

STRUCTURAL DIVISION

ANNUAL REPORT 2021 / 2022





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Committee Members

2021 / 2022

Ir Ben TSE Wai-keung

Chairman
BEN TSE & Associates Ltd.

Ir LAM King-kong

Immediate Past Chairman
Hospital Authority

Ir Albert TAM A-ray

Deputy Chairman
Buildings Department

Ir CHIN Sai-ping

Hon Secretary
Aurecon

Ir Kevin TANG

Hon Treasurer
Greg Wong & Associates Ltd.

Ir Jacky CHIONG Kam-yueng

Committee Member
Arup

Ir Hammus CHUI Wai-ming

Committee Member
Housing Department

Ir Patrick HOU Man-wai

Committee Member
Gammon Construction Limited

Ir Alvin LAI Ho-cheong

Committee Member
Buildings Department

Ir Dr Paul LAM Heung-fai

Committee Member
Department of Architecture and Civil Engineering,
City University of Hong Kong

Ir Alexis LEE Chi-chuen

Committee Member
Arup

Ir LIN Siu-man

Committee Member
West Kowloon Cultural District Authority

Ir Prof Daniel LO Sai-huen

Committee Member
Department of Civil Engineering,
The University of Hong Kong

Ir Dr Simon WONG Ho-fai

Committee Member
Department of Construction Technology and
Engineering,
The Technological and Higher Education Institute
of Hong Kong

Ir Simon WONG Kin-kwok

Committee Member
Architectural Services Department

Ir Jacky WONG Woon-ki

Committee Member
Aecom

Ir Jesse CHAN Hiu-tung

Committee Member
Arcadis

Ir Robert LAM Siu-hung

Committee Member
Sun Hung Kai Properties Ltd.

Ir Jenny LAU Ching-ling

Committee Member
Architectural Services Department

Ir Edward CHAN Sai-cheong

Ex-officio Member (Council Member (Division))

Ir Ken NG Kin-shing

Ex-officio Member (Discipline Representative)
Buildings Department

Mr Simon PANG Hin-lam

Ex-officio Member (AMC Representative)
Arcadis

Mr Vincent POON Wing-ho

Ex-officio Member (YMC Representative)
Paul Y. Engineering Group Limited

Ir Cela YIP Wing-kwan

Ex-officio Member (SSC Representative)
David S K Au & Associates Ltd.

Ir Daniel LEUNG Hung-wai

Co-opted Member
Housing Department

Ir Dr Ray SU Kai-leung

Co-opted Member
Department of Civil Engineering,
The University of Hong Kong

Ir Prof CHAN Siu-Lai

Observer
Department of Civil & Environmental Engineering,
The Hong Kong Polytechnic University

Ir Jimmy CHAN Tai-chi

Observer
Highways Department

Ir Prof DAI Jian-guo

Observer
Department of Civil & Environmental Engineering,
The Hong Kong Polytechnic University

Ir LAU Chi-kin

Observer
Sun Hung Kai Properties Ltd

Ir TSE Kam-leung

Observer (Training Committee Representative)
Architectural Services Department

Ir Prof Ben YOUNG

Observer
The Hong Kong Polytechnic University

Chairman's Report

Session 2021 / 2022



It is indeed my greatest honour to serve as the 43rd Chairman of the HKIE Structural Division for the Session 2021/22. Since elected as the Chairman, I have been most excited with the work of the Structural Division. 2021 was still a difficult year as the COVID-19 pandemic continued to take its toll on our daily lives, posing significant challenges to the people of Hong Kong, amongst others around the world. To conform to the Government's directives and COVID rules, we have inevitably made difficult decisions to suspend some of our signature events, such as the overseas Technical Visit, Structural Engineering Competition for Youth and Annual Visit, etc. Instead, we explored and grasped every opportunity to find alternatives for hosting our activities in other feasible ways, for instance the hybrid modes for the Annual Seminar and online technical webinars. We have also seized the window of opportunity to hold the Annual Dinner 2021.

Thanks to the collective efforts of all Committee Members, the Division has still managed to achieve another fruitful year during the pandemic. I would like to briefly report as follows-

Membership

As of the end of April 2022, the Structural Division has a membership of 6,030 of which 312 are Fellow Members and 4,554 are Corporate Members.

Committee Major Activities

With the concerted effort of Committee Members, the Structural Division has organized approximately 8 activities in this session including:

- Technical Webinars covering a wide range of topics
- Annual Dinner
- Annual Seminar
- Structural Excellence Awards

Major Events

Annual Dinner 2021 was successfully held on 19 November 2021 at Hong Kong Ocean Park Marriot Hotel, with a full house of 240 members and guests. We were privileged to have Dr David CHUNG Wai-keung, JP, Under Secretary for Innovation and Technology of Innovation and Technology Bureau as the Guest of Honour for the Annual Dinner.

Chairman's Report

Session 2021 / 2022

Structural Excellence Award 2022 as conducted in February 2022. Entries are categorised under Project Award and Research & Development Award. This year we are pleased to have 13 project submissions and 5 research paper submissions nominated for assessment. The Judging Panel, chaired by the Chairman of the HKIE Structural Division, composed of the President of the HKIE, directorate representatives from Architectural Services Department, Buildings Department, Housing Department and Highways Department of the HKSAR Government. This year we have also invited 3 renowned professors as our reviewers. The award winners were announced at the Division Annual Seminar on 18 May 2022.

Annual Seminar 2021, which was conducted in hybrid modes, i.e. both in-person and digitally, was held on 18 May 2022 with the theme “Application of Computation and Digitisation in Structural Engineering”. We were most delighted to have Ms YU Po Mei, Clarice, JP, Director of Buildings, Buildings Department as our Guest of Honour, who delivered a keynote speech at this major annual event. In the Annual Seminar, distinguished overseas and local speakers from academia to prominent practicing professionals shared their insights, experience and innovative ideas from recent researches in structural engineering and applications in construction projects. The Annual Seminar promoted innovation and new technologies to drive forward productivity, efficiency and enhanced project delivery outcomes in the construction industry. We have all together 250 participants joining the Annual Seminar, during which, we also announced the result of Structural Excellence Awards 2022.

