



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	Exploring the Combined Use of Distributed Fiber and Deformed Bar Reinforcement to Resist Shear Forces
University	University of Washington
Principal Investigator	Travis Thonstad
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Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC Funding: \$70,000 University of Washington Funding: \$35,000
Total Project Cost	\$105,000
Agency ID or Contract Number	69A3551747121
Start and End Dates	6/1/2022 – 5/31/2023
Brief Description of Research Project	<p>Macro-synthetic fibers are often added to concrete mixtures as secondary reinforcement, designed to control shrinkage and temperature cracks. The contribution of these fibers to the strength of structural elements and the interactions and synergies between distributed fiber and deformed bar reinforcement in resisting shear are not well understood. This project will investigate the behavior of macro-synthetic fiber-reinforced concrete panels subject to a variety of stress states, focusing on shear. The experimental data will be used to develop rational design guidelines for the shear strength of members that containing both macro-synthetic fibers and deformed bar shear reinforcement.</p> <p>The objective of the proposed research is the development of simple, rational design equations for the contribution of macro-synthetic fibers to the shear strength of reinforced concrete members containing at least the minimum shear reinforcement required by the AASHTO LRFD Bridge Design Specifications. The design equations will be based on a rational shear behavior model that will be developed as part of this work using the response of PFRC panel elements, subjected to in-plane loads (e.g., shear and axial tension or compression).</p>
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	This project has just started. Implementation of Research Outcomes will be reported as work progresses

Impacts/Benefits of Implementation (actual, not anticipated)	This project has just started. Impacts/Benefits of Implementation will be reported as work progresses
Web Links <ul style="list-style-type: none">• Reports• Project website	