: March 30, 2026 (48 recipients)
- Follow-up reminders: April 6, April 9, and April 27
- Final responses received: 28
- Projects represented: 33



In cases where multiple Project Champions were associated with a single project, responses were consolidated at the project level to avoid duplication.

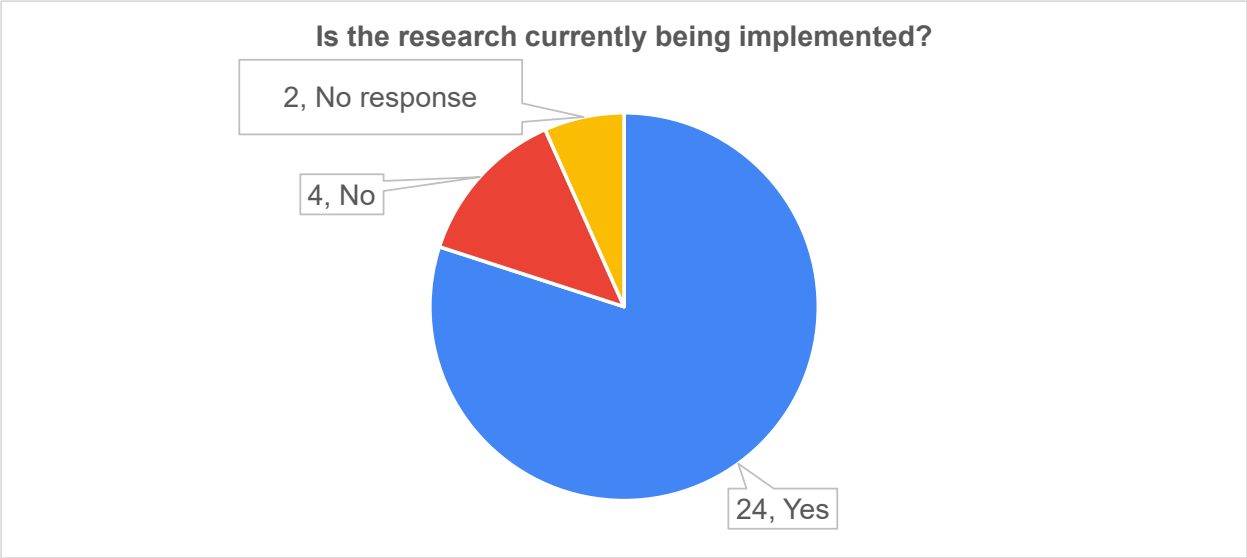
2.3 Response Assessment

The responses provide an initial dataset for qualitative analysis. While not comprehensive, the responses represent a meaningful cross-section of project types, research areas, and implementation experiences. At the same time, the survey highlights an opportunity to improve participation and establish more formal, ongoing data collection processes in the future.

3. Findings and Analysis

3.1 Implementation Status

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. This is an indicator that the RD&T Program is producing relevant, actionable research that aligns with operational needs.



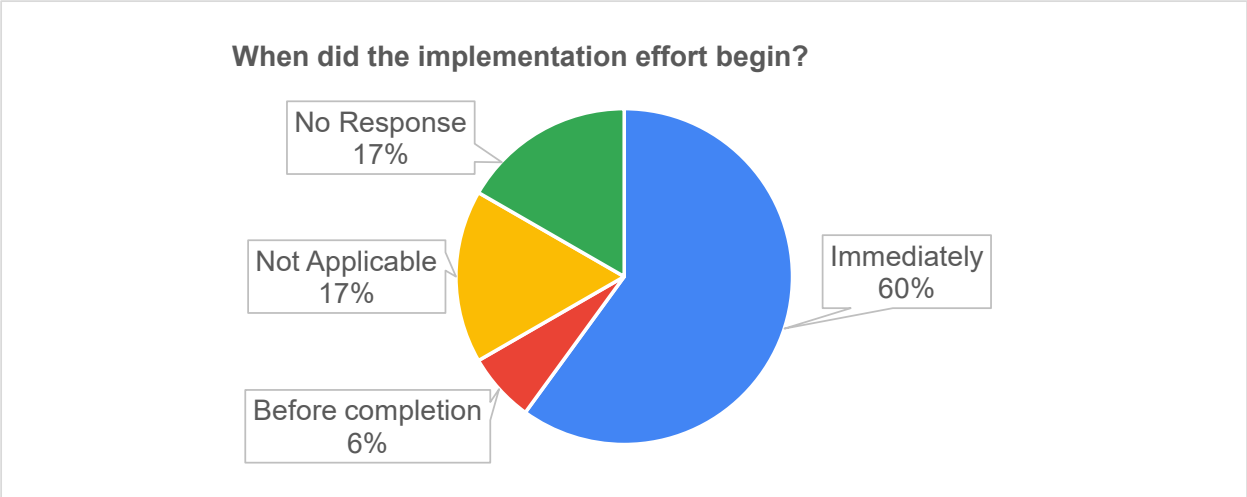
For projects that have not yet been implemented, the reasons provided were generally practical rather than conceptual. Common factors included:

