THE HONG KONG INSTITUTION OF ENGINEERS
香港工程師學會

40th Anniversary
Your Dreams 群策群力
Our Goals 建未來

The Institution of Structural Engineers

JOINT STRUCTURAL DIVISION

ANNUAL REPORT

2015/2016

CONTENT

COMMITTEE MEMBERS

JSD Committee Members 2015-2016

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Chairman
Buildings Department

Ir Martin TSOI Wai-tong
Immediate Past Chairman
Housing Department

Ir LEUNG Kwok-tung, JP
Deputy Chairman
Architectural Services Department

Ir Ben TSE Wai-keung
Hon Secretary
Ben TSE & Associates Limited

Ir TSE Kam-leung
Hon Treasurer
Architectural Services Department

Ir CHAN Chi-kong
Deputy Hon Secretary
Arcadis

Ir Prof Paul PANG Tat-choi
Chairman of IStructE Sub-committee (Hong Kong Division)

Ir CHAN Siu-tack
Discipline Chairman

Ir Prof CHAN Siu-lai
HKIE Council Member
The Hong Kong Polytechnic University

Ir Dr Eddie LAM Siu-shu
IStructE Council Member
The Hong Kong Polytechnic University

Ir Edward CHAN Sai-cheong
Committee Member
AECOM Asia Company Limited

Ir LAU Chi-kin
PAC Representative
Sun Hung Kai Properties Limited

Ir Prof Andrew LEUNG Yee-tak
HKIE Journal Reviewer
City University of Hong Kong

Ir Prof Ben YOUNG
Programme Organiser
The University of Hong Kong

Ir Kenneth CHAN Wai-yee
Programme Organiser
Highways Department

Ir Prof KUANG Jun-shang
WG Chairman of Handbook for Concrete Code
Hong Kong University of Science and Technology

Ir LAM King-kong
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Ir Albert LEUNG Wing-keung
Committee Member
Jacobs China Limited

Ir LUI Yuen-tat
Committee Member
Gammon Construction Limited

Ir Jacky CHIONG Kam-yueng
Committee Member
Buildings Department

Ir Paul TSANG Sau-chung
Committee Member
Ove Arup & Partners Hong Kong Limited

Mr Simon PANG Hin-lam
Ex-officio Member (AMC Representative)
AECOM Asia Company Limited

Ir Vincent TAM Wing-yeung
Ex-officio Member (YMC Representative)
Black and Veatch Hong Kong Limited

Ir Dr LIU Yuk-shing
Ex-officio Member (SSC)
David SK Au & Associates Limited

CHAIRMAN REPORT

It is indeed my greatest honour to be the 37th Chairman of the Joint Structural Division (JSD) for Session 2015/2016. Since becoming the Chairman, I am extremely excited with the work of JSD. Thanks to the collective efforts of committee members, the JSD has achieved another fruitful year, and I would like to briefly report below.

Membership

As of April 2016, we have over 6,200 members. Of which, 292 are Fellow Member, and 4337 are Corporate Member.

Committee Major Activities

With the concerted effort of Committee Members, the JSD has organized over 31 activities in this session including:

- Technical meetings, seminars, workshops and site visits covering a wide range of topics
- Annual Dinner
- Structural Excellence Award
- Annual Seminar
- Annual Visit

Major Events

► **Annual Dinner 2015** was successfully held on 22 October 2015 at Holiday Inn Golden Miles Hong Kong, with a full house of more than 500 members and guests. Mr HUI Siu-wai, JP, Director of Buildings of the Government of HKSAR was the Guest of Honour of the evening, sharing his insight on the work of structural engineers in Hong Kong.

► **Structural Excellence Award 2016**, with the aim to promote excellence in structural engineering and achievement by structural engineers, was conducted in April 2016. The Judging Panel assessed each submission based on submitted documents, site visits and presentations by the participants. This year, to honour academia's contribution to the engineering industry, we have added academic research projects as a new category of the Structural Excellence Award for academia participation. The award winners for each category are to be announced by the Chairman of the Judging Panel, Ir Prof Paul PANG Tat-choi at the Annual General Meeting on 6 May 2016.

► **Annual Visit 2016** to Osaka, Japan was held from 25 to 28 February 2016. We had visited a large construction site for the development of a hotel/office in the city centre of Osaka; a steelwork manufacturing factory; Kyoto University; and some historical building structures. During the visit, we learned, shared and exchanged views on the design and construction of engineering structures, the latest development in the application of steelwork in Osaka, and research development in the academia in Japan and in Hong Kong.

► **Annual Seminar 2016** was held on 12 January 2016 with the theme "Structural Excellence –From Research to Application". We were most delighted to have Prof Peter MATHIESON, President and Vice-Chancellor of the University of Hong Kong, as our Guest of Honour and delivered an opening address at this important annual event. Distinguished overseas and local speakers from academia to prominent practicing professionals had shared their insightful ideas and invaluable experiences at the seminar.

Inspire the Young

To instill in secondary school students their interest in structural engineering, a structural engineering competition for the youth "起紙"咁簡單！(Paper Tower Challenge) was held on 18 July 2015 with over 100 students from 25 Secondary Schools participating. The competition required students to form a team of four, and used 200 pieces of A4 papers to build a tower of an adult's height, and the tower that supported the most weight was the winner. It was indeed a challenge even for practicing engineers. The competition was the first time the JSD had organized for Secondary School students, drawing their interests to structural engineering. We are in the process of holding another similar event in June/July this year as well.

Career talks have also been conducted at local universities to introduce our profession to undergraduate students at the beginning of the next academic year. Also, we are going to hold a seminar and a talk to engineering graduates and young members in May 2016 to share the experience of prominent structural engineers in their careers and how to be become a professional and competent structural engineer.

Continuous Professional Development

In addition to the published handbooks by JSD (i.e. Wind Loading Handbook, Concrete Code Handbook, Handbook to Code of Practice for Demolition of Building, Precast Concrete Construction Handbook, Handbook to the Code of Practice for Foundations), another handbook for the Code of Practice for Structural Use of Steel is being prepared and will be issued soon. We hope our members will find these handbooks helpful for their daily works and professional development.

We have organized over 31 technical meetings and seminars to help support members on continuous professional development. In additional to those organized by our own, we collaborated with over 8 other professional institutions and bodies in conducting seminars, workshops, conferences and technical visits for professional development, and through these activities we have built stronger links with external parties for promoting our profession.

Participation of JSD in Serving the Community

The JSD has active participation in serving the community. Members are nominated to various Government committees and panels with an aim to render our professional advice to the Government in different aspects and at various stages of policy formulation. Some of their contributions such as in the APSEC Discussion Forum of the Buildings Department can now be downloaded from JSD website. Moreover, JSD members also play an important role as experts in the accreditation of university programmes, training schemes, and the assessment of application for registration as Registered Professional Engineer under the Engineers Registration Board.

Professional Recognition and Training

Written examination of the HKIE Structural Examination was successfully held on 26 November 2015 with 378 attendees. To help candidates prepare the examination, a seminar was held on 31 October 2015. The next professional interview will be held in June 2016. Candidates have to pass the Structural Examination before admission to Corporate Membership under the Structural Discipline of HKIE.

IStructE Matters

Prof Tim IBELL, the President, and Mr. Martin POWELL, Chief Executive of the IStructE, came to Hong Kong in late November 2015 for the Presidential Visit. At the Presidential Address, Prof IBELL shared with his wonderful insight on the subject of "Creativity and Fun: Core Strength" to a full house of audience followed by presentation of certificates to newly elected Fellow Members and Chartered Members. They also visited HKIE and were received by the President of HKIE, Ir CHAN Chi-chiu.

Two Chartered Membership Examinations were held in Hong Kong in July 2015 and January 2016 respectively with 107 and 159 candidates taking the examinations.

Appreciation

JSD has now put in place various activities for parties ranging from practicing engineers, graduated engineers, university students to Secondary School students. These are thanks to the collective efforts from past Chairpersons and Committee members, and of course members' participation. I would like to take this opportunity to thank all Committee Members of this session for their invaluable supports to the JSD in achieving another fruitful year.

The JSD will continue to promote the advancement of structural engineering, and to facilitate exchange of professional knowledge for members. I look forward to your active participations and supports to the JSD.

