



April 2026

## *TRAC e-News: Delivering Research Results!*

The Washington State Transportation Center (*TRAC*), conducts transportation research through collaborative partnerships among WSDOT, the University of Washington (UW), and Washington State University (WSU).

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- Muting modular expansion joints on the SR 520 bridge
- Evaluating the seismic vulnerability of bridges with reinforced-concrete columns
- Integrating electrified mobility options at ferry terminals
- Addressing active transportation disparities in rural communities
- Using a laser scanner for chip seal quality acceptance
- Recent WSDOT Webinar Wednesday presentation

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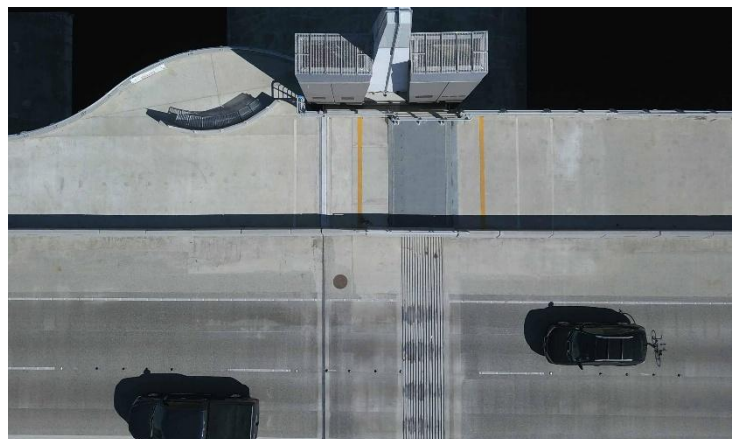
TRAC has a new LinkedIn page. For more research updates, follow us here:  
<https://www.linkedin.com/company/washington-state-transportation-center/>

## Bridges

### Sound Mitigation Study of the SR 520 Bridge Modular Expansion Joints, Phase 3

Research team: [Per Reinhall](#) (UW) | [Omar Jepperson](#) (WSDOT) | [Mustafa Mohamedali](#) (WSDOT)  
Sponsor: WSDOT

*Ongoing:* While expansion joints are a necessary component of bridges, they also contribute to noise pollution. Previous studies have investigated the design and feasibility of strategies to mitigate noise caused by modular expansion joints on bridges in Washington state. This study is Phase 3 of an effort to develop a highly durable sound attenuation system in which researchers will perform laboratory-based testing of noise mitigation prototypes. The prototypes will be injected with mixtures of fiber-reinforced, natural, and synthetic rubber with protective additives. The researchers will use a selection of low-density foam to fill gaps for increased durability and protection against roadway debris. Finally, they will use laboratory equipment to evaluate the prototype systems for hydraulic compression, cyclic fatigue, weathering of the system, adhesive durability, abrasion between the prototype and the seal, and susceptibility to debris.



## Seismic Collapse Prevention for WSDOT Bridges



Research Team: [Marc Eberhard \(UW\)](#) | [Jeffrey Berman \(UW\)](#) | [Amy Leland \(WSDOT\)](#) | [Mustafa Mohamedali \(WSDOT\)](#)

Sponsor: WSDOT

*Ongoing:* Earthquakes threaten the functionality and safety of the highway transportation system in Washington state. Given the state's funding constraints, WSDOT needs to focus scarce resources on the bridge failure mode that is most likely to lead to bridge collapse, namely the shear failure of reinforced concrete columns, and the bridges that are most likely to suffer from column shear failures. This

project is developing a new methodology, or modifying an existing one, to evaluate the seismic-shear vulnerability of WSDOT bridges with reinforced-concrete columns. This will allow WSDOT to account for the amount of shear-strength reduction that will result from repeated cycling during long-duration and shorter-duration earthquakes. The researchers will also provide WSDOT with the practical tools and training needed to implement the developed methodology. The results should enable more reliable characterization of post-earthquake transportation functionality, which will support improved emergency planning.

## Ferry System

### Shore Power: Partnerships to Provide eMobility Options at the Bremerton Ferry Terminal for a Greener Future

Research team: [Hyun Woo "Chris" Lee \(UW\)](#) | [Rachel Berney \(UW\)](#) | [Lingzi Wu \(UW\)](#) | [Bart Treece \(UW\)](#) | [Kevin Bartoy \(WSDOT\)](#) | [David Strich \(WSDOT\)](#)

Sponsor: WSDOT

*Ongoing:* Washington State Ferries (WSF) has prioritized electrification as a core strategy to reduce greenhouse gas emissions, improve accessibility, and alleviate congestion at key terminals. This project aims to develop a replicable interagency planning framework for integrating electrified mobility options at ferry terminals. Integrating electric mobility (eMobility) solutions requires a comprehensive approach that includes expanding access to transit, enhancing multimodal travel options, and deploying electrification infrastructure. The Bremerton Ferry Terminal provides a unique opportunity for electrification, given its role as a regional transportation hub with direct connections to Seattle. For this project, researchers are analyzing current mobility challenges, evaluating eMobility and electrification solutions, performing cost analysis and energy demand modeling, creating a scalable planning framework, and engaging stakeholders and facilitating knowledge transfer among WSF, Kitsap Transit, utility providers, and local agencies. The results will support Washington state's transition to a more resilient, efficient, and equitable transportation system.



