

This course is presented by **Cement & Concrete Services (CCS)** and is endorsed and sponsored by the: **Concrete Pipe Association of Australasia (CPAA) www.cpaas.asn.au**

## PROGRAMME

8.30 - 9.00 Registration  
 9.00 - 10.30 **Session 1 - Concrete Pipe Materials & Manufacture, Pipe Types, & Testing**

This session deals with the materials that make up reinforced concrete pipes. Cement types include GP, SL and HE cement as well as SCM's (supplementary cementitious materials) such as flyash. The reason why some concrete pipes use elliptical steel reinforcement instead of circular steel reinforcement is outlined. Concrete pipe load class is explained and the requirements of crack control for testing in accordance with AS/NZS 4058-2007 are also outlined. Other tests that are expanded upon include hydrostatic testing, absorption testing and durability requirements eg impermeability limits, chloride and sulphate concentration limits.

10.30 - 11.00 Morning Tea  
 11.00 - 12.30 **Session 2 – Soil Properties, Pipe Support & Bedding Factors**

This session explains soil classification codes e.g. GW vs SC, Soil Cohesion parameters, the requirements and differences between backfill, ordinary fill and select fill, the requirements for pipe bedding, haunch zones, side zones and overlay fill zones, Dry Density Ratio vs Density Index, the meaning of Bedding Factors, Support Types eg U vs H vs HS. **A 15 minute workshop tutorial will be given at the end of this session (solutions provided).**

12.30 - 1.30 Lunch (Provided at venue)  
 1.30 - 3.00 **Session 3 – Concrete Pipe Design Loads and Equations**

This session starts by briefly looking at the history of pipe formulas and the people behind these famous equations e.g. Marston, Spangler, Moser, Folkman etc. The pipeline definition of trench vs embankment will be explained and in particular, the formulas in AS/NZS3725-2007 will be explained (derivations provided). The session will therefore address trench theory, positive and negative projection in embankments (both complete and incomplete),

settlement ratios, the effect of soil parameters K & u on the design as well as jacked pipe systems. In particular, the session will address the various loads that can be applied to pipeline systems e.g. Construction loads, Road vehicle loads (including load distribution through fill using Boussinesq equations), Railway loads and Water loads. **A 15 minute workshop tutorial will be given at the end of this session (solutions provided).**

3.00 - 3.30 Afternoon Tea  
 3.30 - 5.00 **Session 4 – Concrete Pipe Design Examples & Software**

This session is entirely devoted to design worked examples. Registrants will be guided through six (6) worked examples (in detail). They will then be given two (2) detailed tutorial questions to solve by hand using the equations and steps shown earlier. The final part of this session is then devoted to show attendees how to quickly solve these same (8) examples using the Concrete Pipe Association of Australia CPAA software program 'PIPECLASS Version 2.0' (all attendees are encouraged to bring along their laptops with the software loaded or have it supplied free on the day so that the software tutorial exercises can be carried out).

5.00 - 5.10 **Feedback Sheets / Certificates of Attendance**

**Further Information**  
 For any further information on this course please contact Joanne on mobile 0413-998-031 or (02) 9899 7447 or email info@cementandconcrete.com



**Calculators required**

## SPEAKERS

**Paul J. Uno** BE MBdgSc MIE(Aust) CPEng  
 Director - Cement and Concrete Services



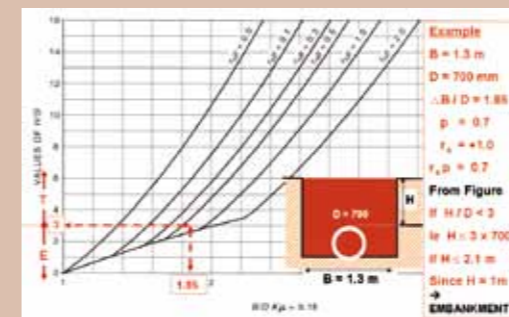
Paul Uno has over 30 years experience in the design and construction industry. He has worked for companies such as CSR Readymix, Transfield, Boral, Spancrete, Dept. of Housing, Australian Institute of Steel Construction, HH Robertson and the Cement And Concrete Association of Australia. He has been a member of the American Concrete Institute since 1992 and a member of the Concrete Institute of Australia since 1982. At present he is a consultant, a presenter for Cement and Concrete Services as well a University senior lecturer.

