ENGEO VIEW

Here is What Awaits You!

- Geotechnical Earthquake Engineering Overview and Projects
- Awards and Recognitions

Design and retrofit of buildings in the urban cores of seismically vulnerable regions present several unique seismic, geotechnical, geologic, and constructability challenges. In close collaboration with leaders in academia, the engineers at ENGEO developed precise methodologies for performing seismic-hazard and site-response analyses for new structures and existing buildings. These approaches allow us to provide optimized earthquake engineering, typically resulting in much more efficient superstructure designs in seismically active urban environments.

Earthquake Engineering Overview
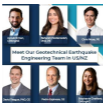
Geotechnical Earthquake Engineering Service

ENGEO's engineers use advanced methods, including non-ergodic and ergodic analyses, to perform site-specific geotechnical earthquake engineering.

We address unique challenges in urban core buildings of seismically vulnerable regions, bringing precise methodologies and working collaboratively with regulatory agencies to ensure timely permitting and project advancement. Our peer-reviewed analyses highlight our commitment to excellence.
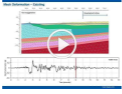
Learn More

Meet Our Geotechnical Earthquake Engineering Team in USNZ

This is ENGEO's Earthquake Engineering Team!

Ayoub Riman, CMEngNZ

Bahareh Heidarzadeh, PhD, PE

Chris Nizas, PE

David Teague, PhD, GE

Pedro Espinosa, GE

Stéphanie Cheffène, CMEngNZ

Learn More about their journey.

Understanding PLAXIS GRA with PM4Sand: A Geotechnical Insight

Understanding PLAXIS GRA with PM4Sand: A Geotechnical Insight

As shown in this video, ENGEO uses advanced modeling techniques to improve seismic design for a waterfront site in San Francisco. The first part shows the impact of ground shaking at the existing conditions, while the second part demonstrates how a soil-cement-mixed buttress can stabilize the site and reduce deformations.

Featured Projects

Sutter Medical Center of Santa Rosa, Medical Center Expansion

ENGEO utilized lean design and integrated project delivery methods, along with advanced building technologies, to enhance efficiencies and optimize project outcomes.

Our contributions included addressing geotechnical hazards such as moderate liquefaction and seismic softening potential, as well as compressible soil, ensuring a streamlined construction schedule and cost-effective solutions.

Learn More

Atlas Block: Building Resilience from the Ground Up

ENGEO is the Geotechnical Engineer of Record, providing design recommendations for new and existing foundations, seismic-hazard mitigation, soil-structure interaction, constructability, and temporary stabilization.

ENGEO has been performing an evaluation of the foundation systems with a three-dimensional finite element model to more accurately predict differential performance between new and existing buildings.

Learn More

Brooklyn Basin: Transforming the Urban Life experience

The project consists of an environmentally sustainable, mixed-use urban master planned development with 3,100 residential units, 200,000 square feet of retail and commercial space, and 30 acres of parks, public trails and open space, new marinas, and renewed wetlands.

ENGEO performed a site-wide non-ergodic seismic-hazard analysis (SHA) for the development. Non-ergodic SHA involves both evaluating historical ground motions recorded at or near the site and simulating the response of the site to various ground-motion levels.

Learn More

1 Whitmore Street: The Pinnacle of Seismic Performance

ENGEO provided geotechnical, hydrogeological and environmental services for the development of a multi-rise commercial structure located at 1 Whitmore Street, Wellington, New Zealand. The near-completed building is a waterfront, 13-story, base-isolated structure, with an approximately one-story basement that has been formed to accommodate the base-isolation system below ground level.

An in-depth understanding of the ground, seismic performance, and our practical approach allowed ENGEO to recommend a robust design that met and exceeded the requirements and achieved one of the most resilient buildings on Wellington's Waterfront.

Learn More

News and Updates from the World of Earthquake Engineering

6ICEGE Presentation in Japan: Enhancing Seismic Safety with Non-Ergodic SHA

David Teague, PhD, GE, presented at the 6th International Conference on Earthquake Geotechnical Engineering in Osaka. David had the opportunity to present on "Application of Non-Ergodic Site Response for High-Velocity-Contrast Sites in the San Francisco Bay Area". His presentation compared the findings of traditional ergodic seismic-hazard analyses (SHA) to more refined, non-ergodic SHA at two sites in the San Francisco Bay Area.

