



APPLIED TECHNOLOGY
GROUP OF COMPANIES
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Course On

Sustainable Concrete Construction and Protection

Date : 17th – 18th August 2016
Time : 9.00 am to 5.00 pm
Venue : Armada Hotel, Petaling Jaya

SYNOPSIS

Sustainability has become one of the guiding principles of the modern construction professional whether s/he is involved in design, construction, operation or management. One of the most cost-effective ways of achieving sustainable design targets in civil engineering and building construction is to develop reliable and resilient designs. These are designs that require minimal future investment to ensure future levels of safety and performance and minimal disruption and loss of function resulting from future repair or strengthening works. Concrete, particularly reinforced or prestressed concrete, has been used extensively throughout the World as a construction material for a wide variety of applications. Extensive experience has shown that if designed, detailed and constructed to a high standard, concrete structures CAN be very reliable and resilient.

However, experience also tells us that a great deal can (and does) go wrong with concrete construction resulting in very costly and disruptive repair or strengthening work. In extreme cases demolition and replacement is necessary. Clearly these results are not sustainable. Designers (including those responsible for construction) can avoid these unacceptable situations by understanding the key issues that need to be addressed from the outset and by making important decisions, in conjunction with their clients, to improve reliability and to reduce future maintenance liabilities.

This 2-day course focuses on gaining an understanding of the potential problems facing concrete construction and how these can be reduced or avoided at an early stage in the design process as well as during construction. Due consideration is also given to the various additional protective measures that are now available to contractors and designers.

LEARNING OUTCOME

This course will provide you with:

- An appreciation of the often overlooked importance of reliability and durability in meeting the sustainability agenda.
- An awareness of the Eurocode requirements for reliable design.
- An understanding of the importance of setting agreed performance targets with the client for new construction at the start of the design process.
- A good level of understanding of the problems that can occur with all forms of concrete construction, particularly reinforced concrete; WHY these problems occur and their impact on the reliability of construction. These include various forms of structural and non-structural cracking; exposure to acidic conditions; sulfates; ASR and reinforcement corrosion.
- Knowledge and understanding of HOW key design decisions such as materials selections and specifications and the use of additional protective measures can impact on performance and the costs of ownership.
- An appreciation of the importance of agreeing performance requirements with the client at an early stage of the design process; thorough site and environmental exposure evaluation; designing for inspection and replacement and adopting appropriate post-construction practice.
- Knowledge and understanding of HOW key “basic” construction processes such as compaction, steel fixing and curing can each impact on reliability.
- A broad overview of the various types of additional protective measures that are now defined in European standards. These include self-compacting concrete; high strength concrete; controlled permeability formwork; non-metallic reinforcement; various surface coatings and treatments and electrochemical measures such as cathodic protection and corrosion inhibitors.
- An independent review of the advantages and limitations of different additional protective measures.

SPEAKER PROFILE



Professor Steve Garrity

BSc(Hons), MSc, PhD, CEng, MICE, FIStructE, FCIHT, FIMS

Steve Garrity is a chartered civil, structural and highways engineer with almost 40 years' experience in the planning, design, supervision of construction and repair or strengthening of a variety of civil and structural engineering works. He gained much of this experience with consulting engineers and the bridge engineering department of a major UK public highway authority. Steve has also spent part of his career as an academic. He was the Head of the Department of Civil and Environmental Engineering at the University of Bradford, UK (1997 - 2002) where he later served as a Civil Engineering Consultant and Visiting Professor in Civil Engineering Design.

He is currently the Hoffman Wood Professor of Architectural Engineering at the School of Civil Engineering, University of Leeds, UK. His current academic work includes teaching at undergraduate and postgraduate levels and research into the performance of concrete and masonry structures. Since 2002 he has also been the principal of Garrity Associates, an independent firm of consulting civil and structural engineers. He has provided training and courses for a wide range of construction professionals and has designed various new structures and repair or strengthening works for a variety of clients including government departments, local authorities, consulting engineers and design and build contractors. Most of his work has been associated with the repair or strengthening of concrete and masonry structures. He is a member of the Institute for Resilient Infrastructure at the University of Leeds and has a number of research links with several universities in the UK and the rest of Europe.

Steve is the recipient of the Institution of Highways and Transportation Babbie Premium Award (1992) and the Institution of Structural Engineers Cass Hayward Prize (1993), Sir Arnold Waters Medal (1995) and the Lewis Kent Award (2004). He was the co-recipient of the Institution of Civil Engineers Historic Bridge and Infrastructure Awards in 2004 (winner) and 2009 (commendation). He serves as a committee and panel member of various learned societies and professional bodies. He is a past-President of the International Masonry Society (2013-15) and, since 2012, has served as one of two international professors on the degree accreditation board of the Hong Kong Institution of Engineers (HKIE). Steve currently chairs the Joint Board of Moderators in the UK. The JBM accredits undergraduate and master's civil engineering (and related) degrees on behalf of the ICE, IStructE, CIHT and the IHE.

WHO SHOULD ATTEND

Anyone involved in the specification, design, construction, production, commissioning, operation and management of concrete structures including architects; contractors; site supervisory staff; consulting engineers; public sector engineers; surveyors; client representatives and materials and/or protective system suppliers.

