Data for CAIT-UTC-REG2B - Sustainable, Rapid Repair Utilizing Advanced Cementitious Materials

Dataset available at: https://doi.org/10.7910/DVN/FTNV5O

(This dataset supports report **Sustainable, Rapid Repair Utilizing Advanced Cementitious Materials**)

This U.S. Department of Transportation-funded dataset is preserved by the Center for Advanced Infrastructure and Transportation (CAIT) in the CAIT Dataverse, which is a part of the Harvard Dataverse repository (https://dataverse.harvard.edu/), and is available at https://doi.org/10.7910/DVN/FTNV5O

The related final report **Sustainable, Rapid Repair Utilizing Advanced Cementitious Materials**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/60455.

Metadata from the Harvard Dataverse Repository record:
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Title: Data for CAIT-UTC-REG2B - Sustainable, Rapid Repair Utilizing Advanced Cementitious Materials
Author:

- Ranade, Ravi (University at Buffalo, State University of New York)
- Okumus, Pinar (University at Buffalo, State University of New York)

Description: Durability and resilience of a structure are typically considered separately, as they address structural performance under different types of loads. A systematic framework for combined durability-resilience assessment of an RC bridge column is presented in this article. Corrosion of steel reinforcement is the main deterioration mechanism considered for durability evaluation, and earthquakes are assumed to be the primary hazard for resilience assessment. An example bridge column with two types of cover materials – conventional concrete and ductile fiber-reinforced concrete – is considered in our study. The ductile fiber-reinforced concrete provides better durability than the conventional concrete, resulting in lower rebar mass loss at a given time. Fick's second law of diffusion is used to model the corrosion initiation phase. A pitting corrosion model, accounting for the effects of cracking on the corrosion rate, is considered for the corrosion propagation phase. Seismic fragility curves are constructed by nonlinear dynamic analysis, incorporating the rebar mass loss, at discrete times during the life span of the bridge. The results indicate that corrosion of reinforcement increases the vulnerability of the bridge column to seismic hazard. Furthermore, better durability provided by the ductile fiber-reinforced concrete cover leads to improved seismic resilience.
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Dataset description:
This dataset contains 1 .zip file, described below.

Data for UTC Region II Year 1 Ranade-Okumus final report.xlsx:
The .xlsx and .xls file types are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine.

National Transportation Library (NTL) Curation Note:
As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (https://ntl.bts.gov/public-access) Section 7.4.2 Data, the NTL staff has performed *NO* additional curation actions on this dataset. NTL staff last accessed this dataset at https://doi.org/10.7910/DVN/FTNV5O on 2022-05-16. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.