DARE

Soil–Foundation–Structure Systems Beyond Conventional Seismic "Failure" Thresholds : Application to New and Existing Structures and Monuments

European Research Council

SEVENTH FRAMEWORK PROGRAMME

The Main Concept of the Project

Conventional seismic design for soil–foundation–structure interaction is still based on the "prudent" conservative approach inherited from static geotechnical and structural engineering: Exceedance of a number of thresholds that lead to the creation of failure mechanisms in the supporting soil or at the footing–soil interface must be avoided.

This is accomplished by the use of "overstrength" factors plus (explicit and implicit) factors of safety.

However, a growing body of evidence suggests that soil–foundation inelastic and nonlinear response under seismic excitation is unavoidable, and at times even desirable. Our research helps break away with the very philosophy of the conventional approach for seismic loading and contributes in a decisive way towards a soil–foundation–structure design that can survive seismically while operating at the verge of failure.

George Gazetas

www.ideas-dare.com

FINAL WORKSHOP : Athens, 25-26 October 2013

Friday, 25 October [1:30– 7:00 pm]: Introduction ■ Research Tools: Experimental, Numerical ■ Seismic Loading Beyond Design Levels: Uplifting and Sliding of Rigid Bodies ■ The Concept: "Inviting" Uplifting and Failure ■ The UC Davis Experimental and Theoretical Related Research ■ "Rocking-Isolation" of Frames

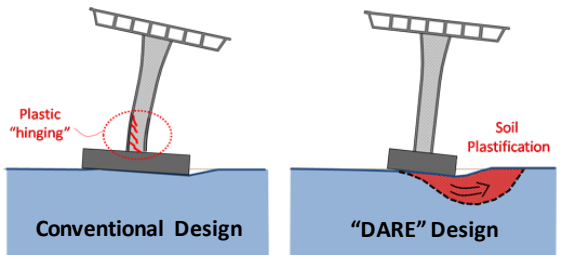
Saturday, 26 October [9:30– 2:00 pm]: Rocking Isolation for Piled Foundations ■ Macroelements ■ Foundations to undergo Tectonic Fault Dislocation ■ Practical Conclusions of "DARE"

Invited Speakers: B. Kutter (USA) **, A. Pecker** (FRANCE) **, R. Paolucci** (ITALY)

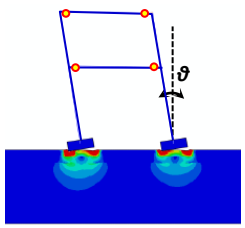
"DARE" Team : G. Gazetas, I. Anastasopoulos, N. Gerolymos, R. Kourkoulis, F. Gelagoti, E. Garini M. Loli, G. Tasiopoulou, S. Giannakos, Th. Zafeirakos, A. Tsatsis E. Vintzilaiou, N. Makris, E. Sapountzakis, I. Psycharis

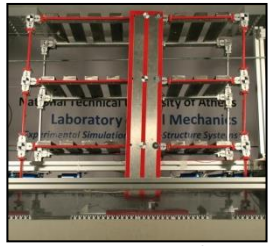
Venue: "Excelixi Training and Conference Center Amphitheater", El. Venizelou 154, Kastri [map]

Project Highlights

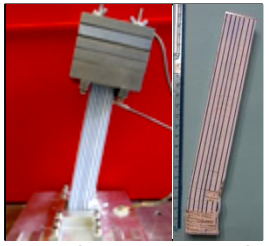


Rocking Frames

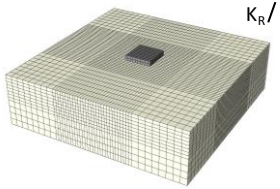


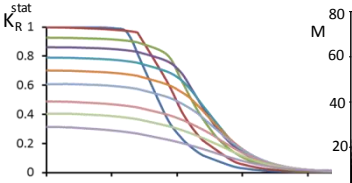


1-g experiments of a Rehabilitated Building

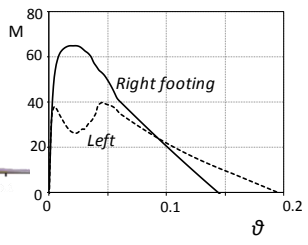


Centrifuge experiments of a Concrete Bridge Pier





Calibration of nonlinear spring-dashpot elements



"DARE" Application to Deep Foundations