



ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

UTC Project Information	
Project Title	NDT Methods Applicable to Health Monitoring of ABC Closure Joints
University	FIU
Principal Investigator	Mehrabi, Armin
PI Contact Information	
Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC Funds: \$55,990 Match Funds: \$27,995
Total Project Cost	Total Funds: \$83,985
Agency ID or Contract Number	Accelerated Bridge Construction University Transportation Center (ABC-UTC) DTRT13-G-UTC41; 69A3551747121
Start and End Dates	06/01/2017 – 12/31/2020
Brief Description of Research Project	<p>In Accelerated Bridge Construction (ABC), prefabricated bridge deck elements are connected using “Closure Joints.” Because of cast-in-place nature of closure joints that are expected to go into service and field observations, there have been some concerns about their long-term durability. This has necessitated the need for health monitoring of ABC closure joints using Non-Destructive Testing (NDT) methods. Closure joints contain unique features that sets them apart from conventional deck panels. They require a special treatment when it comes to selecting the appropriate NDT technique. However, a clear guideline for selection of the most applicable NDT method for various types of closure joints has not been developed yet. To address this, a research project was carried out at ABC-UTC at FIU. This report describes this investigation that includes review of all relevant NDT methods and efforts for categorizing closure joints based on features affecting the use of NDT. Since the applicability of NDT methods heavily depend on the type of expected anomaly to be detected and its root causes, all potential defects and damages were identified and investigated using a Damage Sequence Tree (DST). Consequently, damage etiology for closure joints were established using Fault Tree Analysis (FTA). Finally, a quantitative statistical analysis was performed to substantiate the selection of the most applicable NDT methods. The results presented in this report can readily be used by bridge owners and consultants as a practical guideline for selection of NDT methods for health monitoring of ABC bridges with closure joints. Future experimental work is planned for support in implementation and validation of the project conclusions.</p>

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	The outcomes will be tracked and reported once they are identified.
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/fiu-research-projects/ndt-methods-applicable-health-monitoring-abc-closure-joints/