ENGINEERING TRAINING INSTITUTE AUSTRALIA

SLOPE STABILITY DESIGN WORKSHOP

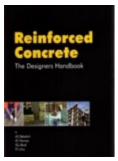
PAUL UNO

BE MBdgSc MIE(Aust) CPEng NER RPEQ APEC Engineer IntPE(Aus)

- Over 40 years of experience in the design and construction industry.
- Former P/T Senior Lecturer – UNSW and University of Sydney.
- Designed many foundations and addressed soil slope issues for mining developments, electricity transmission towers & other such structures.

Recommended Text:

Reinforced Concrete: The Designers Handbook
(2015 Revised Edition)



Beletich, Hymas, Reid & Uno

Livestreamed via zoom

WORKSHOP SUMMARY 8 hours of CPD

This one-day workshop is primarily aimed at civil and structural engineers who wish to design against the potential failure of sloping sites. This can be done by determining the likelihood of failure of the existing soils and slopes on site or designing retaining walls to resist any potential soil slope failures. The software ***FINE GEO5*** will be addressed.

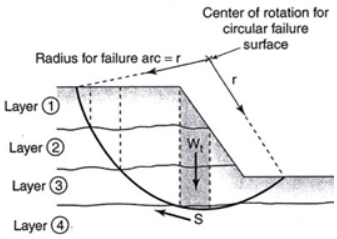
Australian Design Standards AS4678 (applicable in New Zealand) and their requirements as well as Eurocode provisions will be addressed. A series of slope stability methods will be addressed and compared.

All sessions provide worked examples, tutorial exercises and solutions.

PROGRAMME *(8.30am AEDT Zoom invite will be emailed)*

9.00 - 11.00 Session 1
- SOIL CLASSIFICATIONS, TESTS & SOIL MECHANICS

- Soil Basics – Bulk vs Dry vs Saturated vs Submerged Density
- Angle of Repose vs Angle of Internal Friction
- Cohesion vs Shear Strength
- Proctor Density Test and Unit Weights of Various Soils
- Clay vs Sand Basic Soil Type Classification to AS1726/NZS4402
- Shear Box Test vs Oedometer Test vs Triaxial Test
- Factors of Safety – Ultimate vs Serviceability
- HILF Density Classification
- Cracked vs Uncracked Soils
- Active vs Passive Pressure
- Coulomb vs Rankine Theory
- Pore Pressures
- Drained vs Undrained Soils
- Atterberg Limits (LL PL PI)
- Tutorial



(a) Selection of slices so base arc passes through only one soil type

11.00 - 11.15 Morning Break

11.15 – 1.00 Session 2
- SLOPE STABILITY I (Basic Principles)

- Australian and Overseas Examples of Wall and Soil Failures
- Soil Pressure Theory – active vs passive
- Causes of slope failures eg rainfall, inadequate drainage, poor construction, soil properties
- Modes of Slip Failure eg toe, base, slope
- AS4678 information regarding Slope Stability Failure
- Australian Standards vs Eurocode
- Tutorials - worked example by hand vs use of FINE (Geo5) software

1.00 - 1.30 Lunch Break

CALCULATORS REQUIRED

1.30 - 3.00 Session 3
- SLOPE STABILITY II (Basic Design Methods)

- Method of Slices
- Swedish (Fellenius) Method
- Determination of Safety Factor
- Drained vs Undrained
- Water Table effects on Slope Stability
- Phreatic Water line effects
- Tutorials using worked examples, as well as FINE GEO5 Software

3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 4
- SLOPE STABILITY III (Advanced Design Methods & Software)

- Slope Stability Method Comparisons
- Morgenstern-Price method
- Soil over Rock situation
- Taylor Charts
- Eurocode provisions
- Effects of Water Table
- Total vs Effective Stresses vs Pore Pressures
- Stability Charts and Friction Circle Method
- Force Equilibrium vs Moment Equilibrium
- Soil Vertical Cuts vs Tension Cracks in Soils
- Bishop method vs Janbu method vs Spencer Method
- Slope Stability Software packages – FINE Software vs Plaxis
- Tutorials using worked examples, as well as FINE GEO5 Software

Certificate of Attendance will be emailed

Download *FINE GEO5* demo version via the link
www.etia.net.au/geo5-demo-version

- One day course – **$785 pp**

FURTHER INFORMATION
- (02) 9899 7447
- +61 413 998 031
- registrations@etia.net.au

- *To register, visit our website* www.etia.net.au ***OR*** *scan the QR Code.*

Cancellations made more than 5 working days prior to a course will incur a 20% processing fee of the full registration amount.
Cancellations made 5 working days or less will incur forfeiture of the full registration fee.