



PAUL DAVIS BE(Civil) MIE(Aust) CPEng NPER

- Principal Engineer - Project X Solutions
- 30 years of experience in civil and structural design and construction.
- Investigated and reported on approximately 2000 damaged or defective structures.



PAUL UNO BE MBdgSc MIE(Aust) CPEng NER RPEQ
APEC Engineer IntPE(Aus)

- Over 40 years of design and construction experience.
- Former Senior Part-Time Lecturer – UNSW, UTS and University of Sydney.

WORKSHOP SUMMARY 8 hours of CPD

Structures sometimes fail. The investigations of these failures are a field of engineering in itself. An engineer can sometimes be called upon to help stabilise a structure that has been damaged by fire, impacts or some sort of structural failure.

An investigating engineer requires deep experience and a well-rounded understanding of the underlying physical phenomenon, engineering theory, standards, design methodologies and construction process as well as a rigorous approach to investigation and reporting.

By examining fascinating cases from national and international experience, this course will provide some of the tools necessary for an engineer to investigate failed or damaged structures.

Additionally, knowledge of the environments and situations that can lead to failure can help design and construction professionals avoid their own mistakes. This is a form of risk management; it's far better to learn from someone else's mistakes than your own!

PROGRAMME (8.30am Zoom invite will be emailed)

9.00 - 11.00 Session 1 (Paul Davis)

- INTRODUCTION, SYSTEMIC CAUSES OF FAILURE & THE PHYSICAL INVESTIGATION

After introductions, we examine the human and technical factors that can lead to a structural fault and then look at how we might go about the site investigation the failure or damage.

• Systematic Causes:

- Education
- Experience
- Uncertainties
- Design environment
- Design processes
- Chain of responsibility
- Construction



• Investigation techniques:

- Investigation team
- Initial investigation
- Dealing with emergency services, professionals, media and stakeholders.
- Safe investigation methodology
- Stabilisation – “make safes”
- Recording methods
- Gathering evidence

11.00 - 11.15 Morning Break

11.15 - 1.00 Session 2 (Paul Davis)

- TECHNICAL REPORT WRITING

Technical report writing demands a clarity of approach and style which can be beneficial in fields beyond forensic engineering. The session includes:

- Language
- Layout
- Style
- Common mistakes
- Professional responsibilities
- Logical argument structures
- Practical exercise



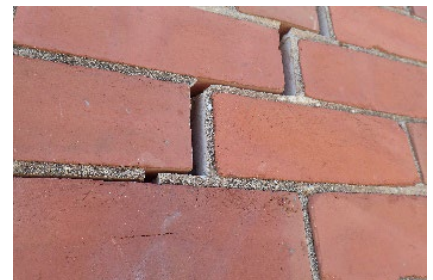
1.00 - 1.30 Lunch Break

1.30 - 3.00 Session 3 (Paul Davis)

- CASE STUDIES: MATERIALS

The examination of real world failures helps us learn from the past and examine our own practices. With a focus on materials this session includes:

- Steel
 - Large portal frame roof collapse
 - Walkway collapse
 - Portal frame in cyclone
 - Floor dynamic failure
 - Bridge collapse
 - Arch collapse
- Concrete
 - Precast failures
 - Tilt Up wall collapses
 - Waterproofing
 - Ground slabs
 - Reinforced concrete failures
- Timber
 - Roof failures
 - Deflection Failures
 - Dynamic Failures
- Masonry
- Geotechnical
 - Retaining walls
 - Residential slabs
 - Bored pier failures
- Practical exercise



3.00 - 3.15 Afternoon Tea

3.15 - 5.00 Session 4 (Paul Uno)

- CASE STUDIES: ACTIONS

We continue our examination of real world failures with a focus on actions. This session includes:

- “Regular” actions:
 - Live loads
 - Wind
 - Snow
 - Earthquake
- Rules of Thumb
- Course review
- “Exotic” actions
 - Fire
 - Water
 - Material deterioration
 - Impacts

Certificate of Attendance will be emailed

Live streamed via



• One day course – \$815 pp

FURTHER INFORMATION

- (02) 9899 7447
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- registrations@etia.net.au

• To register, visit our website www.etia.net.au
OR scan the QR Code.

