

Office of Research and Library Services Monthly Report

May 2007

The Office of Research and Library Services (ORLS) Monthly Report for May highlights activities in the following areas:

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ORLS PROGRAM NEWS

Research Executive Committee Meets

Research Executive Committee and Research Advisory Committees Meet

Each of the Research Advisory Committees met in May to review project progress, select Transportation Pooled Fund (TPF) projects that will receive contributions from ORLS, discuss improvements suggested for the WSDOT Research Problem statement and Principal Investigator selection process and the TRB Cooperative Research Program submittals, and to discuss implementation. They also received a briefing on the Student Research and Synthesis Program as well as a presentation on a recently completed research activity.

The Research Executive Committee met on May 29th to review the recommended TPF projects, The projects and amounts approved for a FFY 2008 contribution from ORLS are included in Table 1.

The REC also reviewed process improvements to the Research Project selection process. Changes that will be integrated into the next selection cycle are:

- Problem statements will include information on the anticipated schedule in order to help improve programming.
- Competition to identify the Principal Investigator is the standard method. However, problem statements may include Principal Investigator(s) name(s) if there is justification for a particular researcher.
- Problems statements for which private entities are expected to be the likely researcher will need to include this information in the problem statement and solicitations for these projects will use an RFP.
- Requests for proposals will be more broadly distributed in the first solicitation for Principal Investigators rather than go through a two stage process (TRAC, then other governmental organizations.)

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Project Title	TPF #	Lead State	Benefit to Department	2008 Funding Amount
Pavement Research (SPTC)	3(074)	WA	Allows collaboration between state agencies and access to leveraged funds for research. Millions of dollars have been saved through the interactions of the four official member states and multiple ex-officio members.	\$15,000
Pavement Tools Consortium (PTC)	5(090)	WA	Has provided pavement training tools to the department for about 1/10 of the cost (due to partnering with other states).	\$20,000
MSE Walls	3(072)	WA	Validation of the K-Stiffness method for marginal quality backfill materials. This will be incorporated into the AASHTO LRFD design specifications for the design of MSE Walls.	\$20,000
Subsurface Drainage for Landslide and Slope Stabilization	5(151)	WA	To provide best practices and guidance for subsurface drainage applications for slope stabilization and to evaluate new applications of existing materials and technologies for stabilizing slopes using subsurface drainage.	\$10,000
Underwater Inspection of Bridge Substructures Using Underwater Imaging Technology	5(131)	CA	Improve methods to assess the performance of existing transportation structures and increasing employee safety by reducing exposure of personnel to hazards encountered while performing underwater inspections.	\$20,000
North/West Passage	5(093)	MN	The long range goal of the study is utilize effective methods for sharing, coordinating, and integrating traveler information across state borders and to influence ongoing standards development.	\$25,000
Safe Routes to Schools	1126	WA	Provides guidance to assess the risk of collisions and thereby address unsafe conditions on a proactive basis. The ultimate goal is to ensure safe, effective, and healthy travel for children and young adults attending schools.	\$10,000
Engineers Estimates for Design-Build Projects	1108	NC	The project will highlight best practices and formulate the most appropriate method for cost estimating on Design-Build Projects. <i>Requested but not funded by ORLS in F07. Project waiting for enough funding to start.</i>	\$20,000
GIS Study	5(108)	WA	Facilitates geo-spatial transportation data sharing and integration. Will reduce costs and increase efficiency by enabling a consortium of public and private entities to collect and combine location referencing and GIS data from multiple agencies to create a complete transportation network and associated location referencing systems.	\$20,000
Library Connectivity OR WTKN)	5(105)	WI	Improves access to information resources from other transportation organizations. Reduces costs through bulk subscriptions and interagency sharing agreements. The WASHTO area states are forming a transportation knowledge network and has not yet determined if funding is needed. We would hold back funds and redirect to the western region project if that evolves quickly enough.	\$10,000

On the Road

ORLS Director Leni Oman and Reference Librarian Mike Wendt gave a brief presentation about the services and resources offered by the WSDOT Library at the statewide Project Delivery Conference in Vancouver, WA on May 16th. While their time in the spotlight was brief, Leni and Mike were able to spend some time afterwards talking to people interested in the library.

