



December 2021

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

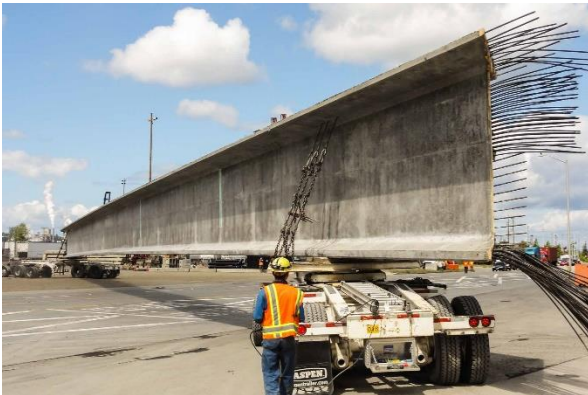
The Washington State Transportation Center ([TRAC](#)), conducts transportation research through collaborative partnerships among WSDOT, the University of Washington (UW), and Washington State University (WSU).

### In this issue

- Handling and transporting longer, heavier bridge girders
- Enhancing stream culvert stability with natural organic materials
- Updating the Washington State Public Records Act for privately provided transportation data
- Improving multimodal safety by reducing pedestrian crash potential
- Developing a specification for using laser scanners for chip seal placement
- Mapping and forecasting electric vehicle charging station locations
- WSDOT Webinar Wednesdays: previous webinars

## Bridges and Structures

### Safety of long girders during handling and transportation: lateral stability and cracking



Research team: [John Stanton](#) (UW) | [Richard Wiebe](#) (UW) | [Bijan Khaleghi](#) (WSDOT) | [Mustafa Mohamedali](#) (WSDOT)  
Sponsor: WSDOT

*Ongoing:* Transportation departments are facing challenges in handling, transporting, and erecting today's longer and heavier bridge girders, as under their own weight they can buckle and fail. This project is seeking to improve the fundamental characterization of girder instability by developing new models that include torsional deformation and consider a broad range of material properties and concrete weights. Models will be developed to analyze both the lateral stability of uncracked girders and the role of cracking in reducing girder stiffness and thus increasing instability. The researchers will assist WSDOT in implementing the findings by providing the criteria necessary to develop a set of new girder shapes that will take advantage of the materials that allow the use of longer spans. [Read more...](#)

## Environment

### Enhancing the stability of simulated streambeds in stream water crossings by using natural organic matter to promote fish passage

Research team: [Nicholas Engdahl](#) (WSU) | [Julie Heilman](#) (WSDOT) | [Jon Peterson](#) (WSDOT)

Sponsor: WSDOT

*Ongoing:* Stream simulation culverts (SSCs) are engineered into road-stream crossings to promote fish passage.

Current design guidelines focus on the construction of SSCs with “clean,” granular, non-cohesive sediments such as sand, gravel, and boulders. However, natural stream corridors also contain roots, decaying plant matter, grasses, and other organic materials, which can also contribute to the stability of sediments and play an

important role in the ecological functioning of a streambed. The objective of this project is to study in detail how natural organic materials can be used in SSCs to promote their long-term stability. To facilitate the recovery of fish populations, agencies will need to prevent or minimize the formation of barriers to fish passage when they replace SSCs. In addition, ensuring that SSCs function like natural streambeds will increase the likelihood that they can function properly for years without incurring large maintenance costs. [Read more...](#)



## Intelligent Transportation Systems

### Adjustments to the Public Records Act

WASHINGTON STATE LEGISLATURE

RCWs > Title 42 > Chapter 42.56 >  
Section 42.56.050

42.56.040 << 42.56.050 >> 42.56.060

**RCW 42.56.050**

**Invasion of privacy, when.**

A person's "right to privacy," "right of privacy," "privacy," or "personal privacy," as these terms are used in this chapter, is invaded or violated only if disclosure of information about the person: (1) Would be highly offensive to a reasonable person, and (2) is not of legitimate concern to the public. The provisions of this chapter dealing with the right to privacy in certain public records not create any right of privacy beyond those rights that are specified in this chapter as express exemptions from the public's right to inspect, examine, or copy public records.

[ 1987 c 403 § 2. Formerly RCW 42.17.255.]

Research team: [Mark Hallenbeck](#) (UW) | [Hugh Spitzer](#) (UW) | [Ricardo Gotla](#) (WSDOT) | [Jon Peterson](#) (WSDOT)

Sponsors: WSDOT, Sound Transit, King County Metro Transit, Milligan Partners

[Documents](#)

*Completed:* People provide substantial amounts of data with specific details about themselves to private transportation companies in connection with their requests for transportation

services. Government agencies work with private transportation companies to manage traffic, provide adequate parking, and maintain safe and walkable communities. Those who share their transportation-related data are often unaware that this information, when held by government agencies, is subject to being released under the Washington State Public Records Act. This project developed recommended changes to the state's Public Records Act that will enable public agencies to obtain and use a variety of new electronic data—often collected by the private sector—that describe transportation system use of individuals, vehicles, and companies, without releasing to the public detailed data that could compromise the privacy of individuals and the trade secrets of companies. [Read more...](#)

## Multimodal Travel

### Advancing multimodal safety by reducing pedestrian crash potential

Research team: [Linda Ng Boyle](#) (UW) | [Anne Vernez Moudon](#) (UW) | [Mike Dornfeld](#) (WSDOT) | [Jon Peterson](#) (WSDOT)