Ir Ken NG Kin-shing
JSD Chairman (Session 2015/16)

The HKIE Structural Examination

The HKIE Structural Examination consists of TWO parts: (a) written examination and (b) professional interview. Applicant passing both parts and meeting the experience requirements under the relevant routes to membership will be eligible to become Corporate Member of the HKIE in the Structural Discipline (subject to meeting other requirements in the HKIE Constitution). Passing the written examination is not a pre-requisite for taking the interview or vice versa.

The written examination of the HKIE Structural Examination (2015) was held on 26 November 2015 at the Kowloon Bay International Trade & Exhibition Centre. It consisted two sections in the form of multiple choice questions (one hour) and design questions (six hours). 378 candidates attended the written examination and 83 passed with a passing rate at 22%. Examination results were announced in April 2016 and the professional interview will be held in June/July 2016.

Chairman of Examination Board:

Ir Prof Paul PANG Tat-choi

Chief Examiners of Design Questions:

Ir Benny LAI Siu-lun
Ir Prof James LAU Chi-wang
Ir Prof LAU Ching-kwong
Ir Paul TSANG Sau-chung
Ir WONG Chi-ming

Chief Examiners of M.C. Questions:

Ir Prof CHAN Siu-lai
Ir KWAN Kin-kei
Ir Dr Eddie LAM Siu-shu
Ir LAU Chi-kin
Ir NG Kin-shing
Ir Dr SU Kai-leung

Lastly, I would like to express my heartfelt thanks to the Examination Board Chairman, Chief Examiners, Examination Markers and Interviewers and, in particular, the JSD Committee, for the dedicated efforts throughout.

Ir CHAN Siu-tack
Chairman of HKIE Structural Discipline
Dated 6 May 2016

Examination Markers:

Ir CHAN Chi-kong
Ir Edmond CHAN Chu-fai
Ir CHAN Chung-ming
Ir Winifred CHAN Ho-wai
Ir Eric CHAN Kar-lock
Ir CHAN Ngai-tung
Ir CHAN Pak-wing
Ir Edward CHAN Sai-cheong
Ir CHAN Wai-ching
Ir Tony CHAN Wai-tong
Ir CHENG Pui-wan
Ir Peter CHEUNG Chi-wei
Ir CHEUNG Kwok-choi
Ir Wilson CHEUNG Yiu-sun
Ir CHIM Chin-yiu
Ir Jacky CHIONG Kam-yueng
Ir CHIU Koon-man
Ir CHOY Chun-chuen
Ir CHUI Wai-ming
Ir Robinson CHUNG Kam-yin
Ir CHUNG Kwong-nung
Ir CHUNG Lung-to
Ir Dr Joseph Duncan CHI Wuh-jian
Ir Dr Paul CHU Chi-keung
Ir Dr Goman HO Wai-ming
Ir Dr Lilian HUI Ming-fong
Ir Dr Eddie LAM Siu-shu
Ir Dr Andy LEE Yuk-nin
Ir Dr LIU Yuk-shing
Ir Dr SU Kai-leung
Ir FOK Wing-huen
Ir FUNG Chi-keung
Ir FUNG Ho-wing
Ir FUNG King-cheong
Ir Joseph HO Chung-leung
Ir Humphrey HO Hon-kit
Ir Danny HO Hoo-yin
Ir Kenith HO Ka-kit
Ir HO Koon-ho
Ir Stephen HOU Ting-fun
Ir David HOWE Wing-chi
Ir David HUNG
Ir IEONG Kwok-lun
Ir Nandi IP Kwong-fat
Ir Eric KAN Shiu-kay
Ir Sonny KAN Tak-cheong
Ir KANG Man
Ir KU Kwai-yau
Ir KUO Tung-ming
Ir KWAN Kai-sing
Ir KWAN Kin-kei
Ir Helen KWAN Po-jen
Ir Philip KWOK Chi-tak
Ir KWONG Po-lam
Ir KWONG Wing-kie
Ir Otto LAI Hou-shun
Ir LAI Wai-wah
Ir Kevin LAM Chun-yin
Ir LAM King-kong
Ir LAM Nga-yan
Ir William LAM Ping-keung
Ir LAM Tsz-fung
Ir LAM Yiu-choi
Ir Albert LAU Chi-ming
Ir LAU Wai-ming
Ir LAU Wing-yin
Ir LAW Ting-kwok
Ir Alexis LEE Chi-chuen
Ir Peter LEE Kai-kwong
Ir Walter LEE Kin-sun
Ir LEE Kwok-chung
Ir Lucas LEE Kwok-keung
Ir LEE Ping-kuen
Ir LEE Wing-hong
Ir LEE Yun-choi
Ir Christopher LEE Yung-ling
Ir Ben LEUNG Chi-hung
Ir Francis LEUNG Chi-suen
Ir Derrick LEUNG Hung-kwong
Ir LEUNG Pak-wai
Ir LEUNG Siu-ming
Ir LEUNG Wai-bun
Ir LEUNG Yu-wah
Ir LI Ting-fan
Ir Albert LIU Chi-kwun
Ir LIU Sik-wing
Ir LIU Tai-chuen
Ir Stephen LO Gon-fai
Ir Raymond LO Man-chiu
Ir Bernard LOONG Chun-wah
Ir MAK Kwok-shing
Ir MAK Ming-fai
Ir MAK Tsz-yee
Ir Kenneth MO Kon-fei
Ir Martin MOK Chi-wah
Ir James MOK Hing-wah
Ir Daniel MOK Kin-yau
Ir NG Hon-keung
Ir NG Kin-shing
Ir NG Tim-yeung
Ir NG Wing-yiu
Ir Peter TO
Ir PO Lap-fun
Ir Prof Adam CHOY Siu-chung
Ir Prof KUANG Jun-shang
Ir PUN Chupman
Ir Anthony PUN Wing-chiu
Ir SHAM Sai-wah
Ir Carmine SIU Koon-hoi
Ir Simon SIU Sik-lam
Ir SO Kwok-leung
Ir SO Wah-wai
Ir SO Yan-wing
Ir SZE Wang-cho
Ir TAI Chi-ho
Ir TAI Kwok-kuen
Ir TAM Hon-wing
Ir William TANG Chung-ming
Ir Kevin TANG
Ir Alex TANG Quoc-tri
Ir TANG Tsz-kit
Ir Chezy TANG Wai-chau
Ir Raymond TANG Wai-ming
Ir Lawrence TOM Mo-shek
Ir TONG Fung-ming
Ir Anthony TOO Chie-houng
Ir TSANG Kwok-leung
Ir Kelvin TSANG Ping-fai
Ir TSE Kam-leung
Ir TSE Pak-kin
Ir TSE Wai-keung
Ir Martin TSOI Wai-tong
Ir WAI Sai-chong
Ir WAN Yiu-lun
Ir WONG Bun
Ir Patrick WONG Che-ming
Ir Louis WONG Chin-to
Ir WONG Him-sun
Ir WONG Hon-wah
Ir Thomas WONG Kam-chuen
Ir WONG Kin-yan
Ir WONG Kong-loi
Ir Richard WONG Kwok-chuen
Ir WONG Po-chi
Ir Francis WONG Tsz-kin
Ir WONG Wai-hing
Ir WONG Woon-ki
Ir Andes WONG Yiu-wang
Ir WU Chung-kei
Ir Alex WU Po-tak
Ir Alan YAU Hoi-ngan
Ir YAU Yiu-fong
Ir YEUNG Chi-man
Ir Jenny YEUNG Fei
Ir YIK Yiu-wah
Ir YIM Chung-wah
Ir Gabriel YU Lin-keung

