

STRUCTURAL DIVISION

ANNUAL REPORT
2023/2024



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Committee Members

2023/2024

Ir Kevin TANG

Chairman
Greg Wong & Associates Limited

Ir Albert TAM A-ray

Immediate Past Chairman
Buildings Department

Ir CHIN Sai-ping

Deputy Chairman
Asia Infrastructure Solutions Limited

Ir Dr Paul LAM Heung-fai

Hon Secretary
Department of
Architecture and Civil Engineering,
City University of Hong Kong

Ir Dr Ray SU Kai-leung

Hon Treasurer
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 LIN Siu-man

Committee Member
The Hong Kong Jockey Club

Ir Patrick HOU Man-wai

Committee Member
Gammon Construction Limited

Ir Alexis LEE Chi-chuen

Committee Member
Arup

Ir Alvin LAI Ho-cheong

Committee Member
Buildings Department

Ir Jacky WONG Woon-ki

Committee Member
AECOM

Ir Jimmy CHAN Tai-chi

Committee Member
Highways Department

Ir Prof J G DAI Jian-guo

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

Ir Stanley CHAN Bong-kwok

Committee Member
C M Wong & Associates Limited

Ir KAN Chun-yuk

Committee Member
Architectural Services Department

Ir Jesse CHAN Hiu-tung

Committee Member
Asia Infrastructure Solutions Limited

Ir Daniel CHOI Yiu-chung

Committee Member
Buildings Department

Ir Emma XIAO Xing-yue

Committee Member
Aurecon Hong Kong Limited

Ir Jacky CHIONG Kam-yueng

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

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-jwan

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 Victor CHAN Wai-tong

Co-opted Member
Buildings Department

Ir Rayson WONG Wai-hung

Co-opted Member
Housing Department

Ir Ben TSE Wai-keung

Observer (HKIE ST Spokesperson)
Ben Tse & Associates Limited

Ir LAU Chi-kin

Observer (HKIE ST Spokesperson)
Sun Hung Kai Properties Limited

Ir Ken NG Kin-shing

Observer

Ir Edward CHAN Sai-cheong

*Observer (HKIE ST Spokesperson &
Training Review Sub-Committee)*

Ir Prof CHAN Siu-lai

Observer
Nida Technology Co. Limited

Ir Prof Ben YOUNG

Observer
The Hong Kong Polytechnic University

Ir Prof ZHAO Xiao-lin

Observer
The Hong Kong Polytechnic University

Ir Dennis YUEN Yat-chung

Observer
SYW & Associates Limited

Ir Kylie LAM Nga-yan

Observer
Arup

Chairman's Report

Session 2023/24



It is indeed my greatest honour to be the 45th Chairman of the HKIE Structural Division for the Session 2023/24. Since becoming the Chairman, I have been most excited about the work of the Structural Division. Thanks to the collective efforts of the Committee Members, the Division has achieved another fruitful year, and I would like to briefly report as below.

Membership

As of end March 2024, the Structural Division has a total membership of 5,867 of which 4 are Hon Fellow Members, 330 are Fellow Members, 4,528 are Corporate Members and 1,005 are Non-Corporate Members.

Committee Major Activities

With the concerted effort of Committee Members, the Structural Division has organized approximately 13 activities in this session including:

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

Major Events

Annual Dinner 2024 was successfully held on 19 January at Hong Kong Ocean Park Marriott Hotel, with a 528 members and guests. The Annual Dinner 2024 is privileged to have Mr. LAM Sai-hung, GBS JP, Secretary for Transport and Logistics as the Guest of Honour.

Structural Excellence Award 2024 was conducted in February 2024. Entries are categorized under Project Award and Research & Development Award. This year we were pleased to have 17 project submissions and 4 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 on the research paper submissions. Each submission was assessed based on the submitted documents and presentation by the participants. The award winners will be announced at the Division Annual General Meeting on 10 May 2024.

Chairman's Report

Session 2023/24

Annual Visit 2024 to Tokyo Japan was held from 25 to 28 April 2024. We visited Tekken R&D Center, a recent development – Shimizu Corporation's Smart Innovation Ecosystem NOVARE, Japan Society of Civil Engineers (JSCE) and University of Tokyo. This visit broadened our knowledge with latest design and construction development in Japan. Furthermore, we have established good relationships and explored possible collaboration opportunities with JSCE and University of Tokyo.

Annual Seminar 2024, which was conducted in hybrid modes, i.e. both physical and online arrangement, was held on 3 May 2024 with the theme "Resilient Structures for Extreme Events". We were most delighted to have Ms Sandy SONG, Acting Director of the Hong Kong Observatory 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.

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. This year we had issued a handbook on Practical Guide to the Code of Practice on Wind Effects in Hong Kong 2019. All handbooks are uploaded to the Website of the HKIE Structural Division for easy reference and use of members. We do hope that our members will find these handbooks helpful for their daily work and professional development.

We have organized various technical meetings, seminars and site visits to help support members on continuous professional development. In addition to those organized by our own, we collaborated with external institutions and bodies in conducting seminars, workshops, conferences and technical visits for professional development. Through these activities we continue to build stronger links with external parties for promoting our profession.

