TILT UP AND PRECAST - DESIGN AND CONSTRUCTION

PROGRAMME – DAY 1

8.30 – 9.00 Registration

9.00 – 10.30 Session 1 - Concrete Properties for Tilt Up & Precast Concrete Panels

This session deals with the various cement and concrete materials that are required to produce good quality tilt-up and precast concrete panels. Materials such as off white cements, flyash and slag blends, admixtures are all addressed. Mix designs and minimum w:c ratios required for tilt up and precast concrete will be outlined. Correct curing (including low steam) will be discussed. Causes for concrete cracking will be addressed in particular plastic shrinkage cracking, plastic settlement cracking, delayed ettringite formation and long term cracking will also be addressed.

10.30 – 11.00 Morning Tea

11.00 – 12.30 Session 2 - Precast Wall & Floor Panels - Structural Design

This section will address the basic principles of structural design of precast and tilt up panels including solid and hollowcore units. Prestressed and non-prestressed design will be dealt with including strength at transfer and prestress losses. Crack control and deflection criteria will also be addressed. ***A tutorial session of 15-20 minutes will follow.***

12.30 – 1.30 Lunch *(Hot and Cold sit down buffet)*

1.30 – 3.00 Session 3 - Tilt Up Buildings - Layout & Details

This session looks at the key steps in determining panel layout from a structural system viewpoint e.g. panel breakup, joint placement, structural steelwork and roof bracing. Structural decisions such as number of panels per bay, smaller panels at corners, craneage required, wall openings, where to oversize and slot holes, connections to steel roof, panel to footing details, slab joint details, levelling for shims and tolerance issues will all be addressed.

3.00 – 3.30 Afternoon Tea

3.30 – 5.00 Session 4 - Tilt Up Panel Design

This session initially covers the sections of the BCA, AS3850 and AS3600 that deal with tilt up. This will be followed by structural design methods such as the Moment Magnifier Method according to Weiler and the ACI. Other reference will include the J. Wyatt method (PCA) and the famous 'green book'. Other references that will be covered include the Brookes Tilt up handbook method as well as Australian references such as CIA. The session will then address panel thickness to satisfy various in-services loads, eccentricities, slenderness, P-Delta effects as well as fire. Finally reinforcement requirements (one layer vs two), reinforcement around openings, stresses during lifting will all be covered. ***A 15-20 minute tutorial will follow.***

Calculators required for sessions 2 & 4

PROGRAMME – DAY 2

9.00 – 10.30 Session 5 - Tilt Up & Precast Panel Construction Issues

This session carries on from the previous day's afternoon design session. It covers additional design topics such as appropriate design of temporary bracing and props. This will be followed by construction topics such as adequate preparation of detail drawings of panels, transportation of factory cast panels, casting layouts, inspection of panels prior to pouring, crane loads on floor slabs, erecting and bracing panels, steel erection, correct removal of braces and final inspection of steelwork, grouting panels and dowels.

10.30 – 11.00 Morning Tea

11.00 – 12.30 **Session 6 -Tilt Up Jobs – Detailed Case Studies** (Learning from Experience)

This session will look at problems experienced on site which need quick and correct solutions. Sometimes this can only be gained via experience. The speaker will outline many jobs he has been involved with over many years where problems with cr aneage, props, steelwork erection, tolerances and temperature effect have had to be fixed. Actual jobs will be shown (in keeping with client confidence) including the new elephant enclosure at Taronga Park Zoo.

12.30 – 1.30 Lunch - Sit down - Hot & Cold Buffet

1.30 – 3.00 **Session 7 - "Anchors & Connections"**

This session considers the engineering involved with anchoring & transferring load into precast concrete from embedded non-reinforcement – both precast & post-installed anchor systems. All too often problems occur at the interface between connected structural elements and we will consider how to manage this. AS3850 (Tilt-up Concrete Construction), AS3600 (Concrete Structures) & other sources will be referred to regarding the rating of various systems available and subsequent design methods. **Case studies** of efficient construction engineering for anchors will be highlighted as will various aspects of risk management associated with successful design & construction of anchor systems in precast vs insitu concrete.

