2026 AASHTO High Value Research Projects and Honorable Mention Projects--July 2026

Thank you for all of the HVR submissions. These projects were selected by each AASHTO Region from over 50 submitted projects. Each Region selected four High Value Research projects and additional Honorable Mention projects (two related to Safety and two related to the next most popular category Construction, Specification, and Materials). Each state submitted the project name, a description, and a QR code leading to more information for each winning project.

Thank you to the AASHTO Communicating Value Task Force who put these summaries and lists together: Devyn Cordero (NJ), Emily Parkany (VT), Cindy Smith (MS), and Sally Mayer (KS).

2026 High Value Research Awards - Region 1

Connecticut:

Adoption of 3D Scanning Technology for High Precision Bridge Assessment

CTDOT funded a study through the University of Connecticut (SPR-2310) to evaluate handheld 3D scanning for measuring corrosion and section loss on steel bridge beam ends and subsequently adopted the technology for operational use. Traditional methods rely on tape measures, calipers, and visual judgment, which introduces subjectivity and can lead to bridges being unnecessarily restricted or replaced due to inaccurate load-carrying capacity assessments. UConn tested handheld structured-light scanners in both lab and field conditions across six in-service Connecticut bridges. In lab trials, the maximum deviation between scanner and ultrasonic gauge measurements was just 0.1 mm. In field trials, scan data revealed that load ratings based solely on maximum section loss can be overly conservative because the profile of loss varies across corroded regions. The study also produced a scanning protocol with recommendations for settings, data collection, and processing, along with video tutorials for field use. Following the study, CTDOT's Bridge Safety and Evaluation unit adopted the technology for real-world operations, including applications beyond the original scope of the research. For example, the unit used scanning to document damage from two over-height vehicle strikes and provide Bridge Design with 3D models to develop structural repairs. In one case, the scan-to-repair process was completed within two months of the strike. The technology has also been used to document architectural features on historic Merritt Parkway bridges for preservation and contractor reference during reconstruction.

New Jersey:

Multi-Hazard Design of Highway Bridges

New Jersey's geographic location exposes its bridge infrastructure to a broad range of environmental and anthropogenic risks, including natural hazards and man-made threats. Natural hazards include earthquakes, floods, hurricanes, scour, and wind, and man-made threats include vessel collisions, vehicle collisions, blast, and fire. Historical events such as Hurricane Sandy and the Philadelphia I-95 fire collapse underscore the urgent need for resilient, adaptive, and performance-based bridge design. Existing standards often address individual hazards in isolation, which does not fully account for compound or cascading risks. To address this gap, this project provides an integrated multi-hazard framework for the design of highway bridges in New Jersey exposed to multiple hazards, rather than a stand-alone, print-ready design guideline. It consolidates multi-hazard considerations into a single strategic framework and outlines how NJDOT may progressively incorporate these concepts into its existing manuals, policies, and procedures. The goal is to improve safety, durability, and resilience while preserving NJDOT's flexibility to determine the timing, level of detail, and format of any formal design standards updates.

Pennsylvania:

Data Management, Mining, and Inference for Bridge Monitoring

Over the past two decades there has been an escalating interest worldwide for cost-effective structural health monitoring structural health monitoring (SHM) strategies to monitor bridges 24/7. SHM evolves the inspection paradigm from "time-based" non-destructive evaluations in which a structure is inspected periodically, to permanent-based where the sensors monitor the structure in real-time in order to flag, locate, and quantify damage as it happens. In 2017, the Pennsylvania Department of Transportation (PennDOT) started a pilot bridge instrumentation program that consisted of instrumenting ten bridges with a commercial system (hardware and software) to collect data. Part of the hardware consisted of wireless sensors that provided real-time information about structural static and dynamic responses. Within that program, PennDOT intended assess the cost of components/equipment, system software, and labor to monitor the identified bridges and/or any or all bridges throughout the Commonwealth, versus the savings to PennDOT for a reduction in man hours and/or a reduction in spending to effectively manage and maintain the bridges. The researchers examined the viability and usability of the data obtained through this continuous monitoring in order to establish how PennDOT may be able to use these sensors in maintenance decision making. This report provides a roadmap to guide the implementation of the broader use of the data obtained through continuous monitoring and the benefits from its use. The work consisted of analyzing the data streamed by the sensors and comparing specific readings to the numerical predictions obtained with the implementation of finite element models.

