

# SEMINAR SERVICES AUSTRALIA

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in conjunction with the following organisation

## CEMENT & CONCRETE SERVICES

www.cementandconcrete.com

ABN 27 830 322 080

present the following courses in Hobart TAS in 2012

**1. BASIC REINFORCED CONCRETE DESIGN WORKSHOP AS3600-2009**

**2. RESIDENTIAL SLABS & FOOTINGS AS2870-2011 - WORKSHOP**

**3. INDUSTRIAL BUILDINGS - DESIGN AND CONSTRUCTION WORKSHOP**

**4. STRUCTURAL STEEL DESIGN WORKSHOP**

### Annual Sponsors for Cement & Concrete courses

- Ability Building Chemicals [www.abilityproducts.com.au](http://www.abilityproducts.com.au)
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- Prestressed Concrete Design Consultants (RAPT) [www.raptsoftware.com](http://www.raptsoftware.com)
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### ANNUAL SPONSORS



# AS3600 - 2009 REINFORCED CONCRETE DESIGN WORKSHOP - BASIC COURSE

## THE WORKSHOP

With the AS3600-2009 code now released for publication, this course will address this new code and all the relevant changes in all the sessions over the 2 day 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 understand 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 - Basics of AS3600 - 2009**

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 th 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

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

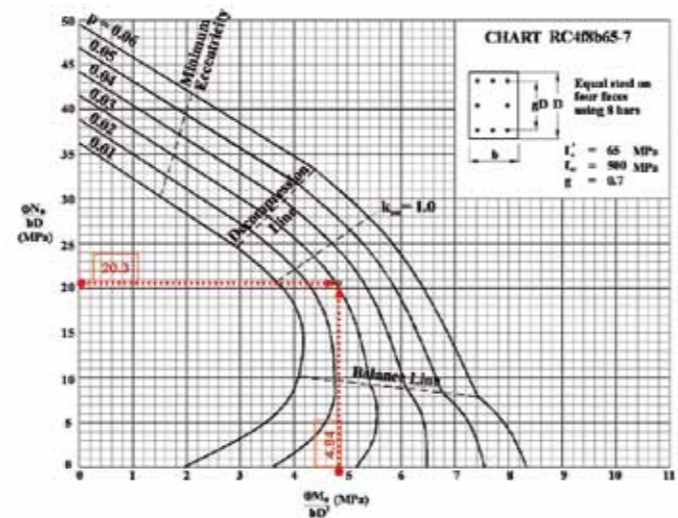
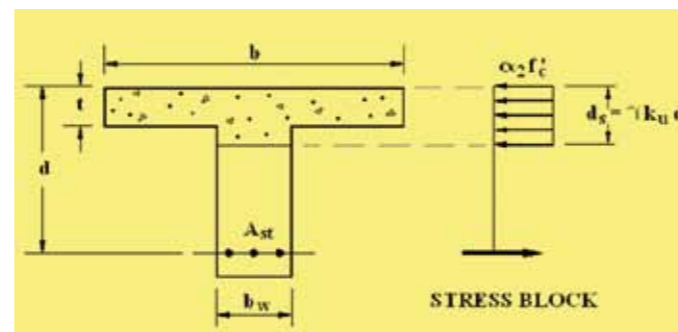
3.00 - 3.30 Afternoon Tea

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".

He has been a member of the American Concrete Institute for the past 16 years and a member of the Concrete Institute of Australia for the past 30 years. 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).



### 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



**CALCULATORS REQUIRED**

## VENUE

\* Hobart Hotel Grand Chancellor,  
1 Davey St  
Hobart TAS 7000  
Ph: (03) 6235 4535

## 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

• Hobart (TAS) Monday 20 - Tuesday 21 February 2012  tick

	Number	@	Total
Day 1 & 2	<input type="text"/>	\$1,000	<input type="text"/>
Text Required	<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.

