



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

# STRUCTURAL DIVISION

ANNUAL REPORT 2022/2023



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# Committee Members

## 2022/2023

### **Ir Albert TAM A-ray**

*Chairman*  
Buildings Department

### **Ir Ben TSE Wai-keung**

*Immediate Past Chairman*  
Ben Tse & Associates Limited

### **Ir Kevin TANG**

*Deputy Chairman*  
Greg Wong & Associates Limited

### **Ir CHIN Sai-ping**

*Hon Secretary*  
Aurecon Hong Kong Limited

### **Ir Dr Ray SU Kai-leung**

*Hon Treasurer*  
Department of Civil Engineering,  
The University of Hong Kong

### **Ir Jimmy CHAN Tai-chi**

*Committee Member*  
Highways Department

### **Ir Jacky CHIONG Kam-yueng**

*Committee Member & Ex-officio Member*  
(Chairman of the Structural Discipline  
Advisory Panel)

### **Ir Prof J G DAI Jian-guo**

*Committee Member*  
Department of Civil and  
Environmental Engineering,  
The Hong Kong Polytechnic University

### **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 Hong Kong Limited

### **Ir Daniel LEUNG Hung-wai**

*Committee Member*  
Housing Authority

### **Ir LIN Siu-mun**

*Committee Member*  
The Hong Kong Jockey Club

### **Ir Dr Simon WONG Ho-fai**

*Committee Member*  
Department of Construction Technology and  
Engineering,  
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 Asia Company Limited

### **Ir Jesse CHAN Hiu-tung**

*Committee Member*  
Asia Infrastructure Solutions Limited

### **Ir Robert LAM Siu-hong**

*Committee Member*  
Sun Hung Kai Properties Limited

### **Ir Daniel CHOI Yiu-chung**

*Committee Member*  
Buildings Department

### **Ir LAM King-kong**

*Ex-officio Member (Council Member - Division)*  
Hospital Authority

### **Mr Simon PANG Hin-lam**

*Ex-officio Member (AMC Representative)*  
Asia Infrastructure Solutions Limited

### **Ir Cela YIP Wing-kwan**

*Ex-officio Member (SSC Representative)*  
David S K Au & Associates Limited

### **Ms Carman LAM Ka-man**

*Ex-officio Member (YMC Representative)*  
Gammon Construction Limited

### **Ir Stanley CHAN Bong-kwok**

*Co-opted Member*  
C M Wong & Associates Limited

### **Ir KAN Chun-yuk**

*Co-opted Member*  
Architectural Services Department

### **Ir Edward CHAN Sai-cheong**

*HKIE Structural Division Spokesperson &  
Training Review Sub-committee*

### **Ir Prof CHAN Siu-lai**

*Observer*  
Nida Technology Co. Limited

### **Ir LAU Chi-kin**

*Observer*  
Sun Hung Kai Properties Limited

### **Ir Prof Daniel LO Sai-huen**

*Observer*  
Hong Kong Quantum AI Lab Limited

### **Ir Ken NG Kin-shing**

*Observer*  
Buildings Department

### **Ir TSE Kam-leung**

*Training Committee Representative*

### **Ir Prof Ben YOUNG**

*Observer*  
The Hong Kong Polytechnic University



# Chairman's Report

## Session 2022/2023



It is indeed my greatest honour to be the 44<sup>th</sup> Chairman of the HKIE Structural Division for the Session 2022/23. Since becoming the Chairman, I have been most excited with the work of the Structural Division. Despite 2022 was still a difficult year as the COVID-19 had kept affecting our daily life, the Structural Division has endeavoured our best efforts in managing to host all our major events successfully. Gratefully everything is now back to normal since early 2023.

Thanks to the collective efforts of all Committee Members, the Division still has achieved another fruitful year, and I would like to briefly report at below.

### Membership

As of end March 2023, the Structural Division has a membership of 5,920 of which 320 are Fellow Members and 4,550 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
- Annual Visit

### Major Events

**Annual Dinner 2022-23** was successfully held on 13 January at Island Shangri-la Hotel, with a full house of 296 members and guests. The Annual Dinner 2022-23 is privileged to have Mr. David LAM Chi-man, JP, Under Secretary for Development of Innovation and Technology Bureau as the Guest of Honour.

**Structural Excellence Award 2023** was conducted in February 2023. Entries are categorized under Project Award and Research & Development Award. This year we were pleased to have 13 project submissions and 5 research paper submissions selected for the 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 4 renowned professors as our reviewers.

# Chairman's Report

## Session 2022/2023

**Annual Seminar 2023**, which was conducted in hybrid modes, i.e. both physical and online arrangement, was held on 6 March 2023 with the theme “Sustainable Structural Design and Construction”. We were most delighted to have Mr. Victor TAI Sheung-shing, Under Secretary for Housing as our Guest of Honour, who had 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.

**Annual Visit 2023** to Hangzhou and Nanjing of Mainland China was held from 15 to 18 April 2023. We visited one of the major residential development project of Sun Hung Kai Properties Ltd. in Hangzhou, Southeast University in Nanjing as well as the under constructing new Nanjing Yangtze Bridge. This visit enlightened us with latest construction technology in Mainland China. In addition, we have established good relationship and explored possible collaboration opportunities with Southeast University.