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LIBRARY ACTIVITIES

The Long Goodbye

The Office of the Research and Library Services has known for several months that WSDOT Librarian Steve Cochran would be leaving, but staff said their final goodbyes before Steve left in early May. Steve returned to his native Indiana to open an artisanal book bindery, a longtime dream of his. Andrew Poultridge, Mike Wendt and the rest of the ORLS staff look forward to working with the new WSDOT Librarian, Kathy Szolomayer. Kathy will join the library on June 1st.

Library Usage

Circulation – Checked out 21 items to WSDOT employees.

Interlibrary Borrowing – Obtained 19 items on behalf of WSDOT employees.

Interlibrary Loans – Lent 36 items to other libraries; unable to fill 4 requests.

Collection – Added 131 new items to WSDOT Library collection.

Library Cards – Issued 3 new library cards to WSDOT employees, renewed 5.

Web Page (May)

- Intranet Total Home Page Views: 563
- Intranet Total Page Views: 1,229
- Average Daily Intranet Page Views: 40
- Popular Intranet Pages: Online Journals; Standards and Manuals; and Journals, Newspapers, Books, and Reports
- Internet Total Home Page Views: 1,153
- Internet Total Page Views: 2,371

Requests from WSDOT Staff

- Literature review on automated enforcement at intersections and in work zones. Office of Research and Library Services
- Search for photos of the Runyang Bridge. Communications Office
- Literature review on developing filing systems. Urban Corridors Office
- Number of cars traveling east over the Tacoma Narrows bridge which have Thurston County as their destination. Communications Office
- Search for bills from the 2007 legislative session dealing with eminent domain. Real Estate Services

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RESEARCH PROJECT NEWS

Three new research project agreements were started this month.

- T4118 15 was initiated with the University of Washington. This \$30,000 project is on Highway Design and Safety. GIS coordinates will be generated by the University on collision data for county and city roads. Work will be completed by June 30, 2007.
- T4118 16 was initiated with the University of Washington. This \$5,000 project, Titled “Evaluation of the Citilog MediaRoad System for Roadway Traffic Detection” Will be completed by June 30, 2007, and will provide a comparison of the vehicle

Counting and classifying software to an off-the-shelf product the Olympic Region is looking at purchasing.

- T4120 04 was initiated with Washington State University in May. This \$50,000 project, titled “Effect of Intermediate Diaphragms to Prestressed Concrete Bridge Girders in Over-Height Truck Impacts” is expected to be completed on December 1, 2007. This research will be focused on concrete diaphragms only.

Two New Research Reports Published

WA-RD 674.1 [URETEK Stitch-In-Time](#), Washington State Department of Transportation, April 2007, Keith W. Anderson, Linda M. Pierce, and Jeff S. Uhlmeyer

WA-RD 676.1 [ITS Backbone](#), University of Washington, May 2007, Daniel J. Dailey

Two Research Reports Requested

The following research reports were requested from ORLS. Other reports are downloaded from the website or requested through the WSDOT Library or through other libraries that have added our reports to their collection.

Requested by private consultants and vendors:

WA-RD 092.1 [Truck Weight Using The FHWA Bridge Weigh-In-Motion \(WIM\) System](#), University of Washington, February 1987, Mark E. Hallenbeck

WA-RD 300.1 [Improved Error Detection for Inductive Loop Sensors](#), University of Washington, May 1993, Daniel J. Dailey

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MULTIMODAL TRANSPORTATION RAC

Synthesis on Washington Data of Public Transportation Benefits Completed

Cathy Silins, Acting Director, of the WSDOT Public Transportation Division and Peter Thein, Executive Director of the Washington State Transit Association (WSTA), requested a review and compilation of relevant research regarding the use of public transportation, with a focus on statistics and research highlighting Washington State. A review of state and national published literature, websites and periodicals was completed on May 9th, 2007 with the assistance of the WSDOT Library.

