ENGINEERING TRAINING INSTITUTE AUSTRALIA

www.etia.net.au
ABN 27 830 322 080

IMPORTANT NOTICE

- ALL COURSES WILL BE LIVE STREAMED (AEST).
- PLEASE REFER TO THE REGISTRATION FORM AT THE BACK OF THIS CATALOGUE (OR THE ETIA WEBSITE) FOR FURTHER DETAILS ON LIVE STREAMING.

November and December 2020 Courses

LIVE STREAMED COURSE LIST

- Tue 10 November 2020 — Metallurgy Materials Workshop
- Thu 12 November 2020 — Shallow Foundations Design Workshop
- Tue 17 November 2020 — Retaining Walls Design Workshop
- Thu 19 November 2020 — Slope Stability Design Workshop
- Tue 24 November 2020 — Blast, Fire & Progressive Collapse Workshop
- Wed 25 + Thu 26 Nov 2020 — Glass & Aluminium Façade Design Workshop
- Tue 1 December 2020 — Value Engineering: Principles & Applications Course
- Wed 2 December 2020 — Precast & Tilt Up Design & Construction Workshop
- Thu 3 December 2020 — Industrial Buildings Design Workshop
- Tue 8 December 2020 — Risk Management Workshop
- Thu 10 December 2020 — Cracking in Concrete Structures Design Workshop

ANNUAL SPONSORS OF ETIA

ENGINEERING TRAINING INSTITUTE AUSTRALIA

BLAST, FIRE & PROGRESSIVE COLLAPSE WORKSHOP

(Structural Robustness for Extreme Events)

NEW COURSE

DR. FARSHAD REZVANI

BEng MEng PhD RPEQ NER MIEAust

- Senior structural engineer (RBG)
- 14 years of experience in civil and structural design.
- Extensive research in progressive collapse assessment of structures.

Live streamed via

zoom

WORKSHOP SUMMARY

This workshop is aimed at practicing civil and structural engineers, and consultants working in the areas of structural design, construction and remediation of reinforced concrete and post tensioned concrete buildings and bridges.

Structures may be subjected to various hazards during their service life, which may affect their overall structural response in an unfavourable manner. Most building codes only suggest general recommendations for mitigating the effect of progressive failure in structures that are overloaded beyond their design loads.

Robustness is a term used to describe the ability of a structure to withstand unforeseen events, without being damaged to an extent disproportionate to the original cause. A structure that is robust will not collapse in progressive manner. Blast, fire, vehicular collision, etc are the potential extreme hazards that may lead to this catastrophe.

This workshop will address progressive collapse resistant design of steel and concrete buildings subject to extreme events based on internationally accredited design codes.

PROGRAMME (8.30 - 9.00 Zoom invite link will be emailed)

9.00 - 11.00 Session 1
- EXTREME EVENTS

- Background and challenges: review of some of the events that have led to collapse of structures and the changes in the design codes to mitigate the risk of progressive collapse.
- Extreme events and their effect on structural elements: physical expression of abnormal loading such as blast, fire, and impact and their effects on structural behaviour.
- Building codes and extreme events: review of design codes for progressive collapse resistant buildings.

11.00 - 11.15 Morning Break

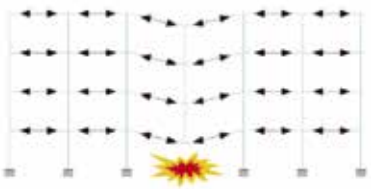
11.15 - 1.00 Session 2
- DESIGN APPROACHES

- Direct and indirect design approaches: Summary of explicit and implicit considerations of resistance to progressive collapse during the design process
- Tie Force Method: required tie strength, distribution, and location
- Alternate Path Method: Capability of the structure to bride over a missing structural element with the resulting extent of damage being localized
- Analysis procedure: linear static, nonlinear static, and nonlinear dynamic analyses to assess progressive collapse potential and design to mitigate the risk of it.

1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 3
- PROGRESSIVE COLLAPSE RESISTANCE

- Force- and Deformation-controlled actions: definitions, examples, and classification for primary and secondary structural elements
- Structural Modelling and acceptance criteria: how to model structural elements and assess progressive collapse potential
- Alternate Path method requirements for structural steel and reinforced concrete: Design strength and rotational capacity of structural elements and connections

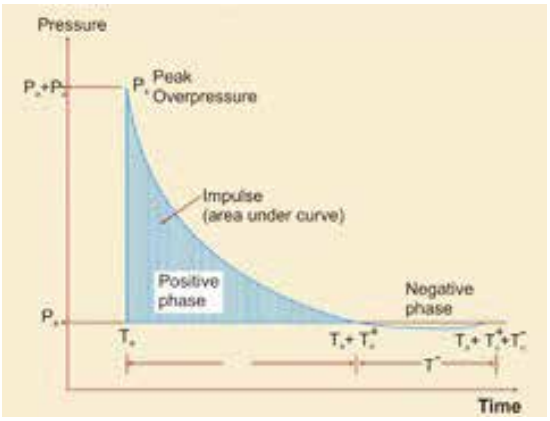


3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 4
- DESIGN EXAMPLE

- Design and modelling assumption: description of the structure, baseline preliminary design, and modelling approach
- Analytical modelling: using computational analysis and design packages.
- Progressive collapse potential assessment and preliminary design modifications through various analysis and design procedures.