- Technical constraints or limitations
- Site-specific applicability challenges
- Need for additional funding or further research

These responses suggest that most research is fundamentally useful, but implementation may depend on external conditions, resources, or readiness.

3.2 Timing of Implementation

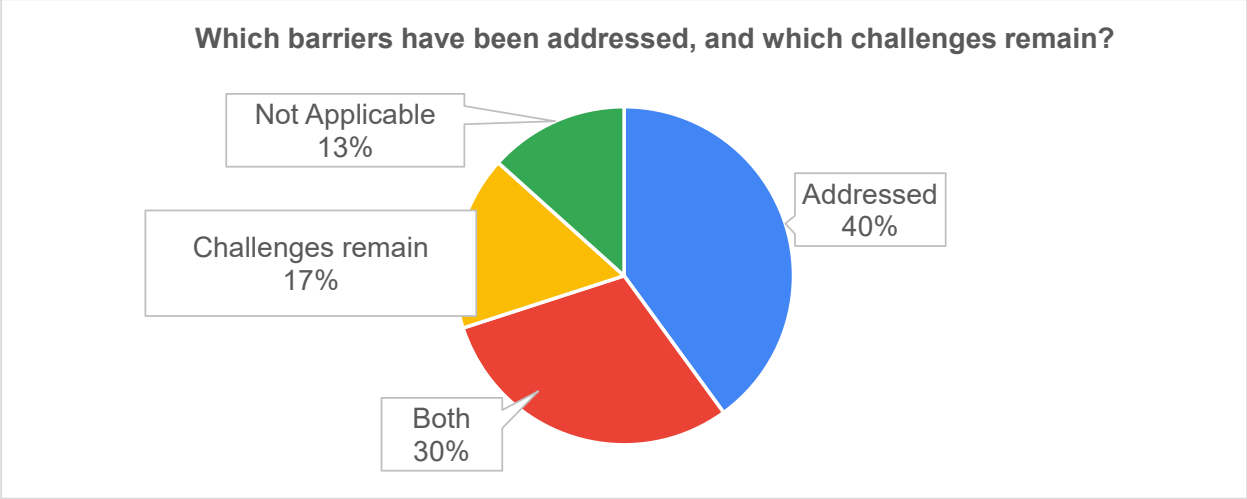
Many respondents indicated that implementation began during the research process or immediately following project completion. This suggests a close connection between research activities and operational use, particularly in cases where stakeholders are engaged early. However, several responses did not specify timing. This inconsistency highlights a key gap: implementation milestones are not systematically tracked or documented. While the overall pattern suggests relatively rapid adoption, the lack of consistent data makes it difficult to evaluate timelines across projects or identify delays.



3.3 Barriers and Challenges

The survey responses show that implementation is rarely a one-step process. While many initial barriers have been addressed, several challenges remain. Common themes include:

- Need for additional technical refinement or supporting strategies
- Organizational or cultural resistance to change
- Ongoing maintenance, updates, or adaptation requirements



These findings reinforce that implementation is iterative. Even when research is technically sound, adoption often requires continued engagement, coordination, and refinement. This also points to the importance of post-project support. Without it, promising research may stall before reaching full implementation.