Technical Meetings & Visits 2015-2016

Date	Details
12 June 2015 (Friday)	Annual Seminar **"Engineering Initiatives for Construction Productivity"** by Various Speakers
23 June 2015 (Tuesday)	Experience sharing with young engineers on **"Dialogue with Experienced Structural Engineers (結構工程交流聚會)"** by Ir Martin TSOI, Ir Benny LAI, Ir Y.T. LUI and Ir Prof Ben YOUNG *Jointly organized Young Members Committee, HKIE*
3 July 2015 (Friday)	Technical meeting on **"Resilience of Critical Infrastructure in Hong Kong - Do Structural Engineers have a Role to Play"** by Ir Prof Thomas S.T. NG of HKU
4 August 2015 (Tuesday)	Technical meeting – IStructE Gold Medal Address **"Designing with Computers"** by Mr Tristram CARFRAE, IStructE Gold Medalist 2014
18 August 2015 (Tuesday)	Half-day Seminar on **"Design of Long Span Composite Beams to Eurocode 4"** by Prof Dennis LAM of University of Bradford, UK *Jointly organized HKISC and PolyU*
25 August 2015 (Tuesday)	Technical meeting on **"Pazhou PZB1301 and PZB1401 - Resolving Complex Architectural Form Through Structural Simplicity (Structural Excellence Award 2015)"** by Ir Andrew LUONG of Arup
28 August 2015 (Friday)	Half-day Seminar on **"Fire Testings and Product Assessment Practice"** by Dr Lipmann L.S. SZE of RED Façade Consultants Limited and Ir Dr Dominic YU of Alpha Consulting Limited *Jointly organized HKISC, PolyU and The HKIE Fire Division*
9 September 2015 (Wednesday)	Half-day Seminar on **"Advanced Design of Scaffolds"** by Ir Stephen McCRORY of NidaEurope, UK *Jointly organized HKISC and PolyU*
9 September 2015 (Wednesday)	Technical meeting on **"On the Design of Reinforced Concrete Beam-column Joints to HKConcrete2013"** by Ir Prof J.S. KUANG of HKUST

▲ *Presented by Ir Prof Thomas S.T. NG of HKU*

▲ *Presented by Ir Andrew LUONG of Arup*

▲ *by Ir Prof J.S. KUANG of HKUST*

Technical Meetings & Visits 2015-2016

Date	Details
30 September 2015 (Wednesday)	Technical meeting on **"Transformation of the Former Police Married Quarters Site on Hollywood Road into a Creative Industries Landmark"** by Ir Agnon N.T. FUNG of ArchSD
6 October 2015 (Tuesday)	Technical meeting on **"Hong Kong Velodrome"** by Ir Tony CHOI & Mr Gabriel YAM of ARUP
12 October 2015 (Monday)	Half-day Seminar on **"High Strength Hollow Sections and Green Steel Solutions"** by Mr. Steve WHITFIELD of Tata Steel Group and Mr. Bauke Hoekstra BONNEMA of Tata Steel Group *Jointly organized HKISC and PolyU*
29 October 2015 (Thursday)	10th Brunel International Lecture Series on "Collectively We are Stronger – Engineers generating collaborative solutions to strengthen community resilience post-disaster" by Mr. Duncan GIBB of Stronger Christchurch Infrastructure Rebuild Team (SCIRT) *Jointly organized Institution of Civil Engineers (ICE)*
2 November 2015 (Monday)	HKIE/IStructE Presidential Address on **"Creativity and Fun: Core Strengths"** by Prof Tim IBELL of President of IStructE 2015
3 November 2015 (Tuesday)	Technical meeting on **"Basic Knowledge of Lighting & Ventilation Requirements under the Buildings Ordinance"** by Ir Ben LEUNG Chi-hung of C M Wong & Associates Ltd.
14 November 2015 (Saturday)	One day conference on "**How QS will succeed in Tomorrow's world**" by Various Speakers *Jointly organized Hong Kong Institute Surveyors (HKIS) & Australian Institute of Quantity Surveyors*
24 November 2015 (Tuesday)	One day Seminar on **"Modern Design of Connections and Drill-in Anchors"** by Various Speakers *Jointly organized HKISC and PolyU*

▲ *Presented by Ir Agnon N.T. FUNG of ArchSD*

▲ *Presented by Ir Tony CHOI & Mr Gabriel YAM of ARUP*

▲ *Presented by Ir LEUNG Chi Hung Ben of C M Wong & Associates Ltd.*

Technical Meetings & Visits 2015-2016

Date	Details
26 November 2015 (Thursday)	Technical meeting on **"Reflections on Eurocode 3 and Design of Elliptical Hollow Sections"** by Prof Leroy GARDNER of Imperial College London, UK
3-4 December 2015 (Thursday & Friday)	2 days Professional Course on **"Structural Design according to Eurocodes 1 2 3 and 8: Fire, Impact and Earthquakes"** by Dr Bill WONG of Monash University, Australia & Dr Nelson LAM of University of Melbourne, Australia *Jointly organized HKU*
4 December 2015 (Friday)	Half-day Seminar on "Essentials and Advances in Steel Structures from Design to Construction" by Various Speakers *Jointly organized HKISC and PolyU*
9 December 2015 (Wednesday)	Technical meeting on **"Information Modeling and Exchanges for the Lifecycle of a Building"** by Dr S.H. LEE of HKU
11 December 2015 (Friday)	Technical meeting on **"Design and Construction of Hong Kong International Airport Midfield Concourse Steel Roof "** by Ir Franky LO of Arup *Jointly organized The HKIE Building Division*
18 December 2015 (Friday)	One-day Seminar on "Design of Composite Structures to Eurocode 4 – The Essentials" by Professor Dennis LAM of University of Bradford, UK *Jointly organized HKISC and PolyU*
30 December 2015 (Wednesday)	Technical meeting on **"Axial-lateral Strain Constitutive Model for Steel- and FRP-confined Concrete"** by Ir Dr Johnny C.M. HO of University of Queensland, Australia
12 January 2016 (Tuesday)	Annual Seminar **"Structural Excellence - from Research to Application"** by Various Speakers

▲ *Presented by Prof Leroy GARDNER of Imperial College London, UK*

▲ *Presented by Ir Dr Johnny C.M. HO of University of Queensland, Australia*

Technical Meetings & Visits 2015-2016

Date	Details
26 January 2016 (Tuesday)	Technical meeting on **"How to Design for Impact Resistance from First Principles"** by Dr Nelson LAM of University of Melbourne *Jointly organized the HKIE Geotechnical Division*
29 January 2016 (Friday)	Technical meeting on **"Foundation Code Handbook"** by Ir LAW Chi-wai of Housing Department
18 February 2016 (Thursday)	Technical meeting on **"South Island Line (East) Contract 903"** by Ir Douglas SIMMONS of Atkins
25-28 February 2016 (Thursday-Sunday)	Annual Visit – Osaka, Japan
29 February 2016 (Monday)	Technical meeting on **"Hong Kong Science Park Phase 3a + 3b"** by Ir S.P. CHIN of AECOM
11 March 2016 (Friday)	Technical meeting on **"Designing RC Beam-column Connections to HKConcrete2013"** by Ir Professor J.S. KUANG of HKUST
22 March 2016 (Tuesday)	Technical meeting on **"Extreme Events Design for Tall Buildings"** by Ir Dr Goman HO of Arup
1 April 2016 (Friday)	One-Day Workshop on **"Design of Composite Steel & Concrete Structures using Eurocode 4"** by Prof Richard LIEW of National University of Singapore *Jointly organized the HKIE, HKISC and PolyU*
19 April 2016 (Tuesday)	Technical meeting on **"Tubular Structures"** by Dr CHAN Tak-ming of PolyU
6 May 2016 (Friday)	Annual General Meeting
16 May 2016 (Monday)	Technical meeting on **"Public Rental Housing Development at Kai Tak 1B – Tak Long Estate"** by Ir K.L. WONG of AECOM

▲ *Presented by Ir Chi-wai LAW of Housing Department*

▲ *Presented by Ir Douglas SIMMONS of Atkins*

▲ *Presented by Ir S.P. CHIN of AECOM*

▲ *Presented by Ir Dr Goman HO of Arup*

▲ *Presented by Dr CHAN Tak-ming of PolyU*

"Structural Engineering Competition for the Youth - Paper Tower Challenge"

The Structural Engineering Competition for the Youth - Paper Tower Challenge was successfully held at the Centennial Campus of The University of Hong Kong on July 18, 2015. The competition was jointly organised by the Joint Structural Division of the Hong Kong Institution of Engineers, and the Business-School Partnership Programme of the Education Bureau. In addition, the competition was supported by the City University of Hong Kong, Hong Kong University of Science and Technology, the Hong Kong Polytechnic University and the University of Hong Kong. Over 100 Form 4 and Form 5 students from 25 secondary schools had participated in the competition. The competition aims to develop students' team spirit, logical thinking and engineering concepts through building up the paper tower. Each team consists of four students and given two rolls of adhesive tape and 200 pieces of A4 recycle papers to build a paper tower of 1.5 to 1.7 meters in height. The paper tower was subjected to a loading test, and assessed according to criteria including aesthetic and innovation.