Chairman's Report

Session 2023/24

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. Our division's Spokesman also provided prompt and professional response to the media and public on incidents and matters related to structural safety throughout this year. 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 28 November 2023 with 365 candidates. The interview part will take place in May - July 2024. 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 2023-24 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 Kevin TANG

Chairman of the HKIE Structural Division
Session 2023/24

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 2023 was held on 28 November 2023 at the Asia World Expo. It consisted of two sections in the form of multiple-choice questions (one hour) and design questions (six hours). 365 candidates attended the written examination and 127 passed Section 1 – (MC) with a passing rate at 67.9%. And 75 passed Section 2 – (DQ) with a passing rate at 20.5%. Examination results were announced in late April 2024 and the professional interview will be held in May-July 2024.

Chairman of Examination Board

- Ir CHAN Sai Cheong Edward

Chief Examiners of Design Questions

- Ir CHIN Sai Ping
- Ir TAM A Ray Albert
- Ir TANG Kevin
- Ir TSANG Sau Chung Paul
- Ir TSE Wai Keung

Chief Examiners of M.C. Questions

- Ir LAU Chi Kin
- Ir NG Tim Yeung
- 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 SD Committee, for the dedicated efforts throughout.

Ir CHIONG Kam Yueng Jacky

Chairman of the HKIE Structural Discipline
April 2024

Discipline Matters

List of Marking Examiners

Ir CHAN Bong Kwok
Ir CHAN Chi Kong
Ir CHEUNG Kwok Wai
Ir Prof CHOY Siu Chung Adam
Ir FONG Suk Wai
Ir HO Hoo Yin Danny
Ir HO Ka Kit Kenith
Ir HO Lam
Ir Dr HUI Ming Fong Lilian
Ir KU Kwai Yau
Ir KWAN Po Jen Helen
Ir LAI Ho Cheong
Ir LAI Hou Shun Otto
Ir LAM Pak Hung Jeremy
Ir LAU Bo Ki
Ir LAU Ching Ling
Ir LEE Shiu Ming
Ir LEUNG Wai Bun
Ir LEUNG Wing Lok
Ir LI Ka Yeung
Ir LIAUW Hak Ka
Ir LIU Sik Wing
Ir LO Tak Fai
Ir MOK Sat Sze
Ir NG Pak Cheong
Ir SO Wah Wai
Ir TAM Yun Lam Benson
Ir WONG Chiu Yeung
Ir Dr WONG Ho Fai
Ir WONG Hon Wah
Ir WONG Kwok Chuen Richard
Ir WONG Woon Ki
Ir WONG Yiu Wang Andes
Ir WU Fung Sing
Ir YAU Hoi Ngan Alan
Ir YUEN Chee Hang Alan
Ir YUEN Yat Chung

Event Highlight

Technical Meetings & Visits 2023 - 2024

Date	Details	Speaker
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15 November 2023

Technical Seminar on Bayesian model updating of long-span bridges utilizing measured modal parameters

Ir Prof LAM Heung-fai



30 November 2023

Technical Seminar on Design and Development of Artist Square Bridge

Dr Alecs CHONG



23 December 2023

Technical visit to LegCo Complex Expansion Project Mic Mock-up Site, Hong Kong



18 January 2024

Technical Seminar on A Base Isolated Theatre Complex: The Structural Design of Taipei Performing Arts Center

Chas POPE



25 January 2024

Technical Seminar on Residential Development at Lohas Park Package 10: The Structural Design of LP10

Ir MO Jiaxuan Leo



Event Highlight

Technical Meetings & Visits 2023 - 2024

Date	Details	Speaker
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27 January 2024

Technical visit to Construction site at Guangzhou South Station and South China University of Technology, Guangzhou, China



13 March 2024

Technical Seminar on Tai Po Tung Cheong Street Leisure Building

Ir Henry WONG and
Ir Dennis LEE



2 April 2024

Technical Seminar on Experimental Investigation on Axial Compressive Behavior of Novel FRP-ECC-HSC Composite Short Column

Dr Shuai LI



29 April 2024

Technical Seminar on Artificial Intelligence for Structural Engineering

Dr Jiaji WANG



Event Highlight Annual Visits 2024

Annual Visit 2024 to Tokyo Japan was held from 25 to 28 April 2024. We visited Tekken R&D Center, a recent development – Shimizu Corporation's Smart Innovation Ecosystem NOVARE, Japan Society of Civil Engineers (JSCE) and University of Tokyo. This visit broadened our knowledge with latest design and construction development in Japan. Furthermore, we have established good relationships and explored possible collaboration opportunities with JSCE and University of Tokyo.



Event Highlight Annual Seminar 2024

The Annual Seminar 2024 was successfully held on 3 May 2024 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 **"Resilient Structures for Extreme Events"** was overwhelmingly received with around 250 participants in total.

Ir Kevin TANG, Chairman of the HKIE Structural Division (2023/2024), started the Annual Seminar with the Welcoming Speech. Keynote Speech was delivered by Guest of Honor Ms Sandy SONG, Acting Director of the HK Observatory. 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 Alvin LAI, Prof WANG Chien-ming, Mr CHEUNG Pak Kin, Dr Neptune YU, Prof WU Yufei, Prof WU Bo, Prof Joseph CHEUNG, Prof TENG Jun.

