



# TEAM ORGANIZATION CHART

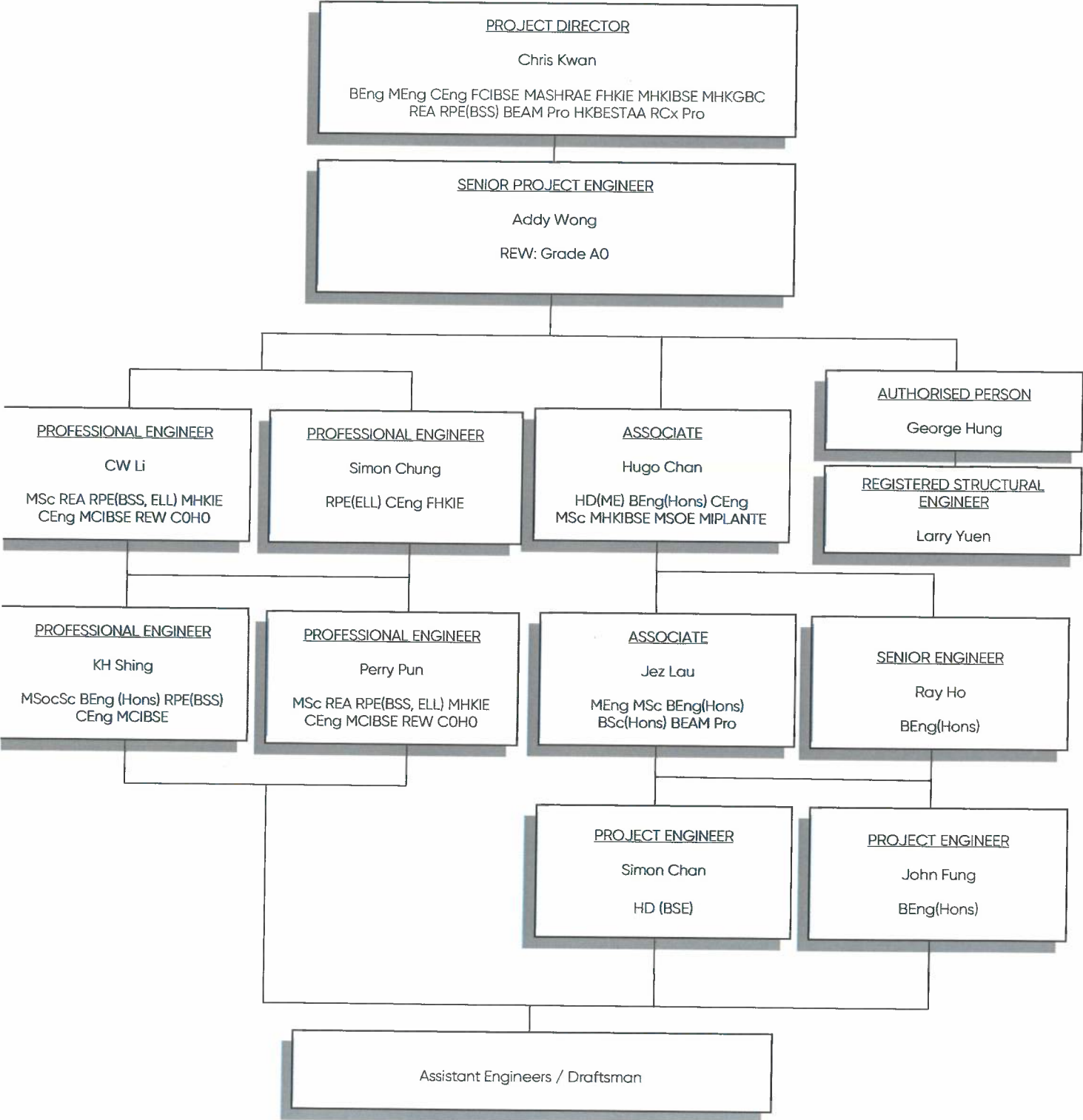
## Consultancy Services Agreement for Design & Installation Works of EVCEI under the EV-charging at Hongkong Garden BSE Consultancy Services

Ref: PR24103-01

2024.03.25  
Private and confidential



### PROPOSED PROJECT TEAM ORGANIZATION CHART



繳款後，請沿虛線剪下並將有效的商業/分行登記證展示在營業地點。

Please cut along the dotted line after making payment and display the valid business/branch registration certificate at business address.

正本 ORIGINAL 表格 2 FORM 2 (商業登記條例) (第 310 章) [第 5 條] BUSINESS REGISTRATION ORDINANCE (Chapter 310) [regulation 5]

XXXXXX XXXXXXXX 商業 XXX 登記證 Business XXX Registration Certificate BUSINESS REGISTRATION REGULATIONS



業務 / 法團所用名稱 Name of Business/ Corporation 域合顧問有限公司 REITHUB CONSULTING LIMITED

業務 / 分行名稱 Business/ Branch Name \*\*\*\*\*

地址 Address FLAT/RM 801 BLK 2 8/F THE QUAYSIDE 77 HOI BUN ROAD KWUN TONG KL

業務性質 Nature of Business CONSULTANCY

法律地位 Status BODY CORPORATE

Table with 4 columns: 生效日期 / Date of Commencement, 屆滿日期 / Date of Expiry, 登記證號碼 / Certificate No., 登記費及徵費 / Fee and Levy. Values: 28/02/2024, 27/02/2025, 73827396-000-02-24-8, \$2,150.

請注意下列《商業登記條例》的規定： Please note the following requirements of the Business Registration Ordinance:

- 1. 第 6(6) 條規定任何業務獲發商業登記證或分行登記證，並不表示該業務或經營該業務的人或受僱於該業務的僱員已遵從有關的任何法律規定。
2. 第 12 條規定各業務須將其有效的商業登記證或有效的分行登記證於每一營業地點展示。

繳款時請將此商業 XXX 登記證及繳款通知書完整交出。在付款後，本繳款通知書方成為有效的商業/XXX 登記證。(請參閱背頁繳款辦法所載內容。)

Please produce this certificate and demand note intact at time of payment. This demand note will only become a valid business/XXX registration certificate upon payment. (Please see payment instructions overleaf.)

機印所示登記費及徵費收訖。 RECEIVED FEE AND LEVY HERE STATED IN PRINTED FIGURES.

(請在剪下前將此膠紙貼下 DO NOT DETACH THIS STRIP BEFORE MAKING PAYMENT)

繳款通知書 DEMAND NOTE

CRC20201

請你在指定繳費日期或該日期之前，繳交上述登記證所示屆滿日期的期間之登記費及徵費。如你不依期清繳，稅務局局長可加徵罰款，並連同登記費及徵費一併向你追討。如你的業務於上述所示生效日期前已結束營業，則無須繳付有關登記費及徵費(在這種情況下，如尚未就結束營業一事通知稅務局局長，請立即發出通知)。不過，請注意：就商業登記條例而言，法人團體的業務不被視作已結束，直至該法人團體被解散或已被公司註冊處處長撤銷註冊為止。繳款辦法請參閱背頁。

You are hereby required to pay the fee and levy shown below, for the period ending as per above Certificate, on or before the Specified Date, failing which the Commissioner may order that a penalty be added to the fee and levy and recovered therewith. If your business has ceased on a date which is prior to the date of commencement as shown, payment of the fee and levy is not required (in which case, please inform the Commissioner of the cessation if not already done). However, please note that for the purpose of the Business Registration Ordinance, the business of a body corporate is not regarded as having ceased until such body corporate is dissolved or deregistered by the Registrar of Companies. For payment instructions, please see overleaf.

指定繳費日期 (Specified Date) 25/03/2024 登記證號碼 (Certificate No.) 73827396-000-02-24-8 應繳金額 (Amount Due) \$2,150.00

850742020000215000010738273960000022408



稅務局局長 譚大鵬 TAM TAI-PANG

Commissioner of Inland Revenue 15/01/2024

編號 3131256  
No.



公司註冊處  
COMPANIES REGISTRY

公司註冊證明書  
CERTIFICATE OF INCORPORATION

本人謹此證明  
I hereby certify that

REITHUB CONSULTING LIMITED  
域合顧問有限公司

於本日根據香港法例第622章《公司條例》  
is this day incorporated in Hong Kong under the Companies Ordinance  
在香港成立為法團，此公司是一間  
(Chapter 622 of the Laws of Hong Kong), and that this company is  
有限公司。  
a limited company.

本證明書於二〇二二年二月二十八日發出。  
Issued on 28 February 2022.

香港特別行政區公司註冊處處長徐麗貞  
Ms Kitty TSUI  
**Registrar of Companies**  
**Hong Kong Special Administrative Region**

註 Note :

公司名稱獲公司註冊處註冊，並不表示獲授予該公司名稱或其任何部分的商標權或任何其他知識產權。

Registration of a company name with the Companies Registry does not confer any trade mark rights or any other intellectual property rights in respect of the company name or any part thereof.





THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION  
ELECTRICITY (REGISTRATION) REGULATIONS (CAP. 406 SUB. LEG.)  
REGULATION 11

香港特別行政區政府  
電力(註冊)規例(第406章, 附屬法例)  
第11條

CERTIFICATE OF REGISTRATION OF ELECTRICAL CONTRACTOR  
電業承辦商註冊證明書



Registration Number: 037362  
註冊號碼



Certificate valid from: 09-Mar-2023 until: 08-Mar-2026  
本證明書有效期由: 至:

I hereby certify that REITHUB CONSULTING LIMITED  
of (address) FLAT 801, BLOCK 2, 8/F., THE QUAYSIDE,  
77 HOI BUN ROAD, KWUN TONG

is registered as an electrical contractor and has been included in the register of registered electrical contractors kept under Regulation 10(1) of the Electricity (Registration) Regulations (Cap. 406 Sub. Leg.).

域合顧問有限公司  
本人茲證明  
地址

已註冊為電業承辦商, 並列入已註冊電業承辦商之註冊紀錄冊內, 該紀錄冊乃根據電力(註冊)規例(第406章, 附屬法例)第10(1)條的規定備存。

C.K. CHAN

for Director of Electrical and Mechanical Services  
機電工程署署長 (陳志學 代行)

10-Mar-2023

Date  
日期

Note:  
備註:

Renewal application must be made within one to four months prior to expiry date. A person whose registration is suspended or cancelled shall return his registration certificate and all issued copies to the Director within 1 week after the date shown on the notification of suspension or cancellation.

續期申請需在有效日期屆滿前一至四個月內提交。任何人被取消或暫時中止註冊, 須自取消或暫時中止註冊的通知書上所示日期起計1星期內, 將他的註冊證明書及由署長發出的所有副本交還給署長。



C138336

C138336

Registered Professional Engineer Certificate

1. Chris Kwan



2. CW Li



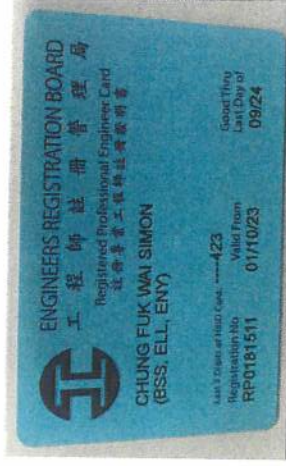
3. Kwan-ho Shing



4. Perry Pun



5. Simon Chung  
RPE (ELL)



Supplementary Information - Professional Registrations (Cont'd)

**BUILDINGS ORDINANCE (CAP 123) SECTION 3**

**建築物條例 (第 123 章) 第 3 條**

**Certificate of Registration**

**Authorized Person**

**認可人士註冊證明書**

Registration No. AP(A) 55/06  
註冊編號

Name : HUNG Ho Ching  
姓名 洪浩澄  
HKID No. : K917220(3)  
香港身份證號碼  
Register : Authorized Person ( List of Architects )  
名冊 認可人士 ( 建築師名單 )  
Date of Expiry of Registration : 21.12.2026  
註冊屆滿日期



(CHAN Miu-ping)  
Building Surveyor / Registration  
for Building Authority  
建築事務監督  
( 測量師 / 註冊 陳妙萍 代行 )

Serial No. 006184  
編號  
Form BI 191A

Issued on : 23.9.2021  
簽發日期

**Certificate of Registration - Authorized Person (List of Architect)**

**BUILDINGS ORDINANCE (CAP 123) SECTION 3**

**建築物條例 (第123章) 第3條**

**Certificate of Registration**

**Registered Structural Engineer**

**註冊結構工程師註冊證明書**

Registration No. RSE 22/99  
註冊編號

Name : YUEN Kin Keung Larry  
姓名 袁建強  
HKID No. : G551640(3)  
香港身份證號碼  
Register : Structural Engineer  
名冊 結構工程師  
Date of Expiry of Registration : 14.10.2025  
註冊屆滿日期



(YU Chi-ki)  
Structural Engineer / Registration  
for Building Authority  
建築事務監督  
( 結構工程師 / 註冊 余志其 代行 )

Serial No. 001535  
編號  
Form BI 101B

Issued on : 22.9.2020  
簽發日期

**Certificate of Registration - Registered Structural Engineer**



電業工程人員註冊證明書  
Certificate of Registration of Electrical Worker

電力條例 (第406章) ELECTRICITY ORDINANCE (CAP. 406)

註冊編號  
Registration No. W073249

姓名 王敬初  
Name WONG KING CHOR ADDY



工程級別 A 准許工程 A0  
Grade Permitted Work

有效日期由 25/01/2024 至 24/01/2027  
Valid from Valid unit



簽發機構 機電工程署 EMSD  
Issued by



# Certificate of Insurance

## Chubb Elite Professional Indemnity

CHUBB®

### Details of Insurance

This is to certify that the following insurance has been effected with this Firm:

<b>Class of Insurance:</b>	Professional Indemnity
<b>Firm:</b>	REITHUB Consulting Limited
<b>Insured:</b>	The Firm, each Principal, Employee and the estate or legal personal representative of each deceased or legally incapacitated Principal or Employee
<b>Coverage:</b>	Chubb will indemnify the Insured against Loss against from any Claim in respect of civil liability for breach of a duty owed in a professional capacity first made against an Insured during the Period of Insurance.
<b>Limit of Liability :</b>	HKD 30,000,000 each claim and in the aggregate
<b>Period of Insurance:</b> (both days inclusive)	From: 02 June 2023 at (00:00) To: 01 June 2024 at (24:00)
<b>Excess:</b>	HKD 50,000 any one Claim
<b>Retroactive Date:</b>	02 June 2022
<b>Territory &amp; Jurisdiction:</b>	Worldwide excluding USA and Canada
<b>Policy Number:</b>	HPI0595351/23

#### Noting:

In term of our credit arrangements with the named Firm, the premium under the said Policy will be paid as arranged and the risk insured is covered by this named Firm subject to the terms and conditions of the said Policy. This Certificate of Insurance is issued as a matter of information only and confers no rights upon the certificate holder. This Certificate of Insurance does not amend, extend or alter the coverage afforded by the said Policy.

