



CALTRANS DIVISION OF RESEARCH,
INNOVATION AND SYSTEM INFORMATION

Research Results

Geotech/
Structures

DECEMBER 2023

Project Title:

Development of Next Generation Liquefaction (NGL) Database for Liquefaction-Induced Lateral Spread

Task Number: 2992

Start Date: June 1, 2022

Completion Date: September 30, 2021

Task Manager:

David Liao
Senior Transportation Engineer
David.Liao@dot.ca.gov

Development of Next Generation Liquefaction (NGL) Database for Liquefaction-Induced Lateral Spread

This research addresses the need to improve methods to estimate the amount of permanent ground displacement associated with the liquefaction-induced lateral spreading.

WHAT WAS THE NEED?

The research topic addresses the need to improve empirical, semi-empirical, analytical and numerical methods to estimate the amount of permanent ground displacement associated with liquefaction-induced lateral spread resulting from several major earthquakes.

WHAT WAS OUR GOAL?

This research was launched to substantially improve the quality, transparency, and accessibility of case history data related to ground failure.

WHAT DID WE DO?

Completed population of the case history database. Completed database dissemination and screening criteria for lateral spread potential.

WHAT WAS THE OUTCOME?

The primary outcome of this research is a vetted and community database of seismic, topographical, geotechnical, and horizontal displacement measurements about case histories of liquefaction-induced lateral spread for further research and model development by other researchers and investigators under the auspices of the Pacific Earthquake Engineering Research (PEER) Center (<http://peer.berkeley.edu/>). Secondary outcomes are software development and support required to host and disseminate this database and supporting information.



DRISI provides solutions and knowledge that improves California's transportation system



WHAT IS THE BENEFIT?

The Next-Generation Liquefaction (NGL) project was launched to (1) substantially improve the quality, transparency, and accessibility of case history data related to ground failure; (2) provide a coordinated framework for supporting studies to augment case history data for conditions important for applications but poorly represented in empirical databases; and (3) provide an open, collaborative process for model development in which developer teams have access to common resources and share ideas and results during model development, to reduce the potential for mistakes and to benefit from best practices mutually.

LEARN MORE

Web based database dissemination tool available at <https://nextgenerationliquefaction.org/>

The contents of this document reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the California Department of Transportation, the State of California, or the Federal Highway Administration. This document does not constitute a standard, specification, or regulation. No part of this publication should be construed as an endorsement for a commercial product, manufacturer, contractor, or consultant. Any trade names or photos of commercial products appearing in this document are for clarity only.