



ACCELERATED BRIDGE CONSTRUCTION  
UNIVERSITY TRANSPORTATION CENTER

<b>UTC Project Information</b>	
Project Title	Tsunami Design Forces for ABC Retrofit
University	UW
Principal Investigator	Eberhard, M. Lehman, D. Motley, M.
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Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC funds: \$10,000 Department of Transportation Match fund by UW: \$5,000
Total Project Cost	\$15,000
Agency ID or Contract Number	Accelerated Bridge Construction University Transportation Center (ABC-UTC) 69A3551747121
Start and End Dates	2019/01/01 - Active
Brief Description of Research Project	<p>The catastrophic damage that tsunamis cause to coastal communities is often exacerbated by the destruction of much of the transportation infrastructure. To reduce the impacts of tsunamis, it is essential that transportation agencies retrofit bridges using methods that minimize disruption to the current transportation system. This project leverages funds from the University of Washington to provide initial estimates of forces that a tsunami would impose on a bridge as the result of debris-laden flows. The effects of the initial tsunami bore on bridges has been studied analytically and experimentally by a number of researchers. For example, with funding from FHWA and five state DOTs, PEER is currently coordinating a study in which the impact of a tsunami bore on a bridge superstructure was simulated experimentally at the NHERI wave flume at Oregon State University (OSU). This small project focuses on later, post-bore effects of tsunamis, which can be equally damaging but have rarely been studied. The post-bore effects are dominated by quasi-steady-state, debris-laden flows that cannot be simulated experimentally well in a flume with a transient, piston-generated wave. No data is available to calibrate design or simulation models for this condition. Such data is needed to develop ABC methods for the retrofit of bridges to resist tsunamis. The main objective of this project is to create datasets that can be used to develop and calibrate design and numerical models that account for flow-structure interaction, rising flow, and debris-induced forces.</p>

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	This is an active research project. Upon completion, outcomes will be reported.
Impacts/Benefits of Implementation (actual, not anticipated)	This is an active research project. Upon completion, impacts/benefits will be reported.
Web Links <ul style="list-style-type: none"><li>• Reports</li><li>• Project website</li></ul>	<a href="https://abc-utc.fiu.edu/research-projects/uw-research-projects/tsunami-design-forces-for-abc-retrofit/">https://abc-utc.fiu.edu/research-projects/uw-research-projects/tsunami-design-forces-for-abc-retrofit/</a>