**SIGNED for and on behalf of Chubb Insurance Hong Kong Limited**



\_\_\_\_\_  
Authorised Signature

29 May 2023

\_\_\_\_\_  
Date

To be posted up in a conspicuous place of  
the place of employment  
此表格應張貼於  
僱用地點的顯眼處

## EMPLOYEES' COMPENSATION ORDINANCE 僱員補償條例

(CHAPTER 282)  
(香港法例第282章)

### NOTICE OF INSURANCE 保險通告

For the purpose of Section 41 of the Employees' Compensation Ordinance  
遵照僱員補償條例第41條所規定

Details of the insurance policy taken out in respect of persons employed at the place of employment as specified below  
為受僱於下列僱用地點的人士投保保險的詳情

Name of Employing Company/Person 僱用公司名稱 / 僱主姓名	REITHUB CONSULTING LIMITED
Address of Place of Employment 僱用地點的地址	FLAT 801, BLOCK 2, 8/F., THE QUAYSIDE, 77 HOI BUN ROAD, KWUN TONG, KLN
Name of Insurer 保險人名稱	Zurich Insurance Company Ltd (a company incorporated in Switzerland with limited liability) 蘇黎世保險有限公司 (於瑞士註冊成立之有限公司)
Insurance Policy Number 保險單號碼	ZWW20122897C
Date of Commencement of Insurance Policy 保險單生效日期	09/06/2023
Date of Expiry of Insurance Policy 保險單屆滿日期	08/06/2024
Number of Employees Insured 受保的僱員人數	ALL EMPLOYEES
Amount of Liability Insured 就有關法律責任投保的款額	HKD 100,000,000

Signed for Employing  
Company/Person:  
僱用公司 / 僱主簽署



Name of Signatory:  
簽署人姓名

KWAN HO SUM

Position:  
職位

MANAGING DIRECTOR

Chop of Company:  
公司蓋印



Date:  
日期

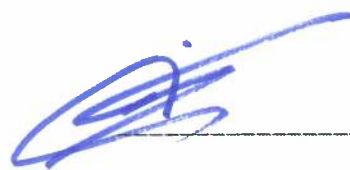
09 / 06 / 2023

Note: Any employer who without reasonable excuse provides any false or misleading information in this Notice commits an offence and is liable to a fine of \$50,000.  
注意: 任何僱主無合理解釋, 在本通告提供虛假或具誤導性資料, 即屬違法, 可被罰款 \$50,000。

Declaration of Any Arbitration, Claims,  
Disputes and Court Hearing Cases

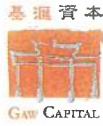
I, **Chris Kwan**, acting on behalf of the company, **REITHUB Consulting Limited**, hereby declare the company has no arbitration, claims, disputes and court hearing cases such as defendant or plaintiff at the last 5 years commencing from 25 MAR 2024 to the date of this tender submission.

Authorized Signature & Company Chop:



Name of Person Authorized to Sign this Declaration:

Chris Kwan, Managing Director



GAW CAPITAL ASSET MANAGEMENT (HK) LIMITED

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19 April 2022

**REITHUB Consulting Limited**  
Unit 2, 27/F, Global Gateway Tower  
63 Wing Hong Street,  
Cheung Sha Wan, Kowloon

Attn: Mr. Chris Kwan (Managing Director)

Dear Sir/ Madam,

**Re: Appreciation Letter**  
**Consultancy Services on FS(CP)O for Commercial/Car Park Block at Ap Lei**  
**Chau Shopping Centre, 326 Ap Lei Chau Bridge Road**

We write to express our appreciation to your company in delivering professional services in planning, designing, coordinating, and supervising the FS(CP)O works at the captioned Premises.

Moreover, we would like to appreciate your staff has been performing professionally and competently and they have been always providing comprehensive solutions to tackle with challenges encountered.

Thank you again for your team's diligent effort in this Project.

Yours faithfully,

A handwritten signature in blue ink, appearing to be 'Kwan-ho Shing', written over a light blue grid background.

Kwan-ho Shing  
Senior Project Manager  
Gaw Capital Asset Management (HK) Limited





01/09/2022

REITHUB Consulting Limited

Unit 801, 8/F, Tower 2,  
The Quayside, 77 Hoi Bun Road  
Kwun Tong, Kowloon, Hong Kong

Dear Mr. Chris Kwan – Managing Director,

Re: Letter of Appreciation

We hereby confirm that REITHUB Consulting Limited was the lead consultant, Building Services and Sustainability for Proposed Development of Smart Logistics Park in Yuen Long (Comboxx) since July 2022.

The project was under very tight budgetary and time constraints but REITHUB was able to quickly adopt to any changes and align different parties to overcome various project challenges, especially under the difficult COVID-19 pandemic circumstances. REITHUB and its team were proactive, professional and responsive to our requirement from the initial planning stage. The result was on schedule completion of a high-quality project.

Our whole cold room space planning development have transformed and we received positive feedbacks from our staff, management and clients.

We look forward to work with them again in the future and would not be hesitated to recommend REITHUB for their prospective clients.

Yours sincerely



Calvin Cheung  
Director, Investor Services  
Project & Development Services

22<sup>nd</sup> August 2022

REITHUB Consulting Limited

Unit 801, 8/F, Tower 2  
The Quayside, 77 Hoi Bun Road  
Kwun Tong, Kowloon

Attn: Mr. Chris Kwan, Managing Director

Dear Sir/ Madam,

Letter of Appreciation

We hereby confirm that Reithub was the building services consultant for the wholesale conversion Project of Westin Centre in Kwun Tong.

The project is an integrated building design involving compliance work and asset enhancement under a tight budgetary and timeframe.

REITHUB is able to quickly adopt to any changes and align different parties to overcome various project challenges via its team were proactive, professional and responsive to our design and operational requirements.

We look forward to work with them again in the future and would not be hesitated to recommend Reithub for their prospective clients.

The above reference is provided in a personal capacity only.

Yours sincerely,



Pak Lui  
Senior Manager (Asset Enhancement)  
Sino Real Estate Agency Limited

**REITHUB CONSULTING LIMITED**

**STATEMENT OF ACCOUNTS**  
**FOR THE PERIOD FROM 28 FEBRUARY 2022**  
**(DATE OF INCORPORATION) TO 31 MARCH 2023**

甘偉亮執業會計師  
***Kam Wai Leong Andrew***  
Certified Public Accountant (Practising)  
Hong Kong

**REITHUB CONSULTING LIMITED**  
**REPORTS AND FINANCIAL STATEMENTS**  
**FOR THE PERIOD FROM 28 FEBRUARY 2022 (DATE OF**  
**INCORPORATION) TO 31 MARCH 2023**

**INDEX**

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**REITHUB CONSULTING LIMITED**  
**DIRECTORS' REPORT**

The sole director submits the first report and the audited financial statements for the period from 28 February 2022 (Date of incorporation) to 31 March 2023.

**PRINCIPAL ACTIVITY**

The principal activity of the Company during the period is provision of consultancy services.

**RESULTS AND APPROPRIATIONS**

The financial results of the Company for the period from 28 February 2022 (Date of incorporation) to 31 March 2023 and the state of the Company's affairs at that date are set out in the annexed financial statements.

The sole director does not recommend the payment of a dividend for the period.

**RESERVES**

The sole director does not recommend the transfer of any amount to and from reserves for the period.

**SHARE CAPITAL**

Movements in share capital during the period are set out in note 11 to the financial statements.

**DIRECTOR**

The sole director who held the office during the period and up to date of this report is as follows:

Chan Kin Chung

There being no provision to the contrary in the Company's Articles of Association, the sole director continue in office for the ensuing period.

**REITHUB CONSULTING LIMITED**  
**DIRECTORS' REPORT (CONTINUED)**

**PERMITTED INDEMNITY PROVISION**

The Company's Articles provides that a director or former director of the Company may be indemnified out of the Company's assets against any liability incurred by the director to a person other than the Company or an associated company of the Company in connection with any negligence, default, breach of duty or breach of trust in relation to the Company or associated company (as the case may be). This permitted indemnity provision is in force during the financial period and at the time of approval of this report.

**MANAGEMENT CONTRACT**

No contracts concerning the management and administration of the whole or any substantial part of the business of the Company were entered into or existed during the period.

**BUSINESS REVIEW**

The Company falls within reporting exemption in the financial period. Accordingly, it is exempted from preparing a business review.

**AUDITOR**

The financial statements have been audited by Messr. Kam Wai Leong Andrew, Certified Public Accountant (Practising), retire and being eligible, offer himself for re-appointment.

**FOR AND ON BEHALF OF THE BOARD**



\_\_\_\_\_  
Chan Kin Chung

Chairman

Hong Kong

Date : 20 Nov 2023

***Kam Wai Leong Andrew***, *Certified Public Accountant (Practising)*

B20, Hungghom Commercial Centre,  
37-39 Ma Tau Wai Road, Hungghom, Kowloon.  
Tel: (852) 3175 2615 Fax: (852) 3007 9215

甘偉亮執業會計師  
九龍紅磡馬頭圍道三十七號五樓  
電話：三三零七五二六  
真話：二六〇一九五五

**INDEPENDENT AUDITOR'S REPORT**  
**TO THE MEMBERS OF**  
**REITHUB CONSULTING LIMITED**

(Incorporated in Hong Kong with limited liability)

***Opinion***

We have audited the financial statements of REITHUB CONSULTING LIMITED ("the Company") set out on pages 6 to 12 which comprise the statement of financial position as at 31 March 2023, and the income statement and statement of changes in equity for the period from 28 February 2022 (Date of incorporation) to 31 March 2023, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the financial statements of the Company are prepared, in all material respects, in accordance with the Hong Kong Small and Medium-sized Entity Financial Reporting Standard ("SME-FRS") issued by the Hong Kong Institute of Certified Public Accountants ("HKICPA") and have been properly prepared in compliance with the Hong Kong Companies Ordinance.

***Basis of Opinion***

We conducted our audit in accordance with Hong Kong Standards on Auditing ("HKSA") and with reference to Practice Note 900 (Revised), Audit of Financial Statements Prepared in Accordance with the SME-FRS issued by the HKICPA. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Company in accordance with the HKICPA's Code of Ethics for Professional Accountants ("the Code"), and we have fulfilled our other responsibilities in accordance with the Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

***Other Information***

The directors are responsible for the other information. The other information comprises the information included in the directors' report set out on page 1 to 2 and detailed income statement schedule, but does not include the financial statements and our auditor's report thereon.

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.



***Kam Wai Leong Andrew***, *Certified Public Accountant (Practising)*

B20, Hunghom Commercial Centre,  
37-39 Ma Tau Wai Road, Hunghom, Kowloon.  
Tel: (852) 3175 2615 Fax: (852) 3007 9215

甘偉亮執業會計師  
九龍紅磡馬頭圍道三十七號五五舖  
電話：三三零七五二六九  
真話：三三零七五二六九

**INDEPENDENT AUDITOR'S REPORT**  
**TO THE MEMBERS OF**  
**REITHUB CONSULTING LIMITED**  
(Incorporated in Hong Kong with limited liability)

... / continued

***Responsibilities of Directors for the financial statements***

The directors are responsible for the preparation of the financial statements in accordance with the SME-FRS issued by the HKICPA and the Hong Kong Companies Ordinance, and for such internal control as the directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Company or to cease operations, or have no realistic alternative but to do so.

***Auditor's Responsibilities for the Audit of the Financial Statements***

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. We report our opinion solely to you, as a body, in accordance with Section 405 of the Hong Kong Companies Ordinance and for no other purpose. We do not assume responsibility towards or accept liability to any other person for the contents of this report. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with HKSA's will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with HKSA's, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.



**Kam Wai Leong Andrew**, *Certified Public Accountant (Practising)*  
B20, Hunghom Commercial Centre,  
37-39 Ma Tau Wai Road, Hunghom, Kowloon.  
Tel: (852) 3175 2615 Fax: (852) 3007 9215

甘偉亮  
執業會計師  
九龍紅磡馬頭道三十七號  
電話：廣福樓三樓  
真話：零七五九二六四一  
三五五號

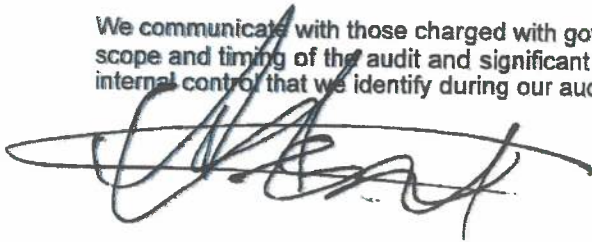
**INDEPENDENT AUDITOR'S REPORT**  
**TO THE MEMBERS OF**  
**REITHUB CONSULTING LIMITED**  
(Incorporated in Hong Kong with limited liability)

... / continued

***Auditor's Responsibilities for the Audit of the Financial Statements (Cont'd)***

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the directors.
- Conclude on the appropriateness of the directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.