Annual Seminar 2015 on "Engineering Initiatives for Construction Productivity"

The Annual Seminar 2015 was successfully held on 12 June 2015 at the Jockey Club Auditorium of the Hong Kong Polytechnic University. The Seminar with the theme "Engineering Initiatives for Construction Productivity", was overwhelmingly received with over 300 participants.

Ir Martin TSOI Wai-tong, Chairman of the Joint Structural Division (2014-2015), started the Annual Seminar with the Welcome Speech. Opening Address was delivered by Mr LEE Shing-see, GBS, OBE, JP, Chairman of the Construction Industry Council. Distinguished speakers of the Annual Seminar included both local and overseas professionals and academia (in order of presentation): Prof Nobuyoshi YABUKI, Ir Prof XU You-lin, Ir Prof Leslie George THAM & Ir KAN Chun-yuk, Ir Dr Gary CHOU, Prof LI Guo-qiang, Ir Douglas SIMMONS, Ir CHIN Sai-ping & Mr Christian VENETZ and Ir YEUNG Chi-man. Q&A sessions open to the floor were hosted by Ir Martin TSOI Wai-tong and Ir Ken NG Kin-shing and closing remarks was delivered by Ir Prof CHAN Siu-lai to conclude the Annual Seminar.

Organizing Committee of Annual Seminar 2015

Chairman

Ir Ken NG Kin-shing

Members

Ir Prof Chan Siu-lai
Ir LEUNG Kwok-tung, JP
Ir Ben TSE Wai-keung
Ir TSE Kam-leung
Ir Edward CHAN Sai-cheong
Ir Prof KUANG Jun-shang
Ir Dr Eddie LAM Siu-shu
Ir CHAN Chi-kong
Ir Prof Ben YOUNG

Annual Seminar 2016 on "Structural Excellence – from Research to Application"

The Annual Seminar 2016 was successfully held on 12 January 2016 at the Rayson Huang Theatre, The University of Hong Kong. The Seminar with the theme " Structural Excellence – from Research to Application", was overwhelmingly received with over 300 participants. The seminar is supported by The University of Hong Kong.

Ir Ken NG, Chairman of the Joint Structural Division (2015-2016) started the Annual Seminar with the Welcome Speech. Opening Address was delivered by Prof Peter MATHIESON, President and Vice-Chancellor of the University of Hong Kong. Prominent local and overseas speakers shared their experiences, insights and innovative ideas in both research and application of structural engineering which would inspire the construction industry at large towards structural excellence.

Distinguished speakers included (in order of presentation): Prof David NETHERCOT, Ir Prof KUANG Jun-shang, Ir TSE Kam-leung & Ir WONG Koi-hou, Dr Ivan SHAM Man-lung, Prof Steve DENTON, Ir Prof CHAN Siu-lai, Ir Dr Goman HO Wai-ming and Ir Prof Ben YOUNG.

Q&A sessions open to the floor were hosted by Ir LEUNG Kwok-tung, JP and Ir Edward CHAN Sai-cheong. The event was successful concluded following the closing remarks by Ir Martin TSOI, the immediate past chairman of JSD.

Organizing Committee of Annual Seminar 2016

Chairman

Ir LEUNG Kwok-tung, JP

Members

Ir Prof Chan Siu-lai
Ir Ben TSE Wai-keung
Ir TSE Kam-leung
Ir CHAN Chi-kong
Ir Edward CHAN Sai-cheong
Ir Dr Eddie LAM Siu-shu
Ir Prof KUANG Jun-shang
Ir Prof Ben YOUNG

Annual Dinner 2015

The Annual Dinner 2015 was successfully held on 22 October 2015 at the Holiday Inn Golden Mile Hong Kong drawing attendance of over 500 members and guests. JSD is privileged to have Mr HUI Siu-wai, JP, Director of Buildings as the Guest of Honour. Other distinguished guests included Ms Ada FUNG Yin-suen, JP, Deputy Director of Housing Authority (Development & Construction), Mr. AU YEUNG Yan-sang, JP, Deputy Head of the Geotechnical Engineering Office (Island) and Ir CHAN Chi-chiu, President of the HKIE.

Organizing Committee of Annual Dinner 2015

Chairman

Ir Edward CHAN Sai-cheong

Members

Ir LAU Chi-kin
Ir TSE Kam-leung
Ir Ben TSE Wai-keung
Ir CHAN Chi-kong
Ir Benny LAI Siu-lun
Ir LAM King-kong
Ir Jacky CHIONG Kam-yueng

STRUCTURAL EXCELLENCE AWARD 2016

The Structural Excellence Award (formerly Structural Awards) aims to promote excellence in structural engineering demonstrated through the design and construction of buildings and structures completed in the last two years. The first award was held in 1998 / 1999 and this year is the 18th event.

This year, new category of small to medium sized projects for the Residential Projects and Non-Residential Projects respectively were introduced so as to encourage participation of more consulting firms and on the academic side, new "Research and Development (R&D) Award" was also introduced aiming to promote excellence in structural engineering through research and application.

On 17 March 2016, the Judging Panel short-listed 12 finalists of Project Awards and 3 finalists of R&D Award. Following project presentations and site visits on 2 April 2016 and 16 April 2016 respectively, project awards were decided with emphasis on engineering approach, integration, innovation / unusual features, buildability, energy efficiency / environmental consideration / sustainability and aesthetics. R&D Awards was attached importance to Engineering Application, Theoretical Background, Innovation / Originality and Sustainability.

2 local projects and 2 overseas projects were awarded as grand awards and 1 Research paper won the grand award. Below is the winner list.

Grand Award

Hong Kong Projects

- Sludge Treatment Facility Hong Kong (Category: Non-residential - (Construction cost more than HK$500 million))
- Avenue (URA Project at H15 at Lee Tung Street and McGregor Street (Category: Residential (Construction cost more than HK$500 million))

Mainland / Overseas Projects

- Guangzhou Chow Tai Fook Finance Centre, China
- Studio City, Macau

R&D Award

Direct Analysis for High-strength Steel Frames with Explicit-model of Residual Stresses

Members of the Judging Panel

Chairman
Ir Prof Paul PANG Tat-choi

Member
Ir Ken NG Kin-shing
Ir Prof LAU Ching-kwong
Ir Prof TSUI Tack-kong
Ir Prof William LAM Hing-keung
Ir CHAN Siu-tack
Prof Richard LIEW

Organizing Committee

Chairman
Ir LEUNG Kwok-tung. JP

Member
Ir Prof CHAN Siu-lai
Ir LAU Chi-kin
Ir Ben TSE Wai-keung
Ir TSE Kam-leung
Ir Edward CHAN Sai-cheong
Ir Thomas WONG Kam-chuen

COMMENDATION MERIT

Mount One 瓏山1號

Winner: Siu Yin Wai & Associates Limited

Hong Kong Project: Residential
(Construction cost on or less than HK$500 million)

Client: Sun Hung Kai Properties Limited
Structural Engineer: Siu Yin Wai & Associates Limited
Architect: LWK & Partners (HK) Limited
Main Contractor: Sanfield Building Contractors Limited

Project Description

- Mount One is a residential development consists of one 28-storey high tower with an associated 3-storey low-rise building with a foot bridge linked between them.
- It stands on flat ground with area of approximately 40mx65m.
- Within the 28-storey high building structure, there are various usages: the top 22-storeys are residential units, then having a transfer plate at 7/F, and from 6/F to ground floors, there are sky garden, clubhouse, swimming pool, carpark, and residential entrance lobby.
- Reinforced concrete structure of beam-slab with column and core wall were chosen for its adaptability.

Project Features

- Standardized and simple structural layout with uniform beam, column, and wall sizes are adopted at the 22-storey residential typical floors. This enhanced the construction sequence and buildability. Repetitive use on the same set of formwork also reduced construction waste.
- Residential Tower steel ratio achieved is only 130kg/m3 by structural optimization. It was carried out by iterating and changing the member sizes that yields to a min. member size and also achieves the building deflection limit.
- Prefabricated RC precast façades and 300mm thick curtain wall are adopted along for more than 80% at the building perimeter. They provided better quality of concrete and tile finish, saving manpower on site for formwork construction, and reduce construction waste.
- Employing proven technologies and readily available material with comprehensive structural analysis, Mount One achieved practicality, durability and economy, as well as beauty of functional form.