Certificate of Attendance will be emailed



COURSE COST

- 1 day course – **$860 pp**

DATES, VENUES & REGISTRATION

- *Registration form (back of catalogue)*
- *Visit our website* www.etia.net.au

FURTHER INFORMATION

- *Office* (02) 9899 7447
- *Mobile* 0413 998 031
- *Email* registrations@etia.net.au

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ENGINEERING TRAINING INSTITUTE AUSTRALIA

CRACKING IN CONCRETE STRUCTURES DESIGN WORKSHOP

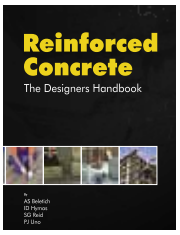
PAUL UNO *BE MBdgSc MIE(Aust) CPEng NER RPEQ APEC Engineer IntPE(Aus)*

- Over 40 years of experience in the design and construction industry.
- Devised the internationally recognised bleed water evaporation E formula $E = 5[(Tc+18)^{2.5} - r(Ta+18)^{2.5}](V+4)x10^{-6}$ which is used to determine the likelihood of Plastic Shrinkage Cracking.
- Written hundreds of reports for clients on the causes of structural and non-structural cracking in concrete structures.

Recommended Text:

Reinforced Concrete: The Designers Handbook (2015 Revised Edition)

Beletich, Hymas, Reid and Uno



WORKSHOP SUMMARY

The workshop is designed for engineers who wish to understand the reason why concrete cracks and then how to design structures to eliminate the problem before it happens.

The course will look at all the various forms of cracks that occur both in the plastic state then in the hardened state. It will then look at the structural aspects of cracking in concrete with an emphasis on the cracking formulas used both in Australia and overseas.

Finally, the workshop will address practical cracking details and how to avoid both structural and non-structural cracking in the first place.

All sessions provide worked examples, tutorial exercises and solutions.

PROGRAMME (8.30 - 9.00 Zoom invite link will be emailed)

9.00 – 11.00 Session 1 - EARLY AGE CRACKING

- Cracks that occur in concrete while is it still soft (ie. its plastic state)
- Cracks that occur in the non-structural or plastic state are normally:
  - (A) Plastic Shrinkage Cracks, or
  - (B) Plastic Settlement Cracks.
- For Part A, the 4 key parameters are (i) Air Temperature (ii) Wind Velocity (iii) Relative Humidity (iv) Concrete Temperature.
  - Formulas and software available (in Australia and Overseas) to determine the likelihood of plastic shrinkage cracking.
  - Use of fibres.
- For Part B, the 3 key parameters are (i) Layout of the steel reinforcement (ii) Cover to the top reinforcing steel (iii) Concrete mix design.
- Tutorial to calculate the likely onset of plastic shrinkage cracking or plastic settlement cracking.

11.00 – 11.15 Morning Break

11.15 – 1.00 Session 2 - THERMAL CRACKING

- Guidelines provided by CIRIA C660-2007, C766-2018 and ACI-207R.
- Thermal cracking in concrete usually occurs during either: Phase 1 (Plastic to Semi-plastic state) due to heat of hydration or Phase 2 (Structural State) due to Solar effects.
- The 8 key parameters that increase the probability of thermal cracking in Phase 1 are (i) Cement content (ii) SCM's used (iii) Air Temperature (iv) Concrete temperature (v) Time of Placement (vi) Member thickness (vii) Formwork used (viii) Degree of Restraint.
- The 4 key parameters that influence thermal cracking in Phase 2 are (i) Air Temperature (ii) Thermal Gradient (iii) Direct Solar Radiation (iv) Member thickness.
- Case studies of how the thermal cracking in various concrete structures can occur so easily both in Summer and Winter.
- Tutorial to determine the likelihood of thermal cracking in Phase 1 (following the guidelines set out in CIRIA C660-2007 and C766-2018).

1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 3 - STRUCTURAL CRACKING 1

- Formulas and structural requirements in AS3600-2018.
- The 4 key parameters that affect the likelihood of cracks occurring in hardened structural concrete are (i) Steel Ratio (ii) Bars vs Mesh (iii) Drying Shrinkage Regime (iv) Restraint.
- Formula behind Tables 8.6.2.2 (A) & (B) in AS3600-2018 which relates bar spacing & bar diameter to steel stress (& therefore crack width).
- Crack equations from various researchers eg Gergely-Lutz (USA), Beeby & Hughes (UK) as well as overseas Codes eg BS8110, BS5400, CEB-FIP, ACI-224R, and Eurocode requirements to compare their results to existing equations and charts.
- Derivation and use of the formula behind the beam and slab equations in AS3600-2018 Section 8.6 and 9.4.3.