Kam Wai Leong Andrew  
Certified Public Accountant (Practising)  
Hong Kong  
Date : 20 Nov 2023

**REITHUB CONSULTING LIMITED**  
**INCOME STATEMENT**  
**FOR THE PERIOD FROM 28 FEBRUARY 2022 (DATE OF INCORPORATION) TO 31 MARCH 2023**  
**(Expressed in Hong Kong Dollars)**

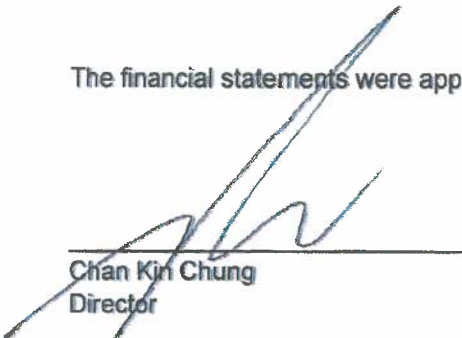
	Note	(28/2/2022 to 31/3/2023) \$
Revenue	4	5,050,783.00
Less : Direct costs		<u>(674,629.30)</u>
Gross profit		4,376,153.70
Operating expenses		<u>(2,660,322.59)</u>
Profit before tax	5	1,715,831.11
Income tax expense	6	<u>(301,877.00)</u>
Profit for the period	12	<u><u>1,413,954.11</u></u>

The accompanying Accounting Policies and Explanatory Notes form an integral part of, and should be read in conjunction with, these financial statements.

**REITHUB CONSULTING LIMITED**  
**STATEMENT OF FINANCIAL POSITION**  
**AS AT 31 MARCH 2023**  
(Expressed in Hong Kong Dollars)

	Note	<u>2023</u> \$
<b>Non-current Assets</b>		
Plant and equipment	8	<u>653,906.60</u>
<b>Current Assets</b>		
Prepayment		17,172.78
Accounts receivable		1,638,140.00
Cash at bank		<u>162,304.61</u>
		<u>1,817,617.39</u>
<b>Current Liabilities</b>		
Accruals		10,000.00
Amount due to a holding company	9	104,592.88
Amount due to a related company	10	641,000.00
Provision for taxation		<u>301,877.00</u>
		<u>1,057,469.88</u>
<b>Net Current Assets</b>		<u>760,147.51</u>
<b>NET ASSETS</b>		<u>1,414,054.11</u>
<b>CAPITAL AND RESERVES</b>		
Share capital	11	100.00
Profit for the period	12	<u>1,413,954.11</u>
		<u>1,414,054.11</u>

The financial statements were approved and authorised for issue by the sole director on 20 Nov 2023

  
\_\_\_\_\_  
Chan Kin Chung  
Director

The accompanying Accounting Policies and Explanatory Notes form an integral part of, and should be read in conjunction with, these financial statements.

**REITHUB CONSULTING LIMITED**  
**ACCOUNTING POLICIES AND EXPLANATORY NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE PERIOD FROM 28 FEBRUARY 2022 (DATE OF INCORPORATION) TO 31 MARCH 2023**  
**(Expressed in Hong Kong Dollars)**

**1 GENERAL INFORMATION**

The Company is a private limited company incorporated and domiciled in Hong Kong. The Company's registered office is located at Flat 801, 8/F., Tower 2, The Quayside, 77 Hoi Bun Road, Kowloon. The principal activity of the Company during the period is provision of consultancy services.

**2 BASIS OF PREPARATION**

The company qualifies for the reporting exemption as a small private company under section 359(1)(a) of the Hong Kong Companies Ordinance (Cap. 622) and is therefore entitled to prepare and present its financial statements in accordance with the Small and Medium-sized Entity Financial Reporting Standard (SME-FRS) issued by the Hong Kong Institute of Certified Public Accountants.

These financial statements comply with the SME-FRS and have been prepared under the accrual basis of accounting and on the basis that the Company is a going concern.

The measurement base adopted is the historical cost convention.

**3 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

The principal accounting policies adopted in the preparation of these financial statements are set out below:

**(a) Plant and equipment**

Plant and equipment are stated at cost less accumulated depreciation and any accumulated impairment losses.

The cost of an item of plant and equipment comprises its purchase price, including import duties and non-refundable purchase taxes, and any directly attributable costs of bringing the asset to working condition for its intended use; any trade discounts and rebates are deducted in arriving at the purchase price.

Depreciation is calculated to write off the cost of items of plant and equipment, less their estimated residue value, if any, on a straight line basis over their estimated useful lives. The residue value and useful life of an asset are reviewed annually. The principal annual rates used for depreciation are as follows:

Furniture and equipment	20%
Leasehold improvement	33 1/3%

The gain or loss on disposal of plant and equipment is the difference between the net sales proceeds and the carrying amount of the relevant asset, and is recognised in the income statement.

**(b) Accounts and other receivable**

Accounts and other receivable are stated at estimated realisable value after each debt has been considered individually. Where the payment of a debt become doubtful a provision is made and charged to the income statement.



**REITHUB CONSULTING LIMITED**  
**ACCOUNTING POLICIES AND EXPLANATORY NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE PERIOD FROM 28 FEBRUARY 2022 (DATE OF INCORPORATION) TO 31 MARCH 2023**  
**(Expressed in Hong Kong Dollars)**

**3 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)**

**(c) Impairment**

An assessment is made at each reporting date to determine whether there is any indication of impairment or reversal of previous impairment of plant and equipment. In the event that an asset's carrying amount exceeds its recoverable amount, the carrying amount is reduced to recoverable amount and an impairment loss is recognised in the income statement. A previously recognised impairment loss is reversed only if there has been a change in the estimates used to determine the recoverable amount, however not to an amount higher than the carry amount that would have been determined (net of depreciation), had no impairment losses been recognised for the asset in prior years.

**(d) Taxation**

Income tax expense represents current tax expense. The income tax payable represents the amounts expected to be paid to the taxation authority, using the tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period.

Deferred tax is not provided.

**(e) Provisions**

Provisions are recognised when the Company has a present legal or constructive obligations as a result of past events, it is probable that an outflow of resources will be required to settle the obligation, and a reliable estimate of the amount can be made. Where the Company expects a provision to be reimbursed, for example under an insurance contract, the reimbursement is recognised as a separate asset but only when the reimbursement is virtually certain.

**(f) Revenue recognition**

Revenue is recognised when it is probable that the economic benefits will flow to the Company and when the revenue can be measured reliably, on the following bases:

- revenue from provision of services is recognised when services are rendered.

**(g) Related parties**

For the purpose of these financial statements, related party includes a person and entity as defined below:

- (a) A person or a close member of that person's family is related to the Company if that person:
- (i) has control or joint control over the Company;
  - (ii) has significant influence over the Company; or
  - (iii) is a member of the key management personnel of the Company or of a parent of the Company.

**REITHUB CONSULTING LIMITED**  
**ACCOUNTING POLICIES AND EXPLANATORY NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE PERIOD FROM 28 FEBRUARY 2022 (DATE OF INCORPORATION) TO 31 MARCH 2023**  
**(Expressed in Hong Kong Dollars)**

**3 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)**

**(g) Related parties (continued)**

- (b) An entity is related to the Company if any of the following conditions applies:
- (i) The entity and the Company are members of the same group (which means that each parent, subsidiary and fellow subsidiary is related to the others)
  - (ii) One entity is an associate or joint venture of the other entity (or an associate or joint venture of a member of a group of which the other entity is a member).
  - (iii) Both entities are joint ventures of the same third party.
  - (iv) One entity is a joint venture of a third entity and the other entity is an associate of the third entity.
  - (v) The entity is a post-employment benefit plan for the benefit of employees of either the Company or an entity related to the Company. If the Company is itself such a plan, the sponsoring employers are also related to the Company.
  - (vi) The entity is controlled or jointly controlled by a person identified in (a).
  - (vii) A person identified in (a)(i) has significant influence over the entity or is a member of the key management personnel of the entity (or of a parent of the

**4 REVENUE AND OTHER INCOME**

Revenue represents sales at invoiced value of goods to customer less discount and returns. The amount of each significant category of revenues recognised during the period are as follows:

	(28/2/2022 to 31/3/2023)
<b>Revenue</b>	
Sales	\$ 940,892.00
<b>Other income</b>	
Bank interest income	2.43
<b>Total revenues</b>	<u>940,894.43</u>

**5 PROFIT BEFORE TAX**

Profit before tax is stated after charging the following

	(28/2/2022 to 31/3/2023)
	\$
Auditors' remuneration	10,000.00
Bad debts	189,360.00
Depreciation	73,570.40
Key management personnel's remuneration	-
Other staff costs	2,085,898.57
Preliminary expenses	<u>5,100.00</u>

**6 INCOME TAX EXPENSE**

Provision for Hong Kong profits tax has been made in the financial statements at 16.5% on the estimated assessable profits arising in Hong Kong for the year less 100% tax relief (maximum of HK\$6,000.00).



**REITHUB CONSULTING LIMITED**  
**ACCOUNTING POLICIES AND EXPLANATORY NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE PERIOD FROM 28 FEBRUARY 2022 (DATE OF INCORPORATION) TO 31 MARCH 2023**  
**(Expressed in Hong Kong Dollars)**

**7 DIRECTORS' REMUNERATION**

Directors' remuneration disclosed pursuant to section 383(1) of the Hong Kong Companies Ordinance (Cap. 622) is as follows:

	(28/2/2022 to 31/3/2023)
	\$
Fees	-
Other emoluments	-
	<u>-</u>

**8 PLANT AND EQUIPMENT**

	<u>Furniture and equipment</u>	<u>Leasehold improvement</u>	<u>Total</u>
<u>Cost</u>	\$	\$	\$
Additions	110,977.00	616,500.00	727,477.00
At 31 March 2023	<u>110,977.00</u>	<u>616,500.00</u>	<u>727,477.00</u>
<u>Accumulated Depreciation and impairment</u>			
Charges for the period	22,195.40	51,375.00	73,570.40
At 31 March 2023	<u>22,195.40</u>	<u>51,375.00</u>	<u>73,570.40</u>
<u>Net Book Value</u>			
At 31 March 2023	<u>88,781.60</u>	<u>565,125.00</u>	<u>653,906.60</u>

**9 AMOUNT DUE TO A HOLDING COMPANY**

The amount due is unsecured, interest free and has no fixed term of repayment. In the opinion of the director, the amount due is repayable within twelve months after the reporting date, and therefore shown as current.

**10 AMOUNT DUE TO A RELATED COMPANY**

The amount due is unsecured, interest free and has no fixed term of repayment. In the opinion of the director, the amount due is repayable within twelve months after the reporting date, and therefore shown as current.

**11 SHARE CAPITAL**

	<u>2023</u>
	\$
Issued and fully paid: 100 ordinary shares	<u>100.00</u>

**12 CHANGES IN EQUITY**

	<u>Share Capital</u>	<u>Retained Profits</u>	<u>Total</u>
	\$	\$	\$
Shares issued	100.00	-	100.00
Profit for the period	-	1,413,954.11	1,413,954.11
Balance at 31 March 2023	<u>100.00</u>	<u>1,413,954.11</u>	<u>1,414,054.11</u>

**REITHUB CONSULTING LIMITED**  
**ACCOUNTING POLICIES AND EXPLANATORY NOTES TO THE FINANCIAL STATEMENTS**  
**FOR THE PERIOD FROM 28 FEBRUARY 2022 (DATE OF INCORPORATION) TO 31 MARCH 2023**  
**(Expressed in Hong Kong Dollars)**

**13 COMPARATIVE FIGURES**

The comparative figures were made up for a period more than 12 months from the date of incorporation as this is the first set of financial statements issued by the Company, therefore comparative figures were not presented for comparative purposes and is not appropriate in this