Again, due to the COVID 19 and the respective pandemic restrictions, inevitably, we had made our difficult decision to cancel the **Technical Visit** and the **Best Reporter Awards 2022**. However, if the situation permits, we will earnestly consider resuming both of the events in the coming session.

Continuous Professional Development

The Division has played an important role in the development of the codes of practice for structural design in Hong Kong, and has published explanatory handbooks for the benefit of the structural engineering profession. We had issued a handbook for the Code of Practice for Structural Use of Steel and a handbook on the Code of Practice for Structural use of Glass. This year we had also updated the handbook on the Code of Practice for Structural use concrete to incorporate changes introduced in the 2020 edition. These handbooks had all been uploaded to the Website of the HKIE Structural Division for easy reference and use of members. In the meanwhile, we are preparing of a Handbook for the revised Code of Practice on the Wind Effects 2019. We do hope that our members will find these handbooks helpful for their daily work and professional development.

Instead of the traditional way in arranging technical meetings and seminars, during the pandemic, we have switched the arrangement and organized various seminars in the form of webinars with a view to providing support to members in the continuous professional development and experience sharing. In addition to those organized by our own, we have been ready at all times to collaborate with external institutions and bodies in conducting seminars, workshops and conferences for professional development whenever opportunities arise. Through these activities we continue to build strong links with external parties in promoting our profession in structural engineering.

Chairman's Report

Session 2021 / 2022

Serving the Community

We have been actively participating in serving the community throughout the year. Members are nominated to various Government committees, task forces and panels to render our professional advice to the Government in different aspects and at various stages of policy formulation, including the APSEC Discussion Forum of the Buildings Department, various standing technical committees on the drafting / review of local codes of practice of the Buildings Department, etc. Moreover, Committee Members 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.

The written examination of the HKIE Structural Examination was held on 1 December 2021 with 363 candidates. The interview part will take place in May - July 2022. Candidates passing the HKIE Structural Examination and professional assessment, and meeting the experience requirements will be eligible to become Corporate Member of the HKIE in the Structural Discipline.

The Structural Division will continue to put in place various activities and events for all parties ranging from practicing engineers, graduated engineers, university students to secondary school students with a view to enriching the expectation and experience of our members while facilitating more understanding of the youngsters about the work life of structural engineers so as to arouse their interest in becoming structural engineers.

Appreciation

The successful years in the past years are all attributed to the collective efforts from our past Chairpersons and Committee Members and, of course, to all members' participation and support. I would like to take this opportunity to thank all Committee Members of this session for their unceasing support and dedication to the Division in making 2021-22 another fruitful and successful year.

The Structural Division will continue to promote advancement of the structural engineering and to facilitate exchange of professional knowledge and experience amongst members. We look forward to receiving your active participation and continuous support to the Division.

Ir Ben TSE Wai-keung

Chairman of the HKIE Structural Division
Session 2021/2022

The HKIE Structural Examination

The HKIE Structural Examination consists of TWO parts: (a) written examination and (b) professional interview. Applicants 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 2021 was held on 1 December 2021 at the Asia World Expo. It consisted of two sections in the form of multiple-choice questions (one hour) and design questions (six hours). 363 candidates attended the written examination and 68 passed with a passing rate at about 18.7%. Examination results were announced in April 2022 and the professional interview will be held in May-July 2022.

Chairman of Examination Board

- Ir WONG Chi-ming

Chief Examiners of Design Questions

- Ir Prof CHAN Siu-lai
- Ir Alexis LEE Chi-chuen
- Ir Charles LUK Win-kit
- Ir NG Tim-yeung
- Ir Albert TAM A-ray

Chief Examiners of M.C. Questions

- Ir LAM King-kong
- Ir LAU Chi-kin
- Ir OH Yuk-choi
- Ir Dr SU Kai-leung
- Ir TSE Kam-leung
- Ir TSE Wai-keung