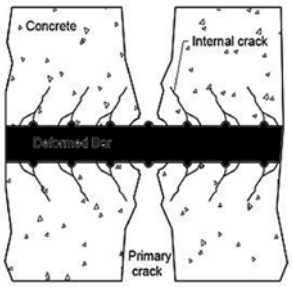
3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 4 - STRUCTURAL CRACKING 2

- Examines 'Direct Tension' cracking and the various stress concentration formulas that can be utilized to determine where cracking will occur in concrete and the severity of that cracking.
- Practical details 'on-site' which can induce cracking in concrete (eg. dowel type, joint layout, pit locations, slab size, plastic vs non plastic underlays).
- Tutorial to determine the best layout of joints to minimize potential slab cracking.
- Long term causes of concrete cracking eg (a) Steel Reinforcement Corrosion (b) AAR (Alkali Aggregate Reaction).

Certificate of Attendance will be emailed

CALCULATORS REQUIRED



Live streamed via zoom

COURSE COST

- 1 day course – **$710 pp**

DATES, VENUES & REGISTRATION

- *Registration form (back of catalogue)*
- *Visit our website* www.etia.net.au

FURTHER INFORMATION

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ENGINEERING TRAINING INSTITUTE AUSTRALIA

GLASS & ALUMINIUM FAÇADE DESIGN WORKSHOP

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

- Master's degree (University of Sydney) on the acoustic topic of '*Transmission Loss of Building Facades*'
- Provided structural design testing for many high-rise glazing curtain wall systems in Sydney including:
  - 20 Elizabeth St Martin Place (originally called The State Bank)
  - ABC Radio and Orchestra building at Ultimo
  - 338 Pitt St Sydney; 66 Clarence St, Sydney
  - 88-90 Arthur St North Sydney
  - 127-141 Walker St North Sydney
  - 32 Phillip St Parramatta
  - 875 Pacific Hwy Pymble
  - IBM Headquarters Frenchs Forest
  - Designed the steel rafter support system for the Triangular Glass Skylight (Area 6) Parliament House, Canberra.
- Previous employment: H.H. Robertson (taken over by Pilkington) as an Engineering Services Manager (Architectural Walls Division) and NATA approved laboratory signatory for a 9m x 11m x 2m x 6kPa test rig; Engineering Manager at Australco (curtain wall company).
- Since 2015, he has lectured on the topic of 'inferior aluminium cladding and its proven fire hazard to high-rise buildings' at UNSW and the ETIA Risk Management Workshop (e.g The Al Tayer Tower, Dubai 2013, and The Torch, Dubai 2015).

ANDREAS BOOMKAMP

MIEAust CPEng RPEQ CMEngNZ

- National Technical Manager for Ancon Building Products in Australia and NZ.
- Responsible for product compliance and custom designs of Ancon's products in Australia and New Zealand.
- Chartered structural Engineer with over 10 years of experience for anchorage in concrete, lifting of precast concrete and connecting concrete systems.

WORKSHOP SUMMARY

This two-day course will cover the topic of glass and aluminium facades (also known as Curtain Walls) for medium to high rise buildings. The Standards that will be highlighted include the Glass Standards AS1288 and AS4666, the Aluminium Standard AS1664 and the façade testing Standard AS4284 and AS 2047.

The structural design of glass panes in window frames as well as the structural design of the aluminium that contains the glazing will be addressed. There will be a primary focus on the design of these facades to wind loads (as per AS1170.2) and AS1288. The testing procedure for such facades according to Australian Standard AS4284 (Sirowet test) and AS2047 will be explained, along with real life examples.

All sessions provide worked examples, tutorial exercises and solutions.

DAY 1 (8.30 - 9.00 Zoom invite link will be emailed)

9.00 - 11.00 Session 1 - GLASS PROPERTIES (incl. THERMAL)

Glass Types

- Annealed
- Laminated
- Heat Strengthened
- Toughened
- Double Glazing or Insulated Glazed Units (DGU or IGU)
- Pigments used to produce coloured glass
- Detrimental Nickel Sulphide inclusions in glass
- TUTORIAL

Thermal & Energy rating systems

- U value vs R value vs Low 'e' coatings
- SHGC formula and values
- T_{vw} value
- Air Infiltration value
- Thermal Cracking of Glass
- BASIX rating system
- TUTORIAL

11.00 - 11.15 Morning Break

11.15 – 1.00 Session 2 - GLASS ACOUSTICS

Sound Insulation

- Acoustic terminology: STL vs (R_w+ C_{tr}) vs STC and L_A or L_{eq}
- Double Glazing – Acoustics vs Condensation vs Heat Flow
- BCA (NCC) & Aust Standards eg AS1276, AS1191, AS2253
- TUTORIAL

1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 3 - HIGH RISE WIND DESIGN TO AS1170.2

Medium to Tall Structure Wind Design to AS1170.2

- Terrain Categories
- Wind pressure derivations for medium to tall structures
- Direction Multipliers
- Local Pressure factors for Glazing and Cladding
- K factors for wind design in high rise
- Effects of Shielding from other buildings
- Shear loads on buildings from wind and earthquakes
- Drift and Façade Displacement
- TUTORIAL