Q&A sessions open to the floor were hosted by Ir Dr Paul LAM Heung-fai, Ir Stanley CHAN Bong-kwok, Ir Prof DAI Jian-guao. The event was successfully concluded following the closing remarks by Ir CHIN Sai-ping, Chairman of the Organizing Committee of the Annual Seminar 2024.

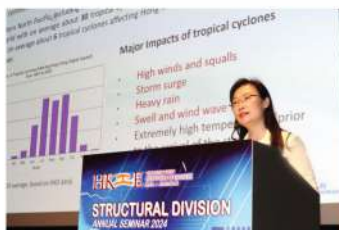
Organizing Committee of Annual Seminar 2024

Chairman

Ir CHIN Sai-ping

Members

Ir Dr Ray SU Kai-leung
Ir Alexis LEE Chi-chuen
Ir Prof CHAN Siu-lai
Ir Stanley CHAN Bong-kwok
Ir Ben TSE Wai-keung
Ir Dr Paul LAM Heung-fai
Ir Prof DAI Jian-guao
Ir Prof ZHAO Xiao-lin



Event Highlight Annual Dinner 2024

The Annual Dinner 2024 was successfully held on 19 January at Hong Kong Ocean Park Marriott Hotel, drawing attendance of 528 members and guests. The Annual Dinner 2024 is privileged to have Mr. LAM Sai-hung, GBS JP, Secretary for Transport and Logistics as the Guest of Honour.

Other distinguished guests included Ir Dr the Hon LO Wai-kiwok, 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 Franco CHEUNG, Director (Project) of Hong Kong Housing Society, Mr Alvin LAI Ho Cheong, Assistant Director/New Buildings of Buildings Department, Dr. CHEUNG Wai Man, Raymond, JP, Head of the Geotechnical Engineering Office & Dep Comr of Mines, Civil Engineering and Development Department, Mr KAN Chun Yuk, Chief Structural Engineer/1, Architectural Services Department.

Annual Dinner Organizing Committee 2024

Chairman

Ir Dr Ray SU Kai-leung

Members

Ir CHIN Sai-ping

Ir Ben TSE Wai-keung

Ir Patrick HOU Man-wai

Ir Dr Paul LAM Heung-fai

Ir Alexis LEE Chi-chuen

Ir Jacky WONG Woon-ki



Structural Excellence Award 2024

The Structural Excellence Award comes to over 17 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 24 February 2024, 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 2024 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 2024

This year, 4 Local projects, 2 Mainland/Overseas projects and 1 Research Paper won the Grand Award. Below is the winning list.

GRAND AWARD

Hong Kong Projects

- **11 SKIES** (Category: Non-Residential)
- **Cainiao Smart Gateway** (Category: Non-Residential)
- **Commercial Development at KTIL 240** (Category: Non-Residential)
- **Tseung Kwan O Interchange** (Category: Infrastructures & Footbridges)

Mainland / Overseas Projects

- **Shanghai Suhewan Mixc World** (Mainland / Overseas)
- **The Hong Kong University of Science and Technology (Guangzhou)** (Mainland / Overseas)

R&D Award

- **Assessment of out-of-plane structural defects using parallel laser line scanning system**

Members of the Judging Panel

Chairman

Ir Kevin TANG

Members

Ir Dr Barry LEE Chi-hong
Mr Richard NG Chin-hung
Ir Daniel LEUNG Hung Wai
Mr CHOY Chun-chuen
Ir Albert TAM A-ray

Reviewer

Prof Dilum FERNANDO
Dr QIAN Xudong
Prof Wei PAN
Ir Prof Ben YOUNG

Organizing Committee

Chairman

Ir CHIN Sai-ping

Members

Ir Dr Ray SU Kai-leung
Ir Alexis LEE Chi-chuen
Ir Ben TSE Wai-keung
Ir Prof CHAN Siu-lai
Ir Stanley CHAN Bong-kwok
Ir Dr Paul LAM Heung-fai
Ir Prof DAI Jian-guuo
Ir Prof ZHAO Xiao-lin

Structural Excellence Award 2024

GRAND AWARD

11 SKIES

Winner:
AECOM Asia Company Limited
Non-Residential (Hong Kong)



Client: New World Development Company Limited / Airport Authority,
Hong Kong International Airport
Architect: Lead8 ; Ronald Lu & Partners
Main Contractor: Hip Seng Builders Limited

Project Description

11 SKIES features Hong Kong's game-changing retailtainment and tourism landmark. The 3.8 million square-foot GFA complex comprised of office buildings covering over 570,000 sq ft, aims to function as a super-regional connector accessible by air, sea, and land, playing a key role in the future growth of the Greater Bay Area.

Project Features

Project features include a sculptured spiral staircase; a real 737 airplane inside the entertainment area; long span dome roof; three stories height vortex glass wall-skylight system. Extensive use of sophisticated CNC technology, dichroic paint, and sensor-controlled Sage Glass for glare and solar control in the Atrium Skylight have redefined building design.