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







Ir Ken NG Kin-shing

Chairman of the HKIE Structural Discipline
30 May 2022

List of Marking Examiners

Ir AU YEUNG Hoi Pang	Ir LAI Wai Wah	Ir NGAI Wai Bun
Ir CHAN Bong Kwok	Ir LAM Chun Yin Kevin	Ir NIP Ho Yin Frankie
Ir CHAN Chi Cheong	Ir LAM Ming Fai	Ir PANG Ping Yiu
Ir CHAN Chi Kong	Ir LAM Nga Yan	Ir SETO Cheuk Ming
Ir CHAN Chi Ming Maverick	Ir LAM Pak Hung Jeremy	Ir SIU Koon Hoi Carmine
Ir Prof CHAN Chu Fai Edmond	Ir LAM Tsz Fung	Ir SO Kit Keung
Ir CHAN Chung Ming	Ir Dr LAU Chi Keung	Ir SO Wah Wai
Ir CHAN Kar Lock Eric	Ir LAU Chi Keung	Ir SO Yan Wing
Ir CHAN Ngai Tung	Ir LAU Chi Ming Albert	Ir SZE Wang Cho
Ir CHAN Sai Cheong Edward	Ir Dr LAU Chi Wang James	Ir TAI Chi Ho
Ir CHAN Siu Fai	Ir LAU Chi Yau William	Ir TAI Kwok Kuen
Ir CHAN Wah Chi Eddie	Ir LAU Man Ching Matthew	Ir TAM Hon Wing
Ir CHAN Wai Tong Tony	Ir Dr LAU Wing Hung Otto	Ir TAM Yun Lam Benson
Ir CHENG Kim Chung	Ir LAU Wing Yin	Ir TANG Chi Ho Calvin
Ir CHENG Koon Yuk	Ir LAW Yu Cheong	Ir TANG Wai Ming Raymond
Ir CHEUNG Ching Ting	Ir LEE Ping Kuen	Ir Peter TO
Ir CHEUNG Yiu Sun Wilson	Ir LEE Shih Ming	Ir TO Yui Kay
Ir CHIU Tze Ming	Ir LEE Shiu Ming	Ir TSANG Ping Fai Kelvin
Ir CHOW Kin Tak Alice	Ir LEE Sik Kwan Lawrence	Ir TSANG Sau Chung Paul
Ir CHOY Chun Chuen	Ir LEE Siu Tong	Ir TSE Chun Kei Godvin
Ir Prof CHOY Siu Chung Adam	Ir LEE Wan Cheung	Ir TSE Pak Kin
Ir CHU Wui Cheung	Ir LEE Yung Ling Christopher	Ir TSE Wing Chung
Ir CHUNG Lung To	Ir LEI Veng Kei	Ir WAI Sai Chong
Ir FUNG Ho Wing	Ir LEUNG Chi Hung Ben	Ir WONG Allan Wai Hoong
Ir FUNG Hoi Fai	Ir LEUNG Chi Wing	Ir WONG Chin To Louis
Ir Nicholas James William HENRY	Ir LEUNG Hung Kwong Derrick	Ir WONG Him Sun
Ir HO Chi Shun	Ir LEUNG Kin Kwong	Ir WONG Hon Wah
Ir HO Hon Kit Humphrey	Ir LEUNG Wai Bun	Ir WONG Kin Kwok Simon
Ir HO Ka Kit Kenith	Ir LEUNG Wan Cheong	Ir WONG Kin Yan
Ir HO Koon Ho	Ir LEUNG Yu Wah	Ir WONG Kong Loi
Ir HO Tak Hong Stephen	Ir LI Kwok Leung	Ir WONG Kwok Chuen Richard
Ir Dr HO Wai Ming Goman	Ir LING Wai Kit	Ir WONG Wai Hing
Ir HOU Ting Fun Stephen	Ir Dr LIU Chi Hong	Ir WONG Wing Keung
Ir HOWE Wing Chi David	Ir LIU Chi Kwun Albert	Ir WONG Woon Ki
Ir Dr HUI Ming Fong Lilian	Ir LIU Sik Wing	Ir WONG Yat Cheong
Ir David HUNG	Ir LIU Tai Chuen	Ir WONG Yau Keung
Ir IP Kwong Fat Nandi	Ir Dr LIU Yuk Shing	Ir WONG Yiu Wang Andes
Ir IP Wai Leung	Ir LO Man Chiu Raymond	Ir WOO Chun Kwok
Ir KONG Shui Sun	Ir LO Tak Fai	Ir WU Fung Sing
Ir Dr KOON Chi Ming	Ir LOKE Hing Wa	Ir WU Kwok Wai
Ir KU Kwai Yau	Ir LUI Charn Kwan Pierre	Ir WU Po Tak Alex
Ir KU Wai Ming	Ir LUK Man Kit	Ir YAP Kin Yung
Ir KUO Tung Ming	Ir MAK Kwok Shing	Ir YAU Hoi Ngan Alan
Ir KWAN Kai Sing	Ir MAK Ming Fai	Ir YAU Yiu Fong
Ir KWAN Kin Kei	Ir MAK Tsz Yee	Ir YEUNG Fei Jenny
Ir KWAN Po Jen Helen	Ir Prof Neil Colin MICKLEBOROUGH	Ir YIP Sik Kwong
Ir KWOK Chi Tak Philip	Ir MOK Chi Wah Martin	Ir YIP Wing Chung
Ir KWONG Shiu Kee Raymond	Ir MOK Hing Wah James	Ir YUEN Chi Hung Maurice
Ir LAI Ho Cheong	Ir NG Chun Chung James	
Ir LAI Hou Shun Otto	Ir NG Pak Cheong	

HKIE, Structural Division Technical Meetings & Visits 2021 - 2022

Date	Details	Speaker	
26 August 2021	Technical Webinar on "Introduction to structural reliability assessment in the Eurocode system"	Dr CHEUNG Sai Hung, Joseph	
4 November 2021	Technical Webinar on "The Structural Behaviour of RC Beam-Column Joints in Hong Kong"	Ir Dr WONG Ho Fai, Simon	
15 March 2022	Technical Webinar on "Resilient Urban Glass Design in Hong Kong Inspired by Post-typhoon Damage Studies"	Mr Neptune YU	
22 March 2022	Technical Webinar on "Briefing Session for Electronic SubmissionHub (ESH)"	ESH Team of Buildings Department	
21 April 2022	Technical Webinar on "Innovative Design of Modern Steel Structures by Direct Analysis - From Research to Application"	Dr LIU Siwei	
25 May 2022	Technical Webinar on "Effective design and construction of high strength S690 steel and their welding technology"	Prof KF CHUNG	

Annual Seminar 2022

The Annual Seminar 2022 was successfully held on 18 May 2022 at Meeting Room N201, Hong Kong Convention & Exhibition Centre. To cope with the unpredictable situation of Covid-19, this year our annual seminar was hosted in Hybrid format (Live and Virtual). The Seminar with the theme "Application of Computation and Digitisation in Structural Engineering", was overwhelmingly received with around 195 participants in total.

Ir Ben TSE Wai-keung, Chairman of the HKIE Structural Division (2021/2022), started the Annual Seminar with the Welcoming Speech. Keynote Speech was delivered by Guest of Honor Ms YU Po Mei, Clarice, JP, Director of Buildings, Buildings Department. Prominent local and overseas speakers shared their experiences, insights and ideas of innovation in recent researches in structural engineering and applications in construction projects.

Distinguished speakers included (in order of presentation): Prof Ahsan KAREEM, Mr Kevin SC WONG, Prof LI Hui, Mr Paul EVANS, Ir Sammy CHEUNG, Ir Dr YEUNG Kwok-wei, Ir Rayson WONG Wai-hung, Ir Prof CHAN Siu-lai.