STRUCTURAL EXCELLENCE AWARD 2016

GRAND AWARD

Avenue, URA Project H15
at Lee Tung Street and McGregor Street

Winner: C M Wong & Associates Limited

Hong Kong Project: Residential
(Construction more than HK$500 million)

Client:	Grand Site Development Limited (URA/Hopewell/Sino)
Architect:	Ronald Lu & Partners (Hong Kong) Limited
Structural Engineer:	C M Wong & Associates Limited.
Building Services Engineer:	Wong & Ouyang (BS) Limited
Landscape Architect:	ADI Limited
Conservation Consultant:	The Team Consultant
Quantity Surveyor:	WT Partnership (Hong Kong) Limited
Main Contractor:	China State Construction Engineering (HK) Limited

Project Description

- The URA Project at Lee Tung Street is a comprehensive development in the heart of Wan Chai district surrounded by the old and new building. It consists of 2 sites including 3 towers at Site A and 1 tower at Site B. The towers in Site A are linked by 4 new footbridges one of which an arch supports a 2m wide elevated footbridge spanning over 30m. The project provides a landmark at the Wan Chai residential area.
- The major constraints includes:
  1. The conservation of old buildings
  2. 4-level basement requiring dewatering and re-charging system by top-down construction with adjacent structures sensitive to settlement
  3. High rockhead level at one side requiring shear pin underneath the diaphragm walls

Project Features

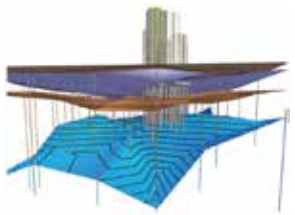
- The 4-level basement was built by top down method with the installation of temporary steel stanchion during the large diameter bored pile casting, the steel stanchions were extended up above ground level for superstructure construction simultaneously with basement excavation. Reason for top down is that the permanent ground and basement slabs acting as the horizontal props are much more rigid than the cross steel struts in conventional bottom up method and the effects to adjacent ground and buildings can be minimized.
- Post-tensioning Prestressing Transfer Plates to overcome the layout differences between the typical floors and the 5 levelled podium. There are 2 post-tensioning transfer plate designed to reduce its thickness and the reinforcement tonnages.
- The Arch Bridge design linking different blocks was introduced with a late design change including the access levels at both ends, while the RC structure of one end support had been built for the originally proposed footbridge at an upper level, which posed significant structural challenges. A special structural steel collar was adopted as strengthening proposal to the cast structure. The bridge deck itself is an elegant arch supporting the roof to express the clear load paths of the entire structure.

FINALIST

HKHA Hung Shui Kiu Area 13 Phase 2

Hong Kong Project: Residential
(Construction cost more than HK$500 million)

Winner: WSP Hong Kong Limited & Hong Kong Housing Authority



Client:	Hong Kong Housing Authority
Architect:	Hsin Yieh Architects & Engineers Limited
Structural Engineer:	WSP|PB Hong Kong Limited
Main Contractor:	Hsin Chong Construction Company Limited

Project Description

- HSK A13 Phase 2 comprises one domestic block (Hung Lok House), a commercial center and car park block plus covered public transport interchange.
- The approximately area of the Phase 2 is 17504m2. Hung Lok House comprises 24 domestic storeys providing 553.

Project Features

- This is a pioneer BIM embedded structural and geotechnical design project.
- Primary aim is to investigate the practical application of BIM in structural design process including drawing production
- External Application Programming Interfaces (APIs) have been developed to convert finite element analysis model to BIM model.
- One of the first batch of projects using VPB (Volumetric Precast Bathroom) under HKHA.
- Shallow raft for carpark and commercial center sitting on existing untreated FILL to reduce excavation amount and shorten construction programme in consider with differential settlement. The shallow raft plate are designed in shallow depth in integrated with manhole and underground utilities via BIM for very cost effective design in avoid clash in construction stage.

STRUCTURAL EXCELLENCE AWARD 2016

COMMENDATION MERIT

Sha Tin Community Green Station

Winner: Architectural Services Department

Hong Kong Project: Non-Residential
(Construction cost on or less than HK$500 million)

Client:	Environmental Protection Department
Structural Engineer:	Architectural Services Department
Architect:	Architectural Services Department
Building Services Engineer:	Architectural Services Department
Quantity Surveyor:	Architectural Services Department
Landscape Architect:	Architectural Services Department
Main Contractor:	Tim Lee Construction Company Limited

Project Description

Sha Tin Community Green Station (CGS), the first of its kind in Hong Kong, was opened for public use in May 2015 to promote environmental education and provide collection services for recyclables of lower economic value at the district level. The Sha Tin CGS comprises an education centre, a multi-purpose room and other ancillary facilities for holding exhibitions and educational activities and helping the communities in collecting recyclables. The site, which used to be temporary parking space, has been greatly beautified to become a public space that can be used by the local community, achieving a place-making effect.

Project Features

1. Innovative and sustainable design of reusing standardized and used freight containers is applied to form different building blocks of various functions to echo with the theme of CGS. 7 nos. 40-foot containers and 8 nos. 20-foot containers are reused in full extent in the project. Coupling with other green features, approximately 26% and 53% carbon reduction during construction and operation respectively are achieved.
2. Modular design and lightweight steelwork are adopted to enhance buildability and enable fast track construction.
3. Use of off-site prefabrication is maximized to reduce construction waste, and noise and air pollution nuisance to surroundings.

GRAND AWARD

Sludge Treatment Facility Hong Kong

Winner: Ove Arup & Partners Hong Kong Limited

Hong Kong Project: Non-Residential
(Construction cost more than HK$500 Million)

Project Owner:	Environmental Protection Department
Client & Main Contractor:	Veolia-Leighton-John Holland JV
Structural Engineer:	Ove Arup & Partners Hong Kong Limited
Architect:	Vasconi Architects

Project Description

- The Sludge Treatment Facility (STF) is Hong Kong's first waste-to-energy plant
- The building was procured on a design-build-operate basis
- All sewage sludge from Hong Kong is treated in the incineration plant which generate a 90% reduction in landfill volume and the capability to process 2000 tonnes of sludge a day
- The project regenerated an ash lagoon with planting and green roofs, net export of electricity, all water generated on site and zero fluids discharge
- The STF combines refined aesthetics of glass, curves and greenery demanded of leisure facilities with the industrial functionality and practicality needed in a power station

Project Features

- An iconic and pragmatic building that remediates an area of contaminated land and houses industrial processes in an attractive setting
- A structural system that achieves complex geometry for the 400m long by 50m wide external envelope from a simple and repeatable support system
- Early involvement of the contractor to allow a structural design that fitted the proposed fabrication and erection strategy
- Temporary loads and stability considerations included in the permanent works design to support the erection process
- Steel work fabricated in easily transportable and erectable modules which were site bolted to achieve spans of up to 50m
- Full integration of process plant, MEP, structure and architecture. All disciplines fully modelled, coordinated and checked in 3D to reduce site delays

COMMENDATION MERIT

Tiu Keng Leng Sports Centre and Public Library

Hong Kong Project: Non-Residential
(Construction cost more than HK$500 million)

Winner: Architectural Services Department & Greg Wong & Associates Limited

Client: Leisure and Cultural Services Department
Structural Engineer: Greg Wong & Associates Limited
Project Manager: Architectural Services Department
Architect: Ronald Lu & Partners Limited
Main Contractor: Lanon Development Limited

Project Description

- Development comprises 3 major elements viz a district open space, a public library building and a sports centre building.
- Sports Centre houses an indoor games hall jogging track, multi-purpose dance rooms, fitness center, and children's playroom.
- Library building houses adult and children sections, multimedia center, newspaper corners and study rooms.
- Architectural design concept is to put twin buildings on a three-dimensional green (grass) carpet.
- District Open space provides leisure paths, outdoor facilities, children's play areas and outdoor reading area.
- Open space has also been maximized to achieve a full one hectare of space over the relatively constrained 1.8 hectare site.

