UTC Project Information	
Project Title	Investigation of The Efficacy Of Helical Pile Foundation Implementation In Accelerated Bridge Construction Projects – Phase I
University	ISU
Principal Investigator	Justin Dahlberg
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Funding Source(s) and Amounts Provided (by each agency or organization)	$70,000 from ABC-UTC $35,000 from Iowa DOT
Total Project Cost	$105,000
Agency ID or Contract Number	69A3551747121
Start and End Dates	January 2018–June 2021
Brief Description of Research Project	Accelerated Bridge Construction (ABC) has been used in an increasing rate by transportation agencies over the past decade as the need to reduce impact to the traveling public and increase the safety of laborers has become of greater importance. Many advances have been made in the construction methodology especially with respect to bridge decks, superstructures, and, to a lesser extent, substructures. Of the many advances that have been made, few have specifically been directed at the accelerated construction of foundations of bridge structures. For this reason, there are still opportunities to decrease project duration and reduce disruption to the road users with the adoption of newer foundation technologies. Research is needed to identify the efficacy of using helical pile foundations for ABC projects. Helical pile installers tout the simplicity and speed of installation along with the ability to work within areas of limited size with smaller equipment. The number of current standard foundation options for bridge substructures is limited thus reducing the potential time savings afforded through newer, less-common technologies. Though acceleration of bridge projects has greatly progressed, the potential for additional time savings still exists through the use of other methods such as helical piles. In addition to their fast installation, the use of helical piles offers immediate capacity determination upon installation through capacity to torque ratios, and the use of small maneuverable equipment for

	installation. Helical pile foundations have become commonplace in new commercial building construction and foundation repair applications with many foundation installers now offering this technology as one of their services. However, few bridge projects have been completed using helical piles despite their high capacities and speed of installation. The required equipment for installation (skid steer, back hoe, or excavator) lends itself to quick deployment and being an economical solution (i.e., excavator vs. crane), an advantage for any bridge project, but particularly for low-volume roads where budgetary considerations tend to be of specific priority. The main objective of this project is to evaluate the efficacy of the use of helical pile foundations in accelerated bridge construction projects.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	Iowa DOT expressed strong interest in continuing the project into Phase 2 due to outputs from this Phase 1 project
Impacts/Benefits of Implementation (actual, not anticipated)	• Willingness of Iowa DOT to support this project is strong indication of their desire to have another option for deep foundations • Iowa DOT has expressed interest in a county-level demonstration project
Web Links • Reports • Project website	https://abc-utc.fiu.edu/research-projects/isu-research-projects/investigation-of-the-efficacy-of-helical-pile-foundation-implementation-in-accelerated-bridge-construction-projects-phase-i-2/