



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	Design of CFST Components and Connections for Transportation Structures: Course Module
University	UW
Principal Investigator	Dawn, E Roeder, C.
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Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC funds: \$20,000 Match Fund by UW: \$10,000
Total Project Cost	\$30,000
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>Over the past decade, significant research has been conducted on concrete-filled steel tubes (CFSTs) and their connections for use in regions of low to high seismicity. CFSTs have application to the superstructure (piers) and substructure (deep foundations). Both CFST components and connections have been thoroughly evaluated using experimental and numerical (high-resolution, finite element modeling) research approaches. In addition, system-level evaluations have been conducted. The results from the work include new design expressions that have been implemented in AASHTO as well as state department of transportation design manuals. Advantages of the system included: (i) larger strength and stiffness for a given diameter in comparison with conventional RC construction, (ii) facilitation of accelerated bridge construction, (iii) improved constructability, (iv) use of environmentally-friendly (low cement) concrete for the concrete fill, and (v) improved seismic performance through damage mitigation. The course module will provide an overview of the research conducted, design expressions for the CFST components and connections, nonlinear modeling techniques, system-level response to vertical and lateral demands including earthquake and tsunami loading, and design examples. The objective is to develop a multi-part course module appropriate for practicing bridge engineers and graduate students. In addition, it is expected that parts of the course will be relevant to other transportation systems including ports and high-speed rail.</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">• Reports• Project website	https://abc-utc.fiu.edu/research-projects/uw-research-projects/design-of-cfst-components-and-connections-for-transportation-structures-course-module/