


PAUL UNO
BE MBdgSc MIE(Aust) CPEng NER

- Over 35 years of experience in the design and construction industry.


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WORKSHOP SUMMARY

This workshop addresses the engineering behind timber design as well as the requirements of AS1720 – Timber Structures.

Wood science, wood exposure and durability, insect attack, moisture and shrinkage of wood will be addressed. The limit state design and analysis process for the various modes of failure (eg bending, tension, compression, shear) are explained in relation to dealing with timber.

The workshop addresses in detail the design of connections. Limit state flow charts are used for the design process for both strength limit state, and serviceability states. Various timber products including sawn timber, softwood and hardwood sections, LVL, GLULAM and CLT are addressed. Engineered products and their low variability including advantages, disadvantages and recommended uses are explained. Examples where good design ideas coming horribly unstuck due to a lack of basic understanding of timber are shown.

All sessions provide worked examples, tutorial exercises and solutions.

DAY 1 (8.30 - 9.00 Registration)

9.00 - 10.30 Session 1

- WOOD & TIMBER MATERIALS

- Properties of wood before it becomes structural timber.
- Softwoods vs hardwoods, timber growth and shrinkage, plywood and its manufacture, Laminated Veneer Lumber (LVL), GLULAM, including the advantages of timber charring in fires.
- Resources from organisations such as the EWPA will be utilized.

10.30 - 11.00 Morning Tea

11.00 - 12.30 Session 2

- LIMIT STATE DESIGN INTRODUCTION FOR TIMBER

- Standards AS1720 and procedures with respect to Limit State Design.
- Comparison of Limit State Design with the earlier design methods and member selection.
- Strength limit states.
- Spread sheets, hand methods and design charts.

12.30 - 1.30 Lunch (Provided at Venue)

1.30 - 3.00 Session 3

- TIMBER DESIGN FOR TENSION & COMPRESSION

- Design process for timber members subjected to 'tension' failure and then 'compression' failure.
- Buckling capacity of various timber elements.

3.00 - 3.30 Afternoon Tea

3.30 - 5.00 Session 4

- TIMBER DESIGN FOR BENDING, SHEAR & BEARING

- Design of bending timber members for strength. (Using hand methods, spread sheets and design charts).
- Shear loads and bearing actions on timber elements and the requirements of the Australian Standard.
- Importance of each action in the design process.
- Problems encountered if the designer does not understand the basic principles.

DAY 2

9.00 - 10.30 Session 5

- TIMBER DESIGN FOR SERVICEABILITY

- Structural timber members may be able to withstand large applied loads without failing but this may result in unsightly deflections.
- Members may satisfy short term deflections but the long-term actions of creep may result in extreme deflections and warping.
- Short and long term actions are addressed with respect to AS1720.

10.30 - 11.00 Morning Tea

11.00 - 12.30 Session 6

- CONNECTIONS FOR TIMBER DESIGN

- NAILS AND SCREWS

- Connections design using various types of nails and screws that are available and are used in the timber marketplace.
- Timber connections requirements of AS1720, with respect to nails and screws.

12.30 - 1.30 Lunch (Provided at Venue)

1.30 - 3.00 Session 7

- CONNECTIONS (CONTINUED)

- BOLTS, DOWELS, RIVETS, SPECIAL CONNECTIONS

- Connections session examines the use of Bolts, Dowels and Rivets in Timber members.
 - o Various formulas and requirements of AS1720 that govern connection design and how to use these formulas.
- 'Special connections' available in the marketplace and why they need to be used.

3.00 - 3.30 Afternoon Tea

3.30 - 5.00 Session 8

- NEW METHODS IN TIMBER ENGINEERING

- New products and timber software in the marketplace.
- Future in timber engineering.
- Cross-laminated timber slabs, columns and shear walls, Epoxy dowel injected connections, hidden plate and dowel pin connections.
- New technology in timber design.

5.00 - 5.15 Certificate of Attendance & Feedback sheets



CALCULATORS REQUIRED

COURSE COST

- 2 day course – \$1,240 pp

DATES, VENUES & REGISTRATION

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

FURTHER INFORMATION

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