# RESIDENTIAL SLABS AND FOOTINGS TO AS2870-2011- DESIGN & CONSTRUCTION WORKSHOP

## PROGRAMME

8.30 – 9.00 **Registration**



### 9.00 – 10.30 **SESSION 1 - Soil Properties & Site Classifications to the new AS2870-2011**

This session looks at the current requirements of AS2870-2011. At present the soil classifications are A, S, M, H (with modifications to H for deep soils ie HD) however in the new Code the classifications include the new categories of H1 and H2. New clauses relating to the effect of trees (single and groups) on soil profiles will be addressed as well as new soil salinity provisions. This session will also address the changes to the suction values (pF) for various locations in Australia.

Soil properties and soil tests will be extensively covered including various shrinkage and swelling properties of Australian soils. Tests to be addressed include linear shrinkage, Atterberg limits, core shrinkage and shrink-swell index. Soil properties to be covered include Cation Exchange & Activity ratios for the various clay types, soil suction (matric and osmotic), pF scales, Thornthwaite Moisture Indices, Clay mineralogy and swelling potential (Kaolinites, Illites, Montmorillonites), soil salinity (with reference to new ECc dS/m values).

The 2011 code has new clauses relating to the effect of trees (both single and groups of trees).

The session will be concluded with a tutorial example on calculating the surface movement  $y_s$  using soil shrinkage index values, suction values, soil layer thicknesses to then achieve a site classification (eg M, H etc)

10.30 – 11.00 **Morning Tea**

### 11.00 – 12.30 **SESSION 2 - Footing Systems to the new AS2870-2011**

This session looks at the various forms of construction and the footing systems that are appropriate for those construction types. The forms of construction that will be discussed include clad frame vs articulate masonry vs masonry veneer, vs articulated masonry veneer vs full masonry (ie double brick).

The footing systems that will then be presented in detail include raft slab, footing slab (ie SOG), waffle slab, stiffened slab and strip footing. Reinforcement requirements for these footing types (ie bar vs mesh) will be discussed as well as the new Code values for footing depths D.

In particular, the waffle slab system will be addressed in detail due to its growing usage in domestic construction over the past 20 years. The pros and cons of using this waffle slab system will be covered in detail so that engineers and builders do not get caught out on site. The properties of the polystyrene pods will also be covered including proper disposal of these units.

Compaction of fill (rolled, controlled, sand and non-sand) in accordance with AS2870 will be addressed.

Bored concrete pier vs steel screw piles will be compared including the decision for choosing one system over the other.

12.30 – 1.30 **LUNCH - (Hot & Cold Buffet - Seated in Restaurant)**

### 1.30 – 3.00 **SESSION 3 - Structural Design of Footings to the new AS2870-2011**

This session covers the theory behind the structural analysis of residential slabs and footings. Topics to be covered include bearing pressures from single vs double storey construction, deformation in footing due to centre heave and edge heave, line load and edge load. This then relates to the two differential mound movement philosophies in the code namely the Mitchell Method vs the Walsh Method.

The session will then explore the basis behind the Beam Stiffness vs Soil Surface Movement graph (Fig 4.1 in AS2870) - its derivation and its use for determining a footing depth based upon beam spacing, soil profile and (rather than reading off the simplistic and sometimes conservative D values from the Code tables eg Table 3.1).

Full structural calculations will be provided to show designers the method of design beams and slabs using standard engineering principles and accounting for hogging vs sagging, applied moment, stiffness of the system (ie EI), rigid vs flexible slabs with particular emphasis on the two methods mentioned earlier ie Mitchell vs Walsh methods.

A tutorial exercise will be conducted in the last part of this session to give attendees the confidence to determine the depth of beam required for a particular soil site classification (eg H), construction system (eg Masonry), slab system (eg Waffle) span (m), beam spacing (m), effect from trees (single vs group) etc

3.00 – 3.30 **Afternoon Tea**

### 3.30 – 5.00 **SESSION 4 - Other Concrete Issues eg mix design, cracks**

This session addresses the remaining factors that affect domestic slab construction. These parameters include materials used in concrete (flyash blends as well as market branding eg builders cement), water cement ratios (in particular the new industry standard value for slump, namely 100mm) and practice on site, mix designs appropriate for residential concrete.

