

The Macroelement Concept for Shallow and Deep Foundations: Efficient Tool for the Analysis of SFSI Problems

Prof. Claudio Tamagnini

Department of Civil and Environmental Engineering, University of Perugia

Seminar overview:

The standard approach widely adopted in current geotechnical practice for the design of shallow and deep foundation is based on the independent evaluation of the safety level with respect to both ultimate limit states and serviceability limit states. The “stability” problem is typically addressed using classical limit equilibrium solutions based on perfect plasticity. The “settlement” problem is typically solved using empirical or semi-empirical approaches which the experience has proven satisfactory under typical design conditions.

Recently, however, the need for proper design of the foundations of special structures, such as tall bridge piers, towers or offshore wind turbines under severe loading conditions (e.g., high load eccentricity and inclination; cyclic and dynamic nature of the applied loads) has motivated an increased interest towards the development of more sophisticated

analysis and design tools, which are capable of describing the complete soil–foundation–superstructure interaction (SFSI) processes in a more rational and unified way, from stable equilibrium states to ultimate failure under complex loading conditions. This lecture focuses on a simple, efficient yet powerful approach to deal with SFSI problems in presence of isolated shallow and deep foundations: the macroelement approach.

Biography:

Prof. Claudio Tamagnini obtained his PhD in Geotechnical Engineering at the Sapienza University of Rome. He then conducted research in Stanford University. He is currently a Professor in Geotechnical engineering at the university of Perugia, working mainly on numerical modelling of the mechanical response and thermo-hydro-mechanical behavior of granular material, on soil-structure interaction problems under static and seismic conditions and on decontamination of polluted sites.



When and where:

Thursday, 21 Mar, 19:00

Newnham Terrace, Darwin College

Queries:

Charalampos Konstantinou
ck494@cam.ac.uk