REITHIUB - Company Project Details

No.	Building Name	Project Details	Project Contract Sum	Project Period
1	Smart Logistics Park in Yuen Long (Comboxx)	Proposed Temperature Controlled, Automated Warehouse & BEAM Plus - New Building (with Design of EVCEI)	\$500,000,000.00	Q2 2022 - Q4 2025
2	LinkREIT - Tung Tau Market	Renovation Works (with Design of EVCEI)	\$20,000,000.00	Q3 2022 - Q3 2023
3	Whitehead, Ma On Shan (Site 1) - Development of Sports Facilities	Preliminary Design (with Design of EVCEI)	TBC	Q3 2022 - Q3 2023
4	SINO - Westin Centre	Wholesale Conversion (with Design of EVCEI)	\$55,000,000.00	Q3 2022 - Q2 2024
5	Bahinia Hotel	Renovation Work (BEAM Plus)	TBC	Q1 2022 - Q2 2024
6	Unit 801 at Asia Logistics Hub-SF Centre	Proposed Cold Storage	\$12,000,000.00	Q2 2022 - Q3 2022
7	Chilitube - Temporary Cold Storage at Man Kam To Road	BEAM Plus - New Building (with Design of EVCEI)	TBC	Q2 2022 - Q4 2024
8	Reitor Quayside Office Unit 801	Interior Design & LEED	\$2,000,000.00	Q2 2022 - Q3 2022
9	LinkREIT - Ping Tin, SMP, LYM, Oi Tung, Hing Wah	FSCPO	TBC	Q3 2022 - Q4 2024
10	Commercial Carpark at 32a Ap Lei Chau Bridge Road	FSCPO	TBC	Q3 2022 - Q4 2023
11	Wing Shing Industrial Building (Due Diligence)	Feasibility Study	N/A	Q3 2022 - Q3 2022
12	LinkREIT - Cheung Wah Carpark No.1 and No.2	FSCPO	TBC	Q3 2022 - Q4 2024
13	Dai Nam Building, Tai Po	Residential Redevelopment (with Design of EVCEI)	TBC	Q1 2024 - Q1 2026
14	LinkREIT - Temple Mall North, Hoi Fu, Homantin, Nam Cheong, Yat Tung	FSCPO	TBC	Q4 2024
15	LinkREIT - Retaining Polycarbonate Skylight	Renovation Works	TBC	By Work Orders
16	TWGHs Wong Fung Ling Memorial Building	Interior Design for Renovation	\$6,600,000.00	Q3 2022 - Q2 2023
17	No.8 Chuk Kok Road, Sai Kung	Residential Redevelopment (with Design of EVCEI)	TBC	Q3 2022 - Q2 2024
18	K18 Hotel at 18 Kimberley Street	Commercial Redevelopment	TBC	Q4 2022 - Q4 2025
19	Restaurant at No. 1 Duddell Street BF, GF & 1F	Proposed Fit-Out Work	\$15,000,000.00	Q4 2022 - Q3 2023
20	Kai Tak Garden Shopping Arcade - Escalator Improvement Works	Feasibility Study	N/A	Q4 2022 - Q1 2023
21	Legoland Discovery Centre	PPE License	N/A	Q4 2022
22	Wing Shing Industrial Building, Kwai Chung	Proposed Cold Store	\$100,000,000.00	Q4 2022 - Q3 2024
23	LinkREIT - Lei Yue Mun Plaza	Asset Enhancement	\$45,000,000.00	Q1 2023 - Q1 2025
24	HKJC - Sha Tin Stable Precinct	Proposed Satellite Treadmill Structure	TBC	Q1 2023 - Q3 2024
25	LinkREIT - Fu Shin Cooked Food Stalls Building	Asset Enhancement	\$48,000,000.00	Q1 2023 - Q1 2024
26	ATL Logistics Centre Block B	Warehouse Storage	\$9,500,000.00	Q3 2023 - Q3 2023
27	HKSTP - Building 12W - Conversion of Chinese Restaurant to Sports Space Area	Wholesale Conversion	TBC	Q2 2023 - Q3 2024
28	Legoland Discovery Centre	PPE License	N/A	Q3 2023
29	TWGHs Wong Fung Ling Memorial Building - LG1F, LG2F & GF	Feasibility Study & Interior Design	N/A	Q2 2023 - Q4 2023
30	Goster Resources Limited - Hotel	Due Diligence Services	N/A	Q2 2023 - Q3 2023
31	Hong Kong Baptist Hospital	Building Services Survey	N/A	Q2 2023 - Q1 2024
32	Hong Kong Science Park	Surveying, Building and Civil Related Works	N/A	By Work Orders
33	Lorna Villa	Design and Installation Works under The EHSS	TBC	Q3 2023 - Q4 2025
34	Mandarin Court Block 5 Building	Design and Installation Works under The EHSS	TBC	Q3 2023 - Q4 2025
35	Cassia Court	Design and Installation Works under The EHSS	TBC	Q3 2023 - Q4 2025
36	The Lamma Palace	Design and Installation Works under The EHSS	TBC	Q3 2023 - Q4 2025
37	Shatin 33	Design and Installation Works under The EHSS	TBC	Q3 2023 - Q4 2025
38	People's Place Malls - Kwai Shing East & Yung Shing	Design and Installation Works under The EHSS	TBC	Q3 2023 - Q4 2025
39	Block B, Champagne Court	Chiller Replacement	TBC	Q4 2023 - Q4 2024
		Survey of Building Services for Demolition	N/A	Q4 2023

REITHIUB - Company Project Details

No.	Building Name	Project Details	Project Contract Sum	Project Period
40	Costa Bello	Design and Installation Works under The EHSS	TBC	Q1 2024 - Q4 2025
41	Marbella	Design and Installation Works under The EHSS	TBC	Q1 2024 - Q4 2025
42	Meadowlands	Design and Installation Works under The EHSS	TBC	Q1 2024 - Q4 2025
43	Hairmy Garden	Design and Installation Works under The EHSS	TBC	Q1 2024 - Q4 2025
44	Chong Hing Square	A&A Works	TBC	TBC
45	King's Park Villa	Design and Installation Works under The EHSS	TBC	TBC
46	Wisdom Court	Design and Installation Works under The EHSS	TBC	TBC
47	The Woodsville	Design and Installation Works under The EHSS	TBC	TBC



## Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)

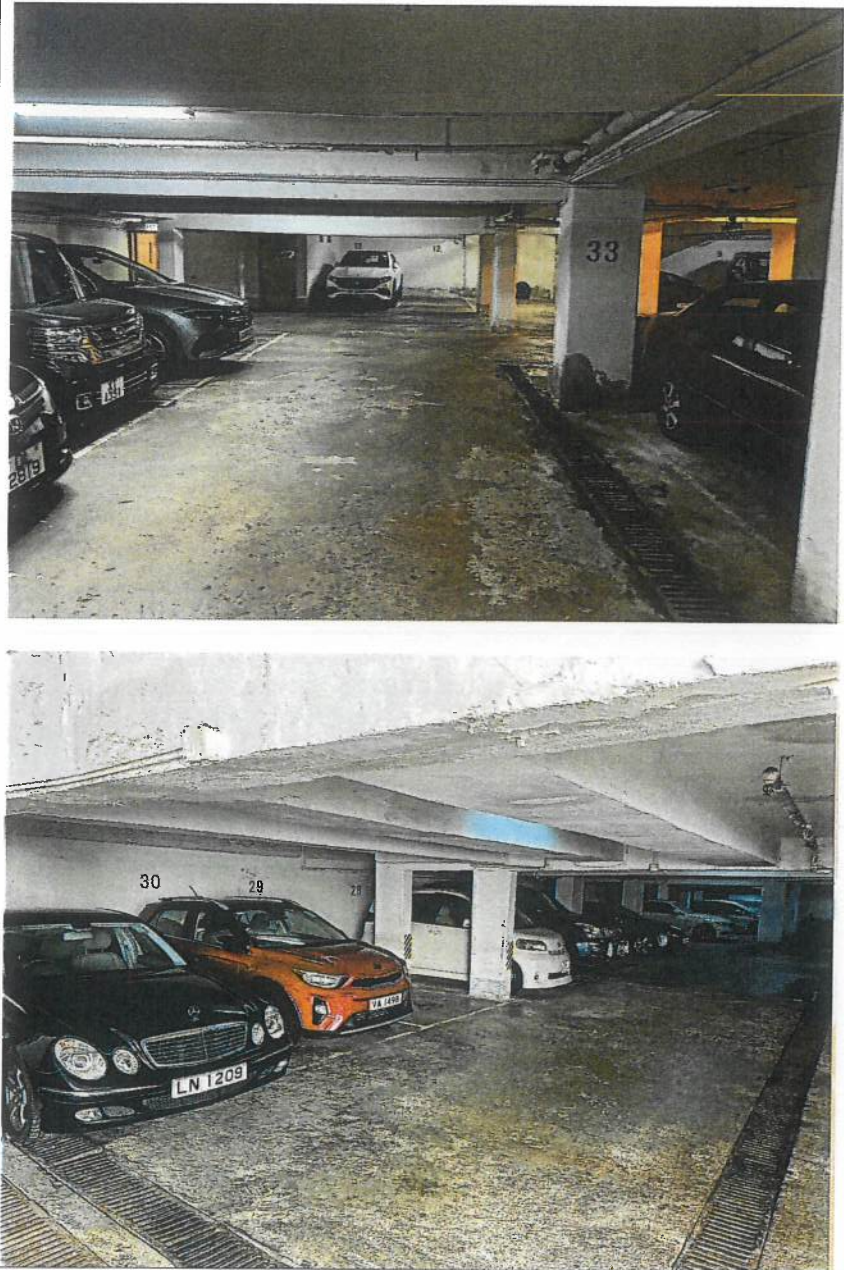
Name of Building	Block 5 of Mandarin Court, Ho Man Tin
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	46
Project Photos	





### Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)

Name of Building	Lorna Villa, Kowloon City
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	48
Project Photos	

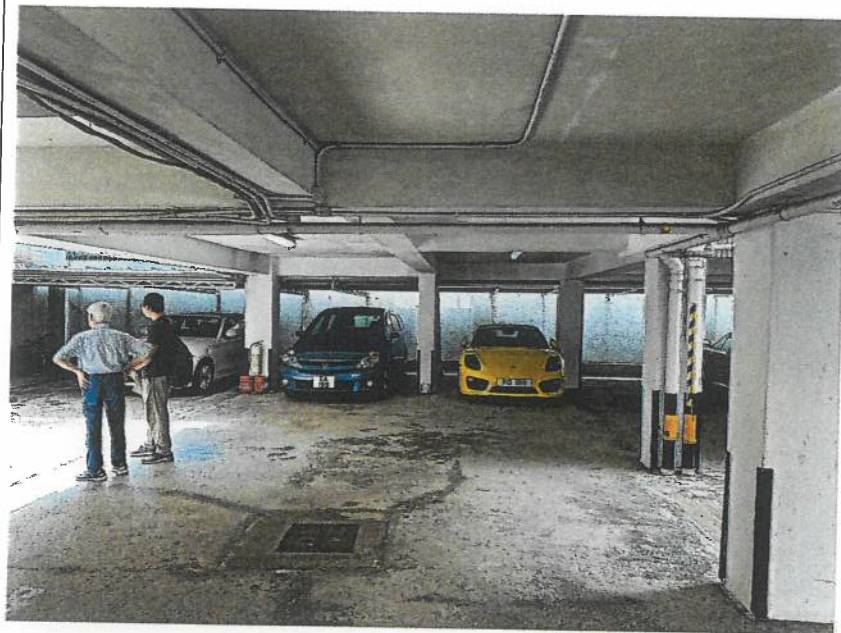


Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)

Name of Building	Cassia Court, Yau Yat Chuen
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	15

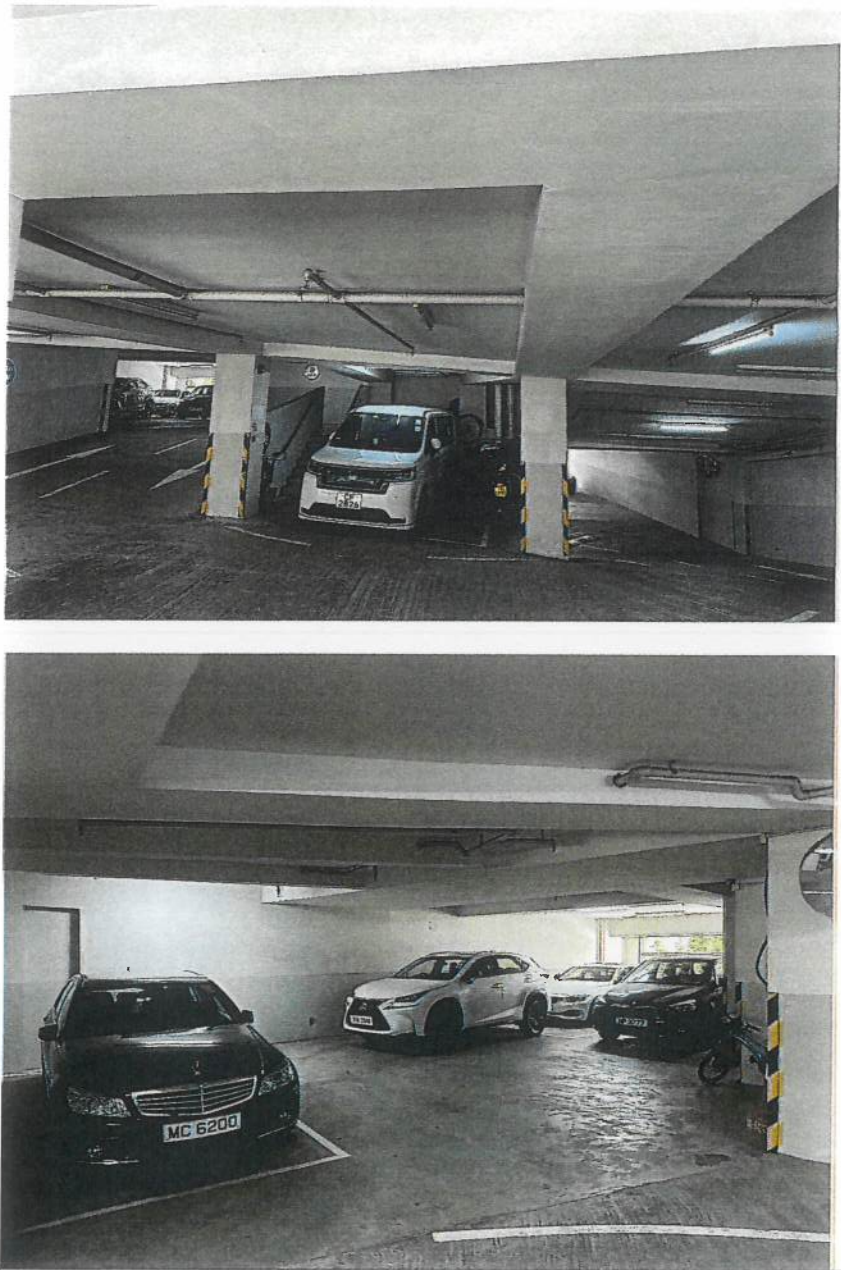
Project Photos





### Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)