Freight Data Framework Research Project

The goal of this project is to develop a framework for the state of Washington that will aid in a developing freight policy plan for freight system needs and support freight project delivery and performance evaluation. Two separate half-day meetings were held on March 5 in Seattle and March 12 in Spokane. Freight data users and producers were in attendance. Attendees were briefed on the purpose of the project and a matrix of existing data sources was developed. Discussion addressed freight data uses/needs for policy, program planning and project analysis purposes. Gaps that exist in the availability and quality of freight information were then identified and potential solutions suggested. The project is scheduled for completion by June 30, 2007.

Update of Tribal Planning Guidelines

Eric Phillips, Regional Coordination Branch Manager, of the Strategic Planning and Programming Division, requested assistance in contracting with Eastern Washington University for an update to the WSDOT Tribal Planning Guidelines. Richard Rolland of the Tribal Technology Center at EWU has agreed do the update to be completed by June 30, 2007. Work is underway to initiate and interagency agreement with EWU.

Freight Systems Division

On May 31st, Leni Oman and Doug Brodin met with staff of the Freight Systems Division to review resources available from the ORLS to assist them in their research and information needs. Doug Brodin also met with several staff earlier in the day to discuss how the Research Office could help in communicating the results of their research efforts to a broader audience.

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PROJECT DELIVERY RAC

Working/Discussion Review Draft of Project Scoping Practice in Washington State

A preliminary review and discussion draft of *Project Scoping Practice in Washington State* was submitted by principal investigators; Dr. Ken Casavant and Dr. Eric Jessup of the School of Economic Sciences at Washington State University in Pullman, Washington. Mark Gabel, Director, WSDOT Office of Cost Risk Assessment, is the project Technical Monitor. The goal of this pilot research is to describe the state of the art program scoping in the United States, specifically identifying scoping methods that are accurate or within reason for the typical level of development and timely or in alignment with the legislative process for budget development. The final project will be completed by June 30, 2007.

State Pavement Technology Consortium Annual Meeting

Kim Willoughby attended the State Pavement Technology Consortium (SPTC) semi-annual meeting on May 1-2, 2007 in Sacramento, CA. The meeting discussions focused mainly around current issues in each of the partner states (California, Florida, Minnesota, Texas, and Washington) and future research collaboration opportunities. See <http://sptc.ce.washington.edu/Meetings/SacramentoMay2007/tabid/85/Default.aspx> for the minutes and presentations.

Scientists and Practitioners Workshop on Eelgrass Restoration

On May 31, scientists and practitioners working with eelgrass restoration efforts gathered to discuss the state of the science for restoring eelgrass in Puget Sound and other areas. Eelgrass is a critical habitat feature for juvenile salmonids and herring, and is present under and near Washington State Ferry terminals as well as other over water transportation structures. Despite years of increasing regulation requiring mitigation for project impacts and experimental methods of restoring eelgrass there still is no systematic process to increase chances of eelgrass restoration success. This is the premise for the collaboration to collect the best available science and to produce guidance for not only project mitigation, but stand alone restoration projects as well. The

meeting was sponsored by Washington Department of Transportation (WSDOT), Washington Department of Fish and Wildlife (WDFW), and Washington Department of Natural Resources (DNR). Dr. Ron Thom, Pacific Northwest National Laboratories (PNNL), led the discussion and is developing a “synthesis of practice”, which will eventually be published in a journal, following peer review.

Fish Passage Research Suspended at the Skookumchuck Fish Hatchery

The culvert test bed, developed and constructed as a pooled fund research project with California, Alaska, Oregon and FHWA has been placed into storage with Washington Department of Fish and Wildlife until the end of the year. The work trailer has been removed and all research equipment has been properly secured and stored, with the exception of two test culverts that are temporarily stored at Olympic Region. The Environmental Services Chronic Deficiency Program staff is seeking funding for further fish passage research. If no funding partnerships can be secured, WSDOT will take steps to remove the equipment from the hatchery site. The last study, by the University of Washington on the characterization of hydraulics of retrofitted culverts, is wrapping up and a final report is due this summer.

