

Introduction to Nonlinear Effective-Stress Site Response Analysis

Portland, Oregon – October 20, 2007
Schedule

Registration – Continental Breakfast	8:00 – 8:30
1. Introductions and Objective	8:30 - 9:00
<ul style="list-style-type: none">• Registration• Personnel Introduction (Dr. Neven Matasovic and Gustavo Ordonez)• Course Participant Introductions• Philosophy – Objectives – Limitations	
2. Role of Advanced Analyses in Geotechnical Earthquake Engineering	9:00 - 10:00 (Neven)
<ul style="list-style-type: none">• Why and When is Nonlinear Analysis Needed?• Why and When is Effective Stress Analysis Needed?• When to use the Nonlinear and Effective-Stress Analyses?• When are 2-D and 3-D Analyses Required?• When Soil-Structure Interaction Effects Should not be Ignored?• Limitations of Site Response Analyses	
Break	10:00 - 10:15
3. Nonlinear and Effective-Stress Analyses	10:15 - 12:00 (Neven)
<ul style="list-style-type: none">• Theoretical Background• Modeling<ul style="list-style-type: none">○ Layer Thickness, Transmitting versus Rigid Boundary○ Evaluation of Rayleigh (Viscous Damping) Parameters○ Porewater Pressure and Cyclic Degradation of Clay Models○ Use of Generic Input Parameters○ Generation of Input Parameters from Published Data• Interpretation of the Results<ul style="list-style-type: none">○ Calculation of Soil Liquefaction○ Calculation of Seismically-Induced Settlement○ Quasi 2-D Effects and Slip Elements• Validation of D-MOD2000<ul style="list-style-type: none">○ Response to Sinusoidal Loading and Handling of Reversals○ Case Histories○ Comparison with Other Programs	
Lunch	12:00 - 1:00
Nonlinear and Effective-Stress Analyses (cont.)	1:00 - 1:30 (Neven)
<ul style="list-style-type: none">• Validation of D-MOD2000<ul style="list-style-type: none">○ Response to Sinusoidal Loading and Handling of Reversals	

- Case Histories
- Comparison with Other Programs
- D-MOD Options and Models

4. Nonlinear Analysis - D-MOD2000 Hands-on Training **1:30 - 3:00 (Gus)**

- Program Download and Installation
- Site Specific Response Analysis with D-MOD2000
 - Problem Definition
 - Selection of Input Ground Motions
 - Dynamic Soil Properties
 - Soil Column
 - Assignment of Input Motion

Break **3:00 - 3:15**

5. Nonlinear Analysis - D-MOD2000 Hands-on Training (cont.) **3:15 - 4:30 (Gus)**

- Site Specific Response Analysis with D-MOD2000
 - Acceleration & Shear Stress Time Histories
 - Porewater Pressure and Degradation Index Time Histories
 - Response Spectrum
- Processing of Output Data from D-MOD2000

Closure **4:30 - 5:00**

- Questions/Answers