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 2023**. However, if the situation permits, we will seriously consider resuming both 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. These handbooks had all been uploaded to the Website of the HKIE Structural Division for easy reference and use by members. In the meanwhile, this year we had also updated handbook on the Code of Practice for Structural use concrete to cope with the changes of 2020 edition, and 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 more 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 2022/2023

### 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 21 November 2022 with 328 candidates. The interview part will take place in May to July 2023. 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 unwavering support and dedication to the Division in making 2022-23 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 Albert TAM A-ray

Chairman of the HKIE Structural Division  
Session 2022/23

# Discipline Matters

## 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 2022 was held on 21 November 2022 at the Asia World Expo. It consisted of two sections in the form of multiple-choice questions (one hour) and design questions (six hours). 328 candidates attended the written examination and 68 passed with a passing rate at about 18.7%. Examination results were announced in late April 2023 and the professional interview will be held in May to July 2023.

## Chairman of Examination Board

- Ir CHAN Sai Cheong Edward

## Chief Examiners of Design Questions

- Ir Prof CHAN Siu Lai
- Ir LUK Win Kit Charles
- Ir TAM A Ray Albert
- Ir TANG Kevin
- Ir TSANG Sau Chung Paul
- Ir TSE Wai Keung

## Chief Examiners of M.C. Questions

- Ir LAM King Kong
- Ir LAU Chi Kin
- Ir LEE Chi Chuen Alexis
- Ir NG Tim Yeung
- Ir Dr SU Kai Leung
- Ir TSE Kam 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 SD Committee, for the dedicated efforts throughout.

## Ir CHIONG Kam Yueng Jacky

Chairman of the HKIE Structural Discipline  
April 2023






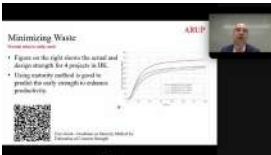
# Discipline Matters

## List of Marking Examiners

Ir CHAN Chi Kong  
Ir CHAN Tai Chi  
Ir CHAN Yiu Ming  
Ir CHIU Chung Lai  
Ir FONG Suk Wai  
Ir HO Hoo Yin Danny  
Ir HO Lam  
Ir HO Ka Kit Kenith  
Ir Dr HUI Ming Fong Lilian  
Ir KU Wai Ming  
Ir KWAN Kin Kei  
Ir KWAN Po Jen Helen  
Ir LAI Ho Cheong  
Ir LAI Hou Shun Otto  
Ir LAM Pak Hung Jeremy  
Ir LAM Ping Chuen Lysander  
Ir LAU Ching Ling  
Ir LEE Shiu Ming  
Ir LEUNG Wing Lok  
Ir LI Ka Yeung  
Ir LIN Siu Mun  
Ir LIU Sik Wing  
Ir LO Tak Fai  
Ir NG Pak Cheong  
Ir Dr NG Siu Leung Daniel  
Ir SO Wah Wai  
Ir TSANG Fan Wai  
Ir Dr WONG Ho Fai  
Ir WONG Wing Wah  
Ir WONG Woon Ki  
Ir WONG Yiu Wang Andes  
Ir YAU Hoi Ngan Alan

# Event Highlight

## HKIE Structural Division Technical Meetings & Visits 2022-2023

Date	Details	Speaker	
22 June 2022	Technical Webinar on: <b>“Effective design and construction of high strength S690 steel in engineering structures”</b>	Ir Prof. K.F. CHUNG & Ir Dr. H.C. HO	
9 December 2022	Technical Webinar on: <b>“Hong Kong Wind Code 2019 – Theory, Practice and Software”</b>	Dr. LIU Yao-Peng	
17 March 2023	Technical Webinar on: <b>“Briefing Session for Electronic Submission Hub (ESH)”</b>	ESH Team of Buildings Department	
30 March 2023	Technical Webinar on: <b>“The Role of Structural Engineer in Climate Change”</b>	Ir Dr Goman Ho	

# Annual Visit 2023

Annual Visit 2023 to Hangzhou and Nanjing of Mainland China was held from 15 to 18 April 2023. We visited one of the major residential development project of Sun Hung Kai Properties Ltd. in Hangzhou, Southeast University in Nanjing as well as the under constructing new Nanjing Yangtze Bridge. This visit enlightened us with latest construction technology in Mainland China. In addition, we have established good relationship and explored possible collaboration opportunities with Southeast University.



# Annual Seminar 2023

The Annual Seminar 2023 was successfully held on 6 March 2023 at Theatre Two, Hong Kong Convention & Exhibition Centre. This year our annual seminar was hosted in Hybrid format (Physical and Virtual). The Seminar with the theme “Sustainable Structural Design and Construction”, was overwhelmingly received with around 250 participants in total.

Ir Albert TAM A-ray, Chairman of the HKIE Structural Division (2022/2023), started the Annual Seminar with the Welcoming Speech. Keynote Speech was delivered by Guest of Honor Mr. Victor Tai Sheung-shing, Under Secretary for Housing, Housing Bureau. 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): Ir Rayson WONG Wai-hung, Prof K.F. CHUNG, Ir Elvin LAM, Dr Yanmin WU, Ir Prof Thomas NG, Ir Dr Ray SU Kai-leung, Prof Leroy GARDNER, Prof Ricardo MATEUS.