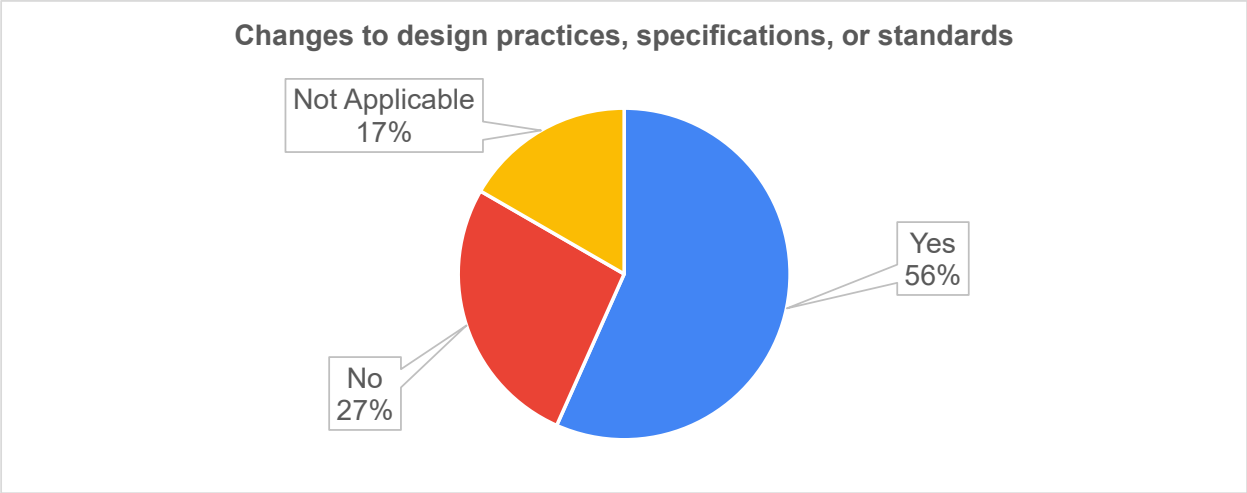
3.4 Impacts

One of the most significant findings is the extent to which research influences agency practices.

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.



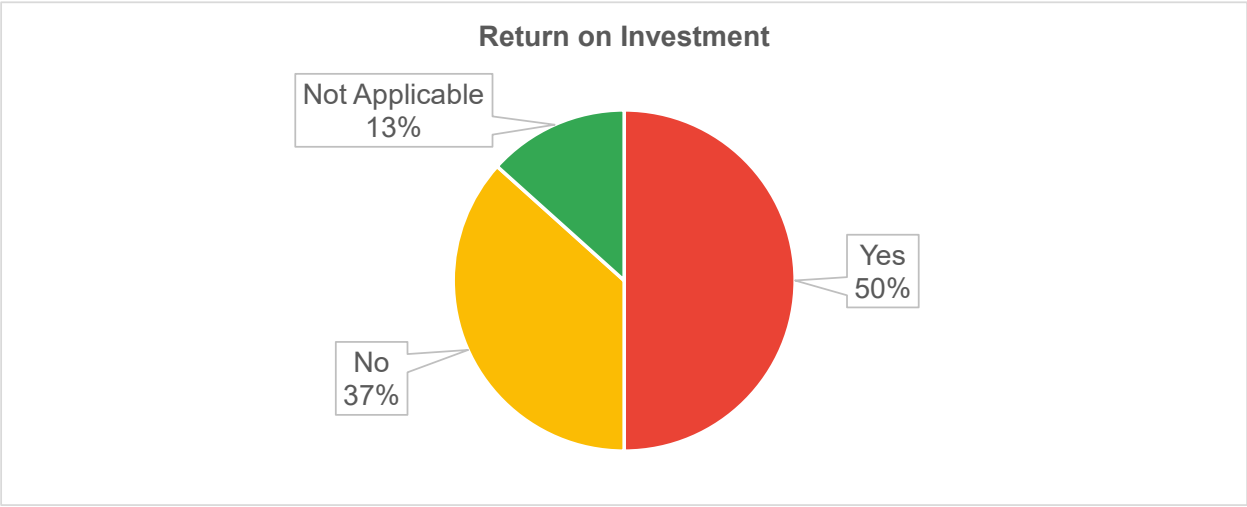
In cases where no changes were reported, explanations included:

- Alignment with existing or new federal requirements
- Research not yet fully implemented
- Limited applicability to current operations

Overall, this confirms that research plays a meaningful role in informing policy, design, and decision-making processes.