Other topics to be covered include minimization of cracking on slabs by attention to weather conditions (ie temperature, humidity and wind speed to be able to quantify the potential for plastic shrinkage cracking) as well as the use of admixtures, evaporative retarders and curing compounds to assist in cracking minimization,

Other non structural crack issues such as crazing, plastic settlement cracking as well as durability and corrosion control points will be highlighted (especially in saline soils) then finally proper joint saw cutting techniques (where required) will be covered.

### 5.00 – 5.30 **Questions/Summary, Feedback Sheets & Certificates of Attendance**

## Calculators Required

## SPEAKER

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, Dept. of Housing, Australian Institute of Steel Construction, HH Robertson and the Cement and Concrete Association of Australia.

As a consultant he has been involved in many concrete footing and slab inspections over the years and written numerous reports on why slabs have failed.

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 a University senior 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 Construction Science (Materials) and in Building Structures (Concrete & Structural Steel Design).

### Who should attend

Engineers (Structural/Civil/Environmental), Project & Maintenance Managers, Local Council & State Government staff handling tender-contract documentation in this area, Concrete Suppliers, Repair Contractors, Suppliers & Builders.

### Material Provided

Powerpoint course notes and other papers will form the course notes. Registrants are also encouraged to purchase a copy of the Design of Residential Slabs & Footings Handbook (1997) as this document will also be referred to during the course of the seminar.

### Professional Development

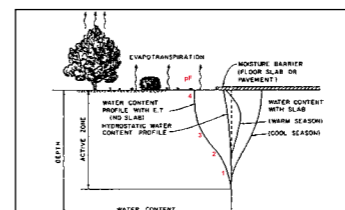
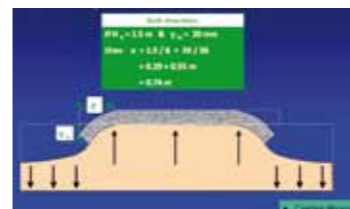
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### Further Information

Contact Joanne from Cement & Concrete Services on mobile 0413-998-031 or Phone (02) 9899-7447 or Fax (02) 9899 5995 for further information regarding this course.

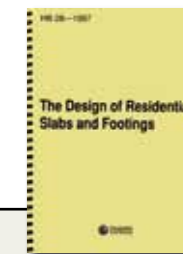
Email: info@cementandconcrete.com

Website: www.cementandconcrete.com



## VENUE

\* Hobart Hotel Grand Chancellor,  
1 Davey St  
Hobart TAS 7000  
Ph: (03) 6235 4535



## REGISTRATION

Please return to:

Cement & Concrete Services (Attn: Joanne)  
RSF Design & Construction Workshop  
PO Box 913 Baulkham Hills NSW 1755

Tel: 02 9899 7447 Fax: 02 9899 5995 Mob: 0413 998 031

Email: info@cementandconcrete.com

I / We wish to attend the **Residential Slabs & Footings - Design & Construction Workshop** at

• Hobart (TAS) Wednesday 22 February 2012  tick

	Number	@	Total
One Day Course	<input type="text"/>	\$595	<input type="text"/>
Residential Slabs & Footings Handbook 1997	<input type="text"/>	\$100	<input type="text"/>
AS2870-2011 Residential Slabs & Footings Code	<input type="text"/>	\$220	<input type="text"/>

**Total Payment**  Cheque \$

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

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.

# INDUSTRIAL BUILDINGS - DESIGN AND CONSTRUCTION WORKSHOP

## PROGRAMME – DAY 1

8.30 – 9.00 Registration

### 9.00 – 10.30 Session 1 - Material Properties of Industrial Building Elements - Steel, Concrete, Masonry, Timber, Glass, Aluminium

This session deals with the various properties of materials that are used in industrial buildings. Properties of Structural Steel elements (eg UB, UC, Angles, CHS, SHS, L0 grades) used in portal frames, cladding and bracing; Concrete floors (eg GP cement, flyash and slag blends, admixtures, superplasticizers); Masonry (clay vs concrete vs AAC block); Timber rafters (eg Glulam, LVL); Glass (eg Annealed vs Heat Strengthened vs Laminated); Aluminium (heat tempered mullions and transoms) are all addressed.

