



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	Quantitative Assessment of Soil-Structure Interaction Effects on Seismic Performance of Bridges with ABC Connections
University	UNR
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Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC funds: \$50,000 Match fund from UNR: \$25,000
Total Project Cost	\$75,000
Agency ID or Contract Number	Accelerated Bridge Construction University Transportation Center (ABC-UTC) 69A3551747121
Start and End Dates	2020/05/01- Active
Brief Description of Research Project	<p>Successful implementation of accelerated bridge construction techniques in seismic regions can significantly reduce onsite construction time, traffic delays and associated costs. In the past, mostly experimental research has been used to achieve a better understanding of the seismic performance of ABC connections and, recently, full bridge systems. However, none of these studies have taken SSI effects into account causing doubts on the actual performance of these bridges in seismic regions. Moreover, systematic studies that focus on modeling the constitutive behavior of ABC components in numerical simulations are still lacking.</p> <p>To take advantage of rapid bridge construction in seismic areas, such as California, and at the same time improve the resilience of the transportation infrastructure, it is important to consider foundation flexibility as well as well-parametrized constitutive relations in modeling ABC bridge foundations and connections. We consider this proposal as a first step towards developing seismically resilient bridges with ABC connections where we use well-calibrated finite element models to quantitatively assess the effects of SSI on a two-span bridge system with different ABC connection types.</p> <p>The main objective of this project is two-fold: (1) calibration of nonlinear numerical models that could capture the local and global behavior of one of the tested bridge systems, and (2) quantitative assessment of the</p>

	seismic performance of the selected bridge with taking SSI effects into account.
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 Reports Project website	https://abc-utc.fiu.edu/research-projects/unr-research-projects/quantitative-assessment-of-soil-structure-interaction-effects-on-seismic-performance-of-bridges-with-abc-connections/