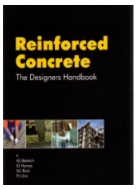
ENGINEERING TRAINING INSTITUTE AUSTRALIA — REINFORCED CONCRETE DESIGN WORKSHOP – MODULE ONE

PAUL UNO *BE MBdgSc MIE(Aus) 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.
- Chairman of the Australian Standards committee BD-066 for the Tilt-Up & Precast (Prefabricated) Concrete Standard AS3850.

Recommended Text:

Reinforced Concrete: The Designers Handbook
(2015 Revised Edition)
Beletich, Hymas, Reid and Uno

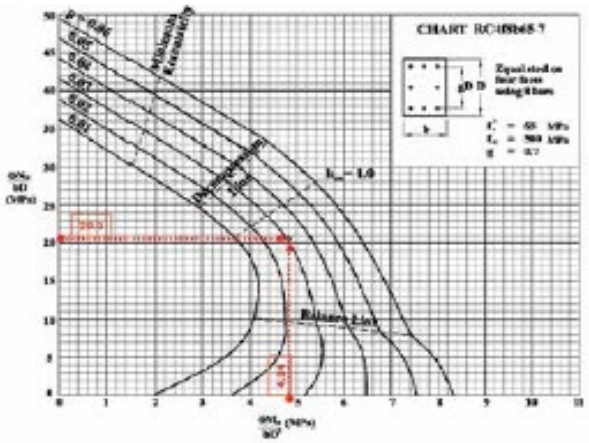


WORKSHOP SUMMARY

Civil and Structural engineers will be using the Concrete Structures Standard AS3600-2018, to design a multitude of concrete structures. This workshop is designed for engineers wanting to hone their skills with reinforced concrete design, gain a better understanding of the Code clauses and equations or refresh the structural design principles learnt at university.

With the advent of computers, many engineers have forgotten basic structural design and thus need to carry out basic structural checks by hand or quick estimates of size and reinforcement requirements.
The use of simple charts can often provide the preliminary structural sizing required for beams, slabs or footings.

Sessions will 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 - BASICS OF AS3600-2018

- New ϕ factors explanation
- Load Combinations to AS/NZS 1170.0
- Material Properties eg. Concrete Modulus E, Creep & Shrinkage
- Flexural Strength f'_{cf}, Tensile Strength f'_{ct}, Mean Strength f_{cm}
- Durability Issues

11.00 - 11.15 Morning Break

11.15 - 1.00 Session 2 - DESIGN STRENGTH

- Bending Strength
- Design Charts
- Ductility Requirements using 500 MPa steel
- Rectangular beams, T beams
- Singly & Doubly Reinforced Beam Design

1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 3 - BEAM DEFLECTION

- Allowable Deflections to AS1170.0, AS3600-2018
- Crack Control in Beams & Slabs to AS3600-2018
- Beam Deflection (Deemed to comply method)
- Serviceability criteria

3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 4 - SLAB DEFLECTION

- Deemed to Comply (L/D) Deflection Method
- One Way Slab (single and continuous) Deflections
- Four-Sided Slab Supported Deflections
- Shrinkage Reinforcement

CALCULATORS REQUIRED

DAY 2

9.00 - 11.00 Session 5 - COLUMN DESIGN

- Short & Slender Column Design using AS3600-2018
- Axial Load-Moment Interaction Graph derivation and use
- End Stiffness - Restraint Factors
- New Bischoff I value formula (replacing Branson)

11.00 - 11.15 Morning Break

11.15 - 1.00 Session 6 - WALL DESIGN & SHEAR DESIGN

- Wall Design – Axial, Moment & Shear Strength
- Beam and Slab – Shear Design to AS3600-2018
- Modified Compression Field Theory for Shear Design
- Mohr Circle – Principal and Shear Stress

1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 7 - FOOTING DESIGN

- Simple Square & Rectangular Pad Footing Design
- Soil Pressure Basics – ultimate vs allowable
- Use of Footing Design Charts
- One-way Bending, One-way Shear and Two-way (Punching) Shear
- Straight vs Cogged Reinforcement

3.00 - 3.15 Afternoon Break

3.15 - 5.00 Session 8 - DEVELOPMENT LENGTHS & DETAILING OF REINFORCEMENT

- Development length L_{sy} in tension and compression
- Deemed to comply steel reinforcing detailing requirements as per AS3600-2018
- Curtailing reinforcement

Certificate of Attendance will be emailed

Live streamed via zoom

COURSE COST

- 2 day course – **AUD$1,470 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

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.