



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	Innovative Multi-Hazard-Resistant Bridge Columns for ABC
University	University of Oklahoma
Principal Investigator	Jeffery S. Volz
PI Contact Information	University of Oklahoma, 202 W. Boyd St., Room 334, Norman, OK 73019
Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC: \$40,000 Oklahoma Department of Transportation (ODOT): \$20,000
Total Project Cost	\$60,000
Agency ID or Contract Number	69A3551747121
Start and End Dates	6/01/22-6/01/23
Brief Description of Research Project	<p>While several techniques are available to accelerate bridge superstructure construction, limited techniques are available to accelerate bridge substructure construction. Hollow-core FRP-concrete-steel (HC-FCS) columns – a concrete core sandwiched between an outer FRP tube and an inner steel tube – provide a potential solution for accelerating bridge substructure construction and offer several advantages over traditional construction materials including enhanced ductility and energy absorption, improved axial and flexural strength, and enhanced durability and corrosion resistance. This project will consist of static cyclic testing of half-scale columns, a parametric finite element analysis, and development of design procedures and recommendations for HC-FCS columns.</p> <p>The overarching goal of this research study is to implement hollow-core FRP-concrete-steel (HC-FCS) columns for accelerated bridge construction. The objectives necessary to achieve that goal include:</p> <ul style="list-style-type: none"> • Determining the benefits of using high-strength SCC and UHPC for the concrete core of HC-FCS columns • Developing design procedures and recommendations for steel, concrete, and FRP wall thicknesses, concrete type (SCC or UHPC), and nominal flexural and shear strengths of HC-FCS columns

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	https://abc-utc.fiu.edu/wp-admin/post.php?post=12729&action=edit