TRENDS IN EXPERIMENTAL DATA OF INTERMEDIATE SOILS FOR EVALUATING DYNAMIC STRENGTH

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Tuesday, June 26
Intermediate soils

- Low plastic (PI) silty clays
- Clayey sands
- Variation in gradation & plasticity

Fundamental behavior:
- ‘sand-like’ (coarse-controlled) to
- ‘clay-like’ (fines-controlled)
Appropriate method to assess seismic strength

- Liquefaction correlations using in-situ testing (CPT, SPT)
  - ‘Sand-like’
  - Sample disturbance renders unreliable laboratory test results

- Cyclic softening procedures w/ laboratory testing
  - ‘Clay-like’
  - Able to manage effects of sample disturbance laboratory testing

Case-by-case judgement required
Purpose for compilation of test data

- Goals
  1. Better understand fundamental behavior
  2. Estimate behavior in advance of testing
  3. Compare against site knowledge to evaluate if laboratory testing appropriate

- Experimental data from 16 studies
  - Natural soils
  - FC = 25-100%, PI = 0 – 30
  - Normally & over consolidated (NC & OCR)
Trends in Experimental Data

• Organization of data
  – Group A – ‘clay-like’, amendable to laboratory testing
  – Group B – less ‘clay-like’, use of laboratory testing depends on field conditions & managing sample disturbance
  – Group C – more ‘sand-like’, likely effects of sample disturbance renders unreliable seismic strengths
Trends in dynamic strength

- Estimating dynamic strengths
  - CRR ($\tau_{cyc}/\sigma'_{1c}$)
  - Cyclic strength ratio ($\tau_{cyc}/s_u$)

- Extension to PI=6

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