



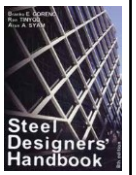
PAUL UNO BE MBdgSc MIE(Aust) CPEng NER RPEQ

- Over 40 years of experience in the design and construction industry.
- UNSW Sessional Senior Lecturer at the School of Construction Management.
- He has worked as a Structural Steel Design Engineer for Transfield and for H.H. Robertson, then a Development Engineer for the Australian Steel Institute.

Recommended Text:

Steel Designers' Handbook
(8th Ed. 2012)

Gorenc, Tinyou and Syam



WORKSHOP SUMMARY

This two-day workshop is a back to basics course which addresses 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. This text is invaluable to engineers wishing to design structures to the Structural Steel Standard AS4100-1998 including Amendment No.1, 2012.

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 (though the working stress format of AS1250 was rebadged as AS3990 and is still in use today for mechanical engineers).

Sessions provide worked examples, tutorial exercises and solutions.

DAY 1 (8.30 - 9.00 Registration)

9.00 - 10.30 Session 1

- MATERIALS

- Basic terms and properties of steel.
- Loading parameters required for steel design.
- Terms & processes involved in producing Hot & Cold rolled sections, CHS, RHS.
- Parallel flange sections, Welded beams and residual stress relieving.
- Temperature effects on steel (hot, cold and transition temperatures), welding, hydrogen cracking, HAZ, quenched & tempered (Bisalloy), brittle fractures, and ductility.
- Steel grades prior to 1998 (250MPa & 350MPa) and steel grades (300 MPa, 350MPa, 400MPa), creep, fatigue & hardness.

10.30 - 11.00 Morning Tea

11.00 - 12.30 Session 2

- DESIGN CODES

- Design aspects such as building height vs. terrain, wind velocity vs. region and wind speeds.
- 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 (Provided at Venue)

1.30 - 3.00 Session 3

- STRUCTURAL ANALYSIS

- Structural framing (isolated beams, braced & unbraced frames FS1 to FS7), and 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

- 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, slenderness α_s and moment α_m factors, moment magnification factors, compactness vs. slenderness for plate elements, buckling and shear capacity of webs (both stiffened and unstiffened).

COURSE COST

- 2 day course – **\$1,500 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



DAY 2

9.00 - 10.30 Session 5

- WEB STIFFENERS/TENSION MEMBERS

- Requirements for the use of transverse and longitudinal web stiffeners in beams and columns. Especially critical in beams with high shear due concentrated loads and in portal frame column-rafter connections.
- 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.

10.30 - 11.00 Morning Tea

11.00 - 12.30 Session 6

- COMPRESSION MEMBERS & BEAM COLUMNS

- Compression members and beam columns both with concentric and eccentric loading.
- Form factors (k_f), compression member constants, axial member capacities and design bending moments.
- Euler buckling loads, unequal moment factors and amplification factors allowing for reduced section capacities and biaxial effects.
- In plane and out of plane moment capacities.

12.30 - 1.30 Lunch (Provided at Venue)

1.30 - 3.00 Session 7

- CONNECTIONS

- 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).
- 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.

3.00 - 3.30 Afternoon Tea

3.30 - 5.00 Session 8

- FRAMING SYSTEMS & FAILURES

- Structural framing systems available including rigid frames, longitudinal bracing, roof trusses, open and closed sections, steel frames for low rise buildings, purlins and girts.
- Deflection limits, fatigue, fire and corrosion requirements.

5.00 - 5.15 Certificate of Attendance & Feedback sheets

CALCULATORS REQUIRED