10.30 – 11.00 Morning Tea

### 11.00 – 12.30 Session 2 - Industrial Building Elements – Structural Design (steel)

The first part of this session will address dead, live and wind loads on industrial buildings according to Australian standards AS/NZS1170 part 1 and part 2. The second part will address the 'basic' principles of structural design of steel elements according to AS4100. Parameters such as lateral torsional buckling of beams, form factor, compact vs non compact vs slenderness ratios, in plane and out of plane buckling of beam-columns, Euler buckling loads, shear centre, sway vs braced frames, sway stiffness ratios, second order effects, moment amplification, web stiffener design will all be addressed. A tutorial session of 15-20 minutes will follow.

12.30 – 1.30 Lunch (Hot and Cold sit down buffet)

### 1.30 – 3.00 Session 3 - Portal Frame Analysis & Design

This session looks at such areas: Portal frame analysis and member sizing; Information gathering for the design process; Elastic vs Plastic design; Tapered members in frames; Latticed portal frames; Frames with central columns; Economies of frame spacing; Fixed vs Pinned bases as well as footing considerations. A 15-20 minute tutorial will follow.

3.00 – 3.30 Afternoon Tea

### 3.30 – 5.00 Session 4 - Roof Structures supported on Load Bearing Concrete Panels.

This session will address: Roof structure layout & panel layout; alternative rafter designs; Fly bracing as well as roof bracing systems. Economies of steelwork design – portal frame vs load-bearing panels will also be discussed. The session will then examine in detail the design of load bearing panels using the moment magnifier method (with particular reference to Clause C1.11 of the Building code of Australia). Panel thickness and reinforcement will be examined as will footing considerations. A 15-20 minute tutorial will follow.

#### 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@seminarservices.com.au

## PROGRAMME – DAY 2

### 9.00 – 10.30 Session 5 - Wall Panel Systems (including Purlin and Girt design issues)

This session will address various cladding systems that can be used for Industrial buildings such as steel sheeting (connected to purlins and girts), masonry (eg blocks from concrete, clay and AAC). Topics to be discussed in detail include: steel roof sheeting; design of purlins and girts ; panels as cladding to portal frame and steel column buildings; fire ties; ACC panels and Dado wall panels. Advantages and disadvantages of cladding alternatives will also be addressed. Supplier provided information will also be referenced.

10.30 – 11.00 Morning Tea

### 11.00 – 12.30 Session 6 - Connections used in Industrial Buildings

This session considers the various 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 will be addressed. Steel to concrete connections, holding down bolts, steelwork to concrete panel connections, fixings into concrete cast-in, and mechanical (expansion anchors) chemical anchors will be highlighted.

12.30 – 1.30 Lunch (Provided at venue)

### 1.30 – 3.00 Session 7 - Concrete Industrial Floor Slab Design

This session will give a quick overview of how to determine the thickness of a concrete industrial floor slab. The guidelines used will include the CCAA method and the Westergaard method. Parameters such as modulus of subgrade reaction (k) and soil elastic modulus will be explained and compared. Fibre vs non steel fibre floor systems will be compared. Loading from forklift, racks and UDL's will all be used. A tutorial session of 15-20 minutes will follow.

3.00 – 3.30 Afternoon Tea

### 3.30 – 5.00 Session 8 - Deflections, Tolerances, Erection Considerations and Case Studies of Problems

Our experienced presenters will look at 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 will be examined. Problems that have occurred while erecting industrial buildings will also be featured. Actual jobs will be shown (in keeping with client confidence).

### 5.00-5.10 Feedback Sheets / Certificates of Attendance

#### Professional Development

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

## SPEAKERS

### Ian Hymas B.Sc.(Hons) M. Eng.Sc

Ian has been a structural engineer for over 30 years and has specialized in Tilt Up for the past 20 years. As a founding partner of the firm Henry and Hymas, he has gained experience in designing tilt-up buildings, and as a consequence Henry and Hymas have had involvement in the design of several hundred tilt-up buildings. The firm Henry and Hymas filled the 'gap in the marketplace' between engineering consultancies and shop detailers, and have a department dedicated to providing dimensioned detailed drawings of precast and tilt up panels, commonly for projects designed by other consultants.



