



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	Innovative Foundation Alternative for High Speed Rail Application
University	UNR
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Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC funds: \$35,000 Match funds: \$17,500 from UNR
Total Project Cost	\$52,500
Agency ID or Contract Number	Accelerated Bridge Construction University Transportation Center (ABC-UTC) 69A3551747121
Start and End Dates	01/01/2018 – 08/01/2020
Brief Description of Research Project	<p>One of the transportation solutions that have been always considered in the past few decades is the high speed rail (HSR) where plans for the HSR date back to the High Speed Ground Transportation Act of 1965 (Public Law 89-220, 79 Stat. 893). However, full implementation of an inter-state HSR has never been accomplished until recently the state of California started a HSR line construction that will connect the bay area to southern California. Bridges are key components of the HSR infrastructure and the state plan is to consider new construction as well as utilizing existing structure and foundation if appropriate. The inherent characteristics of HSR raise new problems beyond those found in typical highway construction, so comprehensive approach on the bridge structure and foundation system needs to be made to systematically tackle the challenges. Upgrading of existing bridges is of particular concern, e.g., (a) HSR bridge superstructures require high stiffness and are likely to be heavy, so upgrading of the existing structure for HSR will apply significant surcharge on the bridge foundation, for which a retrofit solution also needs to be developed; (b) The stiff, heavy components will induce seismic forces that are much higher than in highway bridges, so the ABC solutions developed for highway bridges will have to be reworked to satisfy the more stringent requirements in seismic areas; (c) Construction issues also have to be optimized regarding how this</p>

	<p>upgrade can be best accommodated in a short period time without causing high costs and traffic disruptions. This project aims to develop innovation foundation systems as ABC solution for the HSR applications. Bridges are key components of the HSR infrastructure, while whole new construction of HSR bridges along a HSR line will take some tremendous cost and time. Utilizing the existing structure and foundation for HSR applications provides a good alternative to the challenge, but the methods for upgrading the existing substandard bridges to meet the HSR standards remain largely undeveloped in the engineering community. Focus also will be given to the seismic retrofit, considering the first HSR line is constructed to connect the bay area and southern California.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here</p>	<p>The outcomes will be tracked and reported once they are identified.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>No impacts/benefits to report. The impacts will be tracked and reported once they are identified.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project website 	<p>https://abc-utc.fiu.edu/research-projects/unr-research-projects/innovative-foundation-alternative-for-high-speed-rail-application/</p>