Name of Building	The Lamma Palace, Kowloon City
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	47
Project Photos	



Job Reference of EV Charging Design Consultancy Services

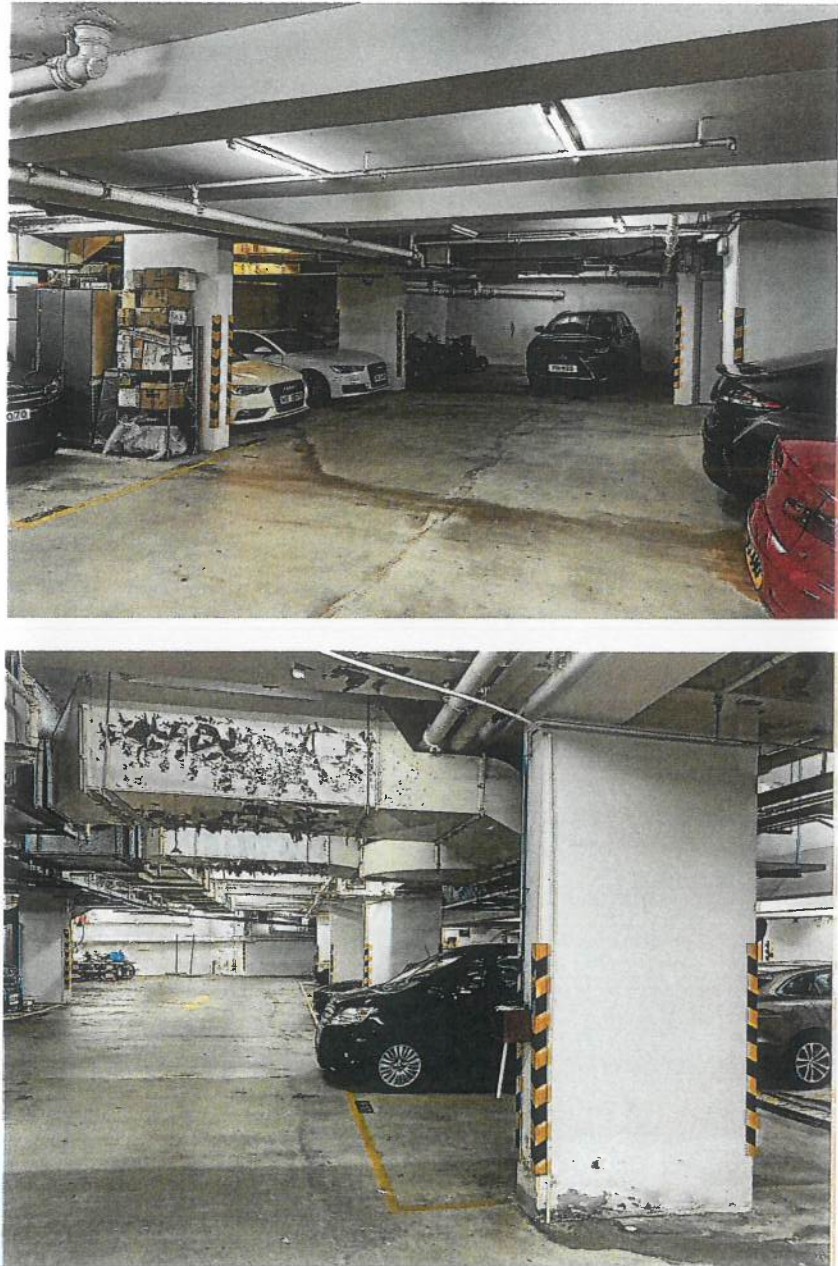
Job Reference (On-going Project)

Name of Building	Shatin 33, Fotan, Shatin
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2026
Quantity of EVCEI	433
Project Photos	<p>                 圖中顯示住宅單位佈局設計圖，其                  住宅單位：199 個                  SHA TIN TOWN LOT NO.33 AREA 42B                  SHA TIN, NEW TERRITORIES                  ANNUAL RENTAL: \$40000                  (S/A AREA: 1962 METRES SQUARE)             </p> <p>                 圖中顯示住宅單位佈局設計圖，其                  住宅單位：199 個                  SHA TIN TOWN LOT NO.33 AREA 42B                  SHA TIN, NEW TERRITORIES                  ANNUAL RENTAL: \$40000                  (S/A AREA: 1962 METRES SQUARE)             </p> <p>                 圖中顯示住宅單位佈局設計圖，其                  住宅單位：199 個                  SHA TIN TOWN LOT NO.33 AREA 42B                  SHA TIN, NEW TERRITORIES                  ANNUAL RENTAL: \$40000                  (S/A AREA: 1962 METRES SQUARE)             </p>



### Job Reference of EV Charging Design Consultancy Services


Job Reference (On-going Project)

Name of Building	Costa Bello, Sai Kung
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2025
Quantity of EVCEI	63
Project Photos	



### Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)

Name of Building	Marbella, Ma On Shan
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	100
Project Photos	



Job Reference of EV Charging Design Consultancy Services

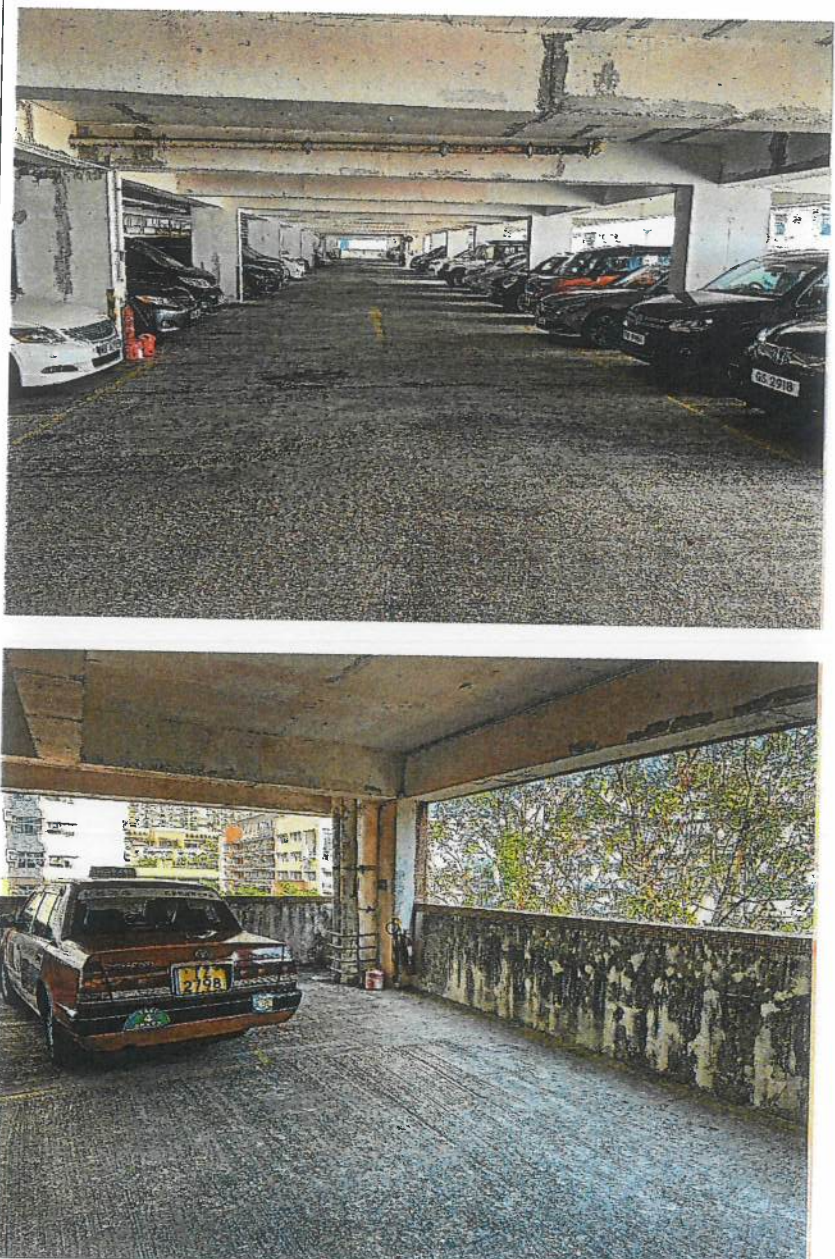
Job Reference (On-going Project)

Name of Building	Meadowlands, Yuen Long
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	464
Project Photos	



### Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)

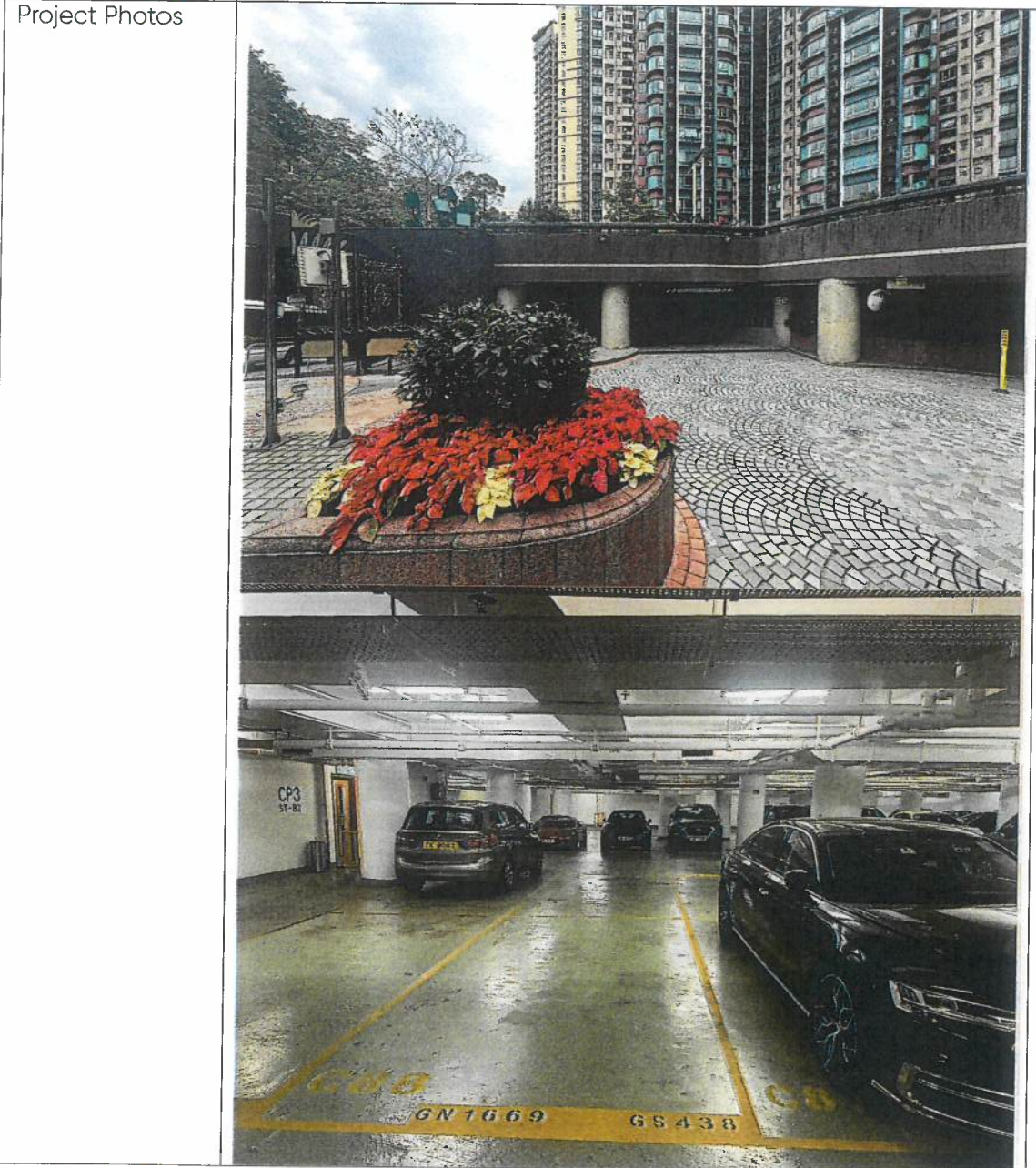
Name of Building	Harmony Garden, Chai Wan
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	468
Project Photos	



Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)


Name of Building	King's Park Villa, Ho Man Tin
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	360





## Job Reference of EV Charging Design Consultancy Services


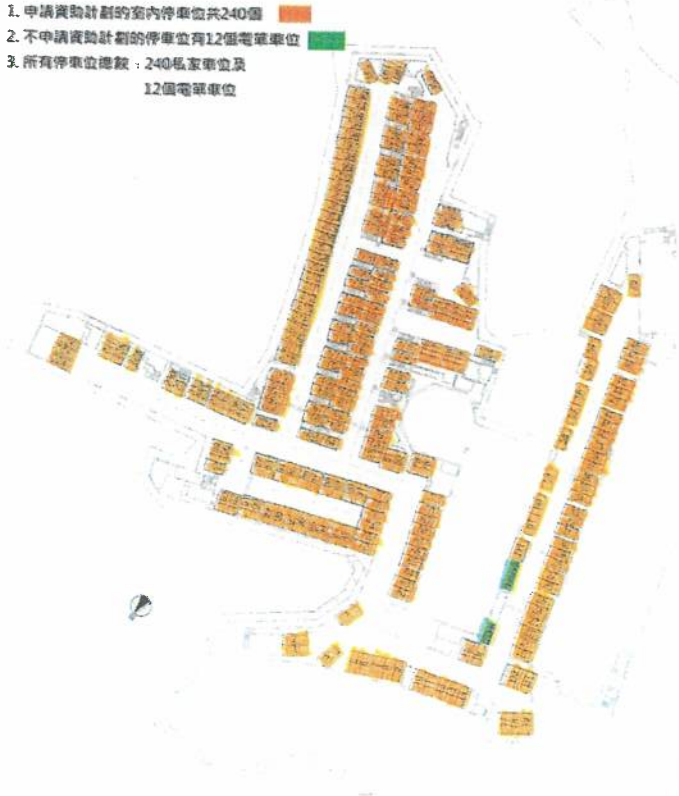
Job Reference (On-going Project)