3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 4 - GLASS PANEL WIND DESIGN TO AS1288

Wind Design for Glazing

- Wind Pressures vs Span Tables
- Two (2) edge vs Four (4) edge support
- Glass Aspect Ratio
- Glass Tensile Strength vs Membrane Action
- Linear vs Non Linear Analysis
- 'Edge' pressure vs 'Away from Edge' pressures
- Glass Fin Design
- Localised glass cracking (Butterfly effect)
- Safety Glass requirements
- Stress Concentrations
- TUTORIAL

Sealants, Gaskets and Tapes

- Silicone Sealants -Silicones vs Polyurethanes
- Other types of sealants
- Acetic vs Neutral cured sealants
- Bite Calculations
- Failure causes in Sealants
- Gaskets – Neoprene vs EPDM
- Shore A Hardness of Spacer blocks
- TUTORIAL

CALCULATORS REQUIRED

Live streamed via zoom

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— CURTAIN WALLS IN MEDIUM TO HIGH RISE STRUCTURES

DAY 2

9.00 - 11.00 Session 5
- ALUMINIUM PROPERTIES AND STRUCTURAL DESIGN

Aluminium design to AS1664

- Anodized Surfaces vs Coatings
- 6061 vs 6063 vs 6060
- Tempers eg T4 vs T5
- Hardenability Treatments
- Structural requirements and applications of AS1664
- Yield vs Tensile Strength
- Allowable vs Ultimate Stresses
- Bending vs Buckling
- High thermal expansion issues of aluminium
- Slotted holes in members and brackets
- Welding aluminium issues
- Corrosion – Stainless vs Aluminium vs Galvanised Steel
- Stainless Steel (to AS4673) vs Galv. Steel (to AS4680)
- TUTORIAL

Fire and Aluminium Panels

- Composite Panels Manufacture
- Fire Issues with Polyethylene Core
- Testing for fire in composite aluminium panels
- Real life examples around the World
- Issues in Australia (e.g. Lacrosse Building)
- TUTORIAL

11.00 - 11.15 Morning Break

11.15 - 1.00 Session 6
- CURTAIN WALL DESIGN

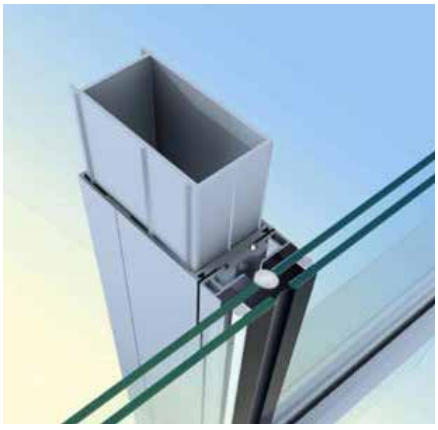
Systems and Terminology

- Stick System
- Panelised (or Unit) System
- Mullions, Transoms, Sills
- Design calculations using I_{xx} vs I_{yy} values
- TUTORIAL

Serviceability

- Serviceability deflection limits
- Support conditions (Edge vs Central)
- Vertical Differential Deflection limits
- Member tolerances
- Column member shortening
- Building sway and inter-storey drift
- Steel cast-in insert anchorage capacity in concrete
- TUTORIAL

1.00 - 1.30 Lunch Break



1.30 - 3.00 Session 7
- CONNECTIONS, DEFLECTIONS, MOVEMENT, TOLERANCES AND ERECTION

Steel Connections

- Steel to Concrete connections e.g. uni-struts
- Steel to Aluminium Member connections
- Connection pull-out capacity in concrete
- Allowance for connection expansion and contraction
- Slotted Hole patterns
- Common Errors
- TUTORIAL

Deflections, Movement, Tolerances

- Panel differential movement
- Inter-storey Drift
- Edge beam deflection
- Thermal movement effects
- Column shortening due to creep and shrinkage
- Allowable Movement Limits and Tolerances
- TUTORIAL

Erection Processes

- Panel installation
- Panel placement - From inside or from outside building
- TUTORIAL

3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 8
- CURTAIN WALL FAÇADE TESTING

Façade Testing (Mock Ups) to AS2047 and AS4284

- Positive and Negative Wind pressure tests
- Air infiltration
- Proof Testing
- Water penetration testing requirements
- Real life case studies of façade testing
- Pendulum Lead Shot test vs Twin Tyre test
- TUTORIAL

Certificate of Attendance will be emailed

Live streamed via zoom

COURSE COST

- 2 day course – **$1,540 pp**

DATES, VENUES & REGISTRATION

- *Registration form (back of catalogue)*
- *Visit our website* www.etia.net.au

FURTHER INFORMATION

- *Office* (02) 9899 7447
- *Mobile* 0413 998 031
- *Email* registrations@etia.net.au

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ENGINEERING TRAINING INSTITUTE AUSTRALIA

INDUSTRIAL BUILDINGS DESIGN WORKSHOP

IAN HYMAS

BSc (Hons) MEngSc

- Structural engineer for over 40 years.
- Founding partner of the firm Henry and Hymas.
- Member of the current BD-066 Standards committee for the Tilt Up and Precast Concrete Code AS3850.