Structural Excellence Award 2024

GRAND AWARD

Cainiao Smart Gateway

Winner:
WSP Hong Kong Limited
Non-Residential (Hong Kong)



Client: Hong Kong Cingleot Investment Management Limited
Architect: Aedas Limited
Main Contractor: Build King – ABLE JOINT VENTURE

Project Description

Located on the landside of the Hong Kong International Airport's (HKIA) South Cargo Precinct, Cainiao Smart Gateway has been developed as premium modern logistics centre with high specifications. The development aims at fulfilling the HKIA Cargo Development Strategy with two main logistics functions of air cargo (B2B) and e-commerce (B2C).

Project Features

Cainiao Smart Gateway spans 12 floors, reaching 118m and providing 380,000 sqm GFA. With high headroom and design bearing capacity, it allows for high-density shelving for goods storage. Featured AS/RS System, AGVs and conveyors, double-sided cargo platform, together with direct ramps on each floor, the centre significantly enhances logistics efficiency.

Structural Excellence Award 2024

GRAND AWARD

**Commercial Development at
98 How Ming Street, Kwun Tong**

Winner:

Arup

Non-Residential (Hong Kong)



Client: KT Real Estate Limited & Turbo Result Limited

Architect: AGC Design Limited

Main Contractor: Yee Fai Construction Co. Limited

Project Description

Located at 98 How Ming Street, the heart of the Kwun Tong in Hong Kong, the KTIL 240 project is a redevelopment of a former KMB bus depot. It marks the start of a new era for the district and could be a catalyst for rejuvenating a traditionally industrial area.

Project Features

The project features a two 20-storey tower office building on top of a 12-storey retail mall with a total GFA of 1.15 million ft². Its structural system was inspired by the curved and organic geometry of the tower, the podiums and the arrival experience at the atrium. Arup has tailored a number of structural solutions for this project, including the double top-down construction.

Structural Excellence Award 2024

**GRAND
AWARD**

**Tseung Kwan O – Lam Tin Tunnel:
Tseung Kwan O Interchange and Associated Works**

Winner:
Chun Wo Construction and Engineering Co. Limited
Aurecon Hong Kong Limited
Infrastructure and Footbridge (Hong Kong)



Client: Civil Engineering and Development Department
Architect: AECOM Asia Company Limited
Main Contractor: Chun Wo Construction and Engineering Co. Limited

Project Description

The Tseung Kwan O Interchange is a key part of the strategy road network between Kowloon and Tseung Kwan O. With the completion of the TKO marine viaduct, a new link will be formed between the TKO and East Kowloon Area to relieve the ongoing traffic congestion in this area for years to come.

Project Features

The TKO marine viaduct is a technically challenging project. Located in the marine area with no land access, the team implemented construction driven engineering by developing key innovative pile cap shell design and construction along with precast segmental bridge erection technique using light weight construction plant. The outcome is the project completion time being well within schedule.

Structural Excellence Award 2024

GRAND AWARD

Shanghai Suhewan Mixc World

Winner:

Arup

Mainland / Overseas



Client: China Resources Land Limited
Architect: Foster+Partners, Kokaistudios
Main Contractor: Shanghai Construction No.1&5 (Group) Co., Limited

Project Description

The project is a commercial complex of residential, retail, office and community space which located in the historic district north of Suzhou Creek. The combination of modern high-tech and old tradition, mixture of commerce and leisure, makes the development a hot spot in the city.

Project Features

The architectural features of the tower posed challenges to structural design, including height limitations, torsional effects due to asymmetrical floor plans, and partially eccentric beam-column joints. Arup coordinated closely with the architect and mechanical and electrical consultants to employ effective measures, ensuring the feasibility and seismic performance of the structural system.

Structural Excellence Award 2024

GRAND AWARD

**The Hong Kong University of
Science and Technology (Guangzhou)**

Winner:

Arup

Mainland / Overseas



Client: The Hong Kong University of Science and Technology
Architect: Kohn Pedersen Fox Associates
Main Contractor: China Railway Guangzhou Engineering Group & China Railway First Group

Project Description

With a total site area of 1.13 km², the HKUST Guangzhou Campus is located in Nansha, Guangzhou. Encompassing a full range of facilities designed to spark collaborations, innovations and a sense of community, the campus including spaces for teaching and research, sports, dormitory, 24-hour library and energy and data centres.

Project Features

The campus marries nature with technology in the local urban context, targeting carbon neutrality and zero water waste. In collaboration with KPF, Arup designed a campus that is engineering provision-ready for carbon neutrality during its operations. Our design emphasises synergy and efficiency while maximising upfront and operational cost-effectiveness across the campus.

Structural Excellence Award 2024

GRAND AWARD

Assessment of out-of-plane structural defects using parallel laser line scanning system

R&D Award

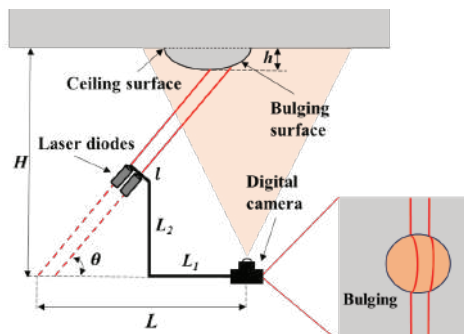


Figure (1)

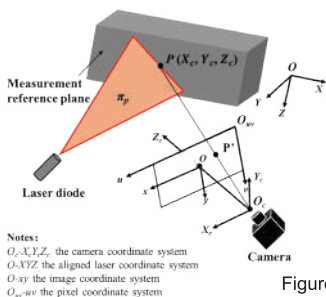


Figure (2)

