TRAC
WASHINGTON STATE TRANSPORTATION CENTER
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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).

Airports

Emergency aviation response

Research Team: Mark Hallenbeck (UW) | John Macarthur | Jon Peterson (WSDOT)

Ongoing: In case of major disasters (such as a large earthquake), responders need airports to be operational quickly so that supplies and emergency personnel can be delivered. In support of that objective, researchers will compile information related to the physical layout and infrastructure attributes of selected airports in Western Washington. *Read more*…

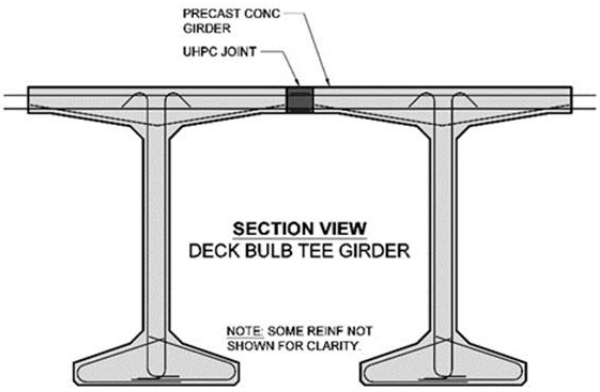
Bridges and Structures

Embankment failure impacts on piled bridge foundations

Research Team: Pedro Arduino (UW) | Tony Allen | Lu Saechao (WSDOT) (WA-RD 874.1)

Completed: Current guidelines for the design of piled bridge foundations to resist liquefaction-induced lateral soil deformation during seismic events usually result in overly conservative designs. This research proposes an economical approach through 3-D analyses. *Read more*…

Crack control between deck bulb tees



Research Team: Pizhong Qiao (WSU) |Bijan Khaleghi | Lu Saechao (WSDOT) (WA-RD 869.1)

Completed: This project explored ways for improving bonding and controlling cracking between deck-bulb tee girders that are used in bridge construction to incorporate the benefits of both an I-girder and a precast slab deck. Researchers investigated the use of ultra-high performance concrete and improved the connection detail between the girders. The next phase of the project will involve structural level testing. *Read more*…

Freight

Alley inventory and truck use assessment

Research Team: Anne V. Goodchild and Edward D. McCormack (UW) | Seattle Department of Transportation

Ongoing: The UW Supply Chain and Transportation Logistics (SCTL) Center is conducting an alley inventory and study of truck load/unload occupancies for the City of Seattle. Researchers are collecting data that identify the locations and infrastructure characteristics of alleys within Seattle's One Center City planning area. They are also observing all truck load/unload activity in selected alleys to determine minutes vacant and minutes occupied by different types of delivery vehicles. The resulting recommendations for alley management will promote safe, sustainable, and efficient goods delivery and pick-up. *Read more*…

Geotechnical Engineering

Concrete wall fascia and slope stabilization

Research Team: Pizhong Qiao (WSU) |Mark Gaines | Lu Saechao (WSDOT) (WA-RD 870.1)

Completed: With an increasing emphasis on using shotcrete for accelerated construction and rapid renewal of wall structures, there is an urgent need to document its use by highway agencies, assess the condition of existing inventory, and identify best practices during various stages of the life cycle of such structures. For the "before shooting" shotcrete mixture that was studied in Phase I, prolonged watering provided the best results, producing both early age shrinkage resistance and long-term freeze-thaw resistance. Phase II of the study will

evaluate “after shooting” shotcrete’s performance and long-term durability. *Read more*…

Multimodal Transportation Planning

Safety on main street highways

Research Team: Anne Vernez Moudon and Mark Hallenbeck (UW) | Alan Soicher | Jon Peterson (WSDOT) (WA-RD 862.1 and 862.2)

Completed: With “Target Zero by 2030” in mind, this study focused on accidents involving pedestrians and bicycles on “main street highways,” which are stretches of State Routes that also act as main streets for the local population. Part I of the research involved analysis of collision data from 2001-2012. In Part II, researchers identified pedestrian and bicyclist collisions hotspots and developed models for estimating socio-economic and environmental predictors of collision locations. The models showed that such high risk locations were significantly associated with street and road intersections (versus mid-blocks), wider roads, roads with bicycle lanes, and low income and non-white neighborhoods. *Read more*…

Using electronic fare transaction data for transportation planning and demand management

Research Team: Mark Hallenbeck (UW) | Alan Soicher | Jon Peterson (WSDOT) (WA-RD 863.1)

Completed: The initial phase of this project documented the use of transaction data from regional electronic transit agency fare (ORCA) cards into information that describes how customers use the transit system. The report describes the detailed steps necessary to combine ORCA transaction data with vehicle location data and data from other sources to estimate ridership patterns and other information useful for transit planning and operations. Results included origin/destination matrices by day-of-week and time-of-day, and ways to gather information about transfer locations, transfer details such as the distances walked, and the time required to make transfers. *Read more*…

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

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.

This eNews was sent by:
Washington State Transportation Center (TRAC)
1107 NE 45th St, Seattle, WA 98105