

Outreach at Ho Chi Minh City University of Technology, Vietnam

On 7th November 2011, Prof. CM Wang led a group of IStructE Singapore Division members on an outreach programme to the Faculty of Civil Engineering at Ho Chi Minh City University of Technology, Vietnam. They were there at the invitation of Dr Luong Van Hai, lecturer at the Faculty of Civil Engineering, to discuss the possibility of setting up of an IStructE Vietnam Chapter, and for the group to present the background of IStructE and a number Singapore landmark projects to undergraduate and graduate students, faculty and practising engineers. The group presented these and other information at the University Hoa Binh Hall.

- Opening Address - Sharing some Thoughts with Fellow Academics Teaching Structural Engineering (Prof. CM Wang)
- Outline of the Institution of Structural Engineers, IStructE Singapore Division and the Chartered Membership Examination (Assoc. Prof. Francis Lok)
- Gardens by the Bay (Er. Mak Yew Cheong)
- Marina Bay Sands Integrated Resort – Understanding and Overcoming the Challenges in the Structural Design (Er. Wijaya Wong)

Following the presentation, a number of questions related to the topics were fielded by the lively audience. Experience shows that there were significant interests in the structural engineering profession and in becoming members of the Institution. Currently, there are no known local members of the Institution in Vietnam. However, there were a number of experienced professional structural engineers in the audience who are registered with the local government in Ho Chi Minh City. Besides, structural engineering is abundantly evident in view of the sprawling built environment and the booming construction market. The number of tall buildings silhouetted against the city skyline in the bay area is a spectacular sight. There is no doubt in the minds of the group that Indo-China, and especially Vietnam, will be the next burgeoning wave of talent and economic might in the Asia-Pacific region. Structural engineers need to be engaged in Vietnam now before they miss the boat, in light of the abundant young talent and potential of this resource-rich country.

At an informal discussion with faculty and graduates of the university, Prof. Wang suggested that he would bring the matter of setting up an IStructE Vietnam Chapter in Ho Chi Minh City when he is in London for the November Council Meeting and to see how IStructE Singapore Division may be able to fully-assist and engage Vietnamese structural engineers. Council member for Region 12 – Asia and Pacific, Dr Francis Lok, will leverage his experience to advice and to co-organise activities between Asia-Pacific countries (where there is a strong IStructE presence – China, Malaysia, Australia, HKSAR, Canada and Singapore) and Vietnam. IStructE Singapore practising engineers will provide all



At the gate of the Ho Chi Minh City University of Technology, Vietnam
L-to-R: Dr Luong Van Hai, Prof CM Wang, Assoc. Prof. Francis Lok, Er. Wijaya Wong, Er. Mak Yew Cheong



Dear readers, Thank you for taking time to read this newsletter. We appreciate your continued support and would also like to hear from you for whatever reasons. Please direct all your correspondence and inquiries to:

IES/IStructE Joint Committee (2010-2011)

Prof. Wang Chien Ming (Chairman)
ceewcm@nus.edu.sg
Er. Dr. Ho Kwong Meng (Vice-Chairman)
hokm@starhub.net.sg
Er. Dr. A/Prof. Lok Tat Seng (Hon. Secretary)
ctslok@ntu.edu.sg
Dr. Boh Jaw Woei (Hon. Treasurer)
jwboh@hotmail.com
Er. Wijaya Wong (Hon. Asst Secretary)
Wijaya.Wong@arup.com
Er. Jeslin Quek (Hon. Asst Treasurer)
jeslinquek@fyfeasia.com
Er. Leonard Heng
leonard@singnet.com.sg
Er. Seow Hong Chiow
hc@sce.com.sg
Er. Mak Yew Cheong
Mak.yew.cheong@pmlink.com.sg
Er. Mah Guan Pang
maba.cnsac@pacific.net.sg
Er. Ang Chee Keong
angcheekeong@gmail.com
Er. Cong Zheng Xia
congzhengxia@yahoo.com.sg
Er. Steve Yeung
Steve.Yeung@worleyparsons.com
Er. Kang Jianhan
jianhankang@gmail.com
Er. Reve Chin
Jen_yee_chin@hotmail.com

The Structuralist Editorial Sub-Committee

Editor: Er. Kang Jianhan
Advisors: Prof. Wang Chien Ming
Er. A/Prof. Lok Tat Seng
Dr. Boh Jaw Woei