Q&A sessions open to the floor were hosted by Ir Dr Paul LAM Heung-fai, Ir Prof CHAN Siu-lai and Ir Kevin TANG. The event was successfully concluded following the closing remarks by Ir Albert TAM A-ray, Chairman of the Organizing Committee of the Annual Seminar 2022.

Organizing Committee of Annual Seminar 2022

Chairman

Ir Albert TAM A-ray

Members

Ir Prof CHAN Siu-lai

Ir CHIN Sai-ping

Ir Kevin TANG

Ir Alexis LEE Chi-chuen

Ir LAU Chi-kin



Annual Dinner 2021

The Annual Dinner 2021 was successfully held on 19 November 2021 at Hong Kong Ocean Park Marriot Hotel, drawing attendance of 240 members and guests. The Annual Dinner 2021 is privileged to have Dr David CHUNG Wai-keung, JP, Under Secretary for Innovation and Technology of Innovation and Technology Bureau as the Guest of Honour.

Other distinguished guests included Ir Dr the Hon LO Wai-kiwok, GBS, MH, JP, Legislative Council Member (Engineering), Mr YU Tak-cheung, JP, Director of Buildings, Buildings Department, Ir Albert WB LEE, JP, Director of Civil Engineering and Development, Civil Engineering and Development Department, Mr CHAN Pai Ming, Jimmy, JP, Director of Highways, Highways Department, Ir Ken NG Kin-shing, Assistant Director /Mandatory Building Inspection, Buildings Department, Ir Sammy Cheung, Deputy Head of the Geotechnical Engineering Office (Island), Civil Engineering and Development Department, and Ir Edwin CHUNG Kwok-fai, President of HKIE.

Annual Dinner Organizing Committee 2021

Chairman

Ir Kevin TANG

Members

Ir Albert TAM A-ray

Ir LAU Chi-kin

Ir Prof CHAN Siu-lai

Ir Patrick HOU Man-wai

Ir CHIN Sai-ping



Structural Excellence Award

2022

The Structural Excellence Award comes to over 15 years since 2006. It aims to promote excellence in structural engineering demonstrated through the design and construction of buildings and structures completed in the last two years.

There are two categories of entries, namely Projects and Research & Development (R&D). To follow the Government guidance of keeping social distance, Organizing Committee has special arrangement this year. Jurors have given marks based on the submissions with no presentation required. On 19 February 2022, an assessment meeting has arranged for Jurors to have discussion and making final decision. Project Awards were decided with emphasis on Engineering Approach, Integration, Innovation / Creativity and Unusual Features, Buildability / Constructability / Safety, Energy Efficiency / Sustainability / Serviceability / Economy and Aesthetics. R&D Awards were selected to the importance to Engineering Application, Theoretical background, Innovation / Originality and Future Impact.

Starting from 2021, a YouTube channel has been created. Videos of all Grand Award projects will be posted there in order to raise public awareness of the Structural Excellence Award and increase exposure for all the Grand Award winners.

Videos for Structural Excellence Award 2022 will be posted soon. All members are welcome to subscribe the channel, like and share the videos by scanning below QR code.



YouTube Channel -
“HKIE Structural Excellence Award”

Structural Excellence Award

2022

GRAND AWARD

Hong Kong Projects

- Disciplined Services Quarters for the Fire Services Department at Pak Shing Kok, Tseung Kwan O (Category: Residential)
- HKSTP InnoCell (Category: Residential)
- M+ Museum of Visual Culture (Category: Non-Residential)
- Long Span Footbridge Connecting Hoi Ying Estate and Hoi Tat Estate (Category: Infrastructures & Footbridges)

Mainland / Overseas Project

- Suzhou Bay Cultural Centre (Category: Mainland / Oversea Project)

R&D Award

- Electromagnetic Shunt Damper for Bridge Cable Vibration Mitigation: Full-Scale Experimental Study

Members of the Judging Panel

Chairman

Ir Ben TSE Wai-keung

Members

Ir Edwin CHUNG Kwok-fai
Ir Jimmy CHAN Pai-ming, JP
Ir Ken NG Kin-shing, JP
Mr CHOY Chun-chuen
Ir Daniel LEUNG Hung-wai

Reviewer

Professor Dr Gang SHI
Ir Prof Francis TK AU
Professor Leroy GARDNER

Organizing Committee

Chairman

Ir Albert TAM A-ray

Members

Ir Prof CHAN Siu-lai
Ir Kevin TANG
Ir LAU Chi-kin
Ir CHIN Sai-ping
Ir Alexis LEE Chi-chuen
Ir Simon WONG Kin-kwok

Structural Excellence Award 2022

**Disciplined Services Quarters for the Fire Services
Department at Pak Shing Kok, Tseung Kwan O**

GRAND AWARD

Winner:
Yau Lee Construction Company Limited
Residential (Hong Kong)



Client: Fire Services Department & Architectural Services Department
Structural Engineer: Jacobs China Limited
Architect: Ho & Partners Architects Engineering & Development Consultant Limited

Project Description

This project is the first high-rise concrete MIC building in Hong Kong. It consists of 5 blocks with total 81 storeys. The typical floor of each block was constructed using 46 concrete modules to form 8 units. It provides 648 nos. 3-bedrooms, comprising 3,726 prefabricated modules.

Project Features

BEANIE platform is an integrated platform of monitoring the MIC process from Factory to Site. The visualization on progress tracking was enhanced through RFID and BIM technology. State-of-the-art blockchain technology ensured the data transactions are securely stored and not altered.

Structural Excellence Award 2022

HKSTP InnoCell

Winner:
WSP (Asia) Limited
Residential (Hong Kong)

GRAND AWARD



Client: Hong Kong Science and Technology Parks Corporation (HKSTP)
Architect: Leigh & Orange Limited
Main Contractor: Hip Hing Engineering Company Limited

Project Description

InnoCell is the first multi-storey Modular Integrated Construction (MiC) project using steel modules in Hong Kong as a pilot project, obtaining approval from the Buildings Department. The 17-storey smart-living dormitory, with a total GFA of 15,300 m², consists of 418 modules and provides four types of room.

