



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	Economic Pier-to-Pile Connections for Permanently Cased Shaft (CFST) Piles
University	UW
Principal Investigator	Lehman, Dawn Roeder, Charles W.
PI Contact Information	
Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC funds: \$70,000 Match fund by PEER: \$35,000
Total Project Cost	\$105,000
Agency ID or Contract Number	Accelerated Bridge Construction University Transportation Center (ABC-UTC) 69A3551747121
Start and End Dates	2020/01/01- Active
Brief Description of Research Project	A missing piece of this new structural system is the foundation system including the direct pier-to-pile connection and the contribution of soil-structure interaction on this is an economical solution that reduces the cost of the structural foundation system. The overall goals of the proposed research are to: (1) Investigate concrete-filled steel tubes (CFST) connections and other column-to-pile connections through a literature review. (2) Select column-to-pile connections for study based on the finite element analysis (FEA) results. (3) Investigate the seismic response and resilience, including damage, of selected CFST connections using large-scale testing. (4) Develop, in collaboration with WSDOT and Caltrans as well as other interested transportation agencies, new design methods for these connections. (5) Develop a simplified nonlinear spring element to simulate the connection and pair the engineering demand parameters from the model to the damage states to provide tools for PBEE.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	<ul style="list-style-type: none"> Invited presentation at PEER (Pacific Earthquake Engineering Research Center) Conference. Use of CFST piles on the new Mukilteo Ferry Terminal. The construction completed in 2020.

Impacts/Benefits of Implementation (actual, not anticipated)	This is an active research project. Upon completion, impacts/benefits will be reported.
Web Links <ul data-bbox="159 310 406 378" style="list-style-type: none">• Reports• Project website	https://abc-utc.fiu.edu/economic-pier-to-pile-connections-for-permanently-cased-shaft-cfst-piles/