

## **Liquefaction Susceptibility and Cyclic Resistance of Transitional Silts with Application to Subduction Zone Earthquakes**

The cyclic resistance and potential for cyclic failure of low plasticity transitional silt soils are often challenging to assess using available liquefaction case history- and in-situ penetration test-based methods. This lecture will provide an overview of findings regarding the cyclic behavior of transitional nonplastic and plastic silt soils and corresponding models developed. Liquefaction susceptibility criteria and a means for reliably quantifying liquefaction susceptibility are discussed. Typical hysteretic responses and corresponding cyclic resistances are presented, with emphasis on the ultimate hysteretic response owing to the larger number of equivalent cycles of loading,  $N$ , associated with subduction zone earthquakes. Relationships allowing the estimation of the equivalent number of cycles associated with subduction zone earthquakes are presented. Then, a model for estimating the cyclic resistance ratio with  $N$  for transitional silts is presented in consideration of their plasticity and stress history.