Project Features

The engineering designs of InnoCell demonstrate the feasibility and sustainability of adopting MiC in Hong Kong. Compared to the traditional in-situ construction, the project shortened the overall construction programme by 40%, reduced construction wastage on site as well as achieved better quality with lower cost and in a safer environment.

Structural Excellence Award 2022

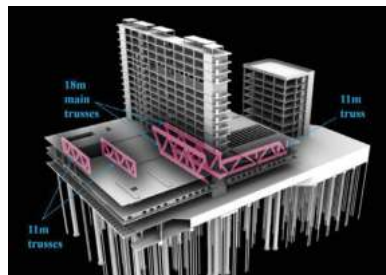
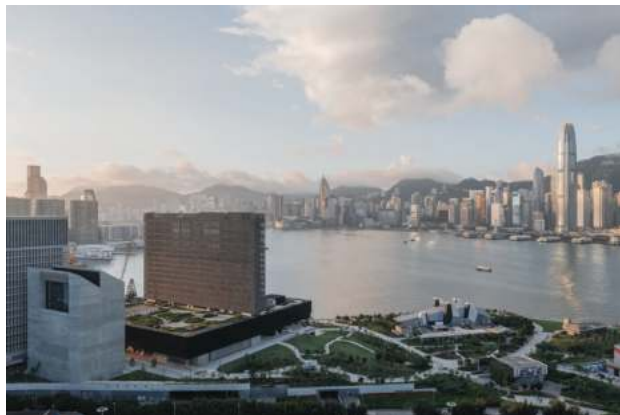
M+ Museum of Visual Culture

Winner:

Arup

Non-Residential (Hong Kong)

GRAND AWARD



Client:

West Kowloon Cultural District Authority

Structural Engineer:

Arup

Architect:

Herzog & de Meuron, TFP Farrells

Main Contractor:

Gammon Construction Limited,
Hsin Chong Construction Company Limited

Project Description

Located within Hong Kong's West Kowloon Cultural District, the M+ museum building is an iconic architectural landmark and is the first global museum of contemporary visual culture in Asia.

The development comprises the M+ Tower and M+ Podium, which accommodates the gallery and exhibition spaces; the CSF building; the WKCDA Tower; and the Integrated Basement, which links all 3 buildings together.

Project Features

The M+ building sits directly above tunnels for the MTR Airport Express and Tung Chung Line, which runs diagonally across the site. The tunnel is a ground bearing structure, which meant it could not support the building above. This led us to a structural solution involving 5 mega composite transfer trusses spanning over the tunnel, coupled with long span concrete elements filling in the spaces between them.

Structural Excellence Award 2022

Long Span Footbridge Connecting Hoi Ying Estate and Hoi Tat Estate

GRAND AWARD

Winner:

**Structural Engineering Section 1 of
Housing Department &
Yau Lee Construction Company Limited
Infrastructures & Footbridges (Hong Kong)**



Client:

Hong Kong Housing Authority

Structural Engineer:

Structural Engineering Section 1 of Housing Department and
Meinhardt Infrastructure and Environment Limited

Architect:

Architectural Section 3 of Housing Department

Project Description

The footbridge connecting Hoi Tat Estate and Hoi Ying Estate is 145m long with its main span about 111m across over West Kowloon Highway and Lin Cheung Road of totally 16 traffic lanes as well as three mass transit railway lines. It is the longest span footbridge in the public housing estates.

Project Features

An innovative construction method was adopted for the first time in Hong Kong to resolve the site constraints and minimise adverse impact to the traffic of major highways and railways underneath. The two halves of the main arches were erected vertically at the two public housing sites separately and then lowered simultaneously and connected in the mid-air in a single night.

Structural Excellence Award 2022

Suzhou Bay Cultural Centre

Winner:

Arup

Mainland / Overseas

GRAND AWARD



Client:

The Suzhou Wujiang City Investment Development Co., Ltd.

Structural Engineer:

Arup

Architect:

Christian de Portzamparc / 2Portzamparc

Main Contractor:

China Construction Third Engineering Bureau Limited

Project Description

Lying by the Taihu Lake and adjacent to the Taihu New Town CBD, Suzhou Bay Cultural Centre is the city's latest cultural, exhibition and convention destination. The mega development houses two iconic buildings – Suzhou Opera House and Wujiang Exhibition Centre – linked by the stunning double ribbons.

Project Features

The unique double ribbons symbolise silk water sleeves of the Kunqu Opera, serve as a bridge allowing pedestrian access to the fantastic views of the lake and the city. Its structure consists of a top ribbon with a span of 100m and a bottom ribbon stretching over 370m. Arup conducted rigorous computational analyses and used advanced digital tools to realise this complicated structure.

Structural Excellence Award 2022

Electromagnetic Shunt Damper for Bridge Cable Vibration Mitigation: Full-Scale Experimental Study

R&D Award

GRAND AWARD

Electromagnetic Shunt Damper for Bridge Cable Vibration Mitigation



LI, Jin-Yang
李錦陽



ZHU, Songye
朱松暉



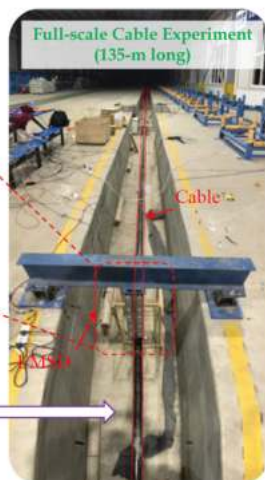
SHI, Xiang
石翔



SHEN, Wenai
沈文愛



Cable-stayed Bridge



Full-scale Cable Experiment
(135-m long)

Cable

ASCE

Company/Organisation:

Authors:

Publication Date of paper:

Published Journal:

The Hong Kong Polytechnic University

Jinyang LI, Songye ZHU, Xiang SHI, Wenai Shen

Jan 2020

Journal of Structural Engineering, ASCE

Project Description

In response to a common demand for effective bridge cable vibration control in Hong Kong and the Greater Bay Area, this project successfully proposes a novel electromagnetic shunt damper capable of excellent vibration control while possessing numerous additional advantages over traditional mechanical dampers.

