

Reinforced Concrete Design Workshop (General Level)

THE WORKSHOP

The workshop is designed for engineers who wish to hone their skills with reinforced concrete design, understand the Code clauses better or just refresh the structural design principles learnt at University. With the advent of computers many engineers have either forgotten or lost the understanding of 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.

PROGRAMME

DAY 1

8.30 - 9.00 Registration

9.00 - 10.30 **Session 1 - Materials, Loads, Durability**

Load Combinations to AS1170.0, Durability Issues
Material Properties eg: Concrete Modulus E, Flexural Strength f_{cf} , Tensile Strength f_{ct} , Mean Strength f_{cm} , Fire Design to AS3600 - 2009

10.30 - 11.00 Morning Tea

11.00 - 12.30 **Session 2 - Strength / Design**

Bending Strength, Design Charts
Ductility Requirements using 500 MPa steel Rectangular beams, T beams
Singly & Doubly Reinforced Beams
Worked Example & Tutorial Exercise

12.30 - 1.30 Lunch - Sit down - Hot and Cold Buffet

1.30 - 3.00 **Session 3 - Serviceability / Beams**

Allowable Deflections to AS1170.0, AS3600 - 2009
Beam Deflection (Deemed to comply method)
Crack Control in Beams & Slabs to AS3600 - 2009
Worked Example & Tutorial Exercise

3.00 - 3.30 Afternoon Tea

3.30 - 5.00 **Session 4 - Deflection / Slabs**

Deemed to Comply (L/D) Deflection Method
One Way Slab (single and continuous) Deflections
Four Sided Slab Supported Deflections, Shrinkage Reinforcement
Worked Example & Tutorial Exercise

DAY 2

9.00 - 10.30 **Session 5 - Column Design**

Short & Slender Column Design to AS3600 - 2009
Axial Load-Moment Interaction Graph derivation
High Strength Concrete Column Design
End Stiffness - Restraint Factors
Worked Example & Tutorial Exercise

10.30 - 11.00 Morning Tea

11.00 - 12.30 **Session 6 - Wall Design / Shear**

Wall Design - Axial, Moment & Shear Strength
Beam and Slab Transverse Shear Design
Mohr Circle - Principal and Shear Stress
Worked Example & Tutorial Exercise

12.30 - 1.30 Lunch - Sit down - Hot and Cold Buffet

CALCULATORS REQUIRED

1.30 - 3.00 **Session 7 - Footing Design**

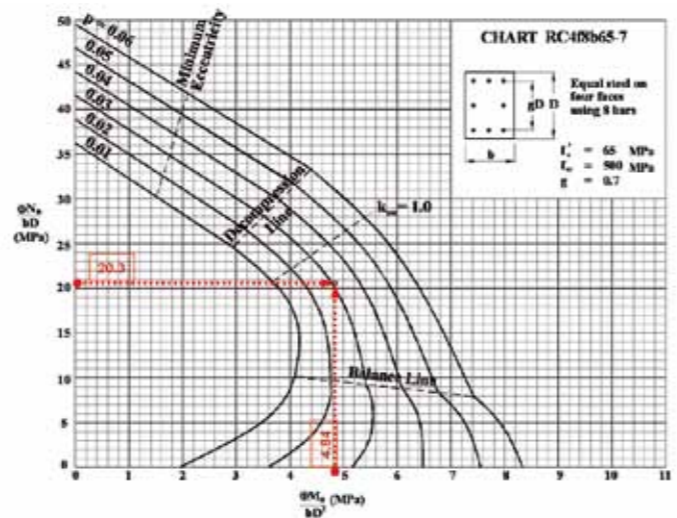
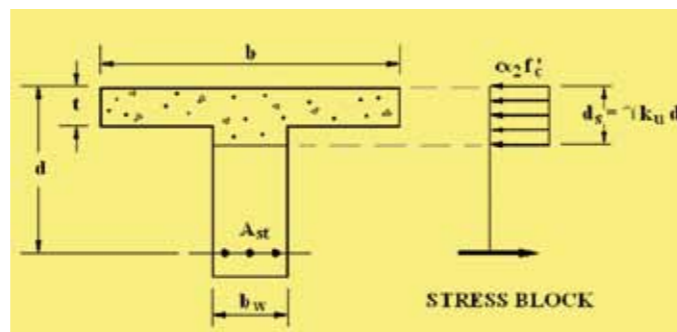
Simple Square Footing Design
Soil Pressure Basics, Kerns
Rectangular Footing Design
One-way Bending, One-way Shear and Two-way (Punching Shear) Footing Failure
Worked Example & Tutorial Exercise

3.00 - 3.30 Afternoon Tea

3.30 - 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 - 2009
- Certificates of Attendance and Feedback Sheets handed out.

5.00 - 5.15 **Certificate of Attendance and Feedback sheets.**



SPEAKERS

Argy Beletich BE Hons (Civil), Dip. Teach., Cert. IV in Training and Assessment, FIE (Aust), CPEng.