Project Features

- Sport Hall Roof is oval shaped on plan and five main steel trusses of maximum span 41.5m across the hall were adopted. Trusses depths are 1.2m at the ends and about 3m at mid-span to achieve highest efficiency.
- 3-D truss using circular hollow steel sections to form an inverted triangular cross section for aesthetic pleasing look and cost effectiveness.
- Roof structure with only 45.7kg/m2 steel tonnage ratio was achieved through structural optimization.
- Green features include green roof with solar panels and lawn area over the sport hall, sun-shading fins for the double storey glazed library, 3-D green carpet open space cover almost the entire site.
- Driven H-pile with vibration / noise mitigation measures is adopted instead of socket-steel H-pile or bored piles to save cost and time.

FINALIST

Revitalisation of Old Tai Po Police Station into Green Hub

Hong Kong Project: Heritage

Winner: APT Engineering Consultant Limited

Client: Kadoorie Farm & Botanic Garden Corporation
Structural Engineer: APT Engineering Consultant Limited
Architect: Thomas Chow Architects Limited / Meta4 Design Forum Limited
Main Contractor: Junic Construction Company Limited
Conservation Consultant: Centre for Architectural Heritage Research

Project Description

- The Old Tai Po Police Station consists of the Main Building, Staff Quarter and Canteen Block. The Main Building and the Staff Quarter were constructed in 1899 and 1940s. They are single storey buildings with double pan and roll tiles and timber pitch roof supported by brick wall.
- The Old Tai Po Police Station was accorded by the Antiquity and Advisory Board as Grade 1 Historical Building in December 2009.
- The Site is located adjacent to Tai Po Egrety SSSI (Site of Special Scientific Interest).
- The client intend to revitalise the existing Old Tai Po Station into the Green Hub with hostel, area for classes and workshop, canteen, farming area and shop etc.
- The Green Hub is a living demonstration of ecological and sustainable options responding to the imminent challenges of Climate Change and to promote low carbon living.

Project Features

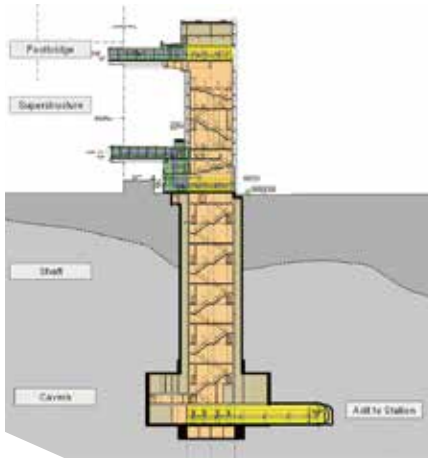
- Structural design concept adopted the original construction method in order to restore and preserve with minimal or no visual impact to the existing historical buildings.
- Close coordination work between the conservation consultant and other parties were required to achieve the restoration and preservation requirements.
- Double Pan and Roll Tiles Timber pitched roof was designed to comply with the Code of Practice on Wind Effects in Hong Kong 2004.
- Underground water tank and pump room is located at the open lawn area. The open lawn area is surrounded by various Character Defining Elements at all sides. The Character Defining Elements adjacent to the underground water tank and pump room are the existing Canteen Block, Staff Quarters, Main Buildings, Open Lawn, incinerator and OVT. The location was carefully chosen to minimise the effect to the adjacent Character Defining Elements and optimise the cost for construction work.
- Well-coordinated construction method to ensure the work has no effect to the historical buildings, Tai Po Egrety SSSI and OVT.

COMMENDATION MERIT

West Island Line – HKU Station Entrances A and C1

Winner: Atkins China Limited

Hong Kong Project: Infrastructure & Footbridge



Client: Mass Transit Railway Corporation Limited
Structural Engineer: Atkins China Limited
Architect: Aedas
Main Contractor: Gammon Construction Limited

Project Description

- The West Island Line (WIL) is an extension of the Island Line service from Sheung Wan to Kennedy Town via Sai Ying Pun and HKU Stations adding approximately 3.3 km of underground route length to the island line
- Community Railway - WIL runs beneath the densely populated areas of the Western District. Over 90% of the area's residents are able to conveniently access the railway by foot
- The WIL relieves traffic congestion in Western District and effectively bring commuters to the doorstep of the central business district

Project Features

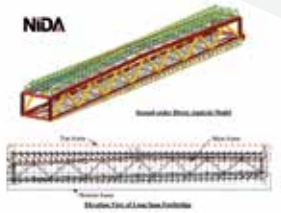
- Both entrance structures comprise a rock cavern at the base, a circular shaft to ground level with the lift core extending above ground supporting a number of link bridges
- Entrance A has 8 high-speed lifts and extends 47 m above ground with two footbridges serving the University's Haking Wong Building and the lower footbridge crossing Pok Fulam Road
- Entrance C1 footbridge structure comprises two deep I beams bolted and lifted into place with no scaffold form required. Bondek flooring between the flanges forms the floor. The footbridge supports a green roof and is clad in GRP terracotta tiles

COMMENDATION MERIT

The Wings II - Footbridge

Winner: Sun Hung Kai Architects & Engineers Limited

Hong Kong Project: Infrastructure & Footbridge



Client: Group Allied Limited (Sun Hung Kai Properties)
Structural Engineer: Sun Hung Kai Architects & Engineers Limited and Alpha Consulting Limited (sub-consultant)
Architect: P&T Architects and Engineers Limited
Main Contractor: Chun Fai Construction Company Limited

Project Description

The footbridge is a 66.3m single span steel truss using Warren-truss-pattern system, mainly constructed by fabricated tubular steel sections, which is built to connect the new development of the Wings II and the nearby MTR Tseung Kwan O station providing public a safe and convenient access without interrupting road traffic. The structural depth of the footbridge varies along the length, and the maximum depth and clear width are 4.7m and 6.0m respectively. The footbridge is fully enclosed with aluminum panels and glass walls with steel sub-frames provided at the top and bottom of the main truss.

Project Features

In this project, the following innovative structure designs are implemented:

- Second-order direct analysis is employed throughout the design process with forces and moments accurately computed at all locations;
- Modern design method based on component-based concept is adopted for joint design and prediction of system behaviour;
- Vibration due to human-induced footfalls and aerodynamic wind is fully checked;
- Fatigue assessment to the human-induced live loads is conducted for the members and joints;
- Second-order construction staged analysis is conducted to investigate lock-in stress and check the stability of each construction stage.

This footbridge is comprehensively designed by the up-to-date technologies and methods for sustainability and cost-effectiveness.

GRAND AWARD

Guangzhou Chow Tai Fook Finance Centre, China

Winner: Ove Arup & Partners Hong Kong Limited

Mainland / Overseas Project

Client: New World Development Company Limited
Structural Engineer: Ove Arup & Partners Hong Kong Limited
Architect: Kohn Pedersen Fox Associates
Main Contractor: China State Construction Engineering Corporation

Project Description

- Guangzhou's tallest building at 530m tall with 111 floors, and the 5th tallest in the world at time of topping out at the end of 2014.
- The tower provides high-end hotel, office and retail facilities.
- The tower adopts a chiseled crystalline form, with floor plates set back at specific levels that relate to the heights of nearby architectural icons.
- Setbacks are complemented by outdoor terraces with sloping parapets that give the building distinct and different appearances from all four faces.
- Deploying China's heaviest duty tower crane and single lift pumping of concrete to over 500m, the structure was topped out in 36 months.

Project Features

- The structural system is formed by eight concrete filled tube (CFT) mega columns at the tower perimeter and a central core with four sets of outriggers and belt trusses, which is unconventional in China where a dual-defence system is often demanded for seismic design.
- Arup used performance based design approach and non-linear time history analyses to ensure the safety and gained approval of this unconventional structural system during the expert panel review.
- Another major breakthrough was the adoption of high strength concrete (C80) in the core wall which was not accepted by expert panel before for super-tall building.
- The mega columns are in CFT form with an innovative connection design with steel outriggers, also first of its kind for a building of this height.