Project Features

Compared with traditional mechanical dampers, the proposed electromagnetic shunt damper in this project is lighter and more compact, and it inherently prevents local overheating and fluid-leakage problems. Meanwhile, the design and maintenance of the proposed damper also becomes easier.

Structural Excellence Award 2022

COMMENDATION MERIT

URA Kwun Tong Town Centre Development (Areas 2 & 3) Grand Central

Winner:
AECOM Asia Company Limited
Residential (Hong Kong)



Client: Urban Renewal Authority / Sino Land Company Limited /
Chinese Estates Holdings Limited

Architect: Wong Tung Group

Main Contractor: CR Construction Company Limited

Project Description

URA Kwun Tong Town Centre Development (Areas 2 & 3) Grand Central is an iconic and diversified development, which comprises four residential blocks with 39-43 storeys, a shopping mall (Yue Man Square) with expansive lawn and also the largest covered Public Transport Interchange (PTI), paving a road to great success in the transforming new Kwun Tong.

Project Features

- Eco-friendly construction and planning with early implementation of BIM
- Creation of a sustainable, energy-efficient Green Community.
- Curved prefabricated steel footbridge with tailor-made curved steel box section & GRC cladding
- Preservation of the local characteristics by setting up Yue Man Lane and the Yue Man Hawker

Structural Excellence Award 2022

Lohas Park Package 7

Winner:

Arup

Residential (Hong Kong)

COMMENDATION
MERIT



Client:

Wheelock Properties Limited / MTR Corporation Limited

Structural Engineer:

Arup

Architect:

P&T Architects Limited

Main Contractor:

China Overseas Building Construction Limited

Project Description

Lohas Park 7 (LHP7) property development comprises two residential towers and retail podium "The LOHAS" located in the vicinity of the existing Lohas Park Station and Depot. The complicated interfaces with MTR's structures, surrounding developments, proposed residential towers and mall are well-coordinated to provide a convenient centerpiece for connectivity.

Project Features

Arup provided steel roofs in truss form and Vierendeel frames, post-tensioning reinforced concrete floors and extensive A&A works to overcome challenging constraints and site restraints including numerous interfaces with existing, on-going and future developments, limited working space and loading provision, sophisticated railway protection requirements, and complicated phasing for OP along with provision of steel-truss form pedestrian footbridges for enhancing the connectivity within the Lohas community.

Structural Excellence Award 2022

North Lantau Hospital - Hong Kong Infection Control Centre

COMMENDATION
MERIT

Winner:

**China State Construction International
Medical Industry Development Company Limited**
Non-Residential (Hong Kong)



Client:	Bureau of Public Works of Shenzhen Municipality, People's Republic of China
Structural Engineer:	China State Construction International Medical Industry Development Company Limited
Architect:	China State Construction International Medical Industry Development Company Limited
Main Contractor:	China State Construction Engineering (Hong Kong) Limited

Project Description

North Lantau Hospital-Hong Kong Infection Control Centre (HKICC), which is capable of providing 136 wards and 816 negative-pressure isolation beds within only 4 months, is a unique and unprecedented project funded by the Central Government to support the Hong Kong Special Administrative Region Government in fighting the COVID-19.

Project Features

As the first hospital in Hong Kong to adopt MiC method and the world's first infectious disease hospital with all-MiC negative-pressure isolation wards, the success of the design and construction of HKICC has set a benchmark and made a positive contribution to promoting the innovative development of the industry.

Structural Excellence Award 2022

Structural Preservation and Rehabilitation Works for Adaptive Re-use of the ex-Sham Shui Po Service Reservoir at Mission Hill

COMMENDATION
MERIT

Winner:
Binnies Hong Kong Limited
Heritage (Hong Kong)



Client: Water Supplies Department
Structural Engineer: Binnies Hong Kong Limited
Main Contractor: Wo Hing Construction Co., Limited

Project Description

The ex-Sham Shui Po Service Reservoir at Mission Hill (also known as Bishop Hill) is a century-old waterworks structure constructed in imitation of a Roman Civil Engineering style, completed with 108 stone pillars and well-preserved red brick arches. Structural preservation and temporary strengthening works including support of concrete roof slabs, brick arches and other structures have been undertaken in preparation for future rehabilitation and conservation.

Project Features

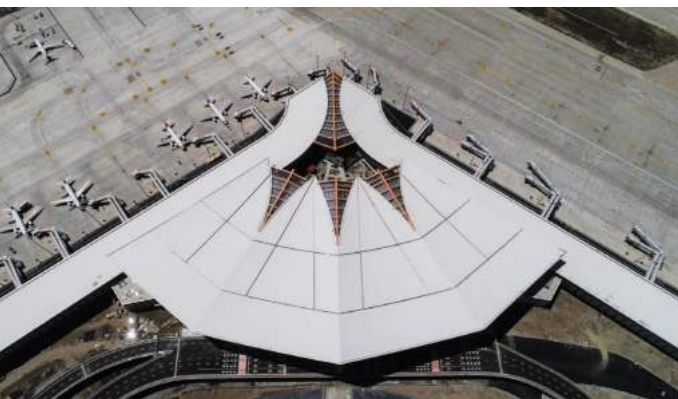
The design concept of the strengthening work explored the uniqueness of this century-old heritage structure, so the public could tour in the dramatic spaces and the play of light across the historic stone pillars and masonry arches, and experience the site's classic atmosphere.

Structural Excellence Award 2022

Lhasa Gonggar Airport Terminal 3

COMMENDATION
MERIT

Winner:
Arup
Mainland / Overseas



Client: Beijing Zhonghang Zhucheng Airport Construction Consultant Co., Ltd.
Structural Engineer: Arup
Architect: Beijing Zhonghang Zhucheng Airport Construction Consultant Co., Ltd.
Main Contractor: China Construction Eighth Engineering Division Co., Ltd.

