

PROJECT OVERVIEW REPORT

1. UTC Identifying Number
69A3551847102
2. Center Identifying Number
CAIT-UTC-REG29
3. Project Title
Seismic Vulnerability Assessment of Deteriorated Bridges
4. Principal Investigator & Contact Information
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7. Project Description
The NYSDOT Seismic Vulnerability Manual provides the procedures for assessing and rating the seismic vulnerability of bridges in NYS to facilitate timely corrective actions. However, these procedures rely on prescriptive vulnerability scores based on as-built conditions and do not systematically account for the bridge deterioration over time, e.g. rebar mass loss in piers due to corrosion, which can be critical for the resilience of a bridge during an earthquake or other large loading events. The primary goal of this proposal is to demonstrate seismic vulnerability assessment of a group of NY state bridges subjected to deterioration due to corrosion or other factors. Assessment will be performed using a systematic framework that can combine the effects of corrosion and seismic hazards. The results can be used to prioritize bridges for maintenance when resources are limited.
8. Implementation of Research Outcomes (or why not implemented)
The intended outcome of the project is the demonstration of the assessment methodology on a small group of bridges, recommendations for the NYSDOT

Seismic Vulnerability Assessment Manual to incorporate the effects of degradation, and recommendations for bridge inspectors to identify damage that is critical for seismic resilience. The framework that will be demonstrated in this research can be similarly used to update the procedures of other state DOTs (especially in the neighboring USDOT regions).

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

10. Dates and Budget

Start date: 1/1/2020

End date: 12/31/2020

UTC (CAIT) Dollars: \$ 70,293

Cost Sharing: \$71,183

Total Dollars: \$141,476

11. Keywords

seismic fragility, asset management, repair, service life, resiliency, corrosion, deterioration, loss of functionality

12. Web Links (Reports and Project Website)

<https://cait.rutgers.edu/research/seismic-vulnerability-assessment-of-deteriorated-bridges/>