



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
PI Contact Information	thonstat@uw.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	\$70,000 (ABC-UTC) \$89,500(ACI-CRC and UW)
Total Project Cost	\$159,500
Agency ID or Contract Number	69A3551747121
Start and End Dates	Jun 1, 2022 - May 31,2023
Brief Description of Research Project	<p>The proposed research will investigate the use of macro-synthetic polyolefin fibers combined with deformed bar reinforcement to resist shear forces, quantifying the potentially beneficial interaction between the two for resisting shear. Eight panel element tests are planned. These panel specimens represent the web of PBEs, such as prestressed girders. The panel elements will be subjected to in plane shear and axial stresses using the University of Washington’s Panel Element Tester, one of only several similar devices in the world. The Panel Element Tester precisely controls the in-plane loads on the specimen in any combination of shear, tension, and compression and produces data that is uniquely suited for understanding the shear strength contributions of macro-synthetic fibers to concrete elements that also contain deformed bar reinforcement. Data from the panel tests and the existing literature will be used to develop design equations for the shear strength of macro-synthetic polyolefin fiber-reinforced concrete (PFRC) members that also contain transverse deformed bar reinforcement. The design equations will be based on a rational shear behavior model for PFRC that will be developed as part of the project. The PIs will work with the advisory panel members and industry professionals to format the results of the research into language suitable for submission to the AASHTO T10 Committee for adoption</p>

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	The outcomes will be tracked and reported once they are identified.
Impacts/Benefits of Implementation (actual, not anticipated)	The impacts will be tracked and reported once they are identified.
Web Links <ul style="list-style-type: none">• Reports• Project website	Exploring the Combined Use of Distributed Fiber and Deformed Bar Reinforcement to Resist Shear Forces Accelerated Bridge Construction (fiu.edu)