

Cost-Effective Methods to Retrofit Metal Culverts Using Composites Dataset

Dataset available at: <https://doi.org/10.5281/zenodo.3893917>

(This dataset supports report **Cost-Effective Methods to Retrofit Metal Culverts Using Composites**, <https://doi.com/10.5281/zenodo.3893915>)

This U.S. Department of Transportation-funded dataset is preserved by the Transportation Consortium of South-Central States in the digital repository Zenodo (<https://zenodo.org/>), and is available at <https://doi.org/10.5281/zenodo.3893917>

The related final report **Cost-Effective Methods to Retrofit Metal Culverts Using Composites**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/50718>

Metadata from the Zenodo Repository record:

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Description: One of the current pressing problems for all DOTs is the corrosion-oriented deterioration of existing metal culverts. These metal culverts typically are designed for a life of 50 years. However, corrosion is making them last no longer than 30 years. A Glass Fiber Reinforced Polymers (GFRP) pipe section has been evaluated as a fit-in GFRP profile liner for complete repair and rehabilitation of the corroded metal culvert with an expected life of 75 years. This is mainly because of the corrosion free nature of the GFRP material. A comprehensive rehabilitation methodology and laboratory scale three-point bending test was conducted to test the composite action of the steel-GFRP section. A finite element model was developed to provide inference on the mechanics of the GFRP-CMP section and the effect of corrosion on the mechanics of the retrofitted pipe. The FE model was verified with experimental observations and will be used to design GFRP section for retrofitting an existing culvert in the field. A Life Cycle Cost Analysis model was developed to conduct a cost-benefit analysis of the proposed retrofitting technique and compare it with other existing technologies.

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Versions:

- Version 1 - 10.5281/zenodo.3893917
- You can cite all versions by using the DOI 10.5281/zenodo.3893917. This DOI represents all versions, and will always resolve to the latest one.

Recommended citation:

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Dataset description:

This dataset contains 1 .zip file collection described below.

Transect data.zip:

This collection contains 7 .xlsx files listed below. .xlsx files can be opened with Excel, and other free available software, such as OpenRefine.

- Corroded_Fulscale testing test results.xlsx
- GFRP tension test.xlsx
- GFRP_Mech_prop.xlsx
- Grout compression.xlsx
- Grout tension.xlsx
- LCCA.xlsx
- Noncorroded_FUlscale test.xlsx

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/10.5281/zenodo.3893917> on 2020-09-30. 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.