PROGRAMME (8.30 - 9.00 Zoom invite link will be emailed)

9.00 - 11.00 Session 1 - PORTAL FRAME ANALYSIS AND DESIGN

- Portal frame analysis and member sizing
- Elastic vs Plastic design
- Tapered members in frames
- Latticed portal frames
- Frames with central columns
- Economies of frame spacing
- Fixed vs Pinned bases
- Footing considerations

11.00 - 11.15 Morning Break

11.15 - 1.00 Session 2 - ROOF AND WALL SYSTEM

- Roof structure layout & panel layout
- Alternative rafter designs
- Fly bracing
- Roof bracing systems.
- Economies of steelwork design
  - Portal frame vs load bearing panels
  - Various cladding systems that can be used for Industrial buildings such as steel sheeting (connected to purlins and girts)
- Design of purlins and girts, panels as cladding to portal frame and steel column buildings; fire ties.
- Advantages and disadvantages of cladding alternatives.

1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 3 - CONNECTIONS IN INDUSTRIAL BUILDINGS

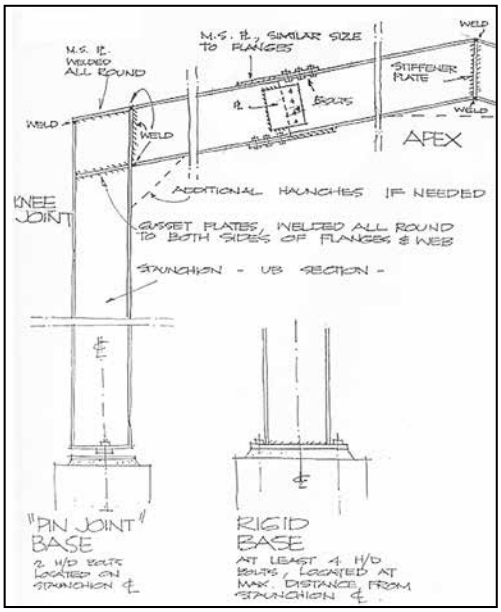
- Connections that are used in portal frame building.
- Steel to steel connections, portal frame knee and apex moment connections, bracing connections and prying forces on plates.
- Steel to concrete connections, holding down bolts, steelwork to concrete panel connections, fixings into concrete cast-in, and mechanical (expansion anchors) chemical anchors.

3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 4 - DEFLECTIONS, TOLERANCES, CASE STUDIES

- Deflections of portal frames and concrete panel supported rafters as well as deflections in bracing systems. Consideration of 'bolt slip', effect of tolerances on design assumptions and erection methods.
- Problems that have occurred while erecting industrial buildings.
- Actual jobs will be shown (in keeping with client confidence).

Certificate of Attendance will be emailed



Live streamed via zoom

CALCULATORS REQUIRED

COURSE COST

- 1 day course – **$810 pp**

DATES, VENUES & REGISTRATION

- *Registration form (back of catalogue)*
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ENGINEERING TRAINING INSTITUTE AUSTRALIA

PRECAST & TILT UP DESIGN & CONSTRUCTION WORKSHOP

IAN HYMAS *BSc (Hons) MEngSc*

- Structural engineer for over 40 years.
- Founding partner of the firm Henry and Hymas.
- Member of the current BD-066 Standards committee for the Tilt Up and Precast Concrete (Prefabricated) Standard AS3850.

Recommended Text:

Reinforced Concrete: The Designers Handbook (2015 Revised Edition)

Beletich, Hymas, Reid and Uno

PROGRAMME (8.30 - 9.00 Zoom invite link will be emailed)

9.00 - 11.00 Session 1 - LAYOUT AND DETAILING

- Key steps in determining panel layout from a structural system viewpoint
  - panel breakup
  - joint placement
  - structural steelwork
  - roof bracing
- Structural decisions such as number of panels per bay, smaller panels at corners, craneage required, wall openings, where to oversize and slot holes, connections to steel roof, panel to footing details, slab joint details, levelling of shims and tolerance issues.

11.00 - 11.15 Morning Break

11.15 – 1.00 Session 2 - PANEL DESIGN

- Structural design methods such as Moment Magnifier.
- Method according to Weiler and the ACI, as well as the J. Wyatt method (PCA) and the 'green book' method.
- Panel thickness versus various in-services loads, eccentricities, slenderness, P-Delta effects & fire issues.
- Reinforcement requirements (one layer vs two), reinforcement around openings, stresses during lifting.

1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 3 - CONSTRUCTION ISSUES

- Design topics such as appropriate design of temporary bracing & props.
- Construction topics such as adequate preparation of detail drawings of panels, transportation of factor cast panels, casting layouts, inspection of panels prior to pouring, crane loads on floor slabs, erecting and bracing panels, steel erection, correct removal of braces and final inspection of steelwork, grouting panels and dowels.
- The speaker will outline many jobs he has been involved with, and where problems with craneage, props, steelwork erection, tolerance & temperature effect have had to be fixed.

