

UTC Project Information	
Project Title	MPC-643 – Development of a New Airborne Portable Sensing System to Investigate Bridge Response
University	Colorado State University
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Funding Source(s) and Amounts Provided (by each agency or organization)	<p>USDOT, Office of the Assistant Secretary for Research and Technology \$63,000</p> <p>Colorado State University \$60,000</p>
Total Project Cost	\$123,000
Agency ID or Contract Number	69A3551747108
Start and End Dates	November 11, 2020 to July 31, 2022
Brief Description of Research Project	<p>Full-scale structural health monitoring (SHM) provides a unique means to understand the bridge response to special vehicles by collecting authentic data on bridge response without modeling errors, however, the instrumentation of SHM systems is very expensive, which limits its use to only a few long-span bridges. Moreover, once sensors in these SHM systems are installed, they are not easily able to be relocated if a different, critical location is found. Therefore, this project proposes an alternative low-cost portable sensing system, which can be more useful in the management of a large number of bridges by state DOTs. In this research, a novel sensing system for monitoring structural response will be developed by integrating the optical and infrared sensors with a UAV platform. This portable system aims to measure the three-dimensional (3D) dynamic displacements of a structure, which presents a unique advantage compared to the existing UAV-based techniques that allow the measurements in only one or two dimensions. By leveraging its airborne nature, the system can access difficult to reach areas, and provide critical angles from desired key locations, offering great flexibility compared to ground-based remote sensing techniques.</p>

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links <ul style="list-style-type: none">• Reports• Project Website	