Sponsor: WSDOT

[WA-RD 900.1](#)

*Completed:* Pedestrian safety is a priority of WSDOT's Target Zero Plan. However, even though crash fatalities have decreased for motor vehicles in Washington state, pedestrian fatalities have remained relatively steady. This study used data from a variety of sources to develop pedestrian risk models that identify the characteristics that contribute to pedestrian crashes that result in severe injuries and fatalities. The researchers also developed models that identify the locations that are most likely to benefit from investments aimed at zero pedestrian fatalities and zero serious injuries. The results should inform WSDOT's operational programs and help WSDOT prioritize safety-related pedestrian projects. [Read more...](#)



## Pavements

### Development of a specification for quality acceptance of chip seals using a laser scanner



Research team: [Haifang Wen](#) (WSU) | [Kevin Littleton](#) (WSDOT) | [Kim Schofield](#) (WSDOT) | [Jon Peterson](#) (WSDOT)

Sponsor: WSDOT

*Ongoing:* Chip seals, used for pavement surfacing, rehabilitation, maintenance, and preservation, cover over 7,000 miles of roadway in Washington state. Unfortunately, an inability to accurately measure and control the percentage of chip embedment contributes to unpredictable variation in the performance of chip seal projects. Although a laser scanner could be used to

determine the percentage of chip embedment both quickly and accurately, no one has systematically evaluated this tool for use in chip seal construction. This project will draft a specification for the appropriate percentage of chip embedment and will develop a test protocol for the use of a laser scanner in chip seal construction. The results should help prevent premature failure of chip seals and lower pavement life cycle costs. [Read more...](#)



## Transportation Planning

### Electric vehicle charging station mapping and forecasting stakeholder process

Research team: [Jim Jensen](#) (WSU) | [Tonia Buell](#) (WSDOT) | [Doug Brodin](#) (WSDOT)

Sponsor: WSDOT

*Ongoing:* To meet anticipated growth in electric vehicle adoption, Washington state will need sufficient charging and refueling infrastructure to serve the public. In 2020, the Washington Legislature passed HB1287, which requires the WSDOT Innovative Partnerships Office to develop and maintain a publicly available mapping and forecasting tool that will provide locations and essential information about charging and refueling infrastructure across Washington

state. This project is establishing the requirements for and costs of such an EV mapping and forecasting tool as well as the data and sources that are available and relevant to the tool's development. [Read more...](#)



### Analysis and tools to set priorities for EV charging station locations on WSDOT corridors

Research team: [Don MacKenzie](#) (UW) | [Tonia Buell](#) (WSDOT) | [Doug Brodin](#) (WSDOT)

Sponsor: WSDOT

*Ongoing:* WSDOT previously supported research that led to the creation of ChargeEVal, a simulation tool with a web-based interface that screens Washington's highway network for adequate coverage of direct current fast charging (DCFC) stations and simulates the impacts of new, user-specified charging station locations on electric vehicle travel and charging demand. This project is building upon that previous work by enhancing the functionality of ChargeEVal, and it will provide technical guidance to WSDOT on the mapping and forecasting tool required by HB1287. [Read more...](#)

## Webinar Wednesdays

WSDOT's [Research & Library Services Office](#) hosts *Webinar Wednesdays*, a series of bimonthly, one-hour webinars. Each webinar showcases a research project whose results could eventually be implemented statewide. [Previous webinars are available for access here.](#)

Below is information about recent webinars:

## Development of a truck parking information management system using artificial intelligence in Washington state (October)

[Access the recording](#)

Presenters: [Karthik Murthy](#), WSDOT Statewide Traffic Electrical Equipment Designer | Hao (Frank) Yang, Ph.D. student, UW

With recent significant increases in e-commerce, freight transportation demand has surged over the past decade. In the U.S., most of the demand has been served by trucks. However, a lack of parking spaces and real-time parking availability information has greatly exacerbated the uncertainty of trips and often resulted in potentially dangerous parking or driving behaviors. This webinar will explore current findings from a pilot project completed by WSDOT in collaboration with the University of Washington's Smart Transportation Research and Application Lab (STAR Lab) to develop an advanced Truck Parking Information and Management System (TPIMS) that offers real-time parking spot visualization and availability prediction based on artificial intelligence tools.



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## A Washington plant guide for the 21<sup>st</sup> century: Improving species distribution maps for Washington's vascular plant species (August)

[Access the recording](#)



Presenter: [David Giblin](#), UW Collections Manager and Research Botanist, UW Herbarium, Burke Museum

*Flora of the Pacific Northwest, 2nd edition*, published by the UW Herbarium, Burke Museum, in October 2018, provides users with dichotomous keys to 5,085 wild-growing Pacific Northwest native and introduced plant species, subspecies, and varieties. It also contains detailed botanical illustrations for 4,373 species. Publication of *Flora 2nd edition* has made the field and lab identification



work of Washington state agency botanists significantly more efficient, and the ability to confidently identify a rare or invasive species on public lands supports land management goals. This project is expanding the [existing Flora 2nd edition website](#) to include automatically updating distribution maps for all taxa in the book as new data become available. In addition, the project will produce revised identifications keys for families, genera, and species that have changed or for been added since the book's publication. This work will help in maintaining *Flora 2nd edition* as a "living" resource for public land managers and other users. In this presentation, Dr. Giblin reviews these tools, shows examples of improved distribution maps, and explains how the work prioritizes species tracked by WSDOT.

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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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