Q&A sessions open to the floor were hosted by Ir CHIN Sai-ping, Ir Stanley CHAN Bong-kwok and Ir Dr Paul LAM Heung-fai. The event was successfully concluded following the closing remarks by Ir Kevin TANG, Chairman of the Organizing Committee of the Annual Seminar 2023.

## Organizing Committee of Annual Seminar 2022

### Chairman

Ir Kevin TANG

### Members

Ir CHIN Sai-ping  
Ir Dr Ray SU Kai-leung  
Ir Alexis LEE Chi-chuen  
Ir Simon WONG Kin-kwok  
Ir Prof CHAN Siu-lai  
Ir LAU Chi-kin  
Ir Stanley CHAN Bong-kwok





# Annual Dinner 2022-23

The Annual Dinner 2022-23 was successfully held on 13 January at Island Shangri-la Hotel, drawing attendance of 296 members and guests. The Annual Dinner 2022-23 is privileged to have Mr. David LAM Chi-man, JP, Under Secretary for Development of Innovation and Technology Bureau as the Guest of Honour.

Other distinguished guests included Ir Dr the Hon LO Wai-kyok, GBS, MH, JP, Legislative Council Member (Engineering), Ms. YU Po Mei, Clarice, JP, Director of Buildings, Buildings Department, Mr. FONG Hok Shing, Michael, 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, Deputy Director of Buildings, Buildings Department, Mr. CHOY Chun-chuen, Assistant Director (Structural Engineering), Architectural Services Department and Ir Edwin CHUNG Kwok Fai, Immediate Past President of HKIE.

## Annual Dinner Organizing Committee 2022-23

### Chairman

Ir CHIN Sai-ping

### Members

Ir Ben TSE Wai-keung

Ir Kevin TANG

Ir Patrick HOU Man-wai

Ir Dr Ray SU Kai-leung





# Structural Excellence Award 2023

The Structural Excellence Award comes to over 10 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). On 25 February 2023, a project presentation has arranged and Jurors 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 2023 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"

## GRAND AWARD

### Hong Kong Projects

- **Admiralty Station New Extension** (Category: Infrastructures & Footbridges)
- **Artist Square Bridge** (Category: Infrastructures & Footbridges)
- **Cross Bay Link, Tseung Kwan O** (Category: Infrastructures & Footbridges)
- **Hong Kong Palace Museum** (Category: Non-Residential)

### Mainland / Overseas Project

**DJI Sky City** (Mainland / Overseas Project)

### R&D Award

**Practical model updating of the Ting Kau Bridge through the MCMC-based Bayesian algorithm utilizing measured modal parameters.**

## Members of the Judging Panel

### Chairman

Ir Albert TAM A-ray

### Reviewer

Professor LI Guo-qiang  
Professor Nelson LAM  
Ir Prof. Francis T.K. AU  
Ir Prof. Ben YOUNG

### Members

Ir Aaron BOK Kwok-ming  
Ir CHAN Pai Ming, Jimmy, JP  
Mr AU YEUNG Hoi-pang  
Mr CHOY Chun-chuen  
Ir Daniel Leung Hung Wai

## Organizing Committee

### Chairman

Ir Kevin TANG

### Members

Ir CHIN Sai-ping  
Ir Dr Ray SU Kai-leung  
Ir Alexis LEE Chi-chuen  
Ir Simon WONG Kin-kwok  
Ir Prof CHAN Siu-lai  
Ir LAU Chi-kin  
Ir Stanley CHAN Bong-kwok

# Structural Excellence Award 2023

New Admiralty Station, Hong Kong

**GRAND  
AWARD**

Winner:  
**Arup**

Infrastructures & Footbridges (Hong Kong)



**Client:** MTR Corporation Limited  
**Architect:** Arup  
**Main Contractor:** Kier Laing O'Rourke Kaden JV (SIL Phase)  
Build King (EAL Phase)

## Project Description

Located in the heart of Hong Kong, the Admiralty Station extension connects four existing railway lines, becoming the largest interchange station in the MTR network.

## Project Features

Arup adopted an innovative underpinning approach which allowed the construction team to excavate a depth of 45m and build three more platform levels underneath the existing station structure without affecting the normal services of the Island Line and Tsuen Wan Line.

# Structural Excellence Award 2023

## GRAND AWARD

### Artist Square Bridge

Winner:

Aurecon Hong Kong Ltd  
Gammon Construction Ltd  
West Kowloon Cultural District Authority  
Architecture Design and Research Group Ltd  
Infrastructures & Footbridges (Hong Kong)



**Client:** West Kowloon Cultural District Authority  
**Architect:** Architecture Design and Research Group Ltd  
**Main Contractor:** Gammon Construction Ltd

### Project Description

The WKCD Artist Square Bridge (ASB) is a key part of WKCD development improving accessibility while also acting as a landmark structure. With its completion, ASB provides a direct, 24-hour barrier-free connection between MTR Station and the Artist Square of WKCD, making WKCD easily accessible and integrated with the nearby transportation hub.

### Project Features

ASB is a compact yet technically challenging project. Located above the AEL tunnel and 9-lane of existing traffic, and surrounded by a busy construction site, the team implemented construction-driven engineering and developed a novel two-directional launching construction approach. The outcome is the reduced construction duration of 19 months from the original 25 months.



