



UTC Project Information – Project C17.2020	
Project Title	Durability of Modified Helical Piles Under Lateral and Torsional Loads: Embracing Efficient Foundation Alternatives to Support Lightweight Transportation Structures
University	University of Maine & University of Rhode Island
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Funding Source(s) and Amounts Provided (by each agency or organization)	Federal: \$149,330; Hubbell: \$138,550; Helix Mooring: \$3,500; University of Maine: \$14,600
Total Project Cost	\$305,980
Agency ID or Contract Number	69A3551847101
Start and End Dates	09/2020 to 08/2022
Brief Description of Research Project	Modified helical (i.e. screw) piles are lightweight deep foundation elements that are screwed into the ground and efficiently generate geotechnical compressive and uplift resistance by mobilizing the shear strength of soil adjacent to helical plates that are welded to an extendable shaft. The addition of a novel collar vane increases the lateral and torsional resistance of this deep foundation element. Helical piles (HPs) are quick and simple to install, utilizing nonspecialized equipment that is ubiquitous in the United States construction industry, eliminating the need for a specialty contractor. Relative to conventional deep foundation alternatives, HP installation is relatively non-intrusive, less cumbersome, and appreciably less expensive. Lightweight transportation structures are often supported on costly conventional foundation systems that have only been advanced incrementally for decades. Savings that could arise from efficient design of these lightweight facilities may be applied elsewhere as available funding for transportation infrastructure continues to diminish. Moreover, these benefits may not be isolated to new lightweight transportation infrastructure, and benefits from this research may extend to other applications, including retrofits and upgrades to increase the capacity and extend the life of existing foundations required to support new or augmented structures.
Describe Implementation of Research Outcomes (or why not implemented)	This project is in its initial research phase. Implementation of research outcomes will be reported upon completion of the research outputs.
Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	This project is in its research phase. Impacts and benefits of the research will be reported after the implementation phase.



Web Links

- Reports
- Project website