3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 4 - ANCHORS AND CONNECTIONS

- Engineering involved in anchoring & transferring load into precast concrete from embedded non-reinforcement – both precast & post-installed anchor systems.
- Types of anchors, bolts and fasteners in the market place.
- Pull out capacities (Tension vs Shear)

Certificate of Attendance will be emailed

Live streamed via zoom

COURSE COST

- 1 day course – **$770 pp**

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ENGINEERING TRAINING INSTITUTE AUSTRALIA

RISK MANAGEMENT WORKSHOP

PAUL UNO

BE MBdgSc MIEAust CPEng NER RPEQ APEC Engineer IntPE(Aus)

- Over 40 years of experience in the design and construction industry.
- Part-time Senior Lecturer – UNSW and The University of Sydney.

ROSS FINNIE

- Over 40 years' experience in construction industry.
- Over 34 years of experience in managerial roles, site foreman, site manager, project manager, construction manager, IMS manager and Safety.

WORKSHOP SUMMARY

Effective risk management can benefit a whole range of areas. Those processes may be structural or mechanical engineering design. It may also be at the planning, and implementation stages of a building construction or the safety aspects on a civil engineering or construction site.

A key component of safety that will be discussed in detail is the "PCBU" (ie. Person Conducting a Business or Undertaking).

All these issues must still focus on doing the right projects, at the right time, for the right reasons.

The course is ten (10) hours in length which satisfies IEAust requirements for minimum CPD accrual in this area of Risk. It will conclude with a one (1) hour examination.

A certificate will be issued in due course to all attendees (once the papers have been marked).

10 HOUR COURSE
(IE Aust CPEng requirement)

8am - 6pm

Live streamed via zoom

PROGRAMME (7.30 - 8.00 Zoom invite link will be emailed)

8.00 - 10.00 Session 1 *(Paul Uno)* - RISKS & FAILURES IN THE ENGINEERING & BUILDING INDUSTRY

- Construction and engineering failures both in Australia and overseas where risks were taken or oversights made which resulted in on-site failures and fatalities.
- Lessons learnt from these failures to avoid the risk in future projects.
- Risk issues in the mechanical, electrical and process engineering fields.

10.00 - 10.30 Morning Break

10.30 - 12.30 Session 2 *(Ross Finnie)* - WHS RISK MANAGEMENT

- Legal obligation of PCBU's, workers, officers and managers with regards to the WHS legislative framework.
- Particular focus on Harmonisation, Due Diligence, Duty of Care (Officers and their Obligations), Fingerprints, Manage Risk and Leadership.

12.30 - 1.30 Lunch Break

1.30 - 3.00 Session 3 *(Ross Finnie)* - HIGH RISK CONSTRUCTION WORK & MANAGING RISK

- 19 categories of High Risk Construction Work (HRCW)
- Key factors include:
  - Understand the importance of detailed development of Safe Work Method Statements.
  - Understand the importance of Risk Assessments covering the tasks carried out on site, how to manage them; reduce risk and methods of ongoing monitoring.
  - How a SWMS ties in with a Project Risk Assessment.

3.00 - 3.30 Afternoon Break

3.30 - 5.00 Session 4 *(Ross Finnie)* - SAFETY IN DESIGN

- Overview of design documentation which can be coordinated by the PCBU and attended by appropriately qualified personnel and key stakeholders (ie. the Client, Designer, Construction team, Architect; Service and Structural Engineers and the Client where practicable) prior to issue.
- Examples of safety in design literature, and examples of safety in design failure and methods of alert and awareness.

5.00 - 6.00 Session 5 *(Ross Finnie)* - EXAMINATION ASSESSMENT

- Examination will cover all sessions.

Certificate of Attendance will be emailed

COURSE COST

- 1 day course – **$900 pp**

DATES, VENUES & REGISTRATION

- *Registration form (back of catalogue)*
- *Visit our website* www.etia.net.au

FURTHER INFORMATION

- *Office* (02) 9899 7447
- *Mobile* 0413 998 031
- *Email* registrations@etia.net.au

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Cancellations made 5 working days or less will incur forfeiture of the full registration fee.

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.
- Part-time 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

Live streamed via zoom

WORKSHOP SUMMARY

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.

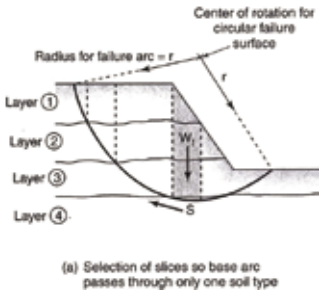
Australian Design Standards AS4678 (applicable in New Zealand) and their requirements as well as Eurocode provisions will be addressed. A series of slope stability methods will be addressed and compared.

All sessions provide worked examples, tutorial exercises and solutions.