Ian is a member of the current BD-066 Standards committee for the Tilt Up & Precast Concrete Code AS3850. He was one of the founding members of this Code when it was first released many years ago.

### 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".



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).

Paul is also the present chairman of the Australian Standards committee BD-066 for the Tilt Up & Precast Concrete Code AS3850.

### Andrew Barraclough OND, BEng, MEng, Grad Dip Man, MIE (UK)

#### Andrew is the Product Manager – Concrete Lifting Systems for Reid Construction Systems.

His current role is in design, testing and development of concrete lifting systems, which includes anchors and accessories for precast concrete elements.



His previously published work includes (a) High Pressure die casting shot control and monitoring (b) Manufacturing Control Systems. His previous roles include Manufacturing Engineer, Quality Manager, Engineering Consulting, Sales and Marketing Manager.

He is currently involved with the Australian Standards committee BD-066 for AS3850:2003 revision and the NPCAA safety training for the precast industry. At present Andrew is completing his PhD with research in the area of concrete maturity and anchor pull out design.

## VENUE

\* Hobart Hotel Grand Chancellor,  
1 Davey St  
Hobart TAS 7000  
Ph: (03) 6235 4535

## REGISTRATION FORM

Please return to:

**Seminar Services Australia** (Attn: Joanne)

PO Box 913 Baulkham Hills NSW 1755

Phone (02) 9899 7447 Fax (02) 9899 5995 Mobile 0413 998 031

Email: info@seminarservices.com.au

I / We wish to attend the **Industrial Buildings Design & Construction Workshop** at

• Hobart (TAS) Thursday 23 - Friday 24 February 2012  tick

Number  Total   
Two Day Workshop @ \$995

Total Payment  Cheque \$

[Cheques payable to 'Seminar Services Australia' 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.



**Calculators required for some sessions**

# Structural Steel Design Workshop

## STRUCTURAL STEEL DESIGN WORKSHOP

This two-day seminar and workshop will address the very important area of structural steel design, a structural element that has always been critical in the construction of both low and high rise buildings. Unfortunately many structures today are designed by means of powerful software programs that result in designers losing the art of structural design and analysis.

This seminar and workshop is a back to basics course which will address the key areas of steel design with particular reference to the Australian source document on steel design namely the 'Structural Design Handbook' by Gorenc, Tinyou and Syam. First published in 1970 by Gorenc and Tinyou, this publication is now in its seventh edition (2005) and is invaluable to engineers wishing to design structures to the Structural Steel Code AS4100 -1998. For many years there existed two main grades of structural steel 250 MPa and 350 MPa – this all changed in 1998 with the release of AS4100.

The seminar is broken up into eight sessions and for the most part follows the text book chapter by chapter. At the end of most sessions, the registrants will then be given a period of time (usually ½ hr) to hone the skills they have been shown in the previous hour by completing a workshop tutorial exercise. Detailed solutions of these tutorial exercises will be worked through and given out. All sessions will be a blend of seminar presentation followed by workshop exercises thus calculators will be required.

## PROGRAMME - Day 1

8.30 – 9.00 **Registration**

9.00 – 10.30 **Session 1 – Materials**

This session looks at the basic terms and properties of steel as well as the loading parameters required for steel design. Terms & processes involved in producing Hot & Cold rolled sections, CHS, RHS. Parallel flange sections, Welded beams and stress relieving will be addressed. Other key parameters to be outlined included temperature effects on steel (hot, cold and transition temperatures), welding, hydrogen cracking, HAZ, quenched & tempered (Bisalloy), brittle fractures, ductility, steel grades prior to 1998 (250MPa & 350MPa) and the new steel grades (300 MPa, 400MPa, 450 MPa and 500 MPa), creep, fatigue & hardness.

10.30 – 11.00 **Morning Tea**

11.00 – 12.30 **Session 2 – Design Codes**

This session will carry on from the previous section looking at the next stage in the process, namely design aspects such as building height vs. terrain, wind velocity vs. region and wind speeds. It will also cover the basic aspects of loading including capacity reduction factors, deflection limits and relevant design codes, bulk material properties and imposed actions as per AS1170.