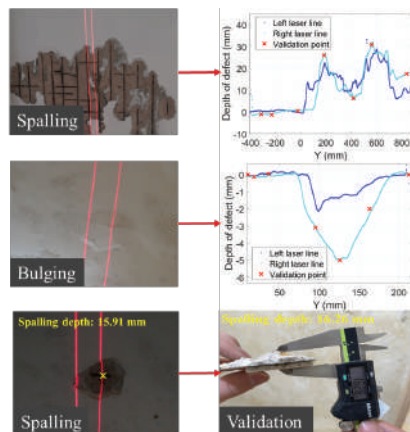


Figure (3)

Authors:

Ir Dr Ray KL Su, Chaobin Li, Xiao Pan

Publication Date of Paper: 24 September 2023

Computer-aided Civil and Infrastructure Engineering

Published Journal::

Project Description

Reinforced concrete structures in Hong Kong face deterioration problems over time. This project introduces a precise laser scanning system that can accurately assess out-of-plane defects such as the depth of bulging and spalling, providing critical quantitative data for structural evaluations.

Project Features

- (1) Single-shot, efficient, and accurate surface profiling analysis, enabling tiny bulge measurements, surpassing the capabilities of other existing methods.
- (2) User-friendly and cost-effective design.
- (3) Versatile of multiple uses like quantifying concrete damage, measuring crack width, evaluating loose bolts, and identifying road potholes.

Structural Excellence Award 2024

COMMENDATION MERIT

22A Kennedy Road (Union Church)

Winner:

**C M Wong & Associates Limited &
Goldwave Steel Structure Engineering Limited**
Non-Residential (Hong Kong)



Client: Union Church
Architect: Lu Tang Lai Architects Limited (Project AP), KplusK Associates (Design Architects)
Main Contractor: Wecon Construction & Engineering Limited

Project Description

Union Church is a Christian group founded in 1844. The church was relocated to the current site in 1890 and severely damaged during World War II which was then rebuilt as the 4th generation in 1949. In 2014, an agreement has been reached between Union Church and Henderson Group to redevelop comprising a church and residential unit.

Project Features

The Church is constructed with a structural steel frame featuring 5 pairs of vaulting columns in the "New Gothic" style. Wide accommodation can also be provided on the top of each Gothic Vaulting column for the connection of two arches and one inclined straight column which are tied together by horizontal ties to form a rigid and robust frame.

Structural Excellence Award 2024

COMMENDATION MERIT

83 Wing Hong Street Commercial Development

Winner:
**New World Development Company Limited &
AECOM Asia Company Limited**
Non-Residential (Hong Kong)



Client: New World Development Company Limited
Architect: Wong & Ouyang (HK) Limited
Main Contractor: Hip Seng Construction Company Limited

Project Description

The 27 storeys Commercial Development faced numerous site constraints and were overcome with innovative construction methodologies and phasing. Major constraints include a public passageway cutting across the site to be maintained throughout construction, and deferred site possession of an area at the middle of the site.

Project Features

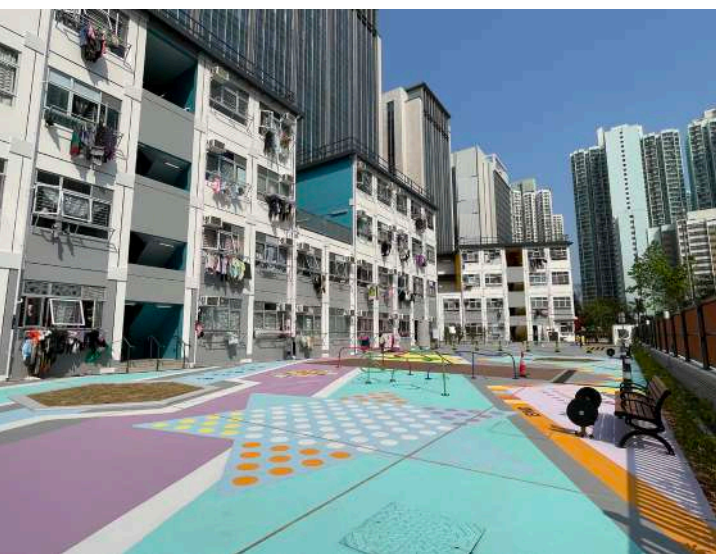
The single tower building was divided into two construction portions to allow early commencement where site possession was possible at project commencement. The public passageway was maintained by innovative staging and cantilever structure mounted to the side of the superstructure once completed instead of extensive steel works from ground to basement.

Structural Excellence Award 2024

COMMENDATION MERIT

Design and Build of Ying Wa Module Community Transitional Social Housing Project at Ying Wa Street, Sham Shui Po, Kowloon

Winner:
Yau Lee Construction Co. Limited & Jacobs China Limited
Residential (Hong Kong)



Client: Society for Community Organization
Architect: Thomas Chow Architects Limited
Main Contractor: Yau Lee Construction Co. Limited

Project Description

This project adopted demountable “Modular Integrated Construction” (MiC) method for construction of 2 nos. blocks of 4-storey height transitional housing buildings. The buildings are designed for demountable reinforced concrete (RC) MiC modules to allow flexibility for relocation of the building to other building area.

