Title: C660 – Early-age thermal crack control in concrete

Outline of Seminar and Training

Thursday 6\textsuperscript{th} December 2007
and
Friday 7\textsuperscript{th} December 2007

INTRODUCTION

The recent CIRIA report C660 (2007) on early age thermal crack control in concrete incorporating Eurocode thinking and the UK Concrete Society Technical Report No. 61 on Enhancing Reinforced Concrete Durability (2004) provide some of the most seminal advances in the thinking on the subject of concrete technology and the delivery of high performance concrete. Dr Phil Bamforth the Author of these reports and an authority in concrete technology in Europe will join hands with Dr Kriban G.N. a local expert in concrete technology to provide an insight into these two areas of concern.

Who should attend

Clients, owners and project managers who want to specify to achieve high performance. Designers who went to deliver concrete structures where crack avoidance and minimisation are critical and where durability and life cycle engineering are to be achieved. This includes mass concrete foundations, water-retaining structures and transfer structures where limits to crack-widths may be required and Marine Structures where the aggressivity of the environment is critical.
About the Speakers

Phil Bamforth B Sc(Hons), PhD, C Eng, MICE.

After graduating from Leeds University in 1970 Phil joined Taywood Engineering, the Consultancy arm of Taylor Woodrow, and spent the next 33 years undertaking and managing Construction Consultancy and Research, primarily in the area of concrete technology. During this time he completed his PhD with Aston University (on the cryogenic properties of concrete). Since 2003 he has been an Independent Consultant supporting design and construction activities in concrete. He is experienced in the performance, specification, investigation and repair of concrete structures and throughout his career he has been actively involved in issues relating to the early age behaviour in concrete. This started in the 1970’s with the construction of large pours in Nuclear pressure Vessels. He produced Concrete Society Digest 2 “Mass Concrete” and the information on limiting temperature differentials which later fed into BS8110: Part 2. He also joint authored (with Bill Price) CIRIA 135 on Construction of Deep Lifts and Large Volume Pours. He has most recently authored CIRIA C660, an update of CIRIA 91 “Early-age thermal crack control in concrete”. He has also published extensively on concrete durability.

Kribanandan Gurusamy Naidu, Bsc., Phd., MICE, MIEM, ACI Arb.

After graduating as a civil and structural engineer from the University of Wales, UK in 1981, he completed a PhD. in Aberdeen University (Scotland). He joined Taywood Engineering (TEL) in London becoming involved in several projects related to the investigation of new and defective structures and R & D initiatives at the forefront of concrete technology. He spent three years in Botswana as a consultant and returned to Kuala Lumpur in 1993 and became Director for TEL being responsible for setting up and developing Taylor Woodrow’s unique Design and Technology consultancy in Malaysia and Singapore. More recently he has provided specialist consultancy support to several projects including the SMART Tunnel, the New Doha International Airport and the Sitra Bridge in Bahrain. He is currently the Managing Director of JTK Consult Sdn Bhd a leading design and technology consultancy in Malaysia. He has published extensively in the subject areas of concrete technology, fibre concrete, remedial engineering and life cycle design and is the Author of over 250 Specialist Technical Reports.
Day 1 programme

1.00 PM – 2.00 PM  Registration

2.00 PM – 2.15 PM  Opening Remarks by Dr Reinier Bouwmeester – Nottingham University

2.15 PM – 2.45 PM  Setting the Scene for Construction Technology by : Ir Dr Kribanandan G.N.

2.45 PM – 3.45 PM  Session 1 Documentation notes based CIRIA C660
                      Introduction to C660
                      Understanding the problem of early age thermal cracking
                      Significance of cracking
                      What’s new – Changes in design (BS8007 to EN1992-3) and property data (EN1992-1-1)
                      Implications
                      By Dr Phil Bamforth

3.45 PM – 4.00 PM  Tea Break

4.00 PM – 5.00 PM  Session 2 Documentation Based on CSTR 61
                      Introduction to CSTR 61
                      Durability Design for Tropical Climates
                      Needed Research
                      By Dr Phil Bamforth

5.00 PM – 5.30PM  Session 3 Closure: Relevance and where we go from here
                      Ir Dr Kribanandan G.N.
Day 2 programme

8.00 am – 9.00 am  Registration with coffee

9.00 am – 9.30 am  Opening Ceremony
Welcome and review of the aims
for the day by:
Ir Dr Kribanandan G.N.

9.30 am – 10.30 am  Session 1
Documentation
Introduction to C660
Understanding the problem of early age thermal cracking
Significance of cracking
What’s new – Changes in design
(BS8007 to EN1992-3) and property data (EN1992-1-1)
Implications

10.30 am – 11.00 am  Tea Break

11.00 am – 1.00 pm  Session 2
The Design Process
Identifying the problem
Design assumptions
Input parameters
Predicting the risk of cracking
Reinforcement design
Presentation of calculators

1.00 pm – 2.30 pm  Lunch

2.30 pm – 3.30 pm  Session 3
Temperature rise and differentials
Autogenous shrinkage
Drying shrinkage
Restraint
Crack Width

3.30 pm – 4.00 pm  Tea Break

4.00 pm – 5.00 pm  Session 3
Worked examples
A wall on rigid foundation
(continuous edge restraint)
A suspended slab between rigid core walls (end restraint)
A thick section with high temperature differential (internal restraint)
Additional measures for reducing the risk of cracking and crack width
Pour sequence and programme
Movement joints
Cooling
Group discussion
Q & A

5.00 pm – 5.30 pm  Closing Remarks
by: Ir Dr Kribanandan G.N.
Excellence in Civil Engineering Speaker Series

2nd Announcement

Send or fax your completed registration form before 26 November 2007 to:

JTK Consult Sdn Bhd
46B Lorong Rahim Kajai 14
Taman Tun Dr Ismail
60000 Kuala Lumpur

Contact Person: Ms Joanne/Cik Haidi
Tel: +603 – 7710 3799
Fax: +603 -7710 3790
Email: info@jtkconsult.com.my
Website: www.jtkconsult.com.my

Seminar Fees Day 1 RM150
Seminar Fees Day 2 RM400
Seminar Fees for Both Days RM450

Method of Payment:
By Cheque or cash
Cheque payable to JTK Consult Sdn Bhd to be submitted before 29 November 2007

Send or fax your completed registration form before 26 November 2007 to:

** Registration does not confirm participation until payment is received.**

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Registration Form
Excellence in Civil Engineering Speaker Series

2nd Announcement

The University of Nottingham Teaching Centre
Level 2 Chulan Tower, No 3 Jalan Conlay
50450 Kuala Lumpur