

**Department of Civil Engineering & Engineering Mechanics
Columbia University**



**Dongju Lee Memorial Lecture
Seismic behaviour and performance-based design of embedded
retaining walls**

Prof. Luigi Callisto, University of Rome “La Sapienza”

Host: Prof. H. Ling

In common practice, the seismic design of an embedded retaining wall is carried out using the pseudo-static method: constant forces are introduced in a limit equilibrium calculation and the seismic analysis of a retaining wall is treated similarly to the evaluation of the safety against a collapse mechanism.

In the present study, the seismic behaviour of embedded retaining walls in a coarse grained soil is studied with a number of non linear dynamic numerical analyses. The results of these analyses are used to propose a reconsideration of the simple pseudo-static calculation, showing that the method can be used within a performance-based design procedure. The seismic performance of the wall is quantified in terms of permanent wall displacements that derive from repeated mobilisation of soil strength. However, the possibility is also investigated that a balanced yielding of the soil and the retaining walls occur during the earthquake.

February 9, 2010 (Tuesday)

**3:00 - 4:00 p.m.
Room 644, Mudd**

<http://www.civil.columbia.edu/~ling/seminar>