GRAND AWARD

Studio City, Macau

Winner: AECOM Asia Company Limited

Mainland / Overseas Project

Client: Melco Crown Entertainment
Structural Engineer: AECOM Asia Company Limited
Architect: Leigh & Orange Limited
Concept Architect: Goddard Group
Main Contractor: Paul Y. - Yau Lee Joint Venture

Project Description

- 4,800,000 sq. ft Hollywood-inspired and cinematically themed integrated resort with casino facilities, a wide array of entertainment offerings and dining options
- An iconic 40 storey high horseshoe shaped hotel
- Golden Reel – This world's first and Asia's highest figure-8 Ferris wheel - sitting between the twin hotel towers which raises 130 meters high
- Studio City Event Center - A 5,000-seat multi-purpose entertainment center
- Other special feature like Pylon Sign, Hero Statue and an adventure themed landscaped podium roof.

Project Features

- Re-Used 70% of the existing PPC piles left in the ground from an abandoned scheme – reducing the piling construction period from 18 months to 10 months and associated embodied energy by minimizing additional piles
- Carefully positioned stiffness elements within horseshoe shaped hotel to control stresses associated with global torsion under seismic and wind loads, whilst balancing the demanding requirements for buildability, functionality and the stringent Macau building standards for lateral movement.
- A state of the art figure 8 ferris wheel designed to be architecturally pleasing, prevent against progressive collapse, mitigate sound transmission and cater for building movement/ thermal effects.
- The Event Centre consists of a 60 m span steel triangular shaped truss roof supported by RC columns as portal frame system.

COMMENDATION MERIT

Riverside 66, Tianjin, China

Mainland / Overseas Project

Winner: Ove Arup & Partners Hong Kong Limited

Client:	Hang Lung Properties Limited
Structural Engineer:	Ove Arup & Partners Hong Kong Limited
Building Services Engineer:	Parsons Brinckerhoff (Asia) Limited
Architect:	Kohn Pedersen Fox Associates
Project Architect:	P&T Architects & Engineers Limited
Main Contractor:	China Construction Eighth Engineering Division
Local Design Institute:	Tianjin Architecture Design Institute

Project Description

- Riverside 66's prominent shell-like carapace, which stretches over 375m, is one of the longest standalone structures in China
- Riverside 66 has redefined the connection between the adjacent He Hai River and the famous historic He Ping Lu pedestrian boulevard in Tianjin, also known as one of the "Top Ten Famous Commercial Streets in China"
- Skillfully integrated into the structure is the adjacent 100-year-old Zhejiang Xingye Bank building, creating a perfect fusion of the old and the new
- The mall offers 152,800m^2 of top-notch state-of-the-art retail facilities and shopping experience with 800 car park spaces.

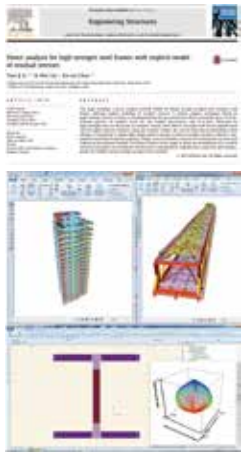
Project Features

- The 'super shell' is constructed from 22 7-storey high structural ribs each about 100m long with a unique geometry, and over 10,000 panels of glass.
- The iconic curved façade converges with the opposing south façade, forming a series of intentionally random "display boxes" yielding a 6-storey contemporary backdrop in contrast to the historic context of He Ping Lu.
- Double columns with opposing double structural ribs were used at seismic joints.
- At the centre of the mega-structure, the grand central atrium, with unrestrained column over 50m, offers an unobstructed view for the visitors.
- The receiving west atrium of the mall is a combination of architectural and structural effort in creating glazed steel enclosures standing over 35m tall, allowing visitors to engage the surrounding streets at every level

GRAND AWARD

Direct analysis for high-strength steel frames with explicit-model of residual stresses

R&D Award



Author(s):	Tian-ji LI, Si-wei LIU and Siu-lai CHAN
Publication Date of Paper:	26 June 2015
Published Journal(s):	Engineering Structures

Aims of the research / Paper abstract

The use of high-strength steel in construction is an upcoming trend. High-strength steel members are susceptible to buckling, which should be carefully checked in a successful design. As the conventional design assumes lumping of geometric and material imperfections to obtain the equivalent initial imperfection, its application to stability design of steel made of strength higher than the commonly used steel grades becomes difficult since these two imperfections are combined and cannot be measured separately. To this, the current research proposes a new and practical direct analysis method (DAM) for design of high-strength steel members allowing a more rigorous consideration and buckling design of steel members with independent considerations of the imperfections which are due to geometric crookedness and residual stresses. The method is modern and simulation-based, and can be applied to design of conventional steel structures made of lower grades of steel.

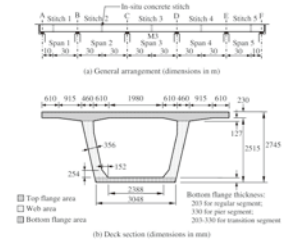
A brief on unusual features

1. A modern and simulation-based direct analysis method (DAM) is proposed for design of structures made of high-strength steel such as grade 690 or above.
2. The method independently considers member geometric and material imperfections in a straightforward manner.
3. Efficient numerical framework, adopting high-order beam-column elements, sophisticated inelastic models, the rigorous cross-section analysis method, etc., is especially developed for practical use of DAM.
4. Vital effects affecting the structural behaviors, e.g. imperfections, large-deflection effects, material yielding, etc., are directly simulated in the analysis.
5. A new inelastic model, called as plastic fiber hinge method, is proposed to simulate gradual yielding of a section.
6. Residual stress models for high-strength steel sections are discussed.
7. A rigorous cross-section analysis technique with an explicit reflection on residual stresses is proposed.
8. Computer program is accordingly developed for practical applications.
9. Extensive verifications are employed to show the feasibility and high accuracy.

COMMENDATION MERIT

Collapse mechanism and robustness of precast segmental bridges

R&D Award



(a) General arrangement (dimensions in m)

(b) Deck section (dimensions in mm)

Figure 1. Configuration of the bridge analysed: (a) general arrangement; and (b) deck section (not to scale).

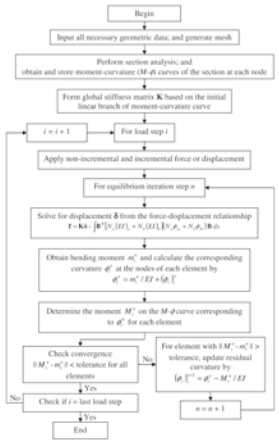


Figure 4. Flowchart of finite element analysis.

Author(s): Francis T.K. AU, Cliff C.Y. LEUNG and Albert K.H. KWAN
Publication Date of Paper: December 2014
Published Journal(s): Proceedings of the ICE – Bridge Engineering

Aims of the research / Paper abstract

In the construction of multi-span precast concrete segmental bridges, in-situ stitches are often cast to connect together adjacent cantilevers assembled from precast segments. Since the stitches are often lightly reinforced, the robustness of a segmental bridge could be adversely affected by the capability of the stitches to resist any large variations in moment during extreme events.

While most previous studies have focused on methods to measure robustness, there has been little systematic examination of the effects of strength and behaviour of structural components on robustness of structures. As prestressed concrete is relatively non-ductile, finite element analyses are carried out taking into account the full-range nonlinear moment-curvature relationship to examine the formation of plastic hinges and possible collapse mechanisms.

Three classes have been proposed for the evaluation of robustness, namely superb, adequate and inadequate. Recommendations to achieve good robustness are also put forward.

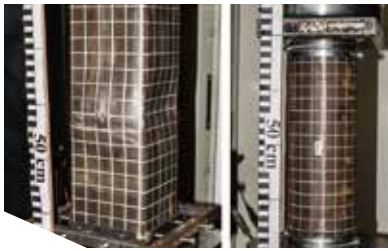
A brief on unusual features

- A novel approach is proposed to explore the robustness of segmental bridges during extreme events, such as a huge bolder falling onto a hillside viaduct, fire due to a tanker truck underneath the bridge, etc.
- A non-linear numerical method is proposed to investigate the collapse mechanism, which takes into account not only the full range behaviour of sections but also unloading phenomena at the post-peak stage.
- A methodology of classification of structural robustness is proposed.
- A practical method is put forward to improve robustness by nominal external tendons across in situ stitches.
- The method of adding external tendons across in situ stitches can be applied to existing precast segmental bridges judged to have insufficient robustness, thus helping to improve not only the strength but also sustainability of existing bridges.