Name of Building	Wisdom Court, Mid-Levels
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	138
Project Photos	



Job Reference of EV Charging Design Consultancy Services


Job Reference (On-going Project)

Name of Building	The Woodville, Yuen Long
Description of Scope of Services	Consultancy Services for Design and Installation Works under the EV-charging at Home Subsidy Scheme (EHSS)
Project Sum	TBC
Project Period	Q4 2024
Quantity of EVCEI	240
Project Photos	 <p data-bbox="480 1171 790 1272">             1. 申請資助計劃的室內停車位共240個              2. 不申請資助計劃的停車位有12個電單車位              3. 所有停車位總數：240私家車位及              12個電單車位         </p> 



**Job Reference of EV Charging Design Consultancy Services**

Job Reference (On-going Project)

Name of Building	Smart Logistics Park in Yuen Long (Comboxx)
Description of Scope of Services	<p>Lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant. More than 30 land plots and right of way for vehicular access will be acquired at Ha Che Village, Pat Heung, N.T., Hong Kong for the development, total GFA involved 300,000sq.ft.</p> <p>It is a single storey RC structure warehouse with fully automated robotic storage and air-conditioning system. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.</p>
Project Sum	\$500,000,000.00
Project Period	Q4 2024
Quantity of EVCEI	100
Project Photos	



**Job Reference of EV Charging Design Consultancy Services**

Job Reference (On-going Project)

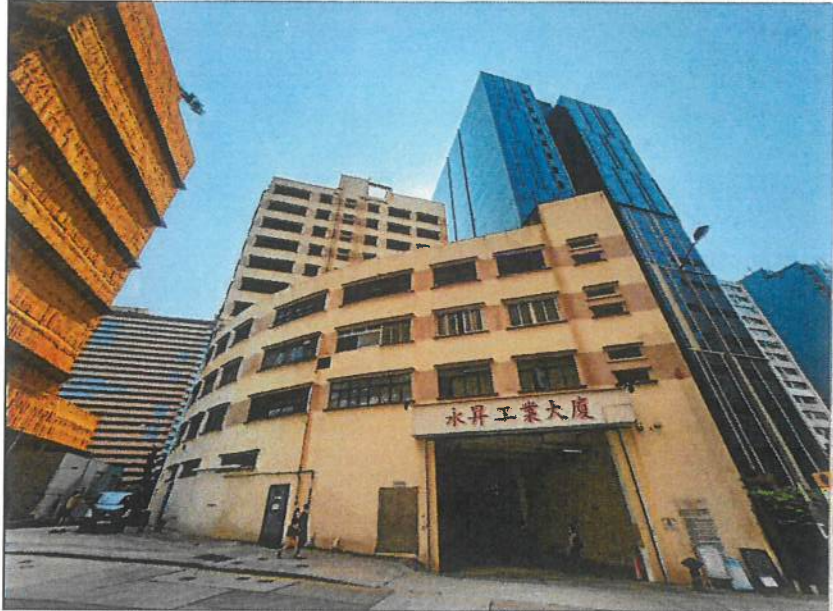
Name of Building	Chilltube - Proposed Temporary Storage and Distribution Of Chilled Poultry/ Meat
Description of Scope of Services	Lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant The development involved total GFA 300,000 sq. ft and it is a single storey RC structure warehouse with fully automated robotic storage and cold chain refrigeration system with operated -18C. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.
Project Sum	\$750,000,000.00
Project Period	Q1 2025
Quantity of EVCEI	50
Project Photos	<p>The diagram is a detailed site plan for the Chilltube project. It features a large central building footprint with a proposed footpath winding around it. The plan includes various landscaping elements such as trees (some to be retained, some to be transplanted), shrubs, and groundcover. It also shows proposed levels, existing levels, parking areas, and noise barriers. A legend on the left side of the plan defines the symbols used for trees, shrubs, levels, and other features. The plan is annotated with numerous technical notes and dimensions, providing a comprehensive overview of the proposed development and its integration with the surrounding site.</p>





### Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)

Name of Building	Wing Shing Industrial Building, 26-30 Wing Kin Road, Kwai Chung - Conversion to Cold Storage
Description of Scope of Services	Asset enhancement and revitalization of whole building conversion from industrial to smart logistic centre with cold storage development.
Project Sum	\$260,000,000.00
Project Period	Q1 2024
Quantity of EVCEI	10
Project Photos	



### Job Reference of EV Charging Design Consultancy Services


Job Reference (Completed Project)

Name of Building	LINKREIT - Tung Tau Market - Renovation Works
Description of Scope of Services	Asset enhancement of shopping mall, Solar PV design installation and carpark/ wet market upgrade works.
Project Sum	\$20,000,000.00
Project Period	Q3 2023
Quantity of EVCEI	40
Project Photos	



### Job Reference of EV Charging Design Consultancy Services

Job Reference (On-going Project)

Name of Building	LINKREIT - Lei Yue Mun Plaza - Asset Enhancement
Description of Scope of Services	Asset enhancement of shopping mall, chiller replacement and carpark upgrade works.
Project Sum	\$45,000,000.00
Project Period	Q1 2025
Quantity of EVCEI	50
Project Photos	



## Job Reference of EV Charging Design Consultancy Services

### Job Reference (On-going Project)


Name of Building	Westin Centre, 26 Hung To Road – Proposed Wholesale Conversion of Industrial Building To Commercial Building
Description of Scope of Services	Revitalization of retail and typical office A&A work, EV-charging enabling works.
Project Sum	\$55,000,000.00
Project Period	Q1 2024
Quantity of EVCEI	10
Project Photos	





## Job Reference of EV Charging Design Consultancy Services


Job Reference (Completed Project)

Name of Building	Goodman - Westlink
Description of Scope of Services	<p>Goodman Westlink will be the state-of-art logistics facility with full ramp access suitable for the newest advancements in automation and robotics.</p> <ul style="list-style-type: none"> <li>- Leasable area of 1.5 million sq ft (approx. 400,000 sq ft per floor)</li> <li>- 4 storey modern logistics building with direct ramp access to all floors</li> <li>- Energy efficient design targeting LEED certification</li> <li>- Amenities such as cafeteria, convenience store and outdoor roof garden shall be available and shuttle bus service to be provided</li> <li>- Abundant parking and loading and unloading bays to support high volume of vehicle movements</li> <li>- 5 metre clear ceiling height with floor loading capacity of 17.5 kPa</li> <li>- FS / Automatic Sprinkler System with HHS3</li> </ul>
Project Sum	\$970,000,000.00
Project Period	2022
Quantity of EVCEI	60
Project Photos	



### Job Reference of EV Charging Design Consultancy Services

Job Reference (Completed Project)

Name of Building	Goodman – GTWW – Proposed Data Centre Development at Lot313 and 49 Sha Tsui Road
Description of Scope of Services	Goodman Tsuen Wan West has significant dedicated high-voltage power supply and is leading the area to become a major data storage, IT and industrial hub when completed in 2022.  - 2 x 50MVA High Voltage (HV 132KV CLP Infrastructure) + 2 x 75MVA High Voltage (HV 132KV CLP Infrastructure) - 2 Deep basement with 2 x 60,000 non-FSI fuel tank provision.
Project Sum	\$100,000,000.00
Project Period	2022
Quantity of EVCEI	60
Project Photos	



**Job Reference of EV Charging Design Consultancy Services**

Job Reference (Completed Project)

Name of Building	Goodman - Interlink - Proposed Godown Development at 35-47 Tsing Yi Road
Description of Scope of Services	<ul style="list-style-type: none"> <li>- Floor plates available from 82,524 sq ft to 137,525 sq ft</li> <li>- High clearance warehouse up to approximately 21 ft (6.5m)</li> <li>- Awarded a Gold Standard Certificate from HK BEAM and a Silver Certificate from LEED</li> <li>- 15 levels with direct vehicle ramp access for container vehicles up to 45 ft (13.7 m)</li> <li>- Seven levels of cargo lift access warehouse</li> <li>- Immediately adjacent to Container Terminal 9 and Stonecutters Bridge</li> </ul>
Project Sum	\$800,000,000.00
Project Period	2012
Quantity of EVCEI	160
Project Photos	





## Job Reference of EV Charging Design Consultancy Services

### Job Reference (Completed Project)

Name of Building	Whitehead, Ma On Shan (Site 1) - Development of Sports Facilities
Description of Scope of Services	A new development project with 180,000 ft2 site area which consisted of four blocks building facilities, outdoor sports facilities, and outdoor parking spaces. The scope of services was BSE design exclusively for professional sport players' usage, especially the lighting design, air ventilation, temperature control, etc.
Project Period	Q3 2022
Quantity of EVCEI	25
Project Photos	



### Job Reference of EV Charging Design Consultancy Services

Job Reference (Completed Project)

Name of Building	Lingnan University Staff Quarters – Proposed Development for 9 Floors
Description of Scope of Services	New base building works at Lingnan University Staff Quarters for 9 floors with 58,900 ft <sup>2</sup> GFA. The works included Drainage Submission, WSD Submission, Plant room design preparation, E&M provision design, statutory submission preparation, master programme preparation, etc.
Project Sum	\$199,110,000.00
Project Period	2023
Quantity of EVCEI	10
Project Photos	





### Job Reference of EV Charging Design Consultancy Services


Job Reference (Completed Project)

Name of Building	Hong Kong Institute of Construction (HKIC) - A&A, Repairs and Improvement Works for Campuses
Description of Scope of Services	Alteration, addition, repair, and improvement works for the Hong Kong Institute of Construction (HKIC), in which the Construction Industry Council with 560,000 ft <sup>2</sup> GFA. The building services consultancy works involve designing, upgrading, and renovating all existing classrooms, workshops, lecture theatres and other auxiliary facilities, lecture hall in all campuses with advanced technologies and sustainable systems.
Project Sum	\$988,000,000.00
Project Period	2021
Quantity of EVCEI	80
Project Photos	 



## Job Reference of EV Charging Design Consultancy Services

## Job Reference (Completed Project)

Name of Building	The Hong Kong Examinations and Assessment Authority (HKEAA) - Renovation Works at Tai Hing Assessment Centre
Description of Scope of Services	The renovation and improvement work of Tai Hing Assessment Centre with 30,000 ft <sup>2</sup> GFA. The scope of works includes the renovation of classrooms, toilets, school halls and the covered playground of the existing building in accordance with the specifications and requirements of The Hong Kong Examinations and Assessment Authority and the latest statutory requirement.
Project Sum	\$30,000,000.00
Project Period	2021
Quantity of EVCEI	10
Project Photos	

## Job Reference of EV Charging Design Consultancy Services

### Job Reference (Completed Project)

Name of Building	Sun Tin Wai Estate, Shatin - Asset Enhancement Works
Description of Scope of Services	Asset enhancement of shopping mall, Solar PV design installation and carpark/ wet market upgrade works.
Project Sum	\$55,000,000.00
Project Period	2022
Quantity of EVCEI	120
Project Photos	 





**Job Reference of EV Charging Design Consultancy Services**

Job Reference (Completed Project)

Name of Building	Tai Wo Plaza - Asset Enhancement Works
Description of Scope of Services	An iconic shopping mall which is situated next to Tai Wo MTR station, this A&A asset enhancement project with over 41000 ft <sup>2</sup> GFA involved stringent and comprehensive M&E design, especially plumbing and drainage system upgrade, additional vertical transportation installation, to greatly enhance the living quality of the community. We also played the Registered Energy Assessor to consolidate, endorse, and submit the Form of Compliance to government agency.
Project Sum	\$35,000,000.00
Project Period	2021
Quantity of EVCEI	60
Project Photos	





Job Reference of EV Charging Design Consultancy Services

Job Reference (Completed Project)

Name of Building	Mei Lam Commercial Centre & Market – Asset Enhancement Works
Description of Scope of Services	Renovation works at Mei Lam Commercial Centre & Market with 10,610 ft² GFA. The works included Drainage Submission, WSD Submission, E&M provision design, EV-charging enabling works, statutory submission preparation, master programme preparation, etc.
Project Sum	\$48,000,000.00
Project Period	2021
Quantity of EVCEI	100
Project Photos	



## Job Reference of EV Charging Design Consultancy Services

Job Reference (Completed Project)


Name of Building	Fu Shin Market & Tai Yuen Market, Tai Po - Asset Enhancement Works
Description of Scope of Services	Asset enhancement of shopping mall, Solar PV design installation and carpark/ wet market upgrade works.
Project Sum	\$18,000,000.00
Project Period	2022
Quantity of EVCEI	100
Project Photos	





### Job Reference of EV Charging Design Consultancy Services

Job Reference (Completed Project)

Name of Building	Remington Centre, 23 Hung To Road - Proposed Wholesale Conversion Of Industrial Building To Commercial Building
Description of Scope of Services	Revitalization of retail and typical office A&A work, EV-charging enabling works.
Project Sum	\$45,000,000.00
Project Period	2023
Quantity of EVCEI	10
Project Photos	



