

Research and Library Services

The Washington State Department of Transportation (WSDOT) Research and Library Services Office manages specialized research and provides information and innovative solutions to support the WSDOT mission.



Research and Library Services (RLS) develops and funds research ideas that lead to breakthroughs in solving problems, informing strategic decisions, adapting new technologies and using best practices in all aspects of the transportation system. Along with funding, directing and managing research, additional activities include:

- Managing the research process to encourage our investments result in products and information that are used.
- Identify and connect with experts to perform research
- Provide a wide range of customers with access to print and digital

library collections, journals, periodicals, and other media

- Support WSDOT managers with contracting and funding research that supports their quest for innovative and practical solutions
- Coordinating agency participation in national research and library programs including Transportation Pooled Fund studies
- Represent WSDOT in partnerships with Federal Highways, the Transportation Research Board, the American Association of State Highway and Transportation Officials, Universities and Colleges,

University Transportation Centers and others to fund and conduct research.

Library Services provides information resources and services supporting the work of agency staff and contractors. The Library's large transportation -centered collection includes technical, engineering and agency-related publications, both current and historical. WSDOT's Online News Clips and other topical news alerts are distributed from the Library to hundreds of subscribers via email.

Librarians provide a range of services including ready reference, in-depth information searches, and interlibrary borrowing. Literature searches, in particular, directly support WSDOT's innovation efforts, helping researchers determine the "state of the practice" for proposed research.

Established working relationships with colleagues in other state and federal transportation agencies give librarians connections to expertise and resources from peer organizations, often requested by WSDOT employees.

The Library is a recognized resource for transportation information focused on Washington State. Between 15% and 20% of library usage comes from outside the agency: members of the public, employees from other states, local and federal agencies, academic researchers and historians.

How we are funded

Core funding for transportation research and library services is provided through the Federal State Planning & Research Program (80% Federal/20% State). In addition, RLS manages research contracts and all library activities funded by other organizations and WSDOT Programs.

Staff

The office is comprised of eleven permanent staff including a Director, Office Coordinator, Business Manager, Fiscal Analyst, four Research Managers, and three Librarians. WSDOT professional staff participate in research committees and project panels and provide the technical support for successful research results.

MORE INFORMATION Research and Library Services

For more information or to receive reports contact:

360-705-7961

www.wsdot.wa.gov/Research

www.wsdot.wa.gov/Library

The following is a sample of current WSDOT research projects:

Liquefaction-Induced Downdrag on Shafts and Piles - Sponsor: WSDOT

During soil liquefaction caused by an earthquake, sandy soil layers may undergo compression that results in downward movement of the overlying soil layers. For pile foundations, and depending on the site conditions, downdrag settlement can have significant influence on the performance of deep foundations, resulting in settlement of 0 to over 3 feet. In fact, liquefaction-induced downdrag and associated settlement of drilled shafts and pile foundations were observed in the 2010, magnitude 8.8 Maule Chilean earthquake. Those observed deep foundation failures and the potential for similar subduction earthquakes in the Cascade region have created a need to examine the downdrag loads on drilled shafts and pile foundations in Washington. This project is developing robust analytical and simplified numerical models to evaluate the effects of liquefaction-induced downdrag on driven piles and drilled shafts. The results will provide improved understanding of the responses of piles and drilled shafts under different conditions and more reliable information for their design.

Principal Investigator: Muhunthan, B., WSU; Project Mgr: Saechao, L., WSDOT
Technical Monitors: Allen, T./Khaleghi, B., WSDOT

Use of Electronic Fare Transaction Data for Transportation Planning and Travel Demand Management - Sponsor: WSDOT

WSDOT and its partner agencies are limited in their ability to plan and implement an integrated multimodal system. They lack detailed data on how transit services are used and the effects of various demand management strategies. In the meantime, transit agencies across the nation are increasingly using electronic fare media to speed passenger boarding, reduce the cost of fare collection, and support more complex fare transactions. In the Puget Sound region, many commuters use the ORCA electronic fare system. By applying modern data analytics to ORCA fare data, this project will develop tools and demonstrate ways to dramatically increase the availability of data describing transit use and will broaden the application of transit data to a variety of activities that WSDOT funds and supports, such as transportation demand management, mobility programs, and congestion reduction measures, as well as to evaluation of the effectiveness of those activities. This project will also demonstrate how the use of such data can significantly benefit the transportation planning processes of both metropolitan planning organizations and transit agencies.

Principal Investigator: Hallenbeck, M.E., UW; Project Mgr: Peterson, J., WSDOT
Technical Monitor: Hellman, J., WSDOT

Study of Illumination for State Highways - Sponsor: WSDOT

Operation of illumination fixtures on state freeways and highways costs WSDOT millions of dollars annually. To reduce those costs, WSDOT must have a complete understanding of the means available to reduce operating and capital costs with the least negative impact on service, safety, and sustainability. Expenditures on illumination could be reduced in several ways: by using more efficient lighting technologies; by operating illumination more judiciously; or by installing fewer luminaires, removing superfluous luminaires, and consolidating luminaires. This project is reviewing existing public agency illumination standards and making a detailed comparison of luminaire and control technologies. The information generated by this research will enable WSDOT to update its illumination design standards for installation, maintenance, and operation, with the goal of reducing operational costs and improving safety.

Principal Investigator: Wang, Y., UW; Project Manager: Brodin, D., WSDOT
Technical Monitor: Bailey, T., WSDOT

Americans with Disabilities Act (ADA) Information: This material can be made available in an alternate format by emailing the Office of Equal Opportunity at wsdotada@wsdot.wa.gov or by calling toll free, 855-362-4ADA(4232). Persons who are deaf or hard of hearing may make a request by calling the Washington State Relay at 711.

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