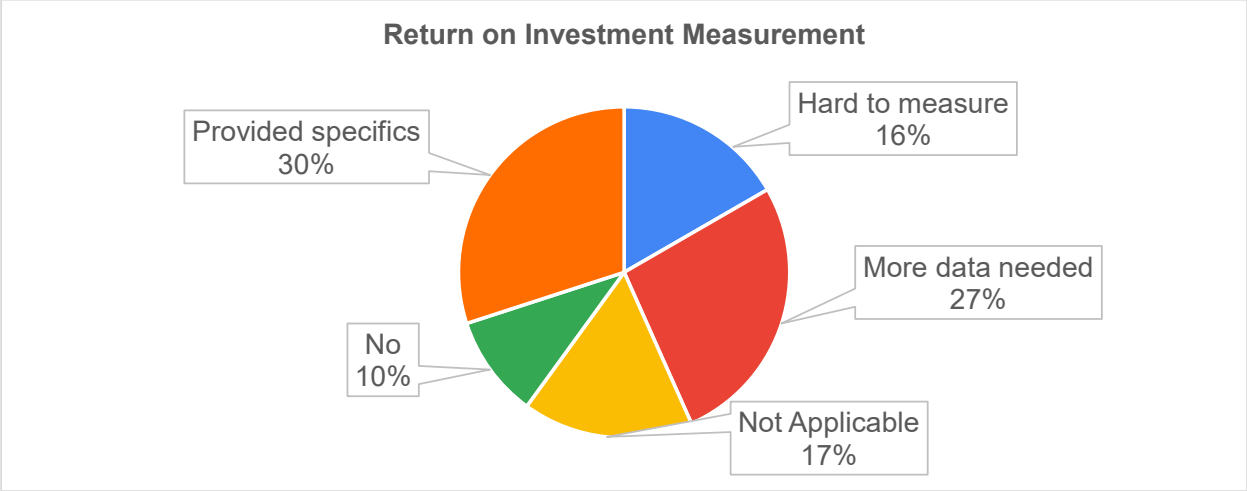
3.5 Return on Investment (ROI)

Most respondents indicated that research has delivered value. However, the way this value is understood and measured varies widely.



Examples of reported benefits include:

- Adoption of best practices
- Improved operational efficiency
- Recognition through publications or awards
- Contributions to future projects and decision-making



At the same time, several respondents noted challenges in measuring ROI:

- Benefits are often indirect or long-term
- Insufficient time has passed to evaluate outcomes
- Impacts are difficult to quantify

"It is difficult to measure since we use the research to make decisions which affect public safety. If we take no action based on the research result, we are risking potential structure collapse. So, it is not possible to measure successful prevention of structure failure when the appropriate actions are being taken to prevent it." – Matt Weidele, Project Champion for the *Revised Load Rating Procedures for Deteriorated Prestressed Concrete* research project.

"Once deployed, the application will provide DOT staff the ability to call up the LiDAR data on any state highway across the state and perform engineering analyses, measure offsets, calculate cross-slopes and many other functions. This saves time from having to send staff out to the field and the data is extremely accurate." – Neil Boudreau, Project Champion for the *Development of a Visualization, Sharing, and Processing Platform for Large-Scale Highway Point Cloud Data* research project.

This highlights a key issue: while the value of research is widely recognized, it is not consistently captured or documented in measurable terms.

