

Charles Lee Powell Structural Research Laboratories Field Station, Camp Elliott



Overview

With its one-of-a-kind facilities, the Field Station of the Powell Laboratories will enable structural tests that have never been possible before. The Field Station will be equipped with the world's first outdoor shake table adjacent to the country's largest soil-structure interaction facility, allowing researchers to perform dynamic earthquake safety tests on full-scale structural systems. A unique blast simulator will be equipped to study the effects of bomb blasts, and test new technologies to harden buildings against terrorist bomb attacks. UCSD broke ground on the \$20M Field Station in December 2002, and construction is scheduled for completion by Fall 2004.



Large High Performance Outdoor Shake Table (LHPOST)

Funding Agency: National Science Foundation (NSF)

Description: At 25 ft by 40 ft, the world's first outdoor shake table will also be the largest shake table in the United States — able to handle structures weighing up to 2,200 tons and buildings as tall as 60 feet. With its powerful hydraulic actuators capable of shaking at speeds up to 6 ft. per second, the shake table will be able to produce accurate near-fault ground motions, creating realistic simulations of the most devastating earthquakes ever recorded. The LHPOST is part of the Network for Earthquake Engineering Simulation (NEES) initiative which is providing \$82 million to construct or enhance research facilities at more than 15 U.S. universities, providing an unprecedented, networked infrastructure for earthquake engineering research and education.



Soil Foundation-Structure Interaction Facility (SFSI)

Funding Agency: California Department of Transportation

With its two refillable soil pits, laminar soil shear box, and two reaction walls, this will be North America's largest facility for testing soil-structure reactions to earthquakes and other natural disasters such as hurricanes. The reaction walls allow for full-scale testing of systems such as a bridge abutments and pile foundations. Researchers will be able to tailor soil properties to simulate conditions in specific geographic locations, and to analyze soil-related phenomena caused by earthquakes such as liquefaction and lateral spreading. The SFSI is located adjacent to the large high performance outdoor shake table, which allows for full-scale testing of foundations and structures.



Blast Simulator

Funding Agency: Technical Support Working Group (TSWG)

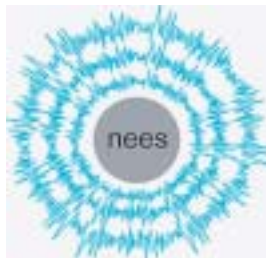
Description: The explosive loading laboratory containing the world's first laboratory-based blast simulator will be used to perform fully repeatable, controlled blast load simulations on critical structural elements (e.g. columns, beams and girders, walls, and floors) and on potentially lethal non-structural elements such as glass windows, masonry walls, and curtain walls. The simulator will be used to characterize blast effects on structural systems and components for use in developing retrofit and hardening optimization technologies.

Board of Directors

The Jacobs School of Engineering has formed a board of directors for the Field Station at Camp Elliott comprised of members of the construction and structural engineering industries. The board provides both financial support and professional expertise to advance the research program. Members include:

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