Vermont:

Validating Travel Time Delay Quantification and Measurement Methods for Vermont Work Zones

This project improved how Vermont measures and manages work zone delays by replacing one-size-fits-all delay thresholds with a scalable, data-driven framework tailored to roadway type, traffic volume, and project significance. The research showed that travel time reliability metrics provide a clear and practical measure of work zone mobility, enabling more consistent performance monitoring and better-informed decisions during construction. By leveraging newly available RITIS data, the approach reduces the need for costly field deployments while making it easier to establish, collect, and track mobility measures across future projects. The framework and lessons learned supported Vermont AOT's January 2026 update to its Work Zone Safety and Mobility Policy and Guidance, creating lasting statewide benefits for work zone management and traveler reliability.

2026 High Value Research Awards - Region 2

Georgia:

Enhancing the GDOT's Maintenance Decision Trees Considering the Effectiveness of Various Treatment Options in Different Geographical Locations and Over Time

The goal of this project was to provide the tools, methodologies, and insights for the GDOT's effective pavement management. These approaches will help enhance the GDOT's decision-making processes, optimize maintenance strategies, and ultimately ensure the resilience and sustainability of Georgia's transportation infrastructure. The findings and recommendations will serve as a roadmap for the GDOT to develop cost-effective treatment plans, prioritize maintenance interventions and uphold its commitment to safe and efficient transportation for all Georgians.

Kentucky:

Bridge Load Posting Based on Load Testing

In Kentucky, not all bridges are associated with a set of construction plans; as such, load rating bridges without design plans is difficult, as field inspections alone often cannot provide enough information to perform detailed analysis. In many instances, this means that a bridge would possess a substandard rating factor (RF < 1.0) simply due to the conservative assumptions required to perform traditional analysis. The most effective method for safely modifying such conservative theoretical rating factors is through load testing. Load testing measures actual bridge behavior and, for most bridges in good health, finds that an increase in load rating is justified. This project utilized load testing to load rate 14 bridges in Kentucky that lack structural plans. Load testing was then carried out utilizing tandem rear-axle dump trucks with measured axle weights. Strain data were collected in real time using a wireless reusable strain gage system. Using these data, researchers computed a field test adjustment factor using MBE methods, which directly modified the calculated theoretical RFs. Ultimately, load testing provided sufficient evidence to safely recommend that load postings were not necessary for any bridges in this study

Louisiana:

Development of Statewide Design Guidelines for Improving Pedestrian Safety on High-Speed Arterials in Louisiana

This study developed statewide guidelines for improving pedestrian safety on Louisiana's high-speed arterials, including intersections and midblock segments, while identifying appropriate countermeasures for varying roadway conditions and recommending potential revisions to applicable Department of Transportation and Development Engineering Directives and Standards Manuals and Louisiana Revised Statutes. The research team categorized the state's high-speed arterial network, identified pedestrian crossing and roadway design features, analyzed 2017–2021 crash and GIS data with supplemental aerial imagery, surveyed transportation professionals nationwide, reviewed existing policies and laws, and developed a comprehensive matrix of pedestrian safety treatments consistent with the Safe System approach. The analysis emphasized the influence of speed limits, lighting, roadway configuration, land use, traffic volume, intersection type, and median type on pedestrian crash risk and facility needs. Recommended treatments include medians and pedestrian refuge islands, road diets, high-visibility crosswalks, curb extensions, narrower lanes, pedestrian crossing signs, signal-timing adjustments, leading pedestrian intervals, pedestrian hybrid beacons, and other context-specific measures. The policy review identified a need for clearer guidance on treatments such as leading pedestrian intervals and pedestrian hybrid beacons and on design criteria such as lane narrowing and reduced curb radii. The resulting statewide guidelines use matrices and visual aids to help transportation officials select appropriate design features and countermeasures and identify potential policy modifications to improve pedestrian and overall roadway safety on high-speed arterials.

Mississippi:

Demonstration of the Application of Travel Speed Deflectometer (TSD) Data in Developing Long-Range Corridor Planning and Management Strategies for Critical Transportation Corridors Within the Mississippi State Highway System

MDOT is in the TSDD pooled fund study. District 5 wanted to use the data to check the initial project recommendation of a full-depth reclamation (FDR). The structural data, TSD and ground penetrating radar (GPR) added to the traditional pavement management system (PMS) data showed that half the project was cracked but structurally sound. The District decided to do a mill-and-fill rather than FDR on the strong half, saving about $10M. MDOT is largely comfortable with use of TSD data both on the network and project levels and hopes to get routine funding for data collection.