Contents & Contributors

1. Outreach at Ho Chi Minh City University of Technology, Vietnam (*TS Lok*)
2. Site visit to Gardens by the Bay on 10th December (*YC Mak*)
3. Conference on Structural Wonders (*CM Wang*)
4. IStructE Meetings in London and IStructE Structural Awards 2011 (*CM Wang*)
5. IStructE Singapore Structural Awards (*Jeslin*)
6. One Day Short Course on Sustainable Construction (*Wijaya Wong*)
7. IStructE Subscription Fee for IES/IStructE Joint Members 2012 (*TS Lok*)
8. Announcement of CME Preparatory Course and dates (*Steve Yueng*)
9. Greetings for Festivities

Disclaimer: All views and opinions expressed therein are solely those of the writers and its publication does not necessarily imply that such views and opinions are endorsed by the IES, IES/IStructE Joint Committee and the editorial committee of The Structuralist.

Copyright: The reproduction in whole or in part of any material in this publication must obtain written permission from the editorial committee of this publication and/or from the respective author(s).

necessary assistance to train and to guide young talent in Vietnam and Singapore via a short exchange programme. By extending our collective assistance to Vietnam, the Institution will strengthen its presence in the region.

To commence with the collaboration, IStructE Singapore Division announced its sponsorship of 2 annual awards:

1. IStructE Singapore Division Gold Medal for the Best Overall Student in Civil/Structural Engineering Programme.
2. IStructE Singapore Division Book Prize for the student with the best results for the Structural Mechanics course.

The IStructE Singapore Division Book Prize will be administered by Dr Luong Van Hai and the first award will be presented at the graduation ceremony in 2012. The Division looks forward to seeing the first recipient of the book prize.



*Group photo after the presentations in Hoa Binh Hall
L-to-R: Dr Luong Van Hai, Er. Mak Yew Cheong, Prof. CM Wang, Prof. Do Kien Quoc (Head of Department, Faculty of Civil Engineering), Er. Wijaya Wong, Assoc. Prof. Francis Lok*



Audience listening intently to the talks that were held in the University Hoa Binh Hall

Site Visit to Gardens by the Bay on 10th December 2011



Group photo of engineers visiting Gardens by the Bay



Gardens by the Bay



Prof Wang presenting Er. Mak token of appreciation for the site visit

On a bright and sunny morning on 10th of December 2011, more than a hundred eager and attentive visitors came upon the brand new Marina South Gardens to have a pre-view of the cool conservatory flower dome. This is probably the largest known grid shell structure in the world. Column-free covering close to 1.2 hA of air conditioned space in the world. The longest span of the glass envelop is 170m and its maximum height is 35m. As a cool dry conservatory, it serves to conserve specimens of plants from cool dry regions all over the world, having collections from Mediterranean Europe, Latin America, South Africa and Australia.

The key challenge of the project lies in erecting more than 3000 tonnes of structural steel and putting up 3000 over pieces of low e-glass that allow maximum light transmission and minimize heat transmission. This was executed with the help of a crash deck that provided a platform for the erection of the grid shell prefabricated grids welded on site and the rib arches (comprising 7 prefab build up steel sections) that were installed next on top of the grid shell. The grid shell are made up of hot rolled triangular shaped hollow sections factory welded to cast nodes and delivered as ladder frames; assembled and welded on site. These arches were de-propped first followed by the grid shell. They were then connected together with 'hanger struts', enabling the shell and arch to act as one and provide stability for the whole envelop system. Besides the uses of low-e glass to reduce thermal transmission, sun shades housed in the rib arches would be deployed over the hottest parts of the day. This reduces the heat load thereby reducing energy usage.

After the visit to the flower dome, the visitors were treated to a preview of the heritage gardens, featuring 4 thematic gardens highlighting the 4 racial groups of Singapore. Each garden has a distinctive culture of the Indian, Chinese, Malay and the Eurasian communities of Singapore.

The Marina South Gardens will be opened in June 2012 and many of the visitors look forward to it when the whole garden including the Cool Moist Cloud Forest Conservatory, Supertree Grove and the rest of the theme gardens would be opened to the public.

The IES/ISE Joint Committee wishes to thank the National Parks for allowing us to conduct the visit, and the many helpers from SWISE in making the visit a pleasant and enriching experience.

