

## PROJECT OVERVIEW REPORT

1. UTC Identifying Number  
DTRT13-G-UTC28
2. Center Identifying Number  
CAIT-UTC-NC55
3. Project Title  
Validation and Refinement of a Novel Deicing System for Stay Cables
4. Principal Investigator & Contact Information  
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6. Customer Principal  
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### 7. Project Description

The goal of this research project is to validate and provide a basis to improve and refine a novel de-icing system for stay-cables. This autonomous de-icing system shows significant potential to cost-effectively remove ice build-up without damaging the protective system of the underlying stay-cable. However, currently there is no means to validate the operation and effectiveness of the system to both provide owners confidence to permit deployment, and provide a means to refine and improve the system itself. This lack of validation represents the key barrier to the widespread adoption and implementation of this system to existing and new cable-stay bridges throughout the U.S.

By undertaking this one-year project, CAIT will fill this need through the use of the unique capabilities of the Bridge Evaluation and Accelerated Structural Testing (BEAST) Laboratory. In particular, this lab will be used to recreate the operational conditions under which the novel de-icing system will be expected to operate. Once the performance of the system has been established, any identified deficiencies will be noted and recommendations provided for their mitigation.

8. Implementation of Research Outcomes (or why not implemented)

The research team (together with the customer) will adopt three strategies to ensure the research outcomes reach all types of owners. First, a wide range of conferences will be targeted inclusive of the TRB Annual Meeting, the International Bridge, Tunnel, and Turnpike Association (IBTTA) Conference, and the International Bridge Conference (IBC), among others. Second, the team will directly connect with specific owners that they have relationships with and who are currently struggling to address the issue of stay-cable de-icing. Third, the team will work with publications such as Civil Engineering Magazine, Engineering News Record, and Structure, among others, to provide brief overviews of the de-icing system as well as a summary of the validation results.

9. Impacts/Benefits of Implementation (actual, not anticipated)

To Be Determined

10. Dates and Budget

Start date: 7/1/2018

End date: 9/30/2019

UTC (CAIT) Dollars: \$222,248

Cost Sharing: \$0

Total Dollars: \$222,248

11. Keywords

De-icing, winter maintenance, cable-stayed bridge, environmental testing

12. Web Links (Reports and Project Website)

<https://cait.rutgers.edu/research/validation-and-refinement-of-a-novel-deicing-system-for-stay-cables/>