Project Features

The building blocks were designed with MiC modules connected by bolt and nut demountable method including the corridors slab & steel frame and roof slab. These structural elements including 85% by concrete volume concrete are pre-fabricated in off-site factory and can be demounted, reused and re-assembled at other building area.

Structural Excellence Award 2024

COMMENDATION MERIT

Kwu Tung North Multi-welfare Services Complex

Winner:
Shui On Joint Venture
Non-Residential (Hong Kong)



Client: Architectural Services Department
Architect: P&T Architects Limited
Main Contractor: Shui On Joint Venture

Project Description

Located in the Area 29 of Kwu Tung North New development Area, the project was completed in December 2022 covering approximately site area of 10,300m² and GFA of 44,000m². This 8-storey Multi-Welfare Service Complex (MWSC) is a purpose-built Residential Care Homes for the Elderly (RCHE) and providing additional elderly and rehabilitation services places for other eligible service users by using MiC Construction.

Project Features

The MWSC adopted numerous advanced technologies achieved efficiently sustainable design and construction, including Modular Integrated Construction (MiC) technology and Multi-trade Integrated MEP (MiMEP) which substantially reduced construction wastes. The first to introduce the 64Tons heaviest capacity tower crane in the Hong Kong obviously enhanced the implement of MiC construction and Battery-supported "Entertainers" with zero carbon emission were introduced to replace diesel generators provided power during construction.

Structural Excellence Award 2024

COMMENDATION MERIT

Residential Development at 10 Muk Tai Street, Kai Tak, Kowloon Monaco One & Monaco Marine

Winner:

C M Wong & Associates Limited

Residential (Hong Kong)



Client: Wheelock Properties (Hong Kong) Limited

Architect: Wong Tung & Partners Limited

Main Contractor: Gammon Construction Limited

Hip Hing Construction Co. Limited (Pile Cap Modification Contractor)

Project Description

In 2019, Wheelock Properties acquired a development site in Kai Tak, which included as-constructed foundation and pile caps, and developed the site into residential projects, namely Monaco One and Monaco Marine. Despite the significant change in building layout made by the project Architect, we effectively utilized the as-constructed foundation by making minor modifications to the pile caps. These approaches minimise construction difficulties and lower construction costs.

Project Features

To incorporate the as-constructed foundation, we strategically shifted the load centre through refinements in the framing plan. Comprehensive wind tunnel tests accurately determined the realistic wind loads for thorough foundation evaluation. As a result, we successfully adapted all as-constructed foundations with minor modifications to the pile caps, overcoming construction challenges, reducing time and costs, and ensuring safety and sustainable development.

Structural Excellence Award 2024

COMMENDATION MERIT

**Proposed Redevelopment at
32B Shantung Street, Mongkok
(Building Name: ONE SOHO)**

Winner:
Aurecon Hong Kong Limited
Residential (Hong Kong)



Client: Sino Group / Urban Renewal Authority
Architect: P&T Architects and Engineers Limited
Main Contractor: Chevalier (Construction) Company Limited

Project Description

One Soho is a residential development developed by Sino. It offers around 322 residential units, 1 storey of clubhouse, 3 storeys of shops and 1 storey of carpark involving 2 levels of Basement. The project had been awarded with Grand award under new building categories in Green Building Award 2023.

Project Features

The Structural elements (beams, columns & walls) were minimized during design stage which provided a more spacious rooms size. Beams were once proposed inside rooms but were replaced by structural ties hidden within slabs at last. The robustness of the column is also enhanced by the hidden tie.

Structural Excellence Award 2024

COMMENDATION MERIT

The Twins

Winner:
WSP Hong Kong Limited
Non-Residential (Hong Kong)



Client: Leader Bright Limited
Architect: DLN Architects Limited
Main Contractor: Hip Hing Engineering Co., Limited

Project Description

The Twins comprises of two 28-storey including 4-storey basement buildings with total GFA around 111,000sq.m located in two adjoining individual sites in Kai Tak area crossed by MTRC Tunnels and drainage reserve zone. It is a multi-functional non-residential building development for carpark, retail, F&B, cinema, sport hall, sky garden, art gallery and office usage.

Project Features

Unsymmetrical superstructure design is tailor-made to accommodate the underground constraints but achieved a symmetrical building appearance. A two-storey floor height steel mega truss at 55m above ground hanging up part of one building due to the underground constraints - "foundation-less". Stepped basement design to mitigate the expected settlement risk to MTRC tunnel during basement excavation.

Structural Excellence Award 2024

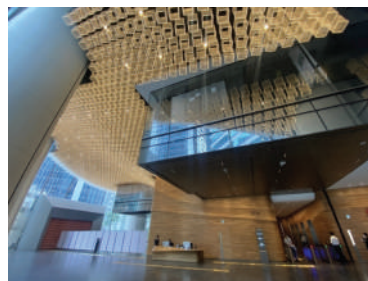
COMMENDATION MERIT

Two Taikoo Place

Winner:

Arup

Non-Residential (Hong Kong)



Client: Swire Properties Limited
Architect: Wong & Ouyang (HK) Limited
Main Contractor: Hip Hing Engineering Co., Limited

Project Description

Two Taikoo Place is a triple Grade-A office building development within Taikoo Place Complex in Quarry Bay, comprising of a 42-storey office tower with total building GFA of 92,000 sqm, 6,400 sqm landscape area, a 3-level basement carpark and a fully-glazed elevated pedestrian walkway system interconnecting adjacent office buildings.

