

UTC Project Information	
Project Title	MPC-554 – Composite-based Rehabilitation of Constructed Bridge Girders with Grooved Geometrics
University	University of Colorado Denver
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Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT, Research and Innovative Technology Administration \$40,000 faculty time and external scholarship/support for students \$40,000
Total Project Cost	\$80,000
Agency ID or Contract Number	69A3551747108
Start and End Dates	December 11, 2017 to July 31, 2022
Brief Description of Research Project	The concise literature review indicates that the integrity of the composite-substrate interface (specifically, CFRP-concrete interface) is a critical component controlling the performance of repair/strengthening systems. Although the several proposed approaches appear to be applicable, there still is a dearth of research to fundamentally reframe the interfacial characteristics of CFRP composites bonded to a concrete substrate, so that the occurrence of premature debonding can be alleviated. This research explores a novel bonding scheme by creating grooves along the substrate and filled by an epoxy adhesive, which are expected to reduce interfacial shear stresses between the CFRP and concrete. The feasibility of the proposed idea will be experimentally verified and its performance will be comparatively assessed against existing debonding mitigation methods. A theoretical study will be conducted to complement experimental findings, including reliability-based modeling, fuzzy logic, and statistical characterization.
Describe Implementation of Research Outcomes (or why not implemented)	The proposed concept can readily be implemented. Upon technology transfer, it is expected that the debonding-mitigation techniques be adopted in practice.
Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	The proposed anchor system with grooved bonding schemes will save repair/strengthening costs at extended longevity since no metallic anchorage (corrosive) is necessary.
Web Links	https://www.ugpti.org/resources/reports/details.php?id=969
<ul style="list-style-type: none"> • Reports 	

- Project Website