

# Calculating Pile Downdrag: Experimental and Numerical Investigations Dataset

Dataset available at: [https://digitalcommons.lsu.edu/transet\\_data/112/](https://digitalcommons.lsu.edu/transet_data/112/)

(This dataset supports report **Calculating Pile Downdrag: Experimental and Numerical Investigations**)

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The related final report **Calculating Pile Downdrag: Experimental and Numerical Investigations**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/61738>.

## Metadata from the LSU Digital Commons Repository record:

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Abstract: Piles can be exposed to significant settlement (i.e., downdrag) and compressive force (i.e., dragload) if embedded in consolidating ground. Downdrag has been included in the design of piles, but there is uncertainty about how downdrag and dragload are efficiently considered in the pile design due to the differences in the existing design methods (e.g., AASHTO and FHWA). Although several field monitoring programs were successfully conducted on pile downdrag, fully instrumented pile model tests are still needed to investigate the responses at the soil-pile interface to improve the design of pile downdrag. This research focused on investigating the downdrag and skin friction at the soil-pile interface using fully instrumented small-scale pile tests. An aluminum pile (51×102×508 mm) was subjected to downdrag in a consolidating loose sand deposit. Innovative interface shear stress sensor (S3F) and strain gauges were installed on the pile surface to measure the drag forces and skin frictions at the soil-pile interface. Settlement plates were installed in the soil at different locations to measure the soil settlement profile. The S3F sensor was calibrated in the lab. Position transducers were also attached to the head and tip of the pile to measure the pile settlement profile. The lab test results will be used to calibrate a numerical model that can predict pile downdrag with a high level of accuracy, which can provide a more realistic estimation of pile downdrag, avoid the conservative pile foundation design, and possibly reduce the foundation cost.

Comments: Tran-SET Project: 20GTLSU10

## Recommended citation:

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**Dataset description:**

This dataset contains 1 file collection described below.

**Downdrag\_report\_data\_2.zip:**

- Downdrag report data.xlsx
- Downdrag report data-2.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://digitalcommons.lsu.edu/transet\\_data/112/](https://digitalcommons.lsu.edu/transet_data/112/) on 2022-05-19. If, in the future, you have trouble accessing this dataset at the host repository, please email [NTLDataCurator@dot.gov](mailto:NTLDataCurator@dot.gov) describing your problem. NTL staff will do its best to assist you at that time.