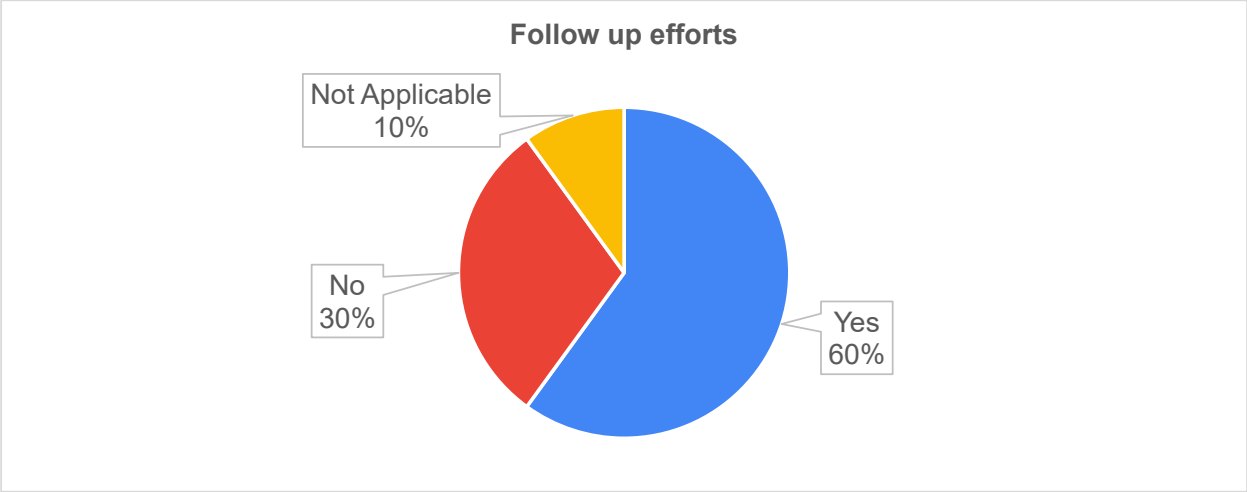
3.6 Follow-Up Efforts

Many respondents reported ongoing or planned follow-up efforts. These include:

- Additional research
- Expanded implementation efforts

- Integration into broader programs

This pattern suggests that some projects are part of a longer research trajectory rather than standalone efforts.



Some respondents indicated no need for follow-up, while others expressed interest in additional funding. One response noted dissatisfaction with a research partner, pointing to the importance of monitoring vendor performance.

Overall, the prevalence of follow-up efforts reflects a program that supports continuous learning and iterative improvement.

4. Conclusions and recommendations

4.1 Overall Assessment

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. Several key themes emerge:

- Implementation is widespread and often timely
- Research frequently shapes standards and operations
- Adoption is iterative and often requires follow-up
- Value is clear but not consistently measured
- Barriers are manageable but persistent

4.2 Opportunities for Improvement

While the program is effective, the findings point to several areas where targeted improvements could significantly enhance impact.

- Implementation Tracking
    - Establish a formal framework to track implementation status and milestones
    - Require periodic post-project updates from Project Champions
    - Develop a centralized system for tracking implementation outcomes
- ROI Measurement

    - Define standard metrics for evaluating research impact
    - Combine quantitative indicators (cost savings, efficiency gains) with qualitative outcomes
    - Integrate ROI tracking into project closeout and follow-up processes
- Documentation and Reporting
    - Standardize how implementation timelines and outcomes are recorded
    - Capture lessons learned and best practices across projects
    - Improve consistency in reporting across projects
- Stakeholder Engagement
    - Strengthen collaboration between researchers and end users
    - Encourage early and continuous engagement throughout the project lifecycle
    - Provide support during implementation phases
- Vendor Performance Monitoring
    - Track performance and satisfaction across research partners
    - Incorporate feedback into future selection and contracting decisions
    - Promote accountability and continuous improvement

4.3 Final Perspective

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.

At the same time, the next phase of program maturity will depend on improving how outcomes are tracked, measured, and communicated. By strengthening implementation tracking, standardizing performance metrics, and supporting long-term adoption, the program can further enhance its value and visibility.

Looking ahead, the RD&T Program is committed to build on its strengths. With targeted improvements, it can continue to drive innovation, support informed decision-making, and contribute to a more efficient, resilient, and forward-looking transportation system for the Commonwealth.

