



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	Complex Network Perspectives Towards Accelerated Bridge Construction (ABC)
University	FIU
Principal Investigator	Arif Mohaimin Sadri
PI Contact Information	asadri@fiu.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC Funds: \$52,587.97 Match Funds: \$32,238.60
Total Project Cost	Total Funds: \$84,826.57
Agency ID or Contract Number	Accelerated Bridge Construction University Transportation Center (ABC-UTC) 69A3551747121
Start and End Dates	October 2019- July 2021
Brief Description of Research Project	<p>Despite the fact that accelerated bridge construction (ABC) reduces many uncertainties associated with construction processes and performance during service life, ABC related activities can create impacts on the road network carrying regular traffic. The problem may get escalated during a major hurricane in coastal areas while a number of people trying to evacuate from the vulnerable area several days ahead of landfall. As such, network positions or credentials of bridges based on their topography or connectivity need to be assessed to prioritize or stage ABC activities. There have been limited investigations by many states to monitor the cascading effects of traffic due to ABC related activities and to identify more efficient strategies to pursue such activities while reducing overall system-wide impact. ABC-UTC is planning to embark on coordinated and extensive network experiments at different geographic scales to apply complex network science principles to the study of bridge networks and ABC related activities. This research will use geographic information systems (GIS) modeling along with Florida Department of Transportation (FDOT) bridge and road network data to run network experiments and prioritize certain bridges based on their network credentials. The objective of this study is to present a method for assessing the vulnerability of a bridge network system and a strategy for improving its resiliency. With growing attention to risk-based inspection and maintenance of infrastructure, accurate knowledge of the vulnerabilities and importance, as well as consideration of interrelation among bridges in a network becomes crucial. The bridge network system</p>

	in the state of Florida, USA will be used as a case study in this project.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	Presentation at the Transportation Research Board Annual Meeting January 2021. The presentation was invited by TRB Standing Committee on Construction Management.
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/complex-networks-perspectives-towards-accelerated-bridge-construction-abc/