3.00 – 3.30 Afternoon Tea

3.30 – 5.00 **Session 8 - Joint Design / Coatings & Sealants / Repair materials**

This session will explain the important aspects of correct joint design and how these measurements are made. Following this, the next segment will look at the various coatings and sealants that are appropriate for tilt up and precast concrete structures. The last part of this session will address the various repair materials that are available on the market and their use in this specialised construction area.

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 landline (02) 9899 7447 or email info@cementandconcrete.com

SPEAKERS

Ian Hymas B.Sc.(Hons) M. Eng.Sc

Ian has been a structural engineer for over 30 years and has specialized in Tilt Up for the past 20 years. As a founding partner of the firm Henry and Hymas, he has gained experience in designing tilt-up buildings, and as a consequence Henry and Hymas have had involvement in the design of several hundred tilt-up buildings.

The firm Henry and Hymas filled the 'gap in the marketplace' between engineering consultancies and shop detailers, and have a department dedicated to providing dimensioned detailed drawings of precast and tilt up panels, commonly for projects designed by other consultants.

Ian is a member of the current BD-066 Standards committee for the Tilt Up & Precast Concrete Code AS3850. He was one of the founding members of this Code when it was first released many years ago.

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 presented precast concrete courses nationally for the NPCAA in 2005 and 2006 and was also acknowledged as a key contributor to the NPCAA/CIA publication "Precast Concrete Handbook".

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 as a University 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). Paul is also the present chairman of the Australian Standards committee BD-066 for the Tilt Up & Precast Concrete Code AS3850.

Andrew Barraclough OND, BEng, MEng, Grad Dip Man, MIE (UK)

Andrew is the Product Manager – Concrete Lifting Systems for Reid Construction Systems.

His current role is in design, testing and development of concrete lifting systems, which includes anchors and accessories for precast concrete elements.

His previously published work includes (a) High Pressure die casting shot control and monitoring (b) Manufacturing Control Systems.

His previous roles include Manufacturing Engineer, Quality Manager, Engineering Consulting, Sales and Marketing Manager.

He is currently involved with the Australian Standards committee BD066 for AS3850:2003 revision and the NPCAA safety training for the precast industry. At present Andrew is completing his PhD with research in the area of concrete maturity and anchor pull out design.

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.

VENUE

* Sydney	Stamford Grand cnr Herring & Epping Rd, North Ryde	NSW	(02) 9888-1077
* Brisbane	Mercure Hotel, cnr Ann & Nth Quay, Brisbane	QLD	(07) 3237-2300
* Melbourne	Hotel Grand Chancellor, 131 Lonsdale St, Melbourne	VIC	(03) 9656-4000
* Perth	Comfort Inn Wentworth Plaza, 300 Murray St., Perth	WA	(08) 9338-5000

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
I / We wish to attend the **Tilt Up & Precast Concrete Design Workshop** at

		tick
• Sydney (NSW)	15-16 March 2011	☐
• Brisbane (QLD)	11-12 April 2011	☐
• Melbourne (VIC)	4-5 May 2011	☐
• Perth (WA)	12-13 September 2011	☐

	Number		Total
Two Day Workshop		@ $940	
Guide to Tilt Up Design and Construction (2005 Edition)		@ $50	

Total Payment ☐ Cheque $

[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) _____

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Expiry Date ____/____ Signature _____

NB A 20% processing fee applies to registration cancellations made earlier than 5 working days before the course date. Cancellations made 5 working days or less incur forfeiture of the entire registration fee. No discounts apply.

For more information on all courses download full brochure from www.cementandconcrete.com - NB A 20% processing fee applies to registration cancellations made earlier than 5 working days before the course date. Cancellations made 5 working days or less incur forfeiture of the entire registration fee. No discounts apply.