

PROJECT OVERVIEW REPORT

1. UTC Identifying Number
69A3551847102
2. Center Identifying Number
CAIT-UTC-REG63
3. Project Title
State-of-the-Art Technologies for Structural Health Monitoring of Tunnels: an Overview
4. Principal Investigator & Contact Information
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7. Project Description
Successful implementation and effectiveness of monitoring systems requires good understanding of (1) structure being monitored, (2) existence of various monitoring technologies and their advantages and limitations, (3) monitoring process and (4) roles of involved parties. In the case of tunnels, lack of understanding of any of these four factors may result in irremediable errors in implementation and loss of effectiveness in the use of monitoring technologies. The primary goal of this proposal is to perform extensive overview of the state-of-the-art technologies for structural health monitoring of tunnels. Such an overview aspires to serve as a source of information and basis on decision making for practitioners and asset managers, who are interested in instrumenting the tunnels for an improved safety and optimized maintenance.
8. Implementation of Research Outcomes (or why not implemented)
The intended outcome of the project will be an extensive report on state-of-the-art technologies for tunnel monitoring, which will encompass traditional,

advanced, and emerging technologies, present both advantages and limitations of each technology, and evaluate their suitability to monitor specific parameters of interest in both short and long terms. It is expected that this information will be very beneficial to DOT tunnel engineers and other interested professionals in the tunnels and monitoring community.

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

To Be Determined

10. Dates and Budget

Start date: 8/1/2021

End date: 7/31/2023

UTC (CAIT) Dollars: \$75,000

Cost Sharing: \$75,000

Total Dollars: \$150,000

11. Keywords

Structural Health Monitoring; Tunnels; Construction, Maintenance and the Use; Traditional, Advanced, and Emerging Sensing Technologies; Overview.

12. Web Links (Reports and Project Website)

<https://cait.rutgers.edu/research/state-of-the-art-technologies-for-structural-health-monitoring-of-tunnels-an-overview/>