



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	Development of User-friendly Tools and Decision-making Algorithms for Service Life Design of ABC Bridges
University	OU
Principal Investigator	Shima Mohebbi Royce Floyd
PI Contact Information	smohebbi@gmu.edu rfloyd@ou.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	\$30,000 from ABC-UTC \$15,000 from George Mason University, PI moved to GMU
Total Project Cost	\$45,000
Agency ID or Contract Number	69A3551747121
Start and End Dates	May 2021- March 2022
Brief Description of Research Project	<p>Prefabrication of structural elements is the essence of the accelerated construction, which allows for the reduction of contract time, tight quality control of materials, rapid production, and good schedule control. However, the connectivity of the precast concrete elements to the rest of the bridge superstructure is of concern in ABC. Using prefabricated deck panels is one of the most popular ABC methods. Prefabricated deck elements are connected by cast-in-place closure joints onsite. The performance of the closure joints under service loads is critical since it affects the structural integrity and durability of the structure. There are several design methods available in the literature which are proof tested and approved by the bridge community. The state-of-the-art of closure joints design methods for service life and durability are synthesized in a recent publication by ABC-UTC.</p> <p>The published guide is comprehensive; however, it is not user-friendly for bridge engineers and state DOTs to be used and implemented in their design. Therefore, a reliable decision support tool is required to assist stakeholders and engineers in choosing appropriate design options and solutions. We will address this gap and develop a prototype web-based tool and decision-making algorithms to design closure joints for service life and durability. The primary objective of the project is to design and implement a prototype web-based decision support tool based on the general steps presented in the ABC-UTC design guide. It will be visual</p>

	and allow users to easily navigate through the design options, design steps, on-site requirements, material properties, and modes of failures
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	SHRP2 R19A panel chair has expressed interest in pursuing this type tool for other aspects of service life design.
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/research-projects/ou-research-projects/development-of-user-friendly-tools-and-decision-making-algorithms-for-service-life-design-of-abc-bridges-2/