Geotechnical Engineering Practice: Changing the Paradigm

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Promoting the Use of Advanced Numerical Methods

- Identify Target Audience
- Demonstrate the Benefits
- Address Data Requirements
- Foster Competition in the Market Place
- Don’t Oversell
- Identify and Discuss Application Failures
Project Organization – Type 1

Owner

Architect or Construction Manager

Structural Engineer

General Civil

Geotechnical Engineer
Project Organization – Type 2

Owner

Regulatory Agency

Geotechnical Engineer
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Seismic Design Requirements

**Incentive**
- Adoption of IBC
- Advanced Analysis is Cost Effective

**Applications**
- Site specific response
- Soil-Structure Interaction
- Response of Earth Structure
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Address Data Requirement

• Keep number of required parameters to minimum
• Provide default values as appropriate
• Correlate parameters to index properties
• Utilize readily available test equipment
• Develop regional databases of material properties
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UTILITY OF RESULTS

• Verify assumptions that form the basis of simple methods
• Identify important features of the response
• Valuable results are those that lead to increased confidence in design
• Simple methods “simply are not simple”!
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CONCLUSIONS

• Applications to small & medium sized projects
  – Region-wide problems
  – Code requirements
  – Approval process involving regulator
• Geotechnical engineers must contribute to scope from the beginning of a project
• Case Studies need to demonstrate improvements in design and associated cost savings