# Structural Excellence Award 2023

## GRAND AWARD

### Cross Bay Link, Tseung Kwan O

Winner:

Joint Application by Civil Engineering and  
Development Department,  
AECOM Asia Company Limited and  
China Road and Bridge Corporation  
Infrastructures & Footbridges (Hong Kong)



**Client:**

East Development Office, Civil Engineering and Development Department

**Architect:**

AECOM Asia Co. Ltd

**Main Contractor:**

China Road and Bridge Corporation

### Project Description

The Cross Bay Link is a 1.8 kilometre long new strategic road connecting Tseung Kwan O with the urban districts. It is the first multi-functional marine viaduct in Hong Kong comprising a carriageway, a cycle track and a footway.

### Project Features

The Cross Bay Link broke new grounds through various innovations including S690QL high strength structural steel, the float-over technology, whole-span lifting and erection, as well as modular construction techniques, greatly enhancing sustainability, works quality and safety.

# Structural Excellence Award 2023

Hong Kong Palace Museum

**GRAND  
AWARD**

Winner:  
**Arup**

Non-residential (Hong Kong)



**Client:** West Kowloon Cultural District Authority  
**Architect:** Rocco Design Architects Associates Limited  
**Main Contractor:** China State Construction Engineering (Hong Kong) Limited

## Project Description

Located at the western end of the West Kowloon Cultural District overlooking Hong Kong's iconic Victoria Harbour, the Hong Kong Palace Museum features an exhibition space of 7,800m<sup>2</sup> across nine galleries, displaying selected art pieces from the Palace Museum in Beijing and other fine objects from across the globe.

## Project Features

The museum's architectural design is a contemporary interpretation of classic Chinese visual and special aesthetics. The 'central axis' of the museum building extends vertically connecting different floors and three atriums stacked on top of each other, guiding visitors to move upwards while offering unobstructed views out through the south, east and west façades.



# Structural Excellence Award 2023

**GRAND  
AWARD**

**DJI Sky City, Shenzhen**

Winner:  
**Arup**

Mainland / Overseas



**Client:** SZ DJI Technology Co., Ltd.  
**Architect:** Foster + Partners  
**Main Contractor:** China Construction Fourth Engineering Division Corp.,Ltd.

## Project Description

Located in Nanshan District, Shenzhen's technology and innovation hub, the development comprises two towers of 213m and 195m tall connected by a floating bridge, providing a unique research and office environment as well as spaces for showcasing the company's latest drone technology.

## Project Features

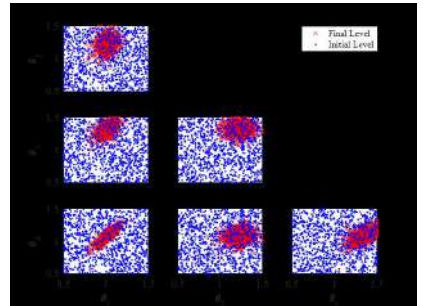
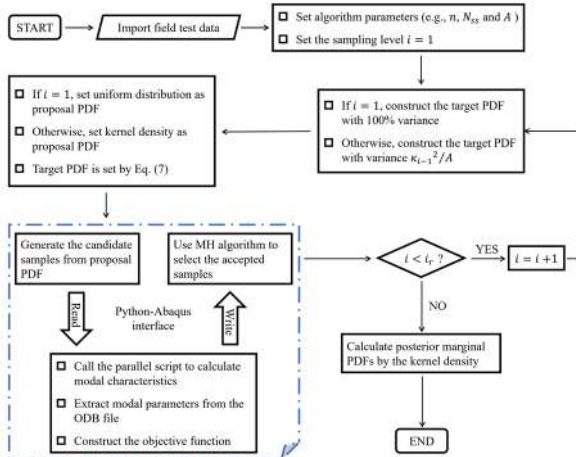
Arup structure design plays a key role in realising the radical architectural form and floating blocks. The building is equipped with a light structure relying on the core, the only structural element that goes all the way to the ground and basement. This allows the blocks to be hung with the floor plates suspended from the top diagonal elements tying the structure to the core.

# Structural Excellence Award 2023

## GRAND AWARD

Practical model updating of the Ting Kau Bridge  
through the MCMC-based Bayesian algorithm  
utilizing measured modal parameters

R&D Award



### Authors:

Chen Fang, Hong-Jun Liu, Heung-Fai Lam, Mujib Olamide Adeagbo, and Hua-Yi Peng

### Publication Date of paper:

March 1, 2022

### Published Journal:

Engineering Structures

### Project Description

A practical Bayesian inference framework through the Python–Abaqus interaction is proposed and applied to update the finite element (FE) model of the Ting Kau Bridge (TKB) in Hong Kong. Full-scale vehicular load tests were conducted for verification. The proposed framework contributes to the structural health monitoring of large-scale structures.

### Project Features

The proposed MCMC-based Bayesian model updating framework using Python–Abaqus interface is successfully applied to the updating of the three-tower cable-stayed TKB (1177 m). The accuracy of the updated model is verified through full-scale vehicular load tests. The proposed method has proved practical for application to large-scale infrastructures.