Appendix: List of Surveyed Projects

Research Project	Research Area	Project Champion
Improved Load Rating Procedures for Deteriorated Steel Beam Ends with Deteriorated Stiffeners	Highway Structure	Alexander Bardow
Development of Comprehensive Inspection Protocols for Deteriorated Steel Beam Ends	Highway Structure	Alexander Bardow
Revised Load Rating Procedures for Deteriorated Prestressed Concrete Beams	Highway Structure	Matt Weidele
Improving Future of the Commonwealth's Curb	Planning	Derek Shooster
BIM for Transit Infrastructure: A Feasibility and Gap Assessment with Current Practices and Systems at the MBTA	Transit	Loay Abdelkarim
Artificial Intelligence Framework for Crosswalk Detection Across Massachusetts	Highway Safety	Bonnie Polin
Uncovering the Root Causes to Truck Rollover Crashes on Ramps	Highway Safety	Bonnie Polin
Post-Fire Damage Inspection of Concrete Structures Phase III – In-Situ Experimental Phase	Highway Structure	David Kent John Czach
Field Study to Determine Salt Usage Efficiency and Transport to the Surrounding Environment on Two Pavement Types	Highway Operation	Mark Goldstein
Development of a Salt Spreader Controller Program Using Machine-Sensed Roadway Weather Parameters	Highway Operation	Mark Goldstein
3D-Printed Lattice-Based Structures for Next Generation Bridge Bearings and Bridge Isolation Bearings (Phase III)	Highway Structure	Hong Chen
Feasibility of 3D Printing Applications for Highway Infrastructure Construction and Maintenance (Phase II)	Highway Structure	Hong Chen
Feasibility of 3D Printing Applications for Highway Infrastructure Construction and Maintenance	Highway Structure	Hong Chen
Compost Blankets for Erosion Control and Vegetation Establishment	Highway Environmental	Stephanie Smoot
Construction and Materials Best Practice for Concrete Sidewalks	Highway Materials	Richard Mulcahy
Construction and Materials Best Practices for Concrete Sidewalks: Phase II – Long-Term Performance and Hot-Weather Placement Effects	Highway Materials	Richard Mulcahy
Effectiveness of Two-stage Turn Queue Boxes in Massachusetts: A Comparison with Bike Boxes	Transit	Violet Wilkins
Massachusetts Depth to Bedrock	Highway Structure	Jennifer Rauch
Evaluation & Mitigation Methods for the Prevention of Cement Concrete Deterioration Due to Pyrrhotite Part 1	Highway Materials	Richard Mulcahy
Recycled Ground-Glass Pozzolan (RGGP) for Use in Cement Concrete	Highway Materials	Richard Mulcahy

Ultra-High Performance Concrete Reinforced with Multi-Scale Hybrid Fibers and Its Durability-Related Properties	Highway Materials	Richard Mulcahy
Speed Management and Emergency Response – A Synthesis Study	Highway Safety	Christopher Falcos
Multisource Data Fusion for Real-Time and Accurate Traffic Incident Detection via Predictive Analytics	Highway Safety	Chester Osborne
A Pavement Marking Inventory and Retroreflectivity Condition Assessment Method Using Mobile LiDAR	Highway Safety	Neil Boudreau
A Pavement Marking Inventory and Retroreflectivity Condition Assessment Method Using Mobile LiDAR – Phase 2	Highway Safety	Neil Boudreau
Development of a Visualization, Sharing, and Processing Platform for Large-Scale Highway Point Cloud Data	Highway Safety	Neil Boudreau
Developing Massachusetts Specific Trip Generation Models for Land Use Projects	Planning	Lionel Lucien
Laboratory Information Materials Management System (LIMMS) Development Planning	Highway Materials	Alana Geary
Using Microfiltration Treatment for Stormwater Management	Highway Environmental	Robbin Bergfors
Flexible Transit Service	Transit	Abril Camino
Safe Waves: Signal Timing Guide, Analysis Tool, and Case Studies	Highway Safety	James Danila