12.30 – 1.30 **LUNCH** - (Sit down Hot & Cold Buffet)

1.30 – 3.00 **Session 3 – Structural Analysis**

This session looks at design effects in more detail such as structural framing (isolated beams, braced & unbraced frames FS1 to FS7), minimum eccentricities, first and second order effects in columns via moment amplification methods, effective lengths, joint rigidity, buckled shapes, restraint stiffness, sway stiffness ratios, unequal end moment factors.

3.00 – 3.30 **Afternoon Tea**

3.30 - 5.00 **Session 4 – Beams & Girders**

This session looks at topics such as member vs. section capacity, slenderness reduction factors, lateral restraint (and the respective categories of lateral restraint F, P, L & U), flexural torsional buckling, k values, moment magnification factors, compactness vs. slenderness for plate elements, buckling and shear capacity of webs (both stiffened and unstiffened).

## PROGRAMME - Day 2

9.00 – 10.30 **Session 5 – Web Stiffeners/Tension Members**

This session addresses the requirements for the use of transverse and longitudinal web stiffeners in beams and columns. These are especially critical in beams with high shear due concentrated loads and in portal frame column-rafter connections. The second part of this session addresses tension members e.g. UB & UC's as support columns or Angles (equal and unequal) in bracing. Both bolted and welded tension members are covered and the failure modes of 'fracture vs yield' are covered. Tutorial exercise follows.

10.30 – 11.00 **Morning Tea**

11.00 – 12.30 **Session 6 – Compression Members & Beam Columns**

This session addresses in more detail compression members and beam columns both with concentric and eccentric loading. Parameters such as form factors, compression member constants, axial member capacities and design bending moments are analysed in more detail with a step by step working through detailed examples. Euler buckling loads, unequal moment factors and amplification factors are addressed in more detail allowing for reduced section capacities and biaxial effects. In plane and out of plane moment capacities will be explained again with detailed examples that precede the tutorial worksheets in the final ½ hr of this segment.

12.30 – 1.30 **LUNCH** - (Sit down Hot & Cold Buffet)

1.30 – 3.00 **Session 7 – Connections**

This session begins by looking at the basic types of bolts, i.e. snug, tensioned bearing and tensioned friction (4.6 S, 8.8 TB and 8.8 TF). Slip loads, minimum design actions on connections, tensile and shear strength (threaded vs. shank). It then addresses welding including the two main metal arc electrode categories E41XX and E48XX (alternatively W40X and W50X), fillet and butt welds, maximum and minimum fillet weld sizes, weld throat size, weld shrinkage cracking. Standardised connections e.g. angle seat, flexible end plate and base plate connections will also be highlighted. Detailed examples will be covered followed by connection tutorial exercises and solutions.

3.00 – 3.30 **Afternoon Tea**

3.30 - 5.00 **Session 8 – Framing Systems & Summary**

This final session looks at the various structural framing systems available including rigid frames, longitudinal bracing, roof trusses, open and closed sections, steel frames for low rise buildings, purlins and girts. Included in this topic will be the deflection limits, fatigue, fire and corrosion requirements.

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

### Who should attend

Engineers (structural/civil/mechanical/environmental) and all structural steel design engineers, Project Managers and Government engineers handling contract documentation dealing with steel. **Calculators required.**

### 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.

## SPEAKERS



### Ron Tinyou BE MIEAust M. ASCE

Ron was a civil/structural Design Engineer and project manager on industrial and hydraulic structures for 16 years with Gutteridge, Haskins & Davey (GHD). He taught in the school of Civil Engineering (Sydney Institute of Technology) and later was an academic at the University of Technology Sydney (UTS) specialising in steel structures.

He served in the drawing sub-committee of the Institution of Engineers, Sydney Division, producing the Structural Engineers Drawing Handbook. He then went on to co-author the most widely used text-book on steel design in Australia, the Steel Designers Handbook, first published in 1970 (and now in its 7th edition, 2005)



### Paul Uno BE BdgSc MIEAust CPEng

Paul Uno has over 30 years experience in the design and construction industry. He worked for quite a number of years in the steel industry and was a structural steel Design Engineer for Transfield and also for H.H Robertson then a Development Engineer for the Australian Institute of Steel Construction (AISC) now called the Australian Steel Institute.