WHY YOU SHOULD ATTEND

- To help you to open your eyes as a designer (or someone who has an influence on design or construction) to understand how improved reliability can be achieved;
- To help you to avoid creating future maintenance liabilities;
- To help you to achieve sustainable designs;
- To help you to understand how your client requirements; site conditions; environmental exposure; construction processes; quality control (as part of a quality management system); the physical properties of concrete and available skills and materials all interact and have an impact on delivering reliable concrete construction.

Claimable under HRDF SBL scheme subject to max limit allowed.

12 BEM Approved CPD Hours (Ref No.: ISE/MD/CPD/ATG/014) , 20 CIDB Approved CCD Points (Ref No.: CIDBSL/C/2016/0268)

COURSE SCHEDULE

DAY 1

9.00am - 10.30am	Session 1: Setting the Scene <ul style="list-style-type: none"> • Definitions; some concerns with reinforced concrete • Consequences of poor performance; de Sitter's "Law of Fives" • Starting design: identifying the key issues • EN 1990 (the Eurocode) - the basic assumptions
10.30am - 10.45am	<i>MORNING TEA BREAK</i>
10.45am - 12.30pm	Session 2: Brief Review of Concrete <ul style="list-style-type: none"> • Physical properties - a summary • Cements and aggregates • Hydration and its influence on durability
12.30pm - 1.45pm	<i>LUNCH</i>
1.45pm - 3.30pm	Session 3: Construction Process <ul style="list-style-type: none"> • Compaction, laitance, bleeding, segregation • Curing, detailing (implications of poor detailing) • Cover, construction tolerances (being realistic when detailing)
3.30pm - 3.45pm	<i>TEA BREAK</i>
3.45pm - 5.00pm	Session 4: Cracking <ul style="list-style-type: none"> • Basic causes; creep effects; autogenous healing • Structural cracking • Non-structural cracking (plastic; early age; shrinkage) • Movement joints; cracking assessment
<i>END OF DAY ONE</i>	

DAY 2

9.00am - 10.30am	Session 1: Deterioration Overview <ul style="list-style-type: none"> • Abrasion; acids; ASR; sulfate attack; other threats • Carbonation induced-corrosion • Chloride-induced corrosion
10.30am - 10.50am	<i>MORNING TEA BREAK</i>
10.45am - 12.30pm	Session 2: Lessons from the past <ul style="list-style-type: none"> • Site and environmental investigations • Materials audits; client's performance requirements • Designing for inspection and maintenance • Post-construction: ownership manuals; design audits
12.30pm - 1.45pm	<i>LUNCH</i>
1.45pm - 3.30pm	Session 3: Additional Protective Measures I <ul style="list-style-type: none"> • Definitions; the key ingredients for success • Use of self-compacting concrete; high strength concrete; controlled permeability formwork • Surface treatments (paints, impregnations and sealers)
3.30pm - 3.45pm	<i>TEA BREAK</i>
3.45pm - 5.00pm	Session 4: Additional Protective Measures II <ul style="list-style-type: none"> • Introduction to electrochemical methods • Electro-chemical protection: Active and passive cathodic protection; Corrosion inhibitors (anodic and penetrating types) • Electrochemical treatments: Re-alkalisation and de-salination • Low corrosion risk reinforcement Summary Questions and Answers
<i>END OF DAY TWO</i>	



COURSE REGISTRATION FORM

Course title: Sustainable Concrete Construction and Protection

(✓ Please tick)

17th - 18th August, 2016 Petaling Jaya, <i>Armada Hotel</i>

Company Information

Company:	
Address:	
State/ Province:	
Zip/Postal Code:	
Country:	
Contact Person:	
Email:	
Phone:	

Attendee Information

Name (1)	
Job title:	
E-mail:	
Mobile/Tel No:	
Name (2)	
Job title:	
E-mail:	
Mobile/Tel No:	
Name (3)	
Job title:	
E-mail:	
Mobile/Tel No:	

Registration Fee

	Fee Before GST (6%)	GST (6%)	TOTAL
Individual Fee	RM2,000	RM120	RM2,120
Group Fee (3 or more delegates)	RM1,800	RM108	RM1,908

Closing date: 10th August 2016. An early bird discount of RM100 for payment received before 17th July 2016.

Payment

Payment is to make payable to:
Applied Technology Group Sdn Bhd
Public Bank Berhad (Malaysia)
 Account no: 3178247302
 GST Registration Number: 000641294336

Payment terms:

Payment is required before the event. Once received your place is automatically reserved. Registration fee includes lunch, refreshments and full training documentation as specified. Delegates may be refused admission if payment is not received prior to the event. The fee does not include hotel accommodations.

Cancellation Policy

All cancellation of registration must be made in writing.

If you are unable to attend:

- A substitute delegate is welcomed at no additional charge.
- Your registration can be credited to a future event.
- You will receive a full refund less 10% administration charge if cancellation is received in writing more than 14 days before the event.
- No cancellations will be accepted within 14 days before the event start date. Full course documentation will however be sent to the delegate.

Course Schedule

Course starts at 9.00am and ends at 5.00pm daily. Please arrive at 8.30am on day one to allow time to register and receive course materials.

Please send completed form to:

Fax to: **+603 5637 9945**
 or Email to : admin@apptechgroups.net
 For enquiry, please call: +603 5634 7905
 Or refer to our website www.apptechgroups.net

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