

Course will be held prior to the
Geotechnical Engineering Group
Dinner Meeting on Mar 27, 2003

Analysis of Landslides: Shear Strengths, Testing, and Stability Methods

An advanced, discussion-oriented short course on
landslide analyses for engineers and geologists
including a laboratory demonstration of applicable
shear strength testing.

Why You Should Attend:

After completing this course, you should:

- Have a knowledge of current geotechnical engineering practices for applicable shear strengths, shear strength testing, and static and seismic stability analyses for landslides
- Understand the measurement and selection of the peak, fully softened, and residual shear strengths for use in stability analyses
- Understand the importance and application of a cohesion value in stability analyses
- Become more proficient in reviewing slope stability problems

The **registration fee of \$425** (US currency) covers one full day of instruction, landslide reference materials and short course notes, refreshments and luncheon, and equipment demonstrations. The short course materials are not available for sale to persons not attending the course. Payment must be sent with the attached registration form.

Cancellation: Advance enrollment is required. If you cannot attend, please notify us immediately. We will try to refund as much of your fee as possible or you may select someone to assume your enrollment position. This is a limited enrollment course and “no-shows” will be charged the full amount of \$425 if they do not cancel before the start of the course.

Please contact Timothy D. Stark at 217-840-8263 or stark@shout.net for additional information.

Preliminary Course Outline

Landslide failure modes, stability analyses, and factors affecting slope stability – *Stark*

Static and seismic slope stability methods
2-D v. 3-D stability analyses for landslides
Importance of cohesion in stability analyses

Types of shear strength for landslides – *Stark*

Intact peak shear strength
Fully softened shear strength
Residual shear strength
First-time landslides v. ancient landslides
Numerical difference between fully softened and residual strength and relevance to landslides
Existence of cohesion in fully softened and residual strength conditions

Selection of shear strength parameters from laboratory direct shear, ring shear, and triaxial compression tests – *Stark*

Fully softened shear strength
Residual shear strength

Laboratory shear strength test procedures and interpretations – *Stark*

Direct shear
Torsional ring shear
Triaxial compression
Effect of mode of shear
Effect of sample preparation and ball-milling
Liquid limit and clay-size fraction

Luncheon

Use of empirical correlations for design and remedial measures – *Stark*

Correction factor for not ball-milling sample – liquid limit and clay-size fraction
Effect of liquid limit, clay-size fraction, and effective normal stress
New fully softened and residual shear strength correlations

Recommendations for conducting stability analyses for landslides – *Stark*
Slope stability methods
Stress-dependent failure envelope
Use of cohesion for fully softened and residual conditions

Demonstration of laboratory strength tests – *Cooper*

Fully softened shear strength
Residual shear strength

Course Instructors:

Timothy D. Stark is a Professor of Civil Engineering at the University of Illinois at Urbana-Champaign. Dr. Stark has been teaching and conducting research on static and seismic slope stability analyses and soil shear strengths for landslides since 1986. His research has led to a better understanding of design shear strength values, shear strength test procedures, and 2-D and 3-D stability analyses for landslides. Dr. Stark has received a number of awards for his teaching and research activities including the Standards Development Award from the ASTM (2002), Walter L. Huber Research Prize from the ASCE (1999), University Scholar Award from the University of Illinois (1998), Thomas A. Middlebrooks Award from the ASCE (1998), Dow Outstanding New Faculty Award from the American Society for Engineering Education (1994), and the Arthur Casagrande Professional Development Award from the ASCE (1992).

David R. Cooper is the President of Cooper Testing Labs, Inc. in Mountain View and Petaluma. Dave directs all laboratory testing for Cooper Testing Labs and regularly conducts shear strength testing for landslide analyses using direct shear, torsional ring shear, and triaxial compression apparatuses.