## Multimodal Transportation

### Bridging the Gap: Identifying and Addressing Active Transportation Disparities in Underserved Rural Residential Clusters



Research team: [Angela Kitali](#) (UW) | [Jeff Walters](#) (UW) | [Grace Young](#) (WSDOT) | [Brian Wood](#) (WSDOT) | [David Strich](#) (WSDOT)  
Sponsor: WSDOT

*Ongoing:* Residents of rural residential clusters (RRCs) in Washington often face systemic barriers to safe, affordable, and reliable transportation, resulting in limited access to essential services. The goal of this study is to advance transportation equity by identifying, analyzing, and addressing active transportation (AT) disparities in transportation-disadvantaged RRCs. An RRC is a small,

unincorporated cluster of adjacent homes located along a state highway or major county road. The study area encompasses nine counties in western Washington. For this project, researchers are developing a geospatial method for identifying and mapping state and major county roads that prevent residents of RRCs from using AT. They are assessing the specific AT needs, challenges, and perceptions of residents in these communities and are identifying the kinds of infrastructure improvements that would be responsive to local priorities and experiences. They are also developing resources and tools to support targeted interventions that WSDOT can implement to improve connectivity, safety, and equitable access for residents of RRCs across the state.

## Pavement

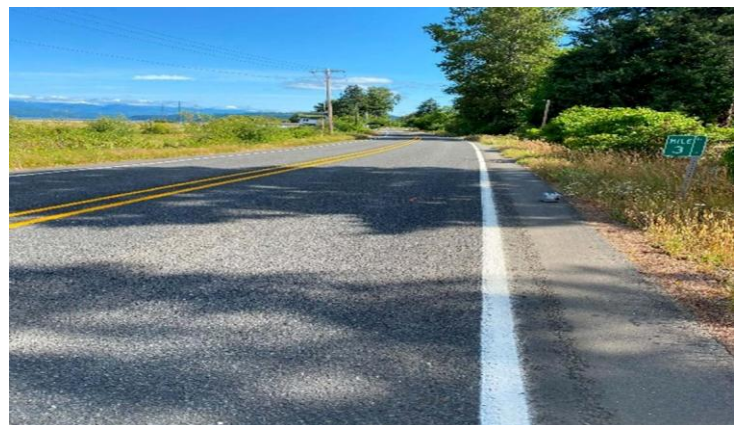
### Development of a Specification for Quality Acceptance of Chip Seals Using a Laser Texture Scanner

Research team: [Haifang Wen](#) (WSU) | [Karen Carlie](#) (WSDOT) | [Riley Bender](#) (WSDOT) | [Jon Peterson](#) (WSDOT)

Sponsor: WSDOT

Report: [WA-RD 942.1](#)

*Completed:* Chip seals are widely used in Washington state as a cost-effective pavement surfacing method. However, they can be subject to variations in performance and premature failure. Currently, no data-driven measures are available to determine the



appropriate percentage of chip embedment during construction. To address that issue, this project developed a quality acceptance specification for chip seal construction that incorporates the use of a laser texture scanner to provide valuable, data-driven insights for quality control and performance assessment. To test a laser scanner's use for determining the percentage of embedded chips, the research team collected data with laser scanners during and after the construction of several WSDOT chip seal projects. They found that the

mean profile depth (MPD) measured by the laser scanner, which is inversely related to the percentage of embedded chips, is a good indicator of chip seal performance. The resulting draft quality acceptance specification, developed in terms of MPD, should help enhance the quality and effectiveness of chip seals. Phase 2 is currently under way. [Read more...](#)

## Webinar Wednesdays

WSDOT's [Research & Library Services Office](#) hosts Webinar Wednesdays, its continuing series of one-hour webinars to promote research technology transfer, encourage implementation, and foster innovation. Generally held every other month, the sessions cover a wide range of transportation topics. Each webinar showcases research results or innovative practices presented by researchers and subject matter experts, and each features a Q&A segment for attendees to pose questions.

[Sign up here](#) for webinar announcements and registration information. [Previous webinars are available for access here.](#)

Below is information about WSDOT's most recent research webinar:

### **WSDOT's Innovation Challenge Program: Empowering Employees to Make a Difference (February 2026)**

Presenter: [Daryl Blumberg](#), Maintenance Innovation & Operations

[Access the recording](#)



WSDOT's Maintenance & Operations (M&O) Innovation Challenge Program encourages full-time M&O employees to submit new ideas, tools, or solutions to everyday challenges they encounter in the field.

Daryl Blumberg, WSDOT's Maintenance Innovation & Operations Manager, talks about how the Innovation Challenge Program has helped enhance safety, reduce operating costs, and improve the ways that WSDOT's work gets done. He also shares examples of creative ideas from front-line staff that have been implemented.

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TRAC e-News will be delivered about three times a year. For more information about TRAC and the ground-breaking work we are doing, please visit our [Current Projects](#) and [Research News](#) pages. A downloadable, pdf version of [this newsletter](#) is also available.

For contact information, follow these links:

- [WSDOT Contacts](#)
- [UW Contacts](#)
- [WSU Contacts](#)

The Washington State Transportation Center (TRAC) is a cooperative, interdisciplinary transportation research agency. Its members, the Washington State Department of Transportation (WSDOT), Washington State University (WSU), and the University of Washington (UW), formed TRAC in 1983 to coordinate transportation research efforts—both state and commercial, public and private—and to develop research opportunities both nationally and locally. TRAC acts as a link among government agencies, university researchers, and the private sector.

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