2026 High Value Research Awards - Region 3

Iowa:

Development of Approaches to Quantify Superloads and Their Impacts on the Iowa Road Infrastructure System

Study addressed the critical need to quantify the impacts of superloads on Iowa's road infrastructure and evaluated the performance of paved and unpaved roads subjected to superload traffic. This research contributes to sustainable strategies for preserving Iowa's road network amidst evolving heavy-transportation demands. The insights gained into the impacts of different superload types on pavement and granular road distresses, treatment costs, and service life reductions can enable engineers to quickly make informed decisions regarding repair and rehabilitation plans for their roads and to determine appropriate permit fees or weight permits for superloads

Kansas:

Identifying the Critical Golden-Hour Zones in Kansas

A Timeliness of Post-Crash Care tool, including an interactive (GIS) map and filterable table, was developed to aid the Drive to Zero Coalition Post-Crash Care Team in their goal to "enhance the survivability of crashes through expedient access to emergency medical care." The table enables the identification of those locations, typically rural, with the highest EMS and post-crash care response times, often due to the distance to the nearest trauma center. The interactive map includes layers for EMS Stations and Hospitals indicating category and level of care and presence of a helipad. The information provided by the tool can be used by first responders to locate the nearest trauma facilities, and by the Drive to Zero Post-Crash Care Team to identify counties and areas of concern to inform targeted strategies and to pursue grant opportunities for improving quality of care in those areas.

Michigan:

Optimizing Work Zone Conditions to Maximize Safety and Mobility

This research project focused on improving the safety and mobility of highway work zones across Michigan by identifying which design and operational features have the greatest influence on crash outcomes and traffic flow. Through a comprehensive literature review, detailed analysis of statewide crash data, and modeling of 25 representative freeway work zones, the study revealed key safety trends, such as the prevalence of rear-end crashes and the seasonal effects on single-vehicle crashes. Using the Empirical Bayes method, researchers quantified how specific work zone characteristics affect safety performance and developed 17 data-driven recommendations to guide future MDOT practices. The project also produced a spreadsheet-based tool that enables consistent evaluation of alternative work zone designs, supporting more informed planning decisions and helping MDOT optimize safety and mobility for workers and motorists alike.

Wisconsin:

Chemistry and Performance of Supplementary Cementitious Materials (SCMs) for Wisconsin Concrete Pavement

Most transportation agencies use Supplementary Cementitious Materials (SCMs) in their concrete mixtures, especially fly ashes, as a replacement for Portland cement. With the demand for non-traditional SCMs and reclaimed ashes as potential substitutions for traditional and approved SCMs increasing, this study investigated the performance of SCMs and alternative supplementary cementitious materials (ASCM). All mixtures containing SCM or ASCM in this study showed good performance and, in some cases, better than the control mixture. Based on the findings of this study, recommendations were made to be included in the Wisconsin DOT specifications and a standard framework for the evaluation of ASCM was proposed.

High Value Research Awards - Region 4

Idaho:

From Research to Implementation: Advancing Off-System AADT Estimation in Idaho

This project advanced Idaho's ability to estimate Annual Average Daily Traffic (AADT) on off system public roads by developing a scalable, defensible, and internally maintainable estimation process for roads where routine traffic counts are unavailable and fiscally impossible to attain. Building on the methodology established in RP 303, the research delivered a fully operational Off-System Local Roads AADT Estimation and Validation Toolbox in ArcGIS Pro that uses Empirical Bayesian Kriging, spatial regression, roadway characteristics, network connectivity, and economic and demographic data to generate segment level traffic estimates across Idaho's entire off system network, including both paved and unpaved roads. By incorporating all stakeholders for each phase early on, the project improved collaboration with local partners and empowered locals with defensible data they can use in grant applications. The project also established validation and scaling procedures that balanced statewide vehicle miles traveled and were aligned with federal reporting requirements, improving crash rate accuracy, safety analysis, and transportation planning while positioning ITD to meet future federal guidance and reporting expectations. To ensure long-term viability, the project documented institutional knowledge for ease in succession and left behind a comprehensive and well-documented system so future staff won't have to start from scratch. Ultimately, the research provides a foundation for long-term local road traffic data management, prevents substantial manual workloads for staff, and supports data-driven decision-making across the state.