*The Institution
of Structural
Engineers*

Conference on Structural Wonders

23rd November 2012

Grand Copthorne Waterfront Hotel, Singapore



The IES/IStructE Joint Committee is organizing this Conference on Structural Wonders to celebrate the innovativeness and achievements of Structural Engineers. The conference will feature an impressive list of structural wonders in Singapore as well as other parts of the world that will undoubtedly interest structural engineers, contractors and architects. These structures have been the talking point not only in their country of origin but also throughout the world. The conference will provide an opportunity for the delegates to present as well as to learn the latest developments in modeling, analysis, design and construction of surface and underground structures. There will be ample opportunities during coffee breaks, lunches and a dinner banquet for delegates to discuss the engineering problems and innovative solutions directly with the principal engineers/designers of these structures.

There will be a total of 8 invited lectures presented during the 1-day conference. The topics and speakers for the lectures are:

- Supreme Structures: Reflections on the IStructE Structural Awards – Prof David Nethercot (Imperial College, UK)
- The Engineering of Structural Wonders in UAE – Matthew Esther (Atkins, UAE)
- Bitexco Financial Tower in Ho Chi Minh City – Dr Luong Van Hai (Golden Base Construction, Vietnam)
- Singapore Sports Hub – Clive Lewis and Andrew Henry (Arup Singapore)
- Gardens by the Bay - Allan Teo and Gunasekaran (Woh Hup Pte Ltd)
- The Interlace - Serena Yap (TY Lin) and Iwan Susanto (Woh Hup Pte Ltd)
- South Beach Development – Edwin Ong (Arup, Singapore)
- Down Town Line 3 – Michael McGowan (Arup, Singapore)

REGISTRATION FEES (INCLUSIVE OF 7% GST)

The fee is inclusive of a copy of Conference proceedings (in colour), coffee break, lunch, reception, banquet and admission to the lectures

- IStructE and/or IES Members : S\$295.00
- Non-IStructE/IES Members : S\$395.00
- Full Time Students : S\$100.00

CONTACT PERSON

Ms Angela Loke
Engineering Science Programme
Faculty of Engineering, National University of Singapore
Blk EA #06-10, 9 Engineering Drive 1
Singapore 117576
Tel: +65 6516 5408 E-mail: esplmh@nus.edu.sg

IStructE Meetings in London and IStructE Structural Awards 2011

Prof C.M. Wang attended the International Interest Group (IIG) Meeting and the IStructE Council Meeting in London on 18 November 2011. In the IIG meeting, he gave a presentation on the IStructE Singapore Division, the IES/IStructE Joint Committee, its activities and new initiatives such as the outreach to Vietnam (see article on front page of this newsletter) and announced the 2012 event highlights such as the course of *Sustainable Construction* (5 March 2012) and the *Conference on Structural Wonders* (23 November 2012). In the Council Meeting, it was made known that the IStructE new website design will be up in January 2012; which will feature webinars. Three webinars have been filmed at HQ including Routes to Membership, Initial Professional Development and Technician Membership. Webinars on “academic qualifications”, “the ICP process,” “Technical Report Route”, and “Fellowship” are being prepared. Council Members were also informed of the 2012 Financial Budget and Operating Plans as well as plans are underway to study the future of the institution building. Two new publications were released, namely, “A short guide to embodied carbon in building structure,” and “Structural design – the engineer’s role”.



Prof C.M. Wang with Ir. David Lau (Chairman of IStructE Malaysia Division) at the Structural Awards 2011 held at the Marriott Hotel, London

For the Structural Awards 2011, many high quality entries were received all over the world and a number of them have been shortlisted in various award categories, such as the Heritage Award, Pedestrian Bridge Award, Transportation Structures Award, Commercial or Retail Structures Award, Sports or Leisure Structures Award, Community or Residential Structures Award and Industrial or Process Structure Award. For the 2011 Supreme Structural Award, the judges unanimously chose the *London 2012 Velodrome* which demonstrates outstanding creativity and uniqueness in its combination of the art and science of engineering.

**The Institution
of Structural
Engineers**

ISTRUCTE Singapore Structural Awards 2012



The IES/Institution of Structural Engineers Joint Committee invites you to submit an entry for the IStructE Singapore Structural Awards 2012. Launched in December 2010, the IStructE Singapore Structural Awards aim to be the premier celebration of achievement and innovation in structural engineering. The awards are designed to recognize and reward the work of Singapore’s most talented structural design engineers and their indispensable contributions to the built environment.

