UTC Project Information	
Project Title	ACCELERATED REPAIR OF CORRODED BRIDGE STEEL MEMBERS USING COLD SPRAY ADDITIVE MANUFACTURING
University	Rowan University
Principal Investigator	Islam M. Mantawy, Ph.D., P.E.
PI Contact Information	mantawy@rowan.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	ABC-UTC funds: $70,000 Match funds : $35,000
Total Project Cost	$ 105,000
Agency ID or Contract Number	69A3552348322
Start and End Dates	January 1, 2024 - June 30, 2025
Brief Description of Research Project	Corrosion is one of the leading causes of deterioration of steel members, causing a wide range of consequences such as section weakening, section losses, and sudden failures. Lack of action toward detecting corrosion, quantifying the impact of corrosion, and the application of repair/preservation techniques can burden both infrastructure owners and users, especially those in rural and remote areas. The research team proposes an approach to evaluate corrosion damage in structural components and repair through cold spray additive manufacturing (CSAM). The objectives of the proposed research project are to (1) correlate corrosion with 3D-point cloud data from LiDAR scanners to quantify the extent and impact of corrosion on bridge elements, (2) develop robust and accelerated repair and upgrade techniques through CSAM, and (3) develop a robust implementation plan for rapid detection, evaluation of corrosion, and accelerated repair in steel bridges that will benefit state DOTs. Accurate detection and evaluation of the extent and impact of corrosion on steel members will allow infrastructure owners to manage resources more efficiently. Tools to preserve, rehabilitate, and repair steel members and structures will result in significant savings in materials, labor, and other construction costs throughout the life cycle of a bridge. The proposed project addresses corrosion of steel infrastructure, which contributes to the 2022-2026 U.S. DOT strategic goal of “Economic Strength and Global Competitiveness” and its key performance indicator assigned to FHWA to “Fix the 10 most economically significant bridges and repair of 10,000 most in need smaller bridges.” The project also contributes to the research category proposed by IBT/ABC-UTC including (1) Research Category B – Accelerated Repair and

	Upgrade of Existing Bridges and (2) Research Category C – Advanced Bridge Technologies, especially additive manufacturing.
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 • Reports • Project website	https://abc-utc.fiu.edu/research-projects/accelerated-repair-ofcorroded-bridge-steelmembers-using-cold-sprayadditive-manufacturing/