# Structural Excellence Award 2023

COMMENDATION  
**MERIT**

**AIRSIDE, Hong Kong**

Winner:  
**Arup**

Non-residential (Hong Kong)



**Client:** Rich Union Development Limited (wholly owned by Nan Fung Group)  
**Architect:** Snøhetta  
**Main Contractor:** Hip Hing Construction Co., Ltd

## Project Description

AIRSIDE is a flagship development in the Kai Tak area in Kowloon East, Hong Kong's next-generation CBD. With a height over 200m, the development is the new landmark in the area, providing over 1.9Mft<sup>2</sup> of GFA housing Grade A office space and retail space.

## Project Features

The two office towers are integrated with the retail podium to form a unified building profile featuring different sloping geometries and terraces. Coupled with the unique façades with varying glass curvatures, the design celebrates the textile industrial history of the developer – Nan Fung Group.



# Structural Excellence Award 2023

## COMMENDATION MERIT

Development of IE 2.0 Project C  
Advanced Manufacturing Center at  
Tseung Kwan O Industrial Estate, N.T.

Winner:  
**Meinhardt (C&S) Limited**  
Non-residential (Hong Kong)



**Client:** Hong Kong Science and Technology Parks Corporation  
**Architect:** Wong Tung & Partners Limited  
**Main Contractor:** Gammon Construction Limited

### Project Description

The Advanced Manufacturing Center is a multi-tenant industrial building to accommodate firms employing advance engineering technologies to produce, assemble and test products or related services. The high headroom, long clear-span, high loading capacity and vibration control provide an ideal space for advanced manufacturing ecosystem, bringing Hong Kong to Industry 4.0..

### Project Features

Precast double-tee concrete slabs were extensively used for the construction of the typical floors. This reduced the requirement of high formwork and falsework system, enhanced buildability, site safety and workmanship of construction, and reduced construction duration.

The adoption of 17m high glass walls at the building entrance offers excellent aesthetics.

# Structural Excellence Award 2023

COMMENDATION  
**MERIT**

Taipei Performing Arts Center

Winner:  
**Arup**

Mainland / Overseas



**Client:** Taipei Performing Arts Center  
**Architect:** OMA  
**Main Contractor:** International Engineering & Construction Co., Ltd

## Project Description

Taipei Performing Arts Center is a major new performing arts facility which is set to advance Taipei as an international arts capital.

## Project Features

The 58,000m<sup>2</sup> building features three theatres plugging into and cantilevering from a central Cube, allowing performing spaces to be combined for new theatrical possibilities. Innovative designs by Arup's structure, fire and sustainability teams were essential in realising the architect's dramatic vision.



# Structural Excellence Award 2023

COMMENDATION  
MERIT

Experimental investigation on axial compressive  
behaviour of novel FRP-ECC-HSC  
composite short column

R&D Award



without ECC ring

ECC ring thickness  
15 mm

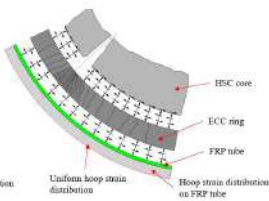
ECC ring thickness  
25 mm

Test setup

Specimen failure modes



Traditional FRP-confined HSC column



Novel FRP-ECC-HSC composite column



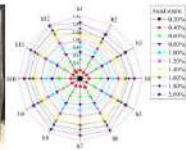
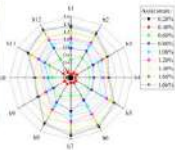
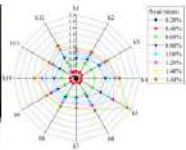
without ECC ring



ECC ring thickness: 15 mm



ECC ring thickness: 25 mm



Authors:

Publication Date of paper:

Published Journal:

Shuai Li, Tak-Ming Chan, Ben Young

28 September 2022

Composite Structures

## Project Description

A novel composite column, consisting of an outer fibre reinforced polymer (FRP) tube, an engineered cementitious composite (ECC) ring and an inner high strength concrete (HSC) core, has been proposed in this project. Compressive behaviour of the novel column was experimentally investigated through stub column tests.

## Project Features

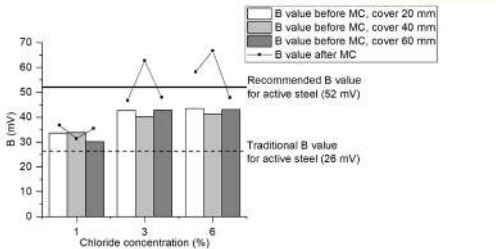
ECC ring is effective to redistribute the hoop strain from localised cracked HSC core to FRP tube, resulting in a uniform hoop strain distribution on the FRP tube. It avoids the premature failure of FRP tube and improves the FRP confining efficiency. The column ductility has also been enhanced.