Award Categories

Award for Structures - For achievement in structural design of commercial or retail structures, heritage buildings, education or healthcare structures, community or residential structures, entertainment structures and sports structures.

Award for Industrial or Process Structures - For achievement in the structural design of offshore facilities, chimneys, barrages, petrochemical works, wafer plants, water treatment plants and power stations.

Award for Infrastructure - For achievement in structural design of road, rail, canal and airport bridges, tunnels, underground structures, ports and antenna structures.

The IStructE Singapore Structural Awards welcome entries from any structural engineer who works in Singapore, and are open to projects large and small that are built in Singapore or overseas. The project submitted must be completed (TOP) after 1 January 2010.

The deadline for submission of entry form is Monday 3 September 2012. Entries on CD should be sent to: Er. Jeslin QUEK, FYFE Asia Pte Ltd, 24 Sin Ming Lane, #03-103, Midview City, Singapore 573970. Email entries should be sent to : jeslinquek@fyfeasia.com

One Day Short Course On Sustainable Construction



Organiser: IES-IStructE Joint Committee
 Date and Time: Monday, 5 March 2012, 8.15 am to 5.30 pm
 Venue : Cinnamon Room, Level 5, Novotel Singapore Clarke Quay,
 177A River Valley Road, Singapore 179031
 Fees : \$250 (IES / IStructE Members), \$300 (Non-Members), \$ 20 (Students)
 CPD : 6 PDUs

Fees are inclusive of 7% GST, course notes, lunch and light refreshments

All registered participants will receive a copy of all lecture notes (i.e. lecturers' powerpoint slides) and a copy of the book on "A Short Guide to Embodied Carbon in Building Structures" by Prof Roger Plank.

For registration, please contact Ms Angela Loke, Engineering Science Programme, Faculty of Engineering, NUS, Blk EA #06-10, 9 Engineering Drive 1, Singapore 117576, Tel: +65 6516 5408 E-mail: esplmh@nus.edu.sg

Introduction

The need for sustainable construction is becoming increasingly important as a design influence, requiring a collaborative approach over a wide range of issues. Some of these are well beyond the scope of normal structural engineering, but do impact on the structure and its design, so at least a broad familiarity is essential. There is a strong interaction, and sometimes conflict, between the main indicators of sustainability, and which issues are of greatest importance depend heavily on local conditions. It is therefore essential to understand the context of a specific project, and in Singapore one of the key issues is to minimise use of resources. This links strongly to the more general need to control the embodied energy and carbon of the building structure, and these are clearly the principal responsibility of the structural engineer. The aim of this course is to familiarise engineers with the underlying principles of sustainable construction, but more importantly to offer practical advice on actions to achieve this. In Singapore context, Building and Construction Authority (BCA) as the authority and regulator in the construction industry has been the driver in the Sustainable Construction (SC). The initiative involves a holistic approach from planning, design (multi discipline i.e. architectural, civil, structural, mechanical, electrical, façade, building physics/ESD) and site implementation/ construction.

Who Should Attend

All the professionals in key areas of building and construction i.e. planners, architects, engineers, builders, specialists and regulators

Programme

Time	Topic
8.15 am - 9.00 am	Registration @ Foyer of Cinnamon Room, Level 5 Novotel Singapore Clarke Quay
9.00 am - 9.10 am	Opening Address <i>by Prof Wang Chien Ming, Chairman, IES/IStructE Joint Committee</i>
9.10 am - 10.30 am	1st Lecture: Sustainable Construction – how can structural engineers contribute? Lecturer : <i>Prof Roger Plank, UK</i>
10.30 am - 11.00 am	Morning Tea/Coffee Break
11.00 am – 12.30 pm	2nd Lecture: Sustainable Construction – BCA's Masterplan and initiatives Lecturer : <i>Mr Low Giau Leong, Building & Construction Authority</i>
12.30 pm to 2.00 pm	Lunch @Dragon Phoenix Restaurant
2.00 pm to 3.30 pm	3rd Lecture: Embodied Carbon Lecturer : <i>Prof Roger Plank, UK</i>
3.30 pm to 3.45 pm	Afternoon Tea/Coffee Break
3.45 pm to 5.15 pm	4th Lecture: Sustainable Construction from an International Design and Build Main Contractor Perspective Lecturer: <i>Ms. Audrey Perez, Dragages</i>
5.15 pm to 5.30 pm	Closing Remark <i>by Er. Dr Ho Kwong Meng, Vice-Chairman, IES/IStructE Joint Committee</i>
5.30 pm	End of Course

IStructE Subscription for Joint IES/IStructE Membership 2012

IStructE Members who are also paid-up members of the Institution of Engineers, Singapore, will continue to enjoy a 33% flat rate discount on their IStructE UK annual subscription. The discount has been applied to each member's account for 2012, if they have received the discount in the 2011 subscription.