Nebraska:

Incorporating Plastic Waste in Asphalt Pavements

Every year, more than 30 million tons of plastic waste are generated in the United States, much of it ending up in landfills.
At the same time, the asphalt industry has a long history of successfully incorporating recycled materials to improve performance and reduce its environmental impact. In July 2023, Nebraska Department of Transportation (NDOT) funded a research project, The Use of Recycled Plastic in Asphalt Pavements: Feasibility Study. In the summer of 2025, South Sioux City, Neb., with financial support from the Nebraska Environmental Trust, paved a 4,000-foot segment of Foundry Road, Neb., to evaluate the use of recycled plastic in asphalt mixtures to improve pavement durability. That project ended January 31, 2026, and currently a new project is monitoring the long-term performance of these improvements.

Texas:

Implementation of Automated Cracking, Rutting, and Strength Test System (AMAZE)

AMAZE is an advanced automated laboratory testing system developed to address workforce challenges, improve safety, and enhance the accuracy and consistency of asphalt mixture and binder testing. It integrates a robotic arm, automated specimen handling, RFID-based tracking, and multiple testing modules into a single coordinated platform, allowing it to perform tasks such as specimen preparation, air voids measurement, and testing with minimal human intervention. By reducing manual processes and incorporating closed-loop controls, safety interlocks, and emergency stop features, AMAZE significantly lowers the risk of human error and operational hazards while increasing productivity. Verification results show that the system delivers more consistent and repeatable outcomes compared to traditional testing methods, demonstrating its effectiveness as a reliable, efficient solution for modern materials laboratories.

Utah:

Non-destructive Evaluation and Numerical Modeling of Unrated Installed Crash Barriers

The Utah Department of Transportation (UDOT) needed a way to non-destructively evaluate the impact resistance of in-service crash barriers that pre-date the AASHTO Manual for Assessing Safety Hardware (MASH) rating system. As prescribed by MASH, the researchers used the commercial finite element software LS-DYNA to analyze existing crash barriers by simulating crash scenarios to demonstrate performance. Finite element models (FEM) for the Midwest Guardrail System (MGS) and the cast-in-place concrete constant slope 42 in. and 54 in. tall barriers were created in LS-DYNA. The FEM and simulation provided satisfactory evidence that the MGS and the 42 in. and 54 in. constant slope barriers are safe and fulfill their functionality according to MASH standards. This research provided significant benefits to UDOT by developing a FEM procedure for evaluating new crash barriers, potentially leading to substantial cost savings by reducing the need for extensive physical testing required by MASH standards. It also allowed UDOT decision-makers to estimate MASH ratings for existing barriers with unknown compliance, thereby resulting in a large asset value benefit and a reduction in enterprise risk.

AASHTO RAC Honorable Mention Award Winners 2026

Safety, Security, and Emergencies

Project Title	Agency Name	Region	Project Report
Develop a Mode Choice Model to Estimate Walk and Bike Trips in the Statewide Model	Maryland Department of Transportation	1	
Evaluation of NJDOT Hardened Traffic Paint Markings and Stripes Performance	New Jersey Department of Transportation	1	
Safety Analysis of Highway Curves Where Crashes Occur in South Carolina	South Carolina Department of Transportation	2	
Operational and Safety Effects of the I–95 Variable Speed Limit System in Fredericksburg, Virginia	Virginia Department of Transportation	2	
A Study of Suburban Arterial Safety Performance Based on Median Type	Indiana Department of Transportation	3	
Improving the Effectiveness of Speed Feedback Trailers in Freeway Work Zones	Iowa Department of Transportation	3	
South Dakota Blowing Snow Mitigation Strategies, Prioritization, and Implementation	South Dakota Department of Transportation	4	
From Data to Safer Roads: Understanding CMV Crash Severity in Idaho	Idaho Transportation Department	4	

Construction, Specifications, and Materials

Project Title	Agency Name	Region	Project Report
Mitigation Strategies for Cracking in Concrete Bridge Decks	Maine Department of Transportation	1	
Effect of Asphalt Binder Source on Asphalt Mixture Performance	Massachusetts Department of Transportation	1	
Evaluation of RAP/RAS Stockpiles in North Carolina and Changes in these Stockpiles Over Time	North Carolina Department of Transportation	2	
Updated Layer Coefficients for GDOT Flexible Design	Georgia Department of Transportation	2	
Detection and Assessment of Sulfates in the Pavement Subgrade	Indiana Department of Transportation	3	
Improving Cost Estimation and Budget Planning with New Michigan Highway Construction Cost Index	Michigan Department of Transportation	3	
Investigation of Poor Compressive Strength and Performance of A45 Structural Concrete Mixes	South Dakota Department of Transportation	4	
A Redesigned Rockfall Attenuator System to Increase Capacity, Improve Resilience, and Provide Greater Flexibility During Installation	Washington State Department of Transportation	4