# Structural Excellence Award 2023

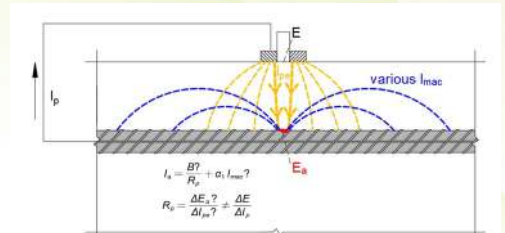
## COMMENDATION MERIT

On the corrosion rate measurement of  
reinforcing steel in chloride induced

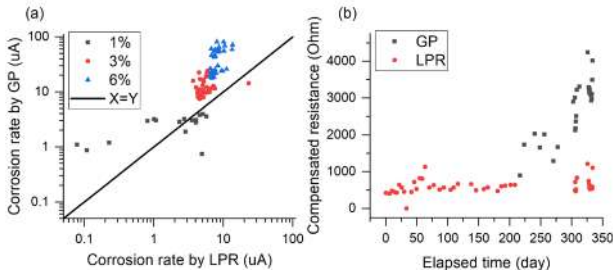
R&D Award



Picture 3. Measured B values before and after macrocell corrosion (MC)



Picture 1. Possible errors during corrosion rate measurement of chloride induced macrocell corrosion



Picture 2. Comparison of results by using GP and LPR. (a) Underestimation by using LPR and (b) successful compensation of diffusion resistance by using GP

**Authors:**

Lijie Chen, Ray Kai Leung Su

**Publication Date of paper:**

30 September 2022

**Published Journal:**

Cement and Concrete Composites

### Project Description

This project measures the corrosion rate of steel in RC under chloride-induced macrocell corrosion. Different techniques were used to evaluate corrosion rates in RC columns with different cover thicknesses, chloride concentrations and cathode over anode ratios. The applicability of traditional Stern-Geary equation on the macrocell corrosion was studied.

### Project Features

A novel Stern-Geary equation is proposed for quantifying the corrosion rate of chloride-induced macrocell corrosion. A novel source of error, diffusion resistance, is found to significantly affect the corrosion rate measurement of RC, which can be eliminated by galvanic polarization.

# Structural Excellence Award 2023

LP10

## FINALIST

Winner:  
**C M WONG & ASSOCIATES LTD**  
Residential (Hong Kong)



**Client:** MTR Corporation Ltd, Nam Fung Development Ltd  
**Architect:** DLN Architects Limited  
**Main Contractor:** China Overseas Building Construction Limited

### Project Description

The project at No. 1 Lohas Park Road is Phase 10 of the residential development of LOHAS comprising 2 residential towers of 48-52 storeys high resting on a 5 storey-podium.

### Project Features

To facilitate different layout design of tower from the original design and preserved loading from existing depot and foundation, “Double Transfer Plates” was adopted for the superstructure construction. The loading from tower is redirected so it does not exceeds the loading limit for depot columns under the new towers.

# Structural Excellence Award 2023

## FINALIST

**New Territories (Shatin) Forensic Medicine Centre  
(Reprovisioning of Fu Shan Public Mortuary at Sha Tin)**

Winner:  
**Architectural Services Department**  
Non-Residential (Hong Kong)



**Client:** Department of Health  
**Architect:** Architectural Services Department  
**Main Contractor:** Nishimatsu Construction Company Limited

### Project Description

HA Queen's Hill Site 1 is a pilot and iconic public housing development project in Northern Metropolis, which comprises 13 residential blocks, a Shopping Centre, a Public Transport Terminus, two Basement Carparks, three Kindergartens and a Government Community Building which create a self-contained community and accommodate a population of 24000.

### Project Features

- A pilot and iconic project of Northern Metropolis
- Meet the demand of public housing shortage
- Increase housing supply, greenery and public open space
- Build a self-contained community
- Pursue ecological conservation
- Preserve local and historical characteristics
- Foster cross-border interactions with the Mainland



# Structural Excellence Award 2023

## FINALIST

Public Rental Housing and Subsidized Sale Flats  
Development at Queen's Hill Site 1, Fanling

Winner:  
**AECOM Asia Company Limited**  
Residential (Hong Kong)



**Client:**

Hong Kong Housing Authority

**Architect:**

Wong & Ouyang (HK) Ltd.

**Main Contractor:**

Hip Hing Construction Ltd., Paul Y. Engineering,  
Yau Lee Construction Co. Ltd.

### Project Description

HA Queen's Hill Site 1 is a pilot and iconic public housing development project in Northern Metropolis, which comprises 13 residential blocks, a Shopping Centre, a Public Transport Terminus, two Basement Carparks, three Kindergartens and a Government Community Building which create a self-contained community and accommodate a population of 24000.

### Project Features

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- Increase housing supply, greenery and public open space
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- Pursue ecological conservation
- Preserve local and historical characteristics
- Foster cross-border interactions with the Mainland



# Structural Excellence Award 2023

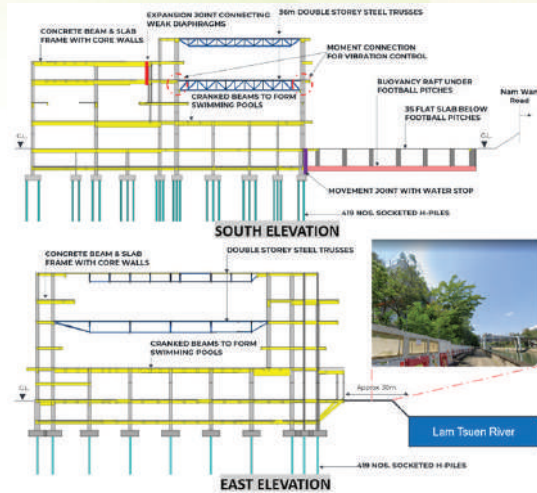
Tai Po Tung Cheong Street Leisure Building

**FINALIST**

Winner:

**WSP (Asia) Limited**

Non-Residential (Hong Kong)



**Client:** Architectural Services Department, The Government of the HKSAR  
**Architect:** DLN Architects Limited  
**Main Contractor:** Hanison Construction Holdings Limited

## Project Description

Situated on the riverbank of Lam Tsuen River, Tai Po Tung Cheong Street Leisure Building is a 5-storey multi-function development with two football pitches atop a basement car park. The building has a humble geometry that maximises the usable space and meets the demands for additional community facilities.