Whilst at AISC he answered many technical enquiries on steel design and also gave presentations on (a) Economical Steel Design; (b)

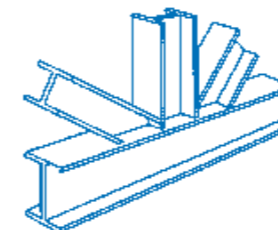
Beam and Column Design (including lateral torsional buckling) using Safe Load Tables; (c) Bolted and Welded structures. These presentations were given at UTS (NSW), Newcastle University, Wollongong University, RMIT (VIC), Ballarat CAE, University of Adelaide, University of SA, University of WA and Curtin University WA.

He was privileged to have worked under people such as Arthur Firkins and Ian Hooper and was also on the original AS1250 code conversion to AS4100 Standards Code committee under Tim Hogan.

For the past few years he has been running Structural Steel Design Workshops with Ron Tinyou (the co-author of Steel Designers Handbook by Gorenc, Tinyou and Syam). He is now co-presenting these steel courses with Ron Tinyou and brings a wealth of experience in both the steel and concrete industry.

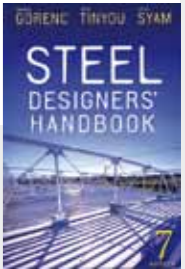
### Material Provided

Powerpoint course notes and other papers from the speakers will form the course notes. Registrants are also encouraged to purchase a copy of the publication Steel Designers Handbook (7th edition) as this document will be referred to quite often during the sessions of this seminar / workshop. Refer to the registration form for purchasing method. (Note people who cannot attend the seminar but only wish to purchase the publication will need to fax the completed registration form, ticking the publication box only and adding a fee of \$15 to the total cost to cover postage and handling).



## VENUES

**Hobart** Hotel Grand Chancellor,  
1 Davey St  
Hobart TAS 7000  
Ph: (03) 6235 4535



## REGISTRATION FORM

Please return to:

Steel Seminars Australia

**Structural Steel Design Workshop (Attn: Joanne)**

PO Box 913 Baulkham Hills NSW 1755 or

Ph 02-9899 7447 Fax 02-9899-5995 Mobile 0413 998 031

Email: info@steelseminars.com

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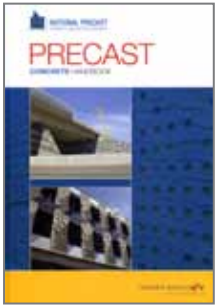
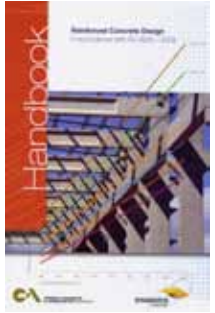
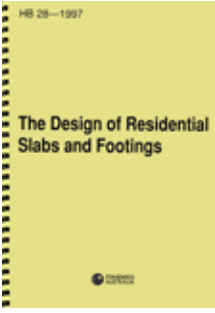





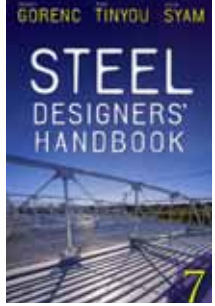
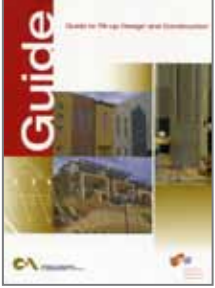


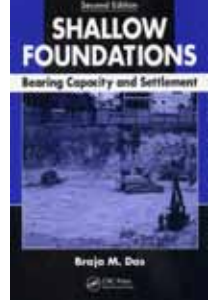
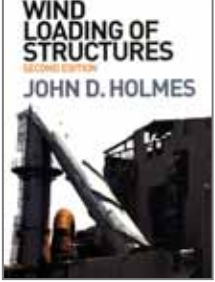


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