

UTC Project Information	
Project Title	Investigation of Anchor Nut Loosening in High-Mast Light Poles Using Field Monitoring and Finite Element Analysis
University	University of Alaska Fairbanks
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Funding Source(s) and Amounts Provided (by each agency or organization)	
Total Project Cost	\$60000.00
Agency ID or Contract Number	DTRT12-G-UTC10
Start and End Dates	03/01/2012~07/31/2014
Brief Description of Research Project	<p>The Alaska Department of Transportation and Public Facilities (ADOT&PF) owns and maintains over one-hundred highmast light poles that are up to 170 feet tall. These poles are used to illuminate intersections and freeways in the central and southcentral regions of Alaska. The poles, which are used throughout the lower 48, have experienced scrutiny in the last decade after a number of catastrophic failures across the country. As part of its review of these structures, the ADOT&PF has found widespread and continual loosening of the anchor bolt nuts at the base of the poles. The design and performance of the poles is based on an assumption of tightened anchor bolts, and the loose nuts endanger nearby traffic and pedestrians. Given their height and proximity to major roadways, collapse of these poles would likely cause significant damage and multiple fatalities. Currently, the state inspects and re-tightens the nuts on each pole on a regular basis, but this is an expensive program and it is not known what level of safety it provides. A more permanent solution is required to ensure the safety of the structures and reduce maintenance efforts. This project will investigate the cause or causes of the nut loosening and recommend procedures to eliminate the phenomenon. In addition to a comprehensive final report, one of the final results of this project</p>

	will be the development of specific guidelines for remediating the problem in current poles, and recommendations for alternative designs for future installations. The guidelines will be shared with other states, many of which have also experienced nut loosening in thier high-mast light poles.
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 	Investigation Of Anchor Nut Loosening In High-Mast Light Poles Using Field Monitoring And Finite Element Analysis http://depts.washington.edu/pactrans/wp-content/uploads/2012/12/PacTrans-14-739439-Hamel-Scott-Small-Project.pdf