Seismic Assessment and Retrofit of WSDOT Bridges

A meeting between the technical monitors and principal investigators was held on May 10th to discuss and refine the scope of work for this research project. The focus will be on two bridge types (multi-column piers and prestressed hollow core columns) and will use a software program to perform a pushover analysis as well as some finite element analyses.

Quality Verification Method for Acceptance of Drilled Shafts

Two Requests for Qualifications were received for this project and have been reviewed by the technical monitor and research manager. At this point, we have requested additional information and will take the next steps after reviewing this information.

Green Roads

This project surfaced from work done by a graduate student at the University of Washington (UW) and is a take on the Green Building concept – except that it applies to roadways. WSDOT is working with the UW on refining the rating categories through a calibration process. Personnel from the Materials Lab are working with Steve Muench from the UW and plan on presenting this information to a larger group of WSDOT personnel in the near future.

Debonding Cracking

This is a TransNOW project and the principal investigator (PI) is Steve Muench from the University of Washington. The goals of this project are to investigate why pavements are failing prematurely and determine the cause. Previous work within Washington showed that thicker pavements tend to crack from the top down, but we really do not know if this type of cracking is due to poor tack practices or highly concentrated loading. This summer, the PI plans to investigate WSDOT pavements through the Washington State Pavement Management System and field cores.

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OPERATIONS RAC

Synthesis on Automated Enforcement Techniques in Highway Workzones Underway

Ted Trepanier, Director, WSDOT Traffic Operations requested a review and compilation of research and examples of other states and countries experience and practice using automated enforcement techniques in work zones and intersections. A new legislative requirement for WSDOT is to have a plan for an automated enforcement program. The synthesis will be completed by June 10th, 2007.

Cable Barrier Research to be Undertaken

Research on cable barrier systems is part of a comprehensive strategy to examine their performance, design, construction and maintenance issues. A combination of national research, coupled with WSDOT sponsored crash testing at Texas Transportation Institute, will contribute critical information to our understanding of best practices and improved performance reliability and safety for the traveling public. The ORLS is providing support to this effort with literature searches and assistance with research proposal development and strategies for research funding.

Traffic/ITS Related Research Update Meeting

Every 6 months, Doug Brodin leads this meeting to have researchers update WSDOT staff on Traffic/ITS research projects. Approximately 20 people met on May 24th in Olympia to discuss the status of 13 research projects that are underway and another 6 projects that are soon to start. These projects represent a substantial investment by WSDOT. Discussions centered on what we need, where we are, where we are going, and how we will use the results.

Congestion Working Group

On May 29th, Doug Brodin attended the meeting of the Congestion Working Group. Subjects addressed at the meeting included:

- The Incident Response Database (WITS) Conversion project funded by the Research Office
- Systems Operations Management (SOM) Activities
- HOV Performance Goals and Policy Update (including the HOV Action Plan project funded by the Research Office next biennium)
- The Congestion Performance Audit
- Contents of the 2007 Congestion Report

INFORMATION AND FINANCE RAC

Draft Proposal Submitted for Data Integration and Document Management Using Ontologies FY '07-'09 Research Project

Professor Daniel Dailey of the Department of Electrical Engineering at the University of Washington, the principal investigator, submitted a Draft Proposal for the Data Integration and Document Management Using Ontologies. Ron Cihon, Cartography and GIS Manager, is the WSDOT project Technical Monitor. The purpose of this project is to develop a defined project scope to determine if ontology can or should be used as a means to improve access to, understanding of, and management of disparate data

stored in multiple systems throughout the transportation arena at WSDOT. The project was approved for funding in the FY '07-'09 Research Program at \$15,000.