COMMENDATION MERIT

Experimental investigation on stub-column behavior of cold-formed high-strength steel tubular sections

R&D Award



Author(s): Jia-lin MA, Tak-ming CHAN and Ben YOUNG
Publication Date of Paper: 29 December 2015
Published Journal(s): Journal of Structural Engineering, American Society of Civil Engineers (ASCE)

Aims of the research / Paper abstract

This paper presents the experimental investigation on the compressive behavior of cold-formed high-strength steel (HSS) tubular stub columns. In this paper, the nominal 0.2% proof stresses of the high-strength steel were 700, 900 and 1100 MPa. A total of 25 stub column tests on circular, rectangular, and square hollow structural sections (CHS, RHS, SHS) were conducted. Geometric imperfections and load-deformation histories were reported and assessed. The experimental results were compared against the design values calculated from the Australian, European, and North American codes, and the corresponding compactness criteria were also assessed. A finite-element model, which incorporated the varying material properties, was described, and the influence of geometric and material imperfections was also evaluated. The finite-element results successfully captured the experimental observations and can be adopted for future parametric studies.

A brief on unusual features

- High strength steel (HSS) is used more often than before in many civil engineering applications. Thus the experimental investigation on HSS is necessary.
- This paper presents the compressive behavior of cold-formed HSS tubular stub columns, which is the most common loading case in the engineering applications for tubular members.
- The great potential is clear for using HSS as a novel building material in the future. Their high strength-to-weight ratio can lead to lighter structural components and hence a smaller foundation. The decrease in resources consumption and the reduced transportation time can reduce the carbon footprint and support the sustainability agenda.
- Advanced finite element (FE) modelling methodology was adopted to incorporate the measured varying material properties and measured local geometric imperfections. FE results successfully captured test observations and can be exploited for future parametric studies.

AWARDS

Joint Structural Division (JSD) Awards 2015

JSD Awards are established to recognize the best Hong Kong candidates who scored the highest marks in the professional examinations including the HKIE Structural Examination and the Chartered Membership Examination of the IStructE.

Name of Examination	Name of Awardee
HKIE Structural Examination	Mr Wong Wai-lam
IStructE Examination	Mr LU Da-peng, Alex

Best Reporter Awards 2015

Best Reporter Awards were introduced in November 2005 to encourage participation in the events organized by the JSD; to promote interests in the respective themes of the events; and to promote report writing skills among members.

Date	Winner	Report Title
6 October 2015	Ir Mark MA Chun-hung	Hong Kong Velodrome
26 November 2015	Mr. CHEN Man-tai	Reflections on Eurocode 3 and Design of Elliptical Hollow Sections

Best Student Awards 2015

Sponsored by structural engineering firms in Hong Kong, Best Student Awards have been announced to commend our undergraduates who demonstrated excellent overall academic results and high level of competence in structural engineering.

Sponsor	University	Awardee
Atkins China Limited	The University of Hong Kong	Mr Cheung Yan-long
Siu Yin Wai & Associates Limited	The Hong Kong Polytechnic University	Mr Wong Kam-ying
AECOM Asia Company Limited	The Hong Kong University of Science and Technology	Ms WANG Xue-ying
T.K. Tsui – Gabriel Yu Limited	City University of Hong Kong	Mr Wong Hei-long

ISTRUCTE REPORT

Report by Chairman of the IStructE Sub-Committee (Hong Kong Division) 2015-2016 Session

It is my honour to serve our structural engineering community as Chairman of the IStructE Sub-Committee (Hong Kong Division). Council Members from Hong Kong include Ir Dr Eddie LAM, Ir Prof J S KUANG and Ir Ken NG. The Council Members and I have been serving as the link between the IStructE and the HKIE for the best interest of our members.

Reported below are major activities organized by the Sub-Committee in 2015-2016 Session.

▶ Chartered Membership Examination

A half-day seminar on IStructE Chartered Membership Examination was successfully held on 6 June 2015 with over 130 participants. The seminar addressed the basic techniques for preparing and taking the examination as well as updating the new examination format and the key dates.

Two Chartered Membership Examinations were held on 10 July 2015 and 8 January 2016 with 107 and 159 candidates, respectively. Candidates have a choice from five questions. New regulations are enforced in that electronic devices are prohibited during the examination.

Professional Review Interviews with 123 candidates were completed in late 2015.

ISTRUCTE REPORT

► Seminar and Conference

On 4 August 2015, the Gold Medalist, Mr Tristram CARFRAE, delivered his Gold Medal Address entitled "Designing with Computers" at the Chiang Chen Theatre of the Polytechnic University, as part of his world tour. The seminar attracted over 260 participants.

A team of Hong Kong delegates attended The IStructE's Global Conference in Singapore on 3-4 September 2015 and have contributed two presentations in the conference.

► Presidential Visit

The Presidential Visit was held on 2-4 November 2015. On 2 November 2015, the President Professor Tim IBELL delivered the President's Address and presented certificates to 29 new members; and the Chief Executive Martin POWELL reported the institutional news and highlights of the new Headquarters premises. On 3 November 2015, the President met post-graduate students and staff of the Department of Civil and Environmental Engineering of the Hong Kong Polytechnic University. Apart from meeting the President and the vice-Presidents of The Hong Kong Institution of Engineers, the President visited Arup Office and the Hong Kong Housing Authority.

Final Remarks

In addition to serving our members, the Sub-Committee has been working closely with the universities in Hong Kong. Through the combined efforts of our Student Liaison Officers from the universities, over 130 undergraduate students joined the Institution in 2015.

I would like to take this opportunity to thank the IStructE Sub-Committee and Committee Members of the Joint Structural Division for their devotion in organizing the various meaningful activities of the Hong Kong Division. In particular, I would like to express my deepest appreciation to all senior members who have conducted the Initial Professional Development Interviews and those who have assisted in the Chartered Membership Examinations.

Ir Prof Paul PANG
Chairman, IStructE Sub-Committee
6 May 2016

LIST OF CHAIRMEN

Session		Name of Chairman
1st	79/80	Ir TSUI Tack-kong
2nd	80/81	Ir Prof Fred NG Sai-ho
3rd	81/82	Ir Dr Raymond HO Chung-tai
4th	82/83	Ir Andrew NGAI Bick-yau
5th	83/84	Ir David George HOLMES
6th	84/85	Ir Brian POON Hon-yin
7th	85/86	Ir David CHAN Wing-keung
8th	86/87	Ir Barry John STUBBINGS
9th	87/88	Ir Dr LAW Kwok-sang
10th	88/89	Ir Patrick YIM Chun-nam
11th	89/90	Ir Dr Joseph CHOW Ming-kuen
12th	90/91	Ir Bruce Malcolm FOX
13th	91/92	Ir TSE Pak-kin
14th	92/93	Ir Ricky SO Yau-chi
15th	93/94	Ir Hugh WU Sai-him
16th	94/95	Ir Ignatuis LAU Yik-sum
17th	95/96	Ir WONG Chi-ming
18th	96/97	Ir CHEUNG Kwok-ming
19th	97/98	Ir Prof KO Jan-ming
20th	98/99	Ir Prof James LAU Chi-wang
21st	99/00	Ir Kenneth LAU Kwong-hon
22nd	00/01	Ir Prof Reuben CHU Pui-kwan
23rd	01/02	Ir Prof Paul PANG Tat-choi
24th	02/03	Ir Johnny FAN Siu-kay
25th	03/04	Ir Helen KWAN Po-jen
26th	04/05	Ir Joseph MAK Yiu-wing
27th	05/06	Ir Prof CHOY Kin-kuen
28th	06/07	Ir CHENG Yan-kee
29th	07/08	Ir KWAN Kin-kei
30th	08/09	Ir CHAN Siu-tack
31st	09/10	Ir LAU Chi-kin
32nd	10/11	Ir Dr KOON Chi-ming
33rd	11/12	Ir Dr Eddie LAM Siu-shu
34th	12/13	Ir Gabriel YU Lin-keung
35th	13/14	Ir Prof CHAN Siu-lai
36th	14/15	Ir Martin TSOI Wai-tong
37th	15/16	Ir Ken NG Kin-shing