## Job Reference of EV Charging Design Consultancy Services

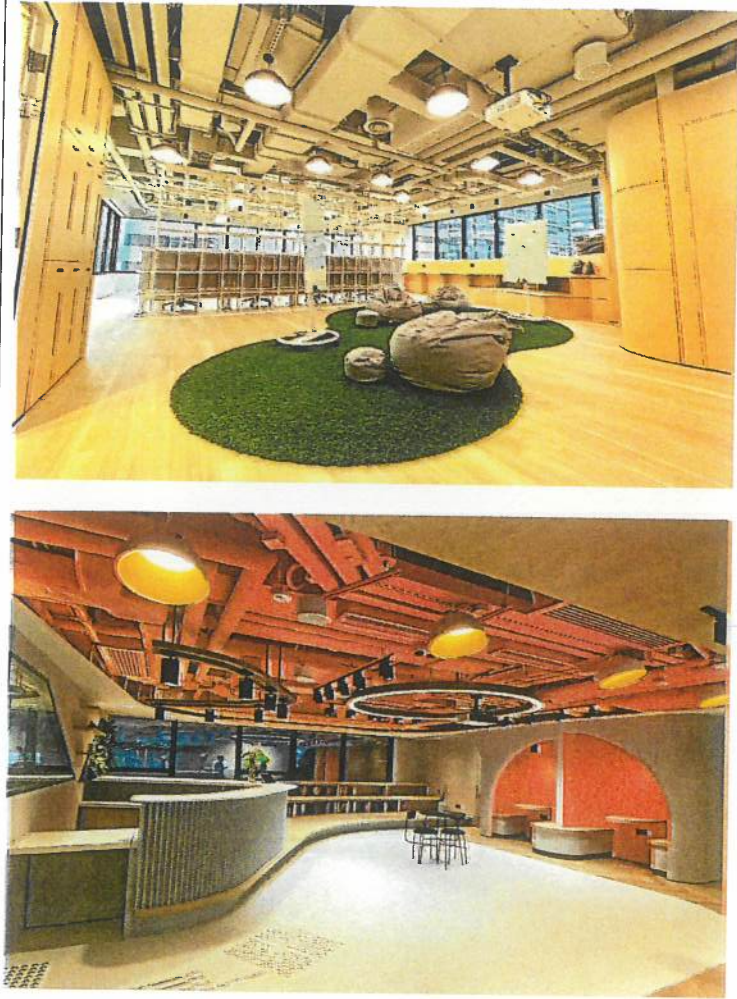
### Job Reference (Completed Project)

Name of Building	Fullerton Centre, 19 Hung To Road - Proposed Wholesale Conversion Of Industrial Building To Commercial Building
Description of Scope of Services	Revitalization of retail and typical office A&A work, EV-charging enabling works.
Project Sum	\$45,000,000.00
Project Period	2023
Quantity of EVCEI	10
Project Photos	



### Job Reference of EV Charging Design Consultancy Services


Job Reference (Completed Project)

Name of Building	G/F – 9/F, BGCA Headquarters No. 3 Lockhart Road, Wan Chai – Architectural Design and Construction for Fitout & Beam Plus Interior
Description of Scope of Services	Fitting-out works for NGO office from G/F to 9/F (except 2/F) with 30,000 ft <sup>2</sup> GFA. The building services provisions incorporate the concept of sustainability design including energy efficiency, reliability of system, maintainability and environmental issue to meet Beam Plus Silver target. Building Service provisions embedded AV system in hall, lobby, boardroom, offices to improve existing headroom and atmosphere to higher levels of indoor comfort environment.
Project Sum	\$57,000,000.00
Project Period	2021
Quantity of EVCEI	10
Project Photos	



## Job Reference of EV Charging Design Consultancy Services


Job Reference (Completed Project)

Name of Building	Gaw Capital - 625 King's Road, North Point - Regeneration of Commercial Development
Description of Scope of Services	A large A&A asset enhancement project located in North Point with 32,000 ft <sup>2</sup> GFA. An avalanche of innovative and diversified M&E designs were successfully put in place, namely solar-desiccant dehumidification system, chiller plant optimization and reconfiguration, indoor air quality improvement works, destination control system for vertical transportation, luxurious lighting design, plumbing works for vertical greens of the building, security and surveillance system upgrade, new additional electrical vehicle charging system, plumbing and drainage replacement works, smart performance display.
Project Sum	\$103,000,000.00
Project Period	2021
Quantity of EVCEI	30
Project Photos	



## Job Reference of EV Charging Design Consultancy Services

## Job Reference (Completed Project)

Name of Building	The Olympian Hong Kong at No.18 Hoi Fai Road, Tai Kok Tsui, Kowloon
Description of Scope of Services	Asset enhancement for a luxury hotel located in Olympic with 58,100 ft <sup>2</sup> GFA. Different engineering solutions to the existing problems of mouldy environment, condensation on wall and ceiling, short circuit of cooled air ventilation, and lighting malfunction have been advised. Registered Energy Assessor service is provided upon completion of the construction.
Project Sum	\$16,500,000.00
Project Period	2022
Quantity of EVCEI	20
Project Photos	



**Job Reference of EV Charging Design Consultancy Services**

Job Reference (Completed Project)

Name of Building	Eltee Building at No.3 Ning Foo Street, Chai Wan - Alternation and Additional Works
Description of Scope of Services	Revitalization of existing conversion from industrial into commercial complex including A/C plant replacement, EV-charging design proposal, typical office at tower and retail at podium development.
Project Sum	\$60,000,000.00
Project Period	2021
Quantity of EVCEI	12
Project Photos	 <p>The 'Project Photos' section contains two side-by-side photographs. The left photograph, labeled 'Before', shows the Eltee Building in its original state, featuring a grey facade and a ground floor with a 'Harley-Davidson' store. The right photograph, labeled 'After', shows the same building after renovation, with a modern facade featuring a prominent red vertical stripe and blue-tinted windows. A yellow and green bus is visible in the foreground of the 'After' photo. A timestamp '2019/1/3 16:33' is visible at the bottom of the 'Before' photo.</p>





機電工程署  
EMSD  
表格 WR1  
香港特別行政區政府  
電力條例(第 406 章)  
電力(線路)規例  
完工證明書

FORM WR1  
THE GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION  
ELECTRICITY ORDINANCE (CAP. 406)  
ELECTRICITY (WIRING) REGULATIONS  
WORK COMPLETION CERTIFICATE

致 固定電力裝置擁有人：  
To the Owner of Fixed Electrical Installation,

第 1 部 (對設計方面的證明) Part 1 (For Certification of DESIGN)	
<p>(1) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明本證明書第 3 部所指固定電力裝置的設計，符合條例的規定。</p> <p>I, _____, a registered electrical worker(REW), pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that the Fixed Electrical Installation depicted in Part 3 of this certificate has been designed in accordance with the Ordinance.</p>	<p>註冊電業工程人員簽署： Signature of REW:</p> <p>註冊編號 Registration No.:</p> <p>屆滿日期 Expiry Date:</p> <p>級別 Grade:</p> <p>准許工程 Permitted Works:</p> <p>聯絡電話 Contact Tel. No.:</p> <p>簽署日期 Date Signed:</p>
<p>(2) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加簽。</p> <p>I, _____, on behalf of _____ (a registered electrical contractor(REC)), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406.</p>	<p>註冊電業承辦商簽署： Signature of REC:</p> <p>註冊編號 Registration No.:</p> <p>屆滿日期 Expiry Date:</p> <p>聯絡電話 Contact Tel. No.:</p> <p>簽署日期 Date Signed:</p>

第 2 部 (對安裝、檢查及測試方面的證明) Part 2 (For Certification of INSTALLATION, INSPECTION & TESTING)	
<p>(3) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明(請選出適用的一段文字，並在其空格內加上✓號)：</p> <p>I, <u>Chung Chun Pong</u>, a REW, pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that (select the appropriate paragraph by ticking the appropriate box below) :-</p> <p><input checked="" type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指的固定電力裝置，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected the Fixed Electrical Installation depicted in Part 3 of this certificate on <u>15/12/2022</u>. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p> <p><input type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指固定電力裝置的其中部分，至於該固定電力裝置並非由本人檢查的各部分，本人已按照《電力(線路)規例》第 21(3)條的規定，收到由其他註冊電業工程人員就個別部分所發出的有效證明書(表格 WR1(A))，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected only part of the Fixed Electrical Installation depicted in Part 3 of this certificate on _____, however in respect of those parts of the Fixed Electrical Installation which I have not inspected, I have received valid certificates (Form WR1(A)) certified by REWs for the individual parts as required under regulation 21(3) of the Electricity (Wiring) Regulation. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p>	<p>註冊電業工程人員簽署： Signature of REW:</p> <p>註冊編號 Registration No.:</p> <p>W109695</p> <p>屆滿日期 Expiry Date:</p> <p>28/06/2025</p> <p>級別 Grade:</p> <p>A</p> <p>准許工程 Permitted Works:</p> <p>A0</p> <p>聯絡電話 Contact Tel No.:</p> <p>9810 0509</p> <p>簽署日期 Date Signed:</p> <p>15/12/2022</p>
<p>(4) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加簽；並確認此檢查紀錄已送交裝置擁有人，而且本人亦根據《電力(線路)規例》第 22 條保存此紀錄的副本。</p> <p>I, <u>YU KI CHUNG</u>, on behalf of <u>ADVANCE ENGINEERING (DEVELOPMENT) LTD</u> (a REC), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406, and confirm that the above inspection records have been given to the owner, and copies of which are being kept by me in accordance with regulation 22 of the Electricity (Wiring) Regulations.</p>	<p>註冊電業承辦商簽署： Signature of REC:</p> <p>註冊編號 Registration No.:</p> <p>020136</p> <p>屆滿日期 Expiry Date:</p> <p>22 DEC 2022</p> <p>聯絡電話 Contact Tel. No.:</p> <p>3571 9483</p> <p>簽署日期 Date Signed:</p> <p>15/12/2022</p>

註：  在適當空格內加上✓號

NOTE:  Tick the appropriate box



第 3 部 ( 固定電力裝置資料 )

Part 3 (Particulars of The Fixed Electrical Installation)

(5) 固定電力裝置所在地址 :

Address of the Fixed Electrical Installation:

CBCT Meter Room, 1/F, Elements, 1 Austin Road West, KLN

固定電力裝置擁有人的姓名或機構名稱 :

Name or Organisation of the Owner of the Fixed Electrical Installation:

MTR Corporation Limited

固定電力裝置擁有人的聯絡地址 (如與上項不同) :

Correspondence Address of the Owner of the Fixed Electrical Installation (if different from the above):

聯絡電話 :

Contact Tel No.: 3927 9000

固定電力裝置的簡要說明、及/或\*簡圖 (另外夾附圖則 \_\_\_\_\_ 頁, 以及說明 \_\_\_\_\_ 頁)

Brief description of Fixed Electrical Installation and/or\* Schematic Diagrams (Additional No. of \_\_\_\_\_ drawings and \_\_\_\_\_ description sheets attached.)

(a) 單線電路圖 :

Single line diagram:

See Attachment

(b) 固定電力裝置受檢查部分的位置及說明

Location & description of inspected part of the Fixed Electrical Installation:

Electrical Installation, at 1/F CBCT Meter Room for Lavatory No.17

(c) 固定電力裝置受檢查部分的最大開關器件為 \_\_\_\_\_ 安培 \_\_\_\_\_ 伏特, ~~單~~相/三相 \*

Largest Switching Device of the inspected part of the Fixed Electrical Installation \_\_\_\_\_ amperes \_\_\_\_\_ volts, ~~single~~/three\* phase

請將不適用的刪去

Delete whichever is inapplicable

**FORM WR1**  
 THE GOVERNMENT OF THE HONG KONG  
 SPECIAL ADMINISTRATIVE REGION  
 ELECTRICITY ORDINANCE (CAP. 406)  
 ELECTRICITY (WIRING) REGULATIONS  
 WORK COMPLETION CERTIFICATE

 致 固定電力裝置擁有人：  
 To the Owner of Fixed Electrical Installation,

第 1 部 (對設計方面的證明) Part 1 (For Certification of DESIGN)	
(1) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章)第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明本證明書第 3 部所指固定電力裝置的設計，符合條例的規定。  I, _____, a registered electrical worker(REW), pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that the Fixed Electrical Installation depicted in Part 3 of this certificate has been designed in accordance with the Ordinance.	註冊電業工程人員簽署： Signature of REW:  註冊編號 Registration No.:  屆滿日期 Expiry Date:  級別 Grade:  准許工程 Permitted Works:  聯絡電話 Contact Tel. No.:  簽署日期 Date Signed:
(2) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章)第 34(11)條的規定，在本證明書上加簽。  I, _____, on behalf of _____  (a registered electrical contractor(REC)), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406.	註冊電業承辦商簽署： Signature of REC:  註冊編號 Registration No.:  屆滿日期 Expiry Date:  聯絡電話 Contact Tel. No.:  簽署日期 Date Signed:
第 2 部 (對安裝、檢查及測試方面的證明) Part 2 (For Certification of INSTALLATION, INSPECTION & TESTING)	
(3) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章)第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明(請選出適用的一段文字，並在其空格內加上✓號)：- I, <u>Chung Chun Pong</u> , a REW, pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that (select the appropriate paragraph by ticking the appropriate box below) : - <input checked="" type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指的固定電力裝置，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected the Fixed Electrical Installation depicted in Part 3 of this certificate on <u>18/01/2023</u> . I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.  <input type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指固定電力裝置的其中部分，至於該固定電力裝置並非由本人檢查的各部分，本人已按照《電力(線路)規例》第 21(3)條的規定，收到由其他註冊電業工程人員就個別部分所發出的有效證明書(表格 WR1(A))。本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected only part of the Fixed Electrical Installation depicted in Part 3 of this certificate on _____, however in respect of those parts of the Fixed Electrical Installation which I have not inspected, I have received valid certificates (Form WR1(A)) certified by REWs for the individual parts as required under regulation 21(3) of the Electricity (Wiring) Regulation. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.	註冊電業工程人員簽署： Signature of REW:   註冊編號 Registration No.: W109695  屆滿日期 Expiry Date: 28/06/2025  級別 Grade: A  准許工程 Permitted Works: A0  聯絡電話 Contact Tel No.: 9810 0509  簽署日期 Date Signed: 17/05/2023
(4) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章)第 34(11)條的規定，在本證明書上加簽，並確認此檢查紀錄已送交裝置擁有人，而且本人亦根據《電力(線路)規例》第 22 條保存此紀錄的副本。 I, <u>PANG YUK LUN</u> , on behalf of <u>FUNG TAT ELECTRICAL ENG. CO. LTD.</u> (a REC), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406, and confirm that the above inspection records have been given to the owner, and copies of which are being kept by me in accordance with regulation 22 of the Electricity (Wiring) Regulations.	註冊電業承辦商簽署： Signature of REC:   註冊編號 Registration No.: 008758 屆滿日期 Expiry Date: 19 Oct 2025 聯絡電話 Contact Tel. No.: 3571 9483 簽署日期 Date Signed: 17/05/2023