## Project Features

Tailored engineering design solution were adopted with fulfilment of functionality, safety, and buildability:

- Two-storey steel trusses creating open indoor spaces
- Moment connection adopted in steel truss of indoor sports hall for vibration control
- Movement joint separating piled main building & football pitch buoyancy raft
- Standardised flat slabs supporting football pitch

# Structural Excellence Award 2023

Ruihong Tiandi Hall of the Sun, Shanghai

**FINALIST**

Winner:  
**Arup**

Mainland / Overseas



**Client:**

Shanghai Rui Hong Xin Cheng Co., Ltd.

**Architect:**

ARQUITECTONICA (commercial podium)

Wong & Tung International Limited (office tower)

**Main Contractor:**

China Construction Third Engineering Bureau Ltd.

## Project Description

Located near the North Bund in Shanghai, the Hall of the Sun consists of two 33-storey tall towers, a 7-floor shopping complex and four levels of basement. The 180,000m<sup>2</sup> shopping complex features a 5,500m<sup>2</sup> skylight in the shape of three lotus leaves - the largest sky canopy in Shanghai.

## Project Features

Arup structural engineers contributed to the final design of the skylight form and introduced the concentric beams and consistent radii curved main beams which maximised the number of repetitive façade panels. This optimised scheme proved to be more practical, constructible and economical.

# Structural Excellence Award 2023

FINALIST

Adaptive resize-residual deep neural network for  
fault diagnosis of rotating machinery

R&D Award

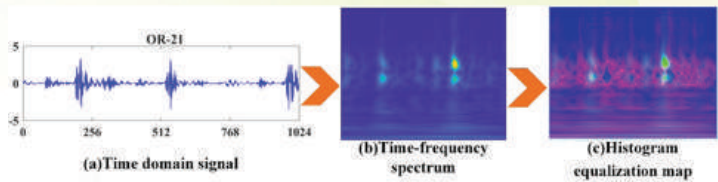


Figure 1. Data preprocessing

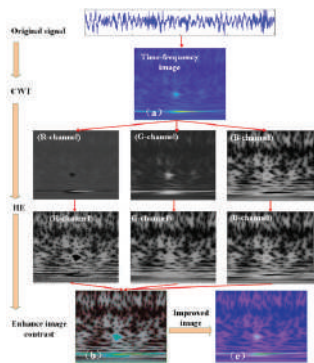


Figure 2. The enhanced time-frequency spectrum of vibration signal:  
(a) the time-frequency spectrum via. Continuous Wavelet Transform,  
(b) the time-frequency spectrum via. Histogram Equalization,  
(c) the improved time-frequency spectrum.

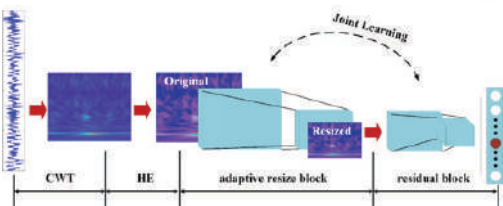


Figure 3. The framework of proposed  
fault diagnosis method

**Authors:** Li Zou, Heung-Fai Lam, Jun Hu  
**Publication Date of paper:** September 10, 2022  
**Published Journal:** Structural Health Monitoring

## Project Description

This study proposes a novel fault diagnosis method for reliable operation of rotating machinery. It utilizes adaptive resize-residual deep neural networks involving three steps: continuous wavelet transform, histogram equalization, and the adaptive resize-residual network. The experimental results demonstrate superior recognition accuracy of the proposed method over many state-of-the-art methods.

## Project Features

The proposed fault diagnosis method using CWT and HE for data preprocessing, adaptive resize network for resizing high-dimensional images, and residual network for pattern recognition. The processed B-channel data replaces the R-channel data to avoid noise signals. The proposed method outperforms state-of-the-art methods and is not limited by resolution.

# Structural Excellence Award 2023

## FINALIST

Effect of concentrated Butt-Joints on  
flexural properties of laminated Bamboo-  
Timber flitch beams

R&D Award



### Authors:

Hexin Zhang, Niaz Gharavi, Simon HF Wong, Yu Deng,  
Ali Bahadori-Jahromi, Suchart Limkatanyu, Yao Qiao and JS Kuang

**Publication Date of paper:** 2022

**Published Journal:** Journal of Sandwich Structures & Materials

### Project Description

This study performs experimental and analytical studies to investigate the effect of concentrated butt-joints on flexural properties of laminated bamboo-timber flitch beam. The experimental results reveal that the concentrated butt-joints significantly reduce the flexural strength of the beam and the analytical predictions are in good agreement with the experimental results.