Argy has spent many years in the Civil & Structural industry. Within the TAFE system he was head of School of Civil Engineering. He was also responsible for development, accreditation and maintenance of courses from AQF levels II to VI in civil-structural engineering, surveying, construction, geographic information systems and hydrology. During other periods in his career he was a University lecturer in Civil Engineering.

In conjunction to his other qualifications he has a TAFE teaching diploma & Certificate IV in Workplace Training and Assessment. He participated in the development of the Institution of Engineers, Australian National Competency Standards for Engineering Associates, Engineering Technologists and Professional Engineers. He is the original author and current co-author of the popular book Design Handbook for Reinforced Concrete Elements.



**Paul J. Uno BE MBdgSc MIE(Aust) CPEng
Director - Cement and Concrete Services**

Paul Uno has over 30 years experience in the design and construction industry. He has worked for companies such as CSR Readymix, Transfield, Boral, Spancrete, Dept. of Housing, Australian Institute of Steel Construction, HH Robertson and the Cement and Concrete Association of Australia.

He presented precast concrete courses nationally for the NPCAA in 2005 and 2006 and was also acknowledged as a key contributor to the NPCAA/CIA publication "Precast Concrete Handbook".

Paul is also the current chairman of the Australian Standards committee BD-066 which is updating the current AS3850 code (Tilt Up Concrete Construction) which will be released in 2012 as the Prefabricated Concrete Elements Code Part 1 - General Requirements, and Part 2 - Building Construction (embracing both Tilt Up and Precast concrete construction).

He has been a member of the American Concrete Institute since 1992 and a member of the Concrete Institute of Australia since 1982. At present he is a consultant, a presenter for Cement and Concrete Services as well as a University lecturer.

He currently lectures in Properties of Materials (Concrete) at Civil Engineering, Sydney University as well as lecturing at UNSW in the faculty of Built Environment in both in Construction Science (Materials) and in Building Structures (Concrete & Structural Steel Design).



**Marcus Edwards
BE MBA Grad Dip Mining (WASM) MIE(Aust) CPEng**

Marcus has been in the design and construction industry for over 20 years. He spent time with the University of Adelaide as a geotechnical field technician before joining Wallbridge and Gilbert as a structural design engineer. Marcus led and was part of design teams working on a wide range of timber, steel and reinforced concrete structures. He also served as a structures tutor for Architecture students.

He sits on Australian Standards Committee BD-084 and has served as associate member delegate for the NPCAA.

Currently, Marcus works for ARC The Australian Reinforcement Company in the New Products and Methods division specialising in constructability, prefabrication, engineered mesh applications and technical policy.



Requirements

- A scientific calculator
- New Concrete Code AS3600-2009

Professional Development

Attendees may be credited towards IEAust Continuing Professional Development (CPD) requirements. Members of IEAust are required to undertake a minimum of 150 hours of equivalent CPD every 3 years.

Further Information

For any further information on this course please contact Joanne on mobile 0413-998-031 or landline (02) 9899 7447 or email info@cementandconcrete.com

VENUES

* Sydney	Stamford Grand cnr Herring & Epping Rd, North Ryde NSW (02) 9888-1077
* Brisbane	Holiday Inn, 159 Roma St, Brisbane QLD (07) 3238-2222
* Melbourne	Hotel Grand Chancellor, 131 Lonsdale St, Melbourne VIC (03) 9656-4000
* Perth	Comfort Inn Wentworth Plaza, 300 Murray St., Perth WA (08) 9338-5000

REGISTRATION FORM

Please return to:

Cement & Concrete Services (Attn: Joanne)
PO Box 913 Baulkham Hills NSW 1755
Phone (02) 9899 7447 Fax (02) 9899 5995 Mobile 0413 998 031
Email: info@cementandconcrete.com

I / We wish to attend the **Reinforced Concrete Design Workshop** at

	Number	Total
• VIC	Mon 19 - Tue 20 March 2012	<input type="checkbox"/>
• QLD	Wed 18 - Thu 19 April 2012	<input type="checkbox"/>
• NSW	Mon 4 - Tue 5 June 2012	<input type="checkbox"/>
• WA	Mon 3 - Tue 4 September 2012	<input type="checkbox"/>

	Number	Total
Day 1 & 2	<input type="text"/> @ \$1,050	<input type="text"/>
Text Required		
• AS3600 - 2009 Code	<input type="text"/> @ \$215	<input type="text"/>

Total Payment Cheque \$

[Cheques payable to 'Cement & Concrete Services' note GST already included]

Name

Name

Company

Street / PO Box

Suburb Postcode

Ph () Fax ()

Email

Person Handling Payment (please print)

VISA M.CARD AMEX 4 DIGIT ID#

Cardholders Name

Expiry Date / Signature

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.