CEMENT & CONCRETE PRACTICE COURSE

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 (SYDNEY)
Day 1 – Rydges Norwest (Baulkham Hills) RYDGES
Day 2 – Boral Laboratory (Winston Hills) BORAL

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 – RYDGES NORWEST *(8.30am Registrations)*

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 – BORAL LABORATORY

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

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

Cancellations made more than 5 working days prior to a course will incur a 20% processing fee of the full registration amount.
Cancellations made 5 working days or less will incur forfeiture of the full registration fee.