Project Features

Two Taikoo Place adopts semi top-down construction for its 17m deep basement to overcome the high rockhead constraint. High strength concrete (Grade C80) with PT Floor Construction maximize the clear head height and column / wall spacing. Pre-tensioned cable glass wall facilitates the slim design of podium façade.

Structural Excellence Award 2024

COMMENDATION MERIT

Wujiang Songling Avenue Integrated Transportation Hub

Winner:

Arup

Mainland / Overseas



Client: Suzhou Wujiang Hengyun Real Estate Co.

Architect: NIKKEN SEKKEI

Main Contractor: China Construction First Group Co. Limited

Project Description

Located in the East Taihu Lake area of Suzhou, the Wujiang Songling Avenue Integrated Transportation Hub is the first TOD project in Wujiang District with a GFA of 250,000m². with a 160m long L-shape main building and four high-rises residential buildings, it is a comprehensive interchange with public facilities.

Project Features

With its atrium seamlessly connected with Suzhou Metro Songling Avenue Station, the project integrates the urban transportation hub with commercial, residential and parking areas. The long L-shape main building and concave outline of the atrium present structural challenges to Arup's engineers. In pursuit of sustainable development, the performance-based seismic design was adopted for the main hub building, reasonably improving the building's seismic performance and meeting the goal of safety and durability in green buildings.

Structural Excellence Award 2024

COMMENDATION MERIT

YOHO Hub - Residential Development

Winner:

Arup

Residential (Hong Kong)



Client: Sun Hung Kai Properties Limited and MTR Corporation Limited
Architect: AGC Design Limited
Main Contractor: Sanfield Building Contractors Limited

Project Description

As the fourth phase of YOHO Series, The YOHO Hub consists of four towers atop Yuen Long Station in the northern site, and two 48-storey towers with a 3-storey mixed-use podium and a basement in the southern side. With a total GFA of 137,990m², the development provides 1,969 residential units.

Project Features

In this complex project which needed to ensure a smooth station operation and the seamless coordination between two sites, Arup proposed enabling works including DfMA in precast concrete barrier and prefabricated steel catchfan over station. The southern site foundation adopted large diameter bored piles with driven steel tubular and pre-bored socketed steel H-piles to fulfill the marble site.

Structural Excellence Award 2024

COMMENDATION MERIT

YOHO Hub - Bridges

Winner:

Arup

Infrastructures / Footbridges (Hong Kong)



Client: Sun Hung Kai Properties Limited and MTR Corporation Limited
Architect: AGC Design Limited
Main Contractor: Sanfield Building Contractors Limited

Project Description

Located above Yuen Long Station, The YOHO Hub consists of four footbridges (FB1-4) and two vehicular bridges (VB & UTB), aiming to enhance the connection between the Yuen Long Station, the Public Transport Interchange (PTI) underneath and the surrounding area. A temporary footbridges system in DfMA was proposed to facilitate the pedestrian flow during construction.

Project Features

Lying above the Light Rail tracks, FB1 and VB connect the northern and southern sites of the development. We minimised its weight to fit the station area by omitting intermediate support. Considering the site condition, we proposed shaft-grouted pre-bored H-piles for FB4 and UTB. We also modified the existing HyD warren truss downramp near FB3 to create a temporary footbridge system.

Structural Excellence Award 2024

COMMENDATION MERIT

Flexural Strengthening of Reinforced Concrete Beams Using Geopolymer-Bonded Small-Diameter CFRP Bars

R&D Award



Figure (1)

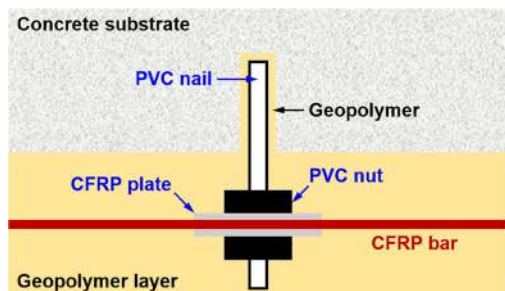


Figure (2)

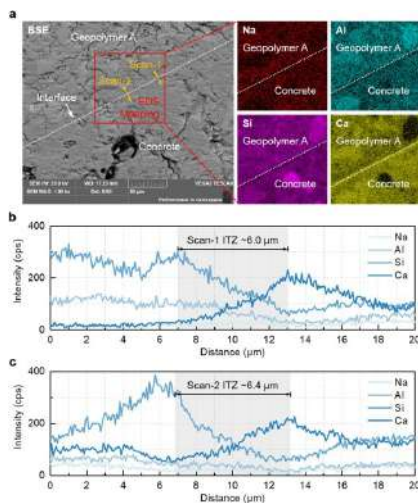


Figure (3)

Authors:

Kai-Di Peng, Bo-Tao Huang, Ling-Yu Xu, Ruo-Lin Hu, Jian-Guo Dai

Publication Date of Paper:

April 01, 2022

Published Journal:

Engineering Structures

Project Description

An innovative technology for strengthening reinforced concrete structures using geopolymer-bonded small diameter CFRP bars was investigated for the first time, and exhibited remarkable strength/stiffness performance and constructability especially under marine environments. A successful pilot project was conducted at The Zhanjiang Port in Guangdong, China, showcasing the practicability of this technique.