Project Description

Sitting at 3,600m above sea level, Lhasa Gongga airport is one of the highest altitude airports in the world. Terminal 3 has a GFA of 88,000m², offering 40 check-in counters, 22 security checkpoints and 20 boarding gates. It is expected to serve nine million passengers per year by 2025.

Project Features

The new terminal building resembles a snow lotus – a symbol of Tibet. Multiple optimization techniques were adopted to ensure the economy of the design. Arup fully considered the extreme condition of high altitude and realized a modern terminal building in the Tibetan plateau.

Structural Excellence Award 2022

COMMENDATION MERIT

Tian An 1000 Trees

Winner:

Arup

Mainland / Overseas



Client:

Shanghai Kai Xuan Men Real Estate Co. Ltd

Structural Engineer:

Arup

Architect:

Heatherwick Studio

Main Contractor:

Shanghai Construction Group

Project Description

Lying alongside the Suzhou Creek and the M50 Moganshan Road Art District, Tian An 1000 Trees is a mega integrated project, envisioned to revitalise the heritage site of the Shanghai Flour Mills. Designed by architect Thomas Heatherwick, the two-stage development comprises a total above ground GFA of 300,000m².

Project Features

The '1000 Trees' shopping mall is covered with greenery cascading over each level to resemble a mountain, creating an iconic urban oasis in Shanghai. Arup has provided design and structural engineering services and offered structural solutions for the two-storey steel pedestrian bridge which connects the first and the second phase of the development.

Structural Excellence Award 2022

Field Measurement and Validation of Structural Dynamic Parameters of Skyscrapers Under Super Typhoon Excitation

COMMENDATION
MERIT

R&D Award

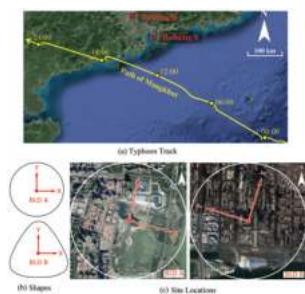


Fig. 1 Typhoon track and BLD Information

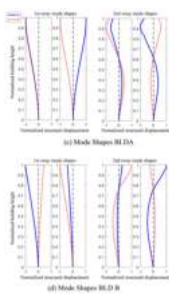


Fig. 2 Mode shapes

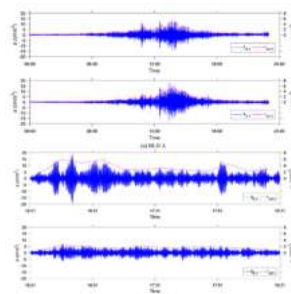


Fig. 3 Acc time history

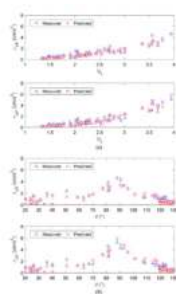


Fig. 4 Acc: predicted vs measured

Company/Organisation:

Arup

Authors:

Xiao LI, Xiaoye YU, Q.S. LI, Andrew ALLSOP

Publication Date of paper:

02 February 2021

Published Journal:

Journal of Civil Structural Health Monitoring

Project Description

The study analyzes the field measurement data of wind-excited vibration responses of two skyscrapers (393 and 432 m in height) during Super Typhoon Mangkhut (1822) and utilizes such measurement data to validate the design parameters adopted in both buildings. In this paper, the structural accelerations of the two monitored skyscrapers measured during Mangkhut are presented.

Project Features

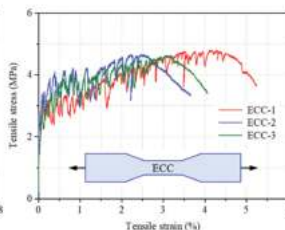
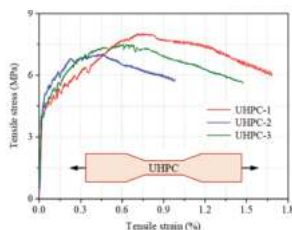
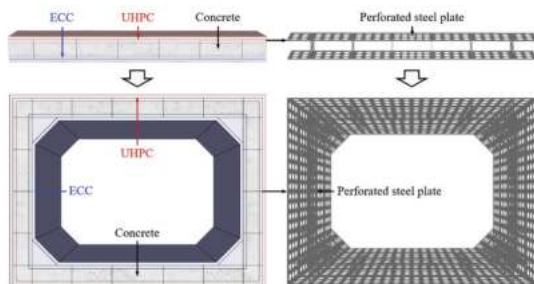
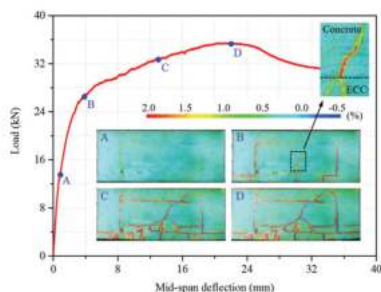
The study has

- Provided valuable structural behaviours and modal parameters of irregular skyscrapers under extreme winds;
- Smartly correlated inputs (spatial anemometers) and outputs (accelerations);
- Effectively eliminated beating effect, avoiding damping over-estimation;
- Revealed magnitude dependencies of frequencies and damping;
- Provided insightful comparison between field measurement and wind tunnel results.

Flexural Performance of UHPC-Concrete-ECC Composite Member Reinforced with Perforated Steel Plates

COMMENDATION
MERIT

R&D Award



Company/Organisation:

Authors:

The Hong Kong Polytechnic University

Bo-Tao HUANG, Jian-Guo DAI*, Ke-Fan WENG, Ji-Xiang ZHU,
Surendra P. SHAH

Publication Date of paper:

25 March 2021

Published Journal:

ASCE Journal of Structural Engineering

Project Description

A novel reinforced concrete structural member comprising ultra-high-performance concrete (UHPC) and engineered cementitious composite (ECC) was proposed for use in underground structures, such as prefabricated utility tunnels. The proposed composite UHPC-concrete-ECC member proved to exhibit excellent mechanical performance and durability due to the strategic use of UHPC and ECC.