PROGRAMME (8.30 - 9.00 Zoom invite link 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

COURSE COST

- 1 day course – **$765 pp**

DATES, VENUES & REGISTRATION

- *Registration form (back of catalogue)*
- *Visit our website* www.etia.net.au

FURTHER INFORMATION

- *Office* (02) 9899 7447
- *Mobile* 0413 998 031
- *Email* registrations@etia.net.au

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

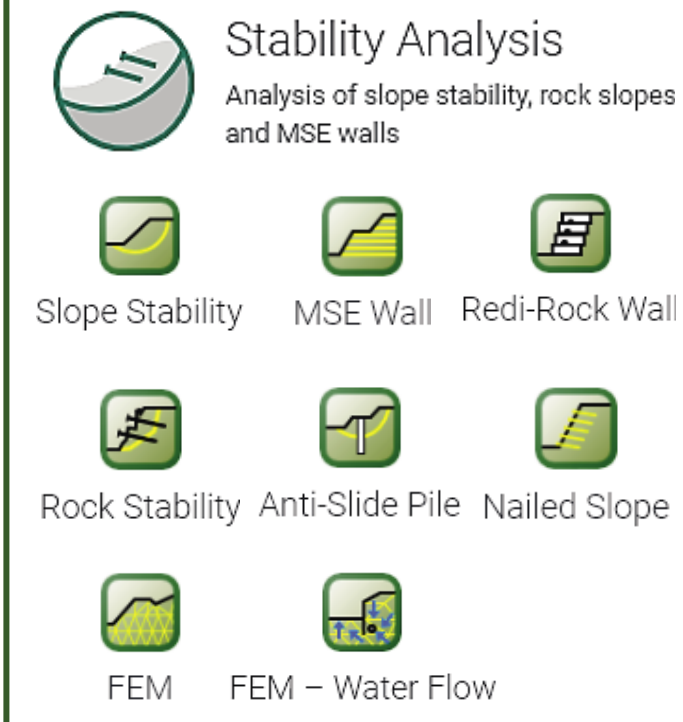
3.00 - 3.15 Afternoon Break

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



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VALUE ENGINEERING: PRINCIPLES & APPLICATIONS COURSE

NEW COURSE

PROF. EMAD SHUBLAQ *Ph.D. (Civ, Leeds) CVS-Life CPEng. F.IEAust. F.ASCE F.SAVE. F.AITD*

- Prof. of Value Management, Western Sydney University
- Ph.D. in Civil Engineering, The University of Leeds, UK
- Over 40 years of experience in Geotechnical, Piling, Project Management, Business Planning & Management and Value Methodology.
- President, SAVE - ANZ +4 Chapter

COURSE SUMMARY

Value engineering is a systematic and organized approach to providing the necessary functions in a construction project at the lowest cost without compromising quality, performance or usefulness.

One way in which Value engineering saves money is by promoting the substitution of materials and methods with less expensive alternatives without sacrificing functionality or quality. It is focused solely on the functions of various components and materials, rather than their physical attributes. Value engineering is also sometimes called value analysis (similar to terms such as operations research)

The value of an item or engineering process is defined as the most cost-effective way of producing an item or carrying out a function without taking away from its purpose.

This course is targeted at Engineers, Project Managers and anyone else who is responsible in meeting the design and/or financial objectives of projects they are working on.

PROGRAMME (8.30 - 9.00 Zoom invite link will be emailed)

9.00 - 11.00 Session 1
- INTRODUCTION TO VALUE METHODOLOGY: VALUE ANALYSIS, ENGINEERING, & MANAGEMENT

- Value methodology history and why it Is different
- Value methodology vs. other management techniques; TQM, BPR, 6 Sigma BSC, and BM.
- Value engineering vs. Cost cutting technique
- When, how, and why value methodology is used

11.00 - 11.15 Morning Break

11.15 - 1.00 Session 2
- VALUE ENGINEERING PLAN

- Value engineering definitions: Australian, European, & American standards
- Information Phase:
  - 1- Space model
  - 2- Cost model
  - 3- Energy model
  - 4-Quality model
  - 5- Life Cycle model

1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 3
- VALUE ENGINEERING PLAN (CONT.)

- Functional Analysis Phase:
  - 1- Functions Identification
  - 2- Functions Classification
  - 3- F.A.S.T Diagramming