Project Features

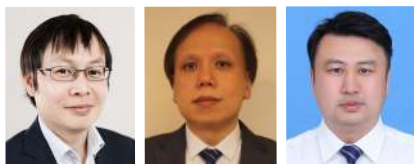
- (1) Geopolymer is a low-carbon binder and forms a strong bond with concrete substrates.
- (2) Using small-diameter CFRP bars leads to improved mechanical interaction between them and the concrete substrate through the geopolymer matrix.
- (3) The new strengthening system is eco-friendly and has excellent constructability under marine environments.

Structural Excellence Award 2024

COMMENDATION MERIT

A new concept of bio-based prestress technology with experimental Proof-of-Concept on Bamboo-Timber composite beams

R&D Award



Authors:

Hexin Zhang, Minhe Shen, Yu Deng, Peter Andras, Piti Sukontasukkul, Terry Y. P. Yuen, Yunchao Tang, Simon HF Wong, Suchart Limkatanyu, Ian Singleton, Chayanon Hansapinyo

Publication Date of Paper: 2023

Published Journal: Construction and Building Materials

Project Description

This paper presents a pioneering experimental proof-of-concept study to validate a novel concept of prestress technology that used only pure bio-based composite materials while achieved consistent prestressed stress distribution within the structure member, and provided in-situ flexibility, improved structural performance, and maximised the rate of utilisation of each material.

Project Features

The prestress is achieved by pressurised/forced lamination of multiple components with different materials and geometrical properties. The prestressing process is activated during the pressure release stage. Twenty two prestressed and non-prestressed laminated bamboo-timber composite beams were manufactured, tested, and analysed to provide an in-depth understanding of their structural behaviours.

Structural Excellence Award 2024

FINALIST

A unified design equation for square and rectangular concrete-filled steel tubular short columns

R&D Award

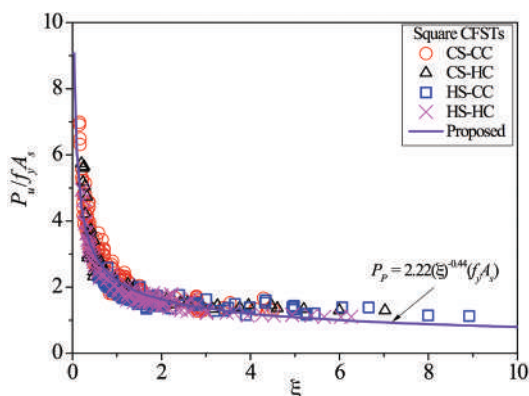


Figure 1: A unified equation for square CFST short columns

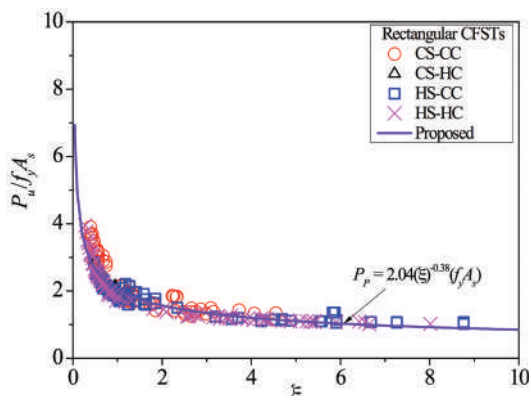


Figure 2: A unified equation for rectangular CFST short columns

Note: CS means conventional-strength steel, CC means conventional-strength concrete, HS means high-strength steel, HC means high-strength concrete.

Authors:

Yancheng CAI, Haonan JIANG, Zhichao LAI

Publication Date of Paper:

19 April 2023

Published Journal:

Journal of Constructional Steel Research

Project Description

Structural performance of square and rectangular concrete-filled steel tubular (CFST) short columns was comprehensively investigated. Test results of CFST over the last three decades were collected, and the gaps in the database were addressed. A unified design equation was subsequently proposed with the limits of the material strength significantly increased.

Project Features

The proposed equation allows a fast and convenient estimation of the compressive strength of CFST short columns, extending the codified material strength limits of the concrete infill and steel tube, i.e., with compressive strength of concrete up to 150 MPa and yield stress of steel tube up to 1000 MPa.

Awards

Best Student Awards 2023

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
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Shui On Construction Co. Limited	Hong Kong University of Science and Technology	Mr CHEN Yitian
Tysan Foundation Limited	The Hong Kong Polytechnic University	Mr CHEN Zhanhao
Sunnic Engineering Limited	City University of Hong Kong	Ms LEUNG Lok Yee
Vibro (H.K.) Limited	Technological and Higher Education Institute of Hong Kong	Ms HO Hiu Fung

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			43rd	21/22	Ir Ben TSE Wai-keung
			44th	22/23	Ir Albert TAM A-ray
			45th	23/24	Ir Kevin TANG

