



**PAUL UNO** BE MBdgSc MIEAust CPEng NER RPEQ APEC Engineer IntPE(Aus)  
Previously

- **NSW Senior Engineer** (Cement & Concrete Association of Australia CCAA)
- **NSW Technical Manager** (CSR Readymix - now Holcim)
- **Materials Engineer** (Boral)

**Event Sponsor:**



**Independent  
Cement**

**FACE-TO-FACE (MELBOURNE)**

**Mantra on Russell**

222 Russell St, Melbourne, VIC

**mantra**  
on russell

## WORKSHOP SUMMARY 16 hours of CPD

This two-day course is aimed at a wide variety of personnel in the concrete construction industry such as, concrete batchers, concrete placers, builders, developers, site managers, construction managers, site foreman and engineers.

### DAY 1 (8.30am Registrations at Venue)

#### 9.00 - 11.00 Session 1

##### - CEMENT AND CONCRETE MATERIALS

- Cement types (portland, blended, low heat, high early strength, low shrinkage, sulfate resistant, off-white, white, high alumina cements, geopolymers)
- Aggregates (fine/coarse), manufactured sands, water
- Supplementary cementitious materials (slag, flyash, silica fume)
- Green Star Rating and Sustainability.

#### 11.00 - 11.15 Morning Break

#### 11.15 - 1.00 Session 2

##### - ADMIXTURES

- Standard admixtures (accelerators, retarders, water-reducers, superplasticisers, air entraining agents, waterproofers, corrosion inhibitors)

#### 1.00 - 1.30 Lunch Break

#### 1.30 - 3.00 Session 3

##### - CONCRETE & REINFORCEMENT PROPERTIES

- Concrete properties
  - Water to cement ratio effects, workability and stiffness, air content, heat of hydration, setting time, shrinkage, strength development as a function of time (concrete maturity) and temperature, bleeding, permeability and porosity.
- Reinforcement properties
  - Yield, bond and anchorage, bars vs mesh, metal vs plastic bar chairs, detailing, prestressing.
  - Issues of using 500 MPa steel bars and steel mesh with regards to ductility and size
  - Use of plastic and steel fibres.

#### 3.00 - 3.15 Afternoon Break

#### 3.15 - 5.00 Session 4

##### - CONCRETING ON SITE

- Transport, place, compact, finish and cure concrete on site.
- Truck sizes, delivery time limits, site access, delivery rate, pumping, avoidance of segregation, vibration, screeding, floating by hand and by machine, curing methods and curing agents, and slip resistance.



## DAY 2

#### 9.00 - 11.00 Session 5

##### - TESTING

- Cement and concrete materials, fresh and hardened concrete (including core tests)
- Slump: vertical and horizontal (spread/flow); in line with the J ring test for self-compacting concretes
- Standard tests: indirect tension, flex, shrinkage, creep, and impact rebound testing (Schmidt hammer).

#### 11.00 - 11.15 Morning Break

#### 11.15 - 1.00 Session 6

##### - DURABILITY & CRACKS IN CONCRETE

- Durability aspects of concrete (abrasion, cover to reinforcement, concrete strength, carbonation, chloride penetration, concrete cancer, exposure environment, freeze-thaw conditions, salt attack)
- Cracks in concrete
  - Hot weather concreting, plastic shrinkage, plastic settlement, thermal cracking, building restraint, inadequate reinforcement.
  - Methods of crack identification and minimisation of cracking, curing compounds, use of fibres (polypropylene and steel)
  - Calculation of bleed water evaporation rates from concrete surfaces using UNO equation, ACI charts and APPs.
  - Joint design (types of dowels used in the marketplace such as round vs square vs flat vs diamond)

#### 1.00 - 1.30 Lunch Break

#### 1.30 - 3.00 Session 7

##### - CONCRETE FOR INDUSTRIAL APPLICATIONS

- High strength and high performance concrete
- Formwork finishes (class 1 to 5) and colour control to AS3610, rendering high strength concrete
- Precast concrete and tilt up construction
- Concrete industrial floors and pavements
- Prestressed concrete.

#### 3.00 - 3.15 Afternoon Break

#### 3.15 - 5.00 Session 8

##### - CONCRETE IN RESIDENTIAL CONSTRUCTION

- Residential slabs and footings to AS2870-2011, crack width and termite ingress, waffle pod slabs, cement rendering, brick mortars and the effect of air entrainers, shotcreting, sprayed concrete pools, stencilled and stamped concrete, colouring concrete using oxides.

### Certificate of Attendance will be emailed

(Morning Tea, Lunch and Afternoon Tea are provided at the venue.)

• Two day course – **\$1,440**

#### FURTHER INFORMATION

- (02) 9899 7447
- +61 413 998 031
- [registrations@etia.net.au](mailto:registrations@etia.net.au)

• To register,  
visit our website  
[www.etia.net.au](http://www.etia.net.au)  
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Code.