3.00 - 3.15 Afternoon Break

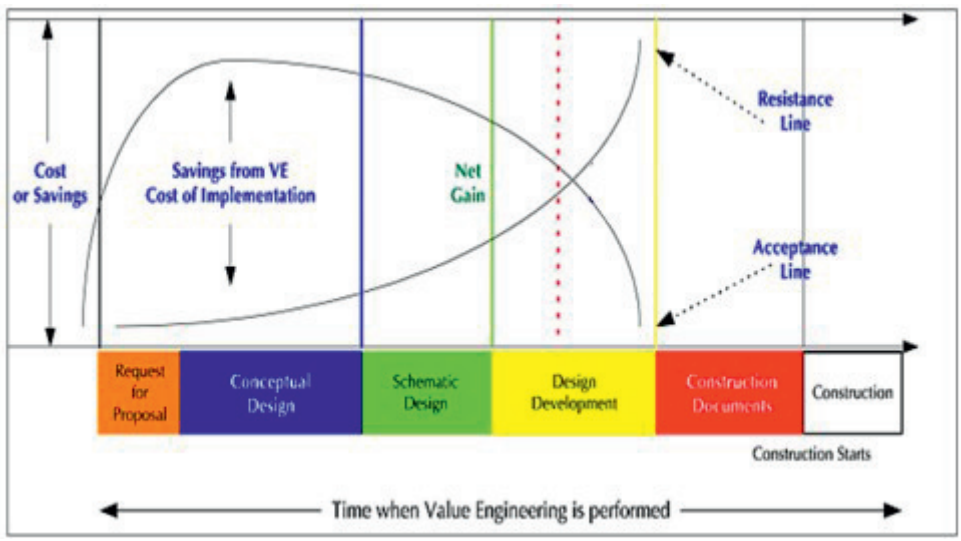
3.15 - 4.00 Session 4
- VALUE ENGINEERING PLAN (CONT.)

- Creativity & Idea Generation (Brainstorming) Phase
- Idea Evaluation and Development Phase
- Idea Recommendation and Presentation Phase

4.00 - 5.00 Session 5
- DETAILED CASE STUDY

- Value Engineering application:
  - Full Case Study

Certificate of Attendance will be emailed



Live streamed via zoom

COURSE COST

- 1 day course – **$850 pp**

DATES, VENUES & REGISTRATION

- *Registration form (back of catalogue)*
- *Visit our website* www.etia.net.au

FURTHER INFORMATION

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ENGINEERING TRAINING INSTITUTE AUSTRALIA

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REGISTRATION FORM

1	**BLAST, FIRE & PROGRESSIVE COLLAPSE WORKSHOP**	**One-day course - $860 pp**
	ZOOM – Tue 24 November 2020	
2	**CRACKING IN CONCRETE STRUCTURES DESIGN WORKSHOP**	**One-day course - $710 pp**
	ZOOM – Thu 10 December 2020	**RECOMMENDED: Reinforced Concrete: The Designers Handbook (2015) - $170**
3	**GLASS & ALUMINIUM FAÇADE DESIGN WORKSHOP**	**Two-day course - $1,540 pp**
	ZOOM – Wed 25 + Thu 26 November 2020	
4	**INDUSTRIAL BUILDINGS DESIGN WORKSHOP**	**One-day course - $810 pp**
	ZOOM – Thu 3 December 2020	
5	**METALLURGY MATERIALS WORKSHOP**	**One-day course - $735 pp**
	ZOOM – Tue 10 November 2020	
6	**PRECAST & TILT UP DESIGN & CONSTRUCTION WORKSHOP**	**One-day course - $770 pp**
	ZOOM – Wed 2 December 2020	**RECOMMENDED: Reinforced Concrete: The Designers Handbook (2015) - $170**
7	**RETAINING WALLS DESIGN WORKSHOP**	**One-day course - $820 pp**
	ZOOM – Tue 17 November 2020	**RECOMMENDED: Reinforced Concrete: The Designers Handbook (2015) - $170**
8	**RISK MANAGEMENT WORKSHOP**	**One-day course - $900 pp**
	ZOOM – Tue 8 December 2020	
9	**SHALLOW FOUNDATIONS DESIGN WORKSHOP**	**One-day course - $775 pp**
	ZOOM – Thu 12 November 2020	**RECOMMENDED: Reinforced Concrete: The Designers Handbook (2015) - $170**
10	**SLOPE STABILITY DESIGN WORKSHOP**	**One-day course - $765 pp**
	ZOOM – Thu 19 November 2020	**RECOMMENDED: Reinforced Concrete: The Designers Handbook (2015) - $170**
11	**VALUE ENGINEERING: PRINCIPLES & APPLICATIONS COURSE**	**One-day course - $850 pp**
	ZOOM – Tue 1 December 2020	

Option 1: Register online www.etia.net.au *(Receive immediate tax invoice receipt & confirmation)*

Option 2: Fill in this form and email to registrations@etia.net.au *(Allow 3 – 5 business days for tax invoice receipt & confirmation)*

Title of Workshop _____

Attendee Name _____ Company _____

Attendee Email _____ Attendee Mobile _____

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☐ VISA* ☐ MASTERCARD* ☐ AMEX*(additional 1.3% surcharge) ** All credit cards are charged a merchant fee of $0.50 per course*

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ZOOM LIVE STREAMING DETAILS

1. Registrations must be received at least **three (3) working days before** the workshop, for course notes to be express posted. Course notes are hard copy only. Registrations received after this period will result in a later delivery of course notes.
2. Only registered attendees are permitted to view the online live stream. Online participants MUST have their webcam on during the presentation. Failure to do so will result in the attendee being denied access to the live stream.
3. Please ensure the attendee provides their *own personal/work email* upon registration.
4. Attendees will be emailed a Zoom link between 8:30am - 9:00am on the day of the course, to join the live stream.

NB: 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.

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fine civil engineering software

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