### Project Features

Laminated Bamboo-Timber Flitch Beam is often manufactured with concentrated butt-joints to obtain longer and wider boards. A series of experiments were conducted to identify its potential impact on the mechanical properties of the beam. It has been shown that the bending strength of the beam can be reduced by around 60%.



# Awards

## Best Student Awards 2022

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
GYU Limited	The Hong Kong University of Science and Technology	Mr. KO Chin Long, Victor
T.K. Tsui & Associates Ltd.	The University of Hong Kong	Mr. CHAN Chak Kwan
AECOM Asia Company Limited	The Hong Kong Polytechnic University	Ms. WONG Po Wai
CM Wong & Associates Limited	City University of Hong Kong	Mr. NG Chun Yin
Sunnic Engineering Limited	Technology and Higher Education Institute of Hong Kong	Ms. LAM Muk Wai, Vivi

# List of Structural Division Chairmen

<b>Session</b>	<b>Name of Chairman</b>				
<b>1<sup>st</sup> 79/80</b>	Ir TSUI Tack-kong				
<b>2<sup>nd</sup> 80/81</b>	Ir Prof Fred NG Sai-ho				
<b>3<sup>rd</sup> 81/82</b>	Ir Dr Raymond HO Chung-tai	<b>23<sup>rd</sup> 01/02</b>	Ir Prof Paul PANG Tat-choi		
<b>4<sup>th</sup> 82/83</b>	Ir Andrew NGAI Bick-yau	<b>24<sup>th</sup> 02/03</b>	Ir Johnny FAN Siu-kay		
<b>5<sup>th</sup> 83/84</b>	Ir David George HOLMES	<b>25<sup>th</sup> 03/04</b>	Ir Helen KWAN Po-jen		
<b>6<sup>th</sup> 84/85</b>	Ir Brian POON Hon-yin	<b>26<sup>th</sup> 04/05</b>	Ir Joseph MAK Yiu-wing		
<b>7<sup>th</sup> 85/86</b>	Ir David CHAN Wing-keung	<b>27<sup>th</sup> 05/06</b>	Ir Prof CHOY Kin-kuen		
<b>8<sup>th</sup> 86/87</b>	Ir Barry John STUBBINGS	<b>28<sup>th</sup> 06/07</b>	Ir CHENG Yan-kee		
<b>9<sup>th</sup> 87/88</b>	Ir Dr LAW Kwok-sang	<b>29<sup>th</sup> 07/08</b>	Ir KWAN Kin-kei		
<b>10<sup>th</sup> 88/89</b>	Ir Patrick YIM Chun-nam	<b>30<sup>th</sup> 08/09</b>	Ir CHAN Siu-tack		
<b>11<sup>th</sup> 89/90</b>	Ir Dr Joseph CHOW Ming-kuen	<b>31<sup>st</sup> 09/10</b>	Ir LAU Chi-kin		
<b>12<sup>th</sup> 90/91</b>	Ir Bruce Malcolm FOX	<b>32<sup>nd</sup> 10/11</b>	Ir Dr KOON Chi-ming		
<b>13<sup>th</sup> 91/92</b>	Ir TSE Pak-kin	<b>33<sup>rd</sup> 11/12</b>	Ir Dr Eddie LAM Siu-shu		
<b>14<sup>th</sup> 92/93</b>	Ir Ricky SO Yau-chi	<b>34<sup>th</sup> 12/13</b>	Ir Gabriel YU Lin-keung		
<b>15<sup>th</sup> 93/94</b>	Ir Hugh WU Sai-him	<b>35<sup>th</sup> 13/14</b>	Ir Prof CHAN Siu-lai		
<b>16<sup>th</sup> 94/95</b>	Ir Ignatius LAU Yik-sum	<b>36<sup>th</sup> 14/15</b>	Ir Martin TSOI Wai-tong		
<b>17<sup>th</sup> 95/96</b>	Ir WONG Chi-ming	<b>37<sup>th</sup> 15/16</b>	Ir Ken NG Kin-shing		
<b>18<sup>th</sup> 96/97</b>	Ir CHEUNG Kwok-ming	<b>38<sup>th</sup> 16/17</b>	Ir LEUNG Kwok-tung		
<b>19<sup>th</sup> 97/98</b>	Ir Prof KO Jan-ming	<b>39<sup>th</sup> 17/18</b>	Ir Edward CHAN Sai-cheong		
<b>20<sup>th</sup> 98/99</b>	Ir Prof James LAU Chi-wang	<b>40<sup>th</sup> 18/19</b>	Ir TSE Kam-leung		
<b>21<sup>st</sup> 99/00</b>	Ir Kenneth Lau Kwong-hon	<b>41<sup>st</sup> 19/20</b>	Ir Prof Ben YOUNG		
<b>22<sup>nd</sup> 00/01</b>	Ir Prof Reuben CHU Pui-kwan	<b>42<sup>nd</sup> 20/21</b>	Ir LAM King-kong		
		<b>43<sup>rd</sup> 21/22</b>	Ir Ben TSE Wai-keung		
		<b>44<sup>th</sup> 22/23</b>	Ir Albert TAM A-ray		



