

# A two-day course and design workshop on **DESIGN & CONSTRUCTION OF PRECAST CONCRETE STRUCTURES**



**KUALA LUMPUR**  
**6-7 August 2009**

<http://eng.upm.edu.my/hrc>  
<http://www.cream.com.my>

The Industrialized Building Systems (IBS) construction concept has been embraced by the government by making it compulsory for all government projects to contain 70% IBS content. This directive has been issued in 2008 and to be implemented in all government projects under the Ninth Malaysian Plan.

Precast concrete is one of the elements being associated with IBS construction. The use of precast concrete multi-storey framed buildings is now widely regarded as an economic, structurally sound and architecturally versatile form of construction. It combines the benefits of VERY rapid construction and high QUALITY

materials with the advantages of production line economy and quality assurance. Design is carried out to the highest standards unsurpassed in the concrete industry - and yet the knowledge remains essentially within the precast concrete industry itself.

This workshop is intended for practising engineers, architects and contractors engaged in the design and construction of commercial, private and industrial buildings. It is also suitable for graduate students in civil engineering, building technology and architecture. It aims to provide the widest possible appreciation of the use of precast concrete for innovative and modern buildings.

Aspects of design creativity at the conceptual stage will be followed by a detailed examination of the structural mechanics of multi-storey frames, enabling the delegates to engage in a real design problem of a 10-storey precast frame during the second day. The lectures will be supplemented by design problems and videos.

Course notes (100 pages) and 600 powerpoint slides will be provided together with the opportunity to purchase the lecturer's latest text book *Precast Concrete Structures* at 20% discount (about RM185) and negotiate the provision of design software for precast structures.

**Recommended for professional design engineers and graduate students in civil engineering and building technology**

Jointly Organized By:



**Dr. Kim S. Elliott**  
BTech, PhD, MICE, CEng  
Nottingham University, UK



**UPM**  
UNIVERSITI PUTRA MALAYSIA

Housing Research Centre  
Universiti Putra Malaysia

**CREAM**

Construction Research  
Institute of Malaysia

Supported By:



Institution of Engineers  
Malaysia



# Tentative Programme

08.30 am	Registration
09.00 am	Precast frame concepts, economics, and architectural requirements Design concepts, visual & structural concrete elements, framing plans, costs and comparisons, construction programmes and methods, structural floor zones, architectural provisions. Video – The Shires Retail Development
10.30 am	Break
11.00 am	Mixed Precast Concrete Construction Precast with structural steel, insitu concrete, timber, masonry and glass.
11.30 am	Precast flooring and composite design Types of flooring, cost and depth comparisons, manufacture, materials, hollow cored slabs, double tee slab, beam and plank floors, lateral load distribution, composite design.
12.45 am	Lunch
02.15 am	Frame and component design Frame analysis methods, materials, prestressed and reinforced beam design in flexure and shear, beam end shear design, truss analogy, column analysis, design and details. Video – Case study of 30 storey hybrid frame in Melbourne, Australia
03.15 am	Break
03.45 am	Frame stability and floor diaphragm action Horizontal loads, braced, unbraced, partially braced frames, shear wall or core positions, horizontal diaphragm floors, shear mechanisms, wind walls, hollow cored walls, concrete and masonry infill walls.
04.45 am	Discussion
05.00 am	Close
09.00 am	Design of beam to column connections Bearing pressures, compression and tension joints, types of connectors (billet, welded plate, cleat), column insert design, confinement links, corbel and nib design, failure modes, experimental test results. Video – Spanframe – A Precast Solution.
10.30 am	Break
11.00 am	Column to foundation connections Grouted sleeve, prefabricated shoe, base plate and pocket foundations, load capacity, failure modes, Video – Column shoe installation.
12.00 pm	Frame robustness and stability ties Background to the problem, progressive collapse, recent amendment rules, protected members, structural catenary ties in the floor, beams, columns and in toppings.
12.30 pm	Discussion
12.45 pm	Lunch
02.00 pm	Design Exercise Groups of 4-5 delegates perform a feasibility study and carryout some detailed design of a 10 storey multi-storey precast concrete frame. The design involves structural stability, shear wall design, plus floor slabs, beam and column design, and beam-column connections. The session is 2½ hours duration with up to 30 minutes for delegates to reveal their solutions.
04.30 pm	Solution Presentations
05.30 pm	Closure

TWO DAY 2

## Speaker

Dr. Kim S. Elliott, BTech, PhD, MICE, CEng, is Senior Lecturer in the School of Civil Engineering at Nottingham University, UK. He was formerly at Trent Concrete Structures Ltd. one of the UK's leading precast concrete manufacturers, and was a design consultant to Hume Industries in KL from 1993-98. Since 1987 Dr Elliott has been active in research into the behaviour of precast concrete structures, and has published more than 100 papers and 4 text books - BCA's Precast Frame Buildings Design Guide (1992), Multi-Storey Precast Concrete Frame Structures (1996), Precast Concrete Structures (2002) and Precast Concrete in Mixed Construction (2002). He is a member of the British Precast Federation's Technical Committees on frames and flooring, and member of the FIB Commission on Prefabrication, where he is a co-author of the 1994 edition of the FIP Frames Manual and the 2000 publication on Hollow Cored Floors. He was Chairman of the European research project COST C1 on Semi-Rigid Connection in Precast Structures. He has lectured on this subject over 40 times in 16 countries worldwide (incl. KL, KK, Kuching, Singapore, Brazil, South Africa, Portugal, Spain, Scandinavia and 6 times in Australia) and at 30 UK universities.

### FURTHER DETAILS

Dr. Kim S. Elliott  
Tel + 44 1159 513887; Fax + 44 1159 513898  
e-mail kim.elliott@nottingham.ac.uk  
www.nottingham.ac.uk

## Registration Form

Surname (Prof/ Assoc. Prof/ Dr/ Mr/ Mrs/ Ms)

Name : \_\_\_\_\_

Designation : \_\_\_\_\_

Organization : \_\_\_\_\_

Address : \_\_\_\_\_

Country/State : \_\_\_\_\_ Postal Code : \_\_\_\_\_

Tel : \_\_\_\_\_ Fax : \_\_\_\_\_

Email : \_\_\_\_\_

Participation Fees (Please select /)

One DAY Seminar RM 600.00

Two DAYS Seminar RM 1,000.00

Please make payment payable to **Construction Research Institute of Malaysia (CIMB Bank Account No. 1420-0007588-05-9)**.

Cheque/Bank Draft/L.O. No : \_\_\_\_\_

Bank/Branch/Company : \_\_\_\_\_

Signature : \_\_\_\_\_ Date: \_\_\_\_\_

The form can be sent by fax/mail/e-mail to our secretariat before 27 July 2009.

Secretariat

Design & Construction of Precast Concrete Structures

Housing Research Centre, Faculty of Engineering

Universiti Putra Malaysia, 43400 UPM Serdang

Selangor, MALAYSIA.

Tel : 603-8946 7849 / 603-2617 0362

Fax : 603-8946 7869 / 603-4045 6828

Email : [illiana@eng.upm.edu.my](mailto:illiana@eng.upm.edu.my) / [hazim@cidb.gov.my](mailto:hazim@cidb.gov.my)