|  |
| --- |
| **UTC Project Information** |
| Project Title | MPC-554 – Composite-based Rehabilitation of Constructed Bridge Girders with Grooved Geometrics |
| University | University of Colorado Denver |
| Principal Investigator | Yail Jimmy Kim |
| PI Contact Information | ProfessorUniversity of Colorado DenverPhone: (303) 352-3653Email: jimmy.kim@ucdenver.eduORCID: 0000-0002-4286-1461 |
| Funding Source(s) and Amounts Provided (by each agency or organization) | USDOT, Research and Innovative Technology Administration$40,000faculty 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)Place Any Photos Here | The proposed concept can readily be implemented. Upon technology transfer, it is expected that the debonding-mitigation techniques be adopted in practice. |
| 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* Reports
* Project Website
 | https://www.ugpti.org/resources/reports/details.php?id=969 |