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RPEQ APEC Engineer IntPE(Aus)

- Over 40 years' experience in design & construction.
- Part-time Senior Lecturer University of Sydney
- Lectured on Timber Materials at UNSW.



PAUL DAVIS

BE(Civil) MIE(Aust) CPEng NPER

- Director - Project X Solutions
- Monthly columnist in a timber industry news magazine.

Live streamed via



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.

New Free 200 pg Timber Design Guide #50 – Mid Rise Timber Building Structural Engineering. Download from <https://woodsolutions.com.au/publications?page=5>

DAY 1 (8.30 - 9.00 Zoom invite link will be emailed)

9.00 - 11.00 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.

11.00 - 11.15 Morning Break

11.15 - 1.00 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.

1.00 - 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 - 3.15 Afternoon Break

3.15 - 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 designer does not understand basic principles.

DAY 2

9.00 - 11.00 Session 5

- TIMBER DESIGN & DURABILITY 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.
- Issues regarding durability of timber.

11.00 - 11.15 Morning Break

11.15 - 1.00 Session 6

- CONNECTIONS FOR TIMBER DESIGN - NAILS & 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.

1.00 - 1.30 Lunch Break

CALCULATORS REQUIRED

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.
 - 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 - 3.15 Afternoon Break

3.15 - 5.00 Session 8

- NEW METHODS IN TIMBER ENGINEERING

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

Certificate of Attendance will be emailed



COURSE COST

- 2 day course – **\$1,460 pp**

DATES, VENUES & REGISTRATION

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

FURTHER INFORMATION

- Office (02) 9899 7447
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