Project Features

This study proposed an innovative and cost-effective solution for utilizing both UHPC and ECC materials for underground structures, in which UHPC and ECC are strategically used as the exterior and interior protective layers, respectively, and a perforated steel plate system is used to reinforce this three-layer composite structure.

Structural Excellence Award 2022

Townplace

FINALIST

Winner:
C M Wong & Associates Ltd
Residential (Hong Kong)



Client: Good Faith Properties Ltd
Structural Engineer: C M Wong & Associates Ltd
Architect: P&T Architects and Engineers Ltd
Main Contractor: Teamfield Building Contractors Ltd

Project Description

TOWNPLACE at 18 Caine Road is a residential development comprises a 101m 32-storey towers with two transfer plates at 2/F and 18/F. Partly located within Scheduled Area No. 1 with a maximum 7.5m height feature 11SW-B/R102 at the south and a site area of approximately 1600m².

Project Features

- Provision of two transfer plates at 2/F and 18/F to cater for different column and wall layouts at higher and lower floors.
- Provision of coupled shear walls and structural optimization to cater for the high building slenderness ratio and asymmetric building layout.

Structural Excellence Award 2022

Former French Mission Building

FINALIST

Winner:
APT Engineering Consultant Limited
Heritage (Hong Kong)



Client: Architectural Services Department, HKSAR
Architect: Design 2 (HK) Limited
Main Contractor: Hop Lee Builders Company Limited

Project Description

French Mission Building, a four-storey procurator's house was built in 1919. Owned by a non-British organisation, it found itself in the heart of the colony's religious, political, and commercial centre. The building was purchased by the HK Government in 1952, and was declared a monument in 1989. This project aims at adaptively reusing the building as offices and ancillary facilities for judicial organisations with key objectives to restore its legendary glory in 1919 while meeting the current statutory and user's requirements.

Project Features

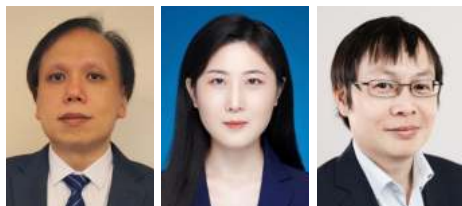
Project Features includes the provision of a thorough structural appraisal on the existing building to verify the existing loading provision, provision of new skylight, disabled lift and staircase.

Structural Excellence Award 2022

Seismic Behavior of Non-seismically Designed Eccentric Reinforced Concrete Beam-Column Joints

FINALIST

R&D AWARD



Company/Organisation:

Authors:

Technological and Higher Education Institute of Hong Kong (THEi)

LIU Ying, WONG Ho Fai Simon, ZHANG Hexin, KUANG, J.S.,

LEE Pok Man and KWONG Wing Hei

Publication Date of paper:

Published Journal:

December 2021

Earthquakes and Structures

Project Description

Non-seismically designed eccentric reinforced concrete beam-column joints were extensively used in existing RC frame buildings, which were found to be vulnerable to seismic action in many incidences. The study has shown that eccentricity had significant effects on the damage characteristics, shear strength, and displacement ductility of non-seismically designed beam-column joints.

Project Features

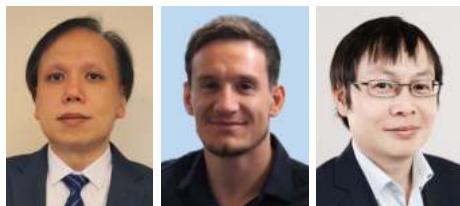
All the specimens tested in the study were designed according to Hong Kong code of practice of structural use of concrete and the results can be treated as one of the essential references when further revision of code of practice is required.

Structural Excellence Award 2022

Determining Equivalent-sectional Shear Modulus in Torsion Tests For Laminated Glass Beams Using Photogrammetry Method

FINALIST

R&D AWARD



Company/Organisation:

Authors:

Technological and Higher Education Institute of Hong Kong (THEi)
Uheida KAL, Deng YU, ZHANG Hexin, Galuppi LAURA,
GAO Jiaxiang, Xie LI, HUANG Shuge, QIN Xuanshen,
WONG Ho Fai Simon, GUO Jianwen, ZHANG Guangxin,
Mohamed AHMED

Publication Date of paper:

Published Journal:

August 2021
Composite Structures

Project Description

Structural glass beams are widely used in supporting floor and roof plates. The assessment of the structural response of laminated glass is complicated as polymer behaviour is viscoelastic and temperature dependent. This study proposed a concise concept for quantifying the shear/torsional stiffness of the laminated glass beams experimentally.

Project Features

In this study, the torsional behaviour of monolithic, polyvinyl butyral (PVB) and SentryGlas Plus (SGP) laminated structural glass beams were investigated experimentally. In order to obtain accurate measurements of torsional stress-strain deformations in each experiment, a non-contact, tailor-made photogrammetry method was applied.

Best Student Awards 2021

This award is sponsored by structural engineering firms in Hong Kong for commendation of universities undergraduates who have demonstrated excellent overall academic results and high level of competence in structural engineering.

Sponsor	University	Awardee
Gammon Construction Limited	The Hong Kong Polytechnic University	Mr Wong Chung Hui
Wong Pak Lam & Associates Consulting Engineers & Architects Ltd.	City University of Hong Kong	Ms Fok Hiu Yi
GYU Limited	The Hong Kong University of Science and Technology	Mr Tse Yiu Wing
C M Wong & Associates Ltd.	Technology and Higher Education Institute of Hong Kong	Mr Hung Tak Yiu
T.K. Tsui & Associates Ltd.	The University of Hong Kong	Mr Leung Jing Shang Gordon

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			43rd	21/22	Ir Ben TSE Wai-keung