Learn More and Access a Full Case Study

ASCE 7-22 Critical Geotechnical Updates: What You Need to Know

The ASCE 7-22 standard will be implemented in the next California Building Code that will take effect on January 1, 2026. The seismic design provisions of ASCE 7-22 include significant advancements relative to its predecessor, ASCE 7-16, leading to enhanced structural resilience against earthquakes. A notable change is the introduction of more refined site classes, which are based primarily on the average shear-wave velocity in the upper 100 feet or 30 meters (VS30), providing a more standardized and precise basis for site classification. Additionally, ASCE 7-22 includes more robust guidelines for calculating vertical response spectra and requirements for estimating dewatering on deep foundations in liquefiable soils. These changes underscore the necessity for ENGEO's seismic design specialists. The ENGEO engineers have project impacts including certain insurance requirements. For example, changes in site class designation can influence risk assessments and ENGEO's participation in preliminary from building-to-building codes (Site Classification). The proposed standards are in the form of Earthquake Resistant Systems. Studies on the ground motion spectra will assess the difference in a site-specific analysis will produce significant refinement relative to the generic set factors. ENGEO aims to inform how these changes may affect your future projects and how our advanced seismic-hazard and numerical modeling approaches can help optimize designs to benefit your project goals.

ENGEO's Contributions to Chapter 21

David Teague, PhD, GE, serves as a corresponding member of the 2026 National Earthquake Hazards Reduction Program (NEHRP) Provisions Update Committee (PUC). The NEHRP provisions document is a technical resource for updates to U.S. building codes and standards (e.g., ASCE 7). David serves on a subcommittee tasked with proposing updates and revisions to the seismic provisions contained within a new edition of Section 21.1, which pertains to site-response analysis procedures. Additionally, David is also involved in efforts to identify when site-response analysis should be required of sites with a liquefaction hazard.

ENGEO Marks Third Year with EERI, Advancing Earthquake Resilience

For the third consecutive year, ENGEO is proud to be a subscribing member of the Earthquake Engineering Research Institute (EERI), an organization dedicated to reducing earthquake risk and advancing resilient communities globally. EERI provides invaluable earthquake engineering resources and ENGEO's role as a leader in the industry, where we provide innovative solutions to complex geotechnical and seismic challenges. Through this partnership, ENGEO continues to contribute to cutting-edge research and promote seismic safety, helping build safer, more resilient structures and communities worldwide.

Recent News: California Hospitals Work to Meet Earthquake Retrofit Deadline

California hospitals are striving to meet the 2030 earthquake retrofit deadline, yet many face intensified challenges, especially after the COVID-19 pandemic. A critical seismic requirement that certain building components remain functional post-earthquake. Securing adequate funding is a significant hurdle, with more than half of the state's 410 hospitals operating at least one building that may not be functional following a major earthquake. ENGEO's engineering is expertise in seismic engineering, offers innovative, data-driven solutions that optimize seismic demands, leading to substantial cost savings and making many retrofit schemes financially feasible and actionable for healthcare facilities.

ENGEO Excellence

ENGEO Wins 2024 ASCE San Francisco Section Awards in Four Categories

ASCE Outstanding Geotechnical Project Award for **The Pier 70 Special Use District** (SUD)

ASCE Outstanding Urban or Land Development Project Award for **The Potrero Power Station Shoreline Stabilization**

ASCE Outstanding Small Project Award for **The Oakland Zoo Entrance Emergency Culvert Repair**

ASCE Outstanding Flood Management Project Award for **The Foster City Levee Improvements**

Learn More

John Holmgren Seismic Resilience in Practice Award 2024

We are very proud to announce that "One Whitmore Street" was awarded the John Holmgren Seismic Resilience in Practice Award 2024.

Congratulations to the entire team on the remarkable achievement! Your dedication and expertise have not only earned this prestigious recognition but also advanced seismic resilience.

Professional Licenses

Congratulations to newly licensed individuals.

Jamie Thomas, CPEng
Chartered Professional Engineer, NZ

Jesse Keith, PE
Professional Engineer, CA

Rhys Morgan, CPEng
Chartered Professional Engineer, NZ

Jacob Correll, CMEngNZ (Pēngāhere)
Chartered Member of Engineering, NZ

We are honored to have our **75 licensed** professionals **PE/GE/CE/GS** in the states of **CA, WA, NV, HI, NC, TX, UT, Guam, and CNMI**.

Celebrating Professional Licenses in USNZ

Client's Testimonial

"Lucas Museum of Narrative Art is a geometrically complex, base-isolated structure, located in Los Angeles. Achieving an enhanced set of design criteria for displacements and accelerations, while not exceeding pre-established moat dimensions, required more sophisticated thinking. This thinking came from the engineers at ENGEO who developed the design ground motions at the site using non-ergodic methods, which prior to our project had only been used in academic settings. Our project was the first commercial application of non-ergodic site response. Not only did ENGEO's work result in a better understanding of the ground shaking that helped us to achieve the project's structural design criteria, but they also seamlessly helped ferry this new thinking through Los Angeles Department of Building and Safety." - Dan Swall / LERA