If a member did not receive the discount in 2011 but would like to apply for the discount in 2012, then they can do so by contacting IStructE HQ (records@istructe.org). For auditing purpose, IES members must declare to IStructE the following statement (when claiming the discount):

"I _____ (full name as shown in the subscription notice) am a member of the Institution of Engineers, Singapore. My IES Membership No. is _____ and I am a fully paid-up member of IES. Accordingly and under the existing Joint Membership agreement, I hereby claim the discounted rate provided for in the memorandum."

Should an individual's circumstances change (i.e. resignation of IES membership), then the full subscription amount shall be payable to IStructE. Please contact the Hon. Secretary of the IStructE Singapore Division, Dr T.S. Lok (ctslok@ntu.edu.sg), if members have any queries on this matter.

The annual subscription for all Grades of Membership, with effect from 1st January 2012, is as follows:

No	Membership Grade	UK Subscription 2012	Joint IES-IStructE Subscription payable wef 1 st Jan 2012
1	Fellow	£ 355	£ 237.85
2	Member	£ 274	£ 183.58
3	Associate	£ 274	£ 183.58
4	Associate Member	£ 178	£ 119.26
5	Companion	£ 133	£ 89.11
6	Technician Member	£ 138	£ 92.46
7	Graduate 1 st year	£44 ^(a)	£29.48 ^(a)
8	Graduate 2 nd year	£89 ^(a)	£59.63 ^(a)
9	Graduate 3 rd & subsequent years	£ 133	£ 89.11
10	Student – on an accredited course	£0	£0
11	Student – on a non-accredited course	£0 ^(b)	£0 ^(b)
12	Student – in full time employment	£ 133	£ 89.11
	Student 1 st Year	£44	£29.48
	Student 2 nd Year	£89	£59.63
13	Retired – receiving Journal	£57	£38.19
14	Retired – Fellow receiving Journal	£70	£46.90
15	Retired – not receiving Journal	£30	£20.10

^(a) Applicable only to those who apply for Graduate membership within one year of completion of studies.

^(b) Students on a non-accredited course will not be required to pay a fee. However, such members will receive access to the Journal on an on-line basis only.

The Institution of Structural Engineers (IStructE) Chartered Membership Examination Preparatory Course



Organiser: IES-IStructE Joint Committee
Venue: The Institution of Engineers, Singapore
70 Bukit Tinggi Road
Singapore 289758
Fee: \$95 total (inclusive of GST and light refreshment)
Coordinator: Er. Steve Yeung

This course is aimed to help the IStructE Chartered Membership Examination candidates prepare for the forthcoming examination in April 2012. The course will be conducted over two sessions:

Session 1: Saturday 18th Feb 2012, 2 pm – 5 pm

Tutors who successfully passed the CM Exam in recent years will collectively conduct this session on:

- Preparation for the exam;
- Exam techniques and time management;
- Marking scheme and failure points – Explanation on what the Examiners look for when marking the exam scripts and what the common mistakes are;
- Discussion on past exam questions – The tutors will talk through the questions they attempted in the actual exam, e.g. structural concepts development, details, drawings, such that candidates can appreciate how to present the solution with an appropriate level of details during the exam.

Session 2: Saturday 17th Mar 2011, 2 pm – 5 pm

- Discussion on past exam questions – The tutors will talk through a number of other past exam questions
- This also serves as a follow-up tutorial and Q&A session

Please register online http://www.ies.org.sg/event_view.php?event_id=805 or email the completed form by Friday, 17th Feb 2011: Jasmine Chua, Email: jasmine@iesnet.org.sg , (Tel) 6461 1222

The IES/IStructE Joint Committee wishes all members an Enjoyable
Festive Season and a Prosperous Lunar Dragon Year 2012!