He currently lectures in Properties of Materials (Concrete) at Civil Engineering, Sydney University as well as lecturing at UNSW in the faculty of Built Environment in both in Construction Science (Materials) and in Building Structures (Concrete & Structural Steel Design). He is also the current chairman of Australian Standards BD-066 Precast & Tilt Up code (AS3850).

**David Millar** BE Grad Dip Bus Admin MIE Aust.



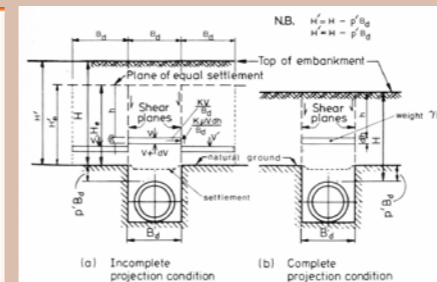
David graduated as a civil engineer from the University of Sydney in 1991 and also holds a Graduate Diploma in Business Administration from UTS. He has extensive experience in the construction industry in design, marketing and business management of precast concrete and concrete related materials. At present he is the Executive Director of the Concrete Pipe Association of Australasia. David's role at the CPAA includes a particular focus on education in the stormwater drainage and pressure pipe markets, in design, installation, and asset management. He is also the current president of the NSW division of the Concrete Institute of Australia, the External Project Manager for the Australian Standards committee BD26, and along with the members of the CPAA, is committed to the use of Australian and New Zealand Standards as the benchmark throughout industry.



$$W_s = C_i w B^2$$

where  
 $W_s = V; w = \gamma$  (soil weight)  
 $B = B_z$

$$C_i = \left( \frac{1 - e^{-2K\mu\left(\frac{H}{B}\right)}}{2K\mu} \right)$$



## VENUE

- \* Sydney Stamford Grand cnr Herring & Epping Rd, North Ryde NSW (02) 9888-1077
- \* Brisbane Holiday Inn, 159 Roma St, Brisbane QLD (07) 3238-2222
- \* Melbourne Hotel Grand Chancellor, 131 Lonsdale St, Melbourne VIC (03) 9656-4000

## REGISTRATION FORM

Please return to:  
**Cement & Concrete Services** (Attn: Joanne)  
 PO Box 913 Baulkham Hills NSW 1755  
 Phone (02) 9899 7447 Fax (02) 9899 5995 Mobile 0413 998 031  
 Email: info@cementandconcrete.com  
 I / We wish to attend the **Reinforced Concrete Pipes and Pipeline Design Workshop** at:

		tick
• Sydney NSW	Tue 14 August 2012	<input type="checkbox"/>
• Brisbane QLD	Thu 20 September 2012	<input type="checkbox"/>
• Melbourne VIC	Fri 30 November 2012	<input type="checkbox"/>

Number Total  
 One Day Workshop  @ \$ 495   
 (Includes Handouts & Meals)

Total Payment \$   
 [Cheques payable to 'Cement & Concrete Services' note GST already included]

Name \_\_\_\_\_  
 Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Street / PO Box \_\_\_\_\_  
 Suburb \_\_\_\_\_ Postcode \_\_\_\_\_  
 Ph ( \_\_\_ ) \_\_\_\_\_ Fax ( \_\_\_ ) \_\_\_\_\_  
 Email \_\_\_\_\_

Person Handling Payment (please print) \_\_\_\_\_

CHQ  VISA  M.CARD  AMEX 4 DIGIT ID#

Cardholders Name \_\_\_\_\_

Expiry Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Signature \_\_\_\_\_

NB: 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.

**Professional Development**  
 Attendees may be credited towards IE Aust Continuing Professional Development (CPD) requirements. Members of IE Aust are required to undertake a minimum of 150 hours of equivalent CPD every 3 years.