Introduction

On 20 October 2006, Building and Construction Authority (BCA) issued an advisory note to construction industry personnel stating that BCA would be adopting BS EN version of the Eurocodes and is planning to specify them in the Approved Documents of the Building Control Regulations after the corresponding British Standards are withdrawn.

To prepare local structural engineering practitioners for the adoption of the Eurocodes in the design of reinforced concrete building structures, this 2-day workshop will approach the design of concrete building structures using Eurocodes in a comparison with BS 8110, which has been a familiar code of practice in Singapore. The workshop will contain lectures as well as hands-on tutorial sessions to provide participants with practical design experience.

This workshop is jointly organised by BCA Academy and Protective Technology Research Centre of Nanyang Technological University.

Objectives

After attending the workshop, the participants will be able to:

• Appreciate the design approach based on the Eurocodes;
• Appreciate differences between Eurocode 2 (EC 2) and BS 8110 in:
  - basis of structural design and action on structures;
  - design procedures and results for beams, slabs and columns;
  - detailing requirements.
• Understand and manage design spread sheets to EC2

Workshop Outline

The participants will be provided with fundamentals of general design concepts as well as detail specifications of Eurocodes from a comparative point of view with British Standards.

DAY 1

• Basis of structural design using EN 1990 (EC0)
• Actions on structures as described in EN 1991 (EC1)
• Determination of wind loads
• Material specification for concrete and reinforcing steel - EC2 BS 8110
• Design schedule and flow charts for beams and slabs to EC2
• Flexural and shear design - EC2 vs. BS 8110
• Tutorial sessions

DAY 2

• Design schedule and flow charts of regular columns to EC2
• Design for regular columns - EC2 vs. BS 8110
• Differences in detailing requirement between EC2 and BS
• Mitigation of progressive collapse of structures
• Tutorial sessions
ASSOCIATE PROFESSOR TAN KANG HAI obtained his BSc(Eng) and PhD from the University of Manchester, UK. He is currently an Associate Professor at the School of Civil & Environmental Engineering, Nanyang Technological University (NTU). He is also a Co-Director of Protective Technology Research Centre, NTU.

Prior to joining NTU, he worked as a graduate engineer in Ove Arup & Partners, UK. He won the UK Institution of Structural Engineering Henry Adams Award in May 1989 for original research work in structural sandwich panels subjected to lateral loading. This award was based on his PhD work and was given on an annual basis to the best original research paper published in the Institution of Structural Engineers for that year.

He is a registered Professional Engineer in Singapore. He has been involved in several fire engineering consultancy works involving analysis and design of steel structures in clean room facilities, storage racks, Chang Terminal 1 (A&A works on structural fire resistance aspect), consultant to HDB on the upgrading of SECAD computer system to Eurocode for structural concrete, etc. He also served as Chairman of a few task force groups on Eurocodes relating to structural fire applications. He is currently involved with MHA work on mitigating progressive collapse of buildings due to terrorist bomb.

He has written over 100 SCI international journal paper publications and another 100 international conference articles on structures. His research topics include behaviour and modelling of steel, concrete and composite structures under fire conditions, strut and tie modelling of reinforced concrete structures, and progressive collapse resistance and numerical simulations of structures after subjected to extreme loading.

### REGISTRATION FORM

**2-Day workshop on Design of Concrete Structures - Eurocodes versus British Standards**

**Date:** 1 & 2 August 2012  
**Time:** 9.00am to 5.30pm *(Registration starts at 8.30am)*  
**Venue:** BCA Academy

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- **Yes, I would like to receive course - seminar updates via email __________.**
- **Company Name:** __________  
- **Company UEN No.:** __________

**Contact Person Particulars**

- **Name:** (Dr/Mr/Mrs/Ms)  
- **Designation:** __________
- **Telephone No.:** __________
- **Fax no.:** __________
- **Email:** __________

**Payment**

Enclosed is a cheque no. ____________ (Cheque should be crossed, marked “account payee only” and payable to “Building and Construction Authority”) for S$______________ OR Deduct from GIRO acc. No ____________

(should be the same bank account number as indicated in the Direct Debit Authorisation form submitted to BCA)

**Company Stamp** (For company application)

**Name/Signature (for company / individual applicant)**

| Registration may be made by fax, e-mail, post or by hand. To confirm registration, payment must be made before the course/semester/module date via cheque, VISA or Nets/cash. No invoice will be issued. Walk-in applicants will only be admitted on the basis of seat availability and full payment. Please inform us in writing of any change in your registration, which is subject to administrative charges as shown below:

**Request for Replacement and/or Withdrawal**

- Request for replacement in writing, must reach BCA Academy before the commencement date of the course/semester/module: No administrative charge
- Request for withdrawal in writing, that reaches BCA Academy at least 2 weeks before the course/semester/module date: 50% refund of course/semester/module fee
- Request for withdrawal in writing, that reaches BCA Academy between 2 weeks and more than 3 working days before the course/semester/module date: 75% refund of course/semester/module fee
- Request for withdrawal in writing, that reaches BCA Academy more than 3 working days before the course/semester/module date: No refund of course/semester/module fee

**Deferment and Course Switching**

An administration fee of 10% of the original course/semester/module fee is chargeable if notice in writing is received by BCA Academy at least 2 weeks before the semester commencement date. An administration fee of 25% of the fee is chargeable if the notice is received by BCA Academy between 2 weeks and more than 3 working days before the semester commencement date. No deferment or course switching is allowed if the notice is received by BCA Academy 3 working days or less before the semester commencement date. Under the circumstance, the case will be treated as withdrawal unless the registered participant decides to proceed with the original course.

In the case of a successful course switching, the participant may be given a refund if the fee of the new course is lower than that of the original course. However, any refund arising from course switching shall not be more than 10% of the fee of the original course.

BCA Academy reserves the right to amend the seminar/course/weekshop details or cancel the seminar/course/weekshop and fully refund the participants should unforeseen circumstances warrant it.

**Event Code:** XXXXX

**Enquiries**

For enquiries, please call 6248-9999 or email us at bca_academy@bca.gov.sg or fax us at 6258-0558

For details of other seminars/courses/weekshops, please visit our website: www.bcaa.edu.sg

**Registration**

Seats are limited; registration is on a first-come, first-served basis. Training places will be confirmed upon the payment of the fees before the commencement date. Cheques with original application and supporting documents should be mailed to BCA Academy, 200 Braddell Road, Singapore 579700