 註： 在適當空格內加上✓號  
 NOTE: Tick the appropriate box

第 3 部 ( 固定電力裝置資料 )  
Part 3 (Particulars of The Fixed Electrical Installation)

(5) 固定電力裝置所在地址 :  
Address of the Fixed Electrical Installation:

Lav. 1, 1/F, Elements, 1 Austin Road West, KLN

固定電力裝置擁有人的姓名或機構名稱 :  
Name or Organisation of the Owner of the Fixed Electrical Installation:

MTR Corporation Limited

固定電力裝置擁有人的聯絡地址 (如與上項不同):  
Correspondence Address of the Owner of the Fixed Electrical Installation (if different from the above):

聯絡電話 : 3927 9000  
Contact Tel No.: 3927 9000

固定電力裝置的簡要說明 · 及/或\*簡圖 (另外夾附圖則 \_\_\_\_\_ 頁 · 以及說明 \_\_\_\_\_ 頁)  
Brief description of Fixed Electrical Installation and/or\* Schematic Diagrams (Additional No. of \_\_\_\_\_ drawings and  
\_\_\_\_\_ description sheets attached.)

(a) 單線電路圖 :  
Single line diagram:

See Attachment

(b) 固定電力裝置受檢查部分的位置及說明  
Location & description of inspected part of the Fixed Electrical Installation:  
Electrical Installation at 1/F Room E1203 for Lavatory No.1

(c) 固定電力裝置受檢查部分的最大開關器件為 \_\_\_\_\_ 安培 \_\_\_\_\_ 伏特 ~~單相~~/三相 \*  
Largest Switching Device of the inspected part of the Fixed Electrical Installation ~~63~~ \_\_\_\_\_ amperes ~~380~~ \_\_\_\_\_ volts,  
~~single~~/three\*phase

\* 請將不適用的刪去  
Delete whichever is inapplicable



FORM WR1  
THE GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION  
ELECTRICITY ORDINANCE (CAP. 406)  
ELECTRICITY (WIRING) REGULATIONS  
WORK COMPLETION CERTIFICATE

致 固定電力裝置擁有人：  
To the Owner of Fixed Electrical Installation,

第 1 部 (對設計方面的證明) Part 1 (For Certification of DESIGN)	
<p>(1) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明本證明書第 3 部所指固定電力裝置的設計，符合條例的規定。</p> <p>I, _____, a registered electrical worker(REW), pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that the Fixed Electrical Installation depicted in Part 3 of this certificate has been designed in accordance with the Ordinance.</p>	<p>註冊電業工程人員簽署： Signature of REW:</p> <p>註冊編號 Registration No.:</p> <p>屆滿日期 Expiry Date:</p> <p>級別 Grade:</p> <p>准許工程 Permitted Works:</p> <p>聯絡電話 Contact Tel. No.:</p> <p>簽署日期 Date Signed:</p>
<p>(2) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加簽。</p> <p>I, _____, on behalf of _____ (a registered electrical contractor(REC)), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406.</p>	<p>註冊電業承辦商簽署： Signature of REC:</p> <p>註冊編號 Registration No.:</p> <p>屆滿日期 Expiry Date:</p> <p>聯絡電話 Contact Tel. No.:</p> <p>簽署日期 Date Signed:</p>

第 2 部 (對安裝、檢查及測試方面的證明) Part 2 (For Certification of INSTALLATION, INSPECTION & TESTING)	
<p>(3) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明(請選出適用的一段文字，並在其空格內加上✓號)：-</p> <p>I, <u>Chung Chun Pong</u>, a REW, pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that (select the appropriate paragraph by ticking the appropriate box below): -</p> <p><input checked="" type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指的固定電力裝置。本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected the Fixed Electrical Installation depicted in Part 3 of this certificate on <u>25/04/2023</u>. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p> <p><input type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指固定電力裝置的其中部分。至於該固定電力裝置並非由本人檢查的各部分，本人已按照《電力(線路)規例》第 21(3)條的規定，收到由其他註冊電業工程人員就個別部分所發出的有效證明書(表格 WR1(A))，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected only part of the Fixed Electrical Installation depicted in Part 3 of this certificate on _____, however in respect of those parts of the Fixed Electrical Installation which I have not inspected, I have received valid certificates (Form WR1(A)) certified by REWs for the individual parts as required under regulation 21(3) of the Electricity (Wiring) Regulation. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p>	<p>註冊電業工程人員簽署： Signature of REW: <u>鄧</u></p> <p>註冊編號 Registration No.:</p> <p>W109695</p> <p>屆滿日期 Expiry Date:</p> <p>28/06/2025</p> <p>級別 Grade:</p> <p>A</p> <p>准許工程 Permitted Works:</p> <p>A0</p> <p>聯絡電話 Contact Tel. No.:</p> <p>9810 0509</p> <p>簽署日期 Date Signed:</p> <p>25/04/2023</p>
<p>(4) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加簽；並確認此檢查紀錄已送交裝置擁有人，而且本人亦根據《電力(線路)規例》第 22 條保存此紀錄的副本。</p> <p>I, _____, on behalf of <u>FUNG TAT ELECTRICAL ENG CO. LTD.</u> (a REC), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406, and confirm that the above inspection records have been given to the owner, and copies of which are being kept by me in accordance with regulation 22 of the Electricity (Wiring) Regulations.</p>	<p>註冊電業承辦商簽署： Signature of REC: <u>[Signature]</u></p> <p>註冊編號 Registration No.:</p> <p>008758</p> <p>屆滿日期 Expiry Date:</p> <p>22 DEC 2025</p> <p>聯絡電話 Contact Tel. No.:</p> <p>2487 8021</p> <p>簽署日期 Date Signed:</p> <p>26/04/2023</p>

註：  在適當空格內加上✓號

NOTE:  Tick the appropriate box

第 3 部 (固定電力裝置資料)

Part 3 (Particulars of The Fixed Electrical Installation)

(5) 固定電力裝置所在地址：

Address of the Fixed Electrical Installation:

Room EG801, 2/F, Element, 1 Austin Road West, KLN

固定電力裝置擁有人的姓名或機構名稱：

Name or Organisation of the Owner of the Fixed Electrical Installation:

MTR Corporation Limited

固定電力裝置擁有人的聯絡地址 (如與上項不同)：

Correspondence Address of the Owner of the Fixed Electrical Installation (if different from the above):

聯絡電話：

Contact Tel No.: 3927 9000

固定電力裝置的簡要說明，及/或\*簡圖 (另外夾附圖則 \_\_\_\_\_ 頁，以及說明 \_\_\_\_\_ 頁)

Brief description of Fixed Electrical Installation and/or\* Schematic Diagrams (Additional No. of \_\_\_\_\_ drawings and 3 \_\_\_\_\_ description sheets attached.)

(a) 單線電路圖：

Single line diagram:

See Attachment

(b) 固定電力裝置受檢查部分的位置及說明

Location & description of inspected part of the Fixed Electrical Installation:

Electrical Installation at G/F Room EG801 for Lavatory No.16

(c) 固定電力裝置受檢查部分的最大開關器件為 \_\_\_\_\_ 安培 \_\_\_\_\_ 伏特，~~單~~相/三相\*

Largest Switching Device of the inspected part of the Fixed Electrical Installation 63 amperes 380 volts, ~~single~~/three\* phase

請將不適用的刪去

Delete whichever is inapplicable



機電工程署  
EMSD  
表格 WR1  
香港特別行政區政府  
電力條例(第 406 章)  
電力(線路)規例  
完工證明書

FORM WR1  
THE GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION  
ELECTRICITY ORDINANCE (CAP. 406)  
ELECTRICITY (WIRING) REGULATIONS  
WORK COMPLETION CERTIFICATE

致 固定電力裝置擁有人：  
To the Owner of Fixed Electrical Installation,

第 1 部 (對設計方面的證明) Part 1 (For Certification of DESIGN)	
<p>(1) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明本證明書第 3 部所指固定電力裝置的設計，符合條例的規定。</p> <p>I, _____, a registered electrical worker(REW), pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that the Fixed Electrical Installation depicted in Part 3 of this certificate has been designed in accordance with the Ordinance.</p>	<p>註冊電業工程人員簽署： Signature of REW： 註冊編號 Registration No.： 屆滿日期 Expiry Date： 級別 Grade： 准許工程 Permitted Works： 聯絡電話 Contact Tel. No.： 簽署日期 Date Signed：</p>
<p>(2) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加簽。</p> <p>I, _____, on behalf of _____ (a registered electrical contractor(REC)), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406.</p>	<p>註冊電業承辦商簽署： Signature of REC： 註冊編號 Registration No.： 屆滿日期 Expiry Date： 聯絡電話 Contact Tel. No.： 簽署日期 Date Signed：</p>
第 2 部 (對安裝、檢查及測試方面的證明) Part 2 (For Certification of INSTALLATION, INSPECTION & TESTING)	
<p>(3) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明(請選出適用的一段文字，並在其空格內加上✓號)：-</p> <p>I, <u>Chung Chun Pong</u>, a REW, pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that (select the appropriate paragraph by ticking the appropriate box below) :-</p> <p><input checked="" type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指的固定電力裝置，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected the Fixed Electrical Installation depicted in Part 3 of this certificate on <u>18/05/2023</u>. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p> <p><input type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指固定電力裝置的其中部分，至於該固定電力裝置並非由本人檢查的各部分，本人已按照《電力(線路)規例》第 21(3)條的規定，收到由其他註冊電業工程人員就個別部分所發出的有效證明書(表格 WR1(A))，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected only part of the Fixed Electrical Installation depicted in Part 3 of this certificate on _____, however in respect of those parts of the Fixed Electrical Installation which I have not inspected, I have received valid certificates (Form WR1(A)) certified by REWs for the individual parts as required under regulation 21(3) of the Electricity (Wiring) Regulation. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p>	<p>註冊電業工程人員簽署： Signature of REW：  註冊編號 Registration No.： W109695 屆滿日期 Expiry Date： 28/06/2025 級別 Grade： A 准許工程 Permitted Works： A0 聯絡電話 Contact Tel No.： 9810 0509 簽署日期 Date Signed： 18/05/2023</p>
<p>(4) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加簽；並確認此檢查紀錄已送交裝置擁有人，而且本人亦根據《電力(線路)規例》第 22 條保存此紀錄的副本。</p> <p>I, <u>PANG YUK LUN</u>, on behalf of <u>FUNG TAT ELECTRICAL ENG CO. LTD.</u> (a REC), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406, and confirm that the above inspection records have been given to the owner, and copies of which are being kept by me in accordance with regulation 22 of the Electricity (Wiring) Regulations.</p>	<p>註冊電業承辦商簽署： Signature of REC：  註冊編號 Registration No.：008758 屆滿日期 Expiry Date：19 OCT 2025 聯絡電話 Contact Tel. No.：2487 8021 簽署日期 Date Signed：18/05/2023</p>

註： 在適當空格內加上✓號  
NOTE: Tick the appropriate box



第 3 部 ( 固定電力裝置資料 )

Part 3 (Particulars of The Fixed Electrical Installation)

- (5) 固定電力裝置所在地址：  
Address of the Fixed Electrical Installation:

Room E1601, 2/F, Elements, 1 Austin Road West, KLN

- 固定電力裝置擁有人的姓名或機構名稱：  
Name or Organisation of the Owner of the Fixed Electrical Installation:

MTR Corporation Limited

- 固定電力裝置擁有人的聯絡地址 (如與上項不同)：  
Correspondence Address of the Owner of the Fixed Electrical Installation (if different from the above):

聯絡電話：  
Contact Tel No.: 3927 9000

固定電力裝置的簡要說明·及/或\*簡圖 (另外夾附圖則\_\_\_\_\_頁·以及說明\_\_\_\_\_頁)  
Brief description of Fixed Electrical Installation and/or\* Schematic Diagrams (Additional No. of \_\_\_\_\_ drawings and  
4 \_\_\_\_\_ description sheets attached.)

- (a) 單線電路圖：  
Single line diagram:

See Attachment

- (b) 固定電力裝置受檢查部分的位置及說明  
Location & description of inspected part of the Fixed Electrical Installation:

Electrical Installation at 1/F Room E1601 for Lavatory No.4

- (c) 固定電力裝置受檢查部分的最大開關器件為\_\_\_\_\_安培\_\_\_\_\_伏特·~~單~~相/三相\*

Largest Switching Device of the inspected part of the Fixed Electrical Installation 20 amperes 220 volts,  
single/~~three~~\*phase

\* 請將不適用的刪去  
Delete whichever is inapplicable



表格 WR1(A)  
香港特別行政區政府  
電力條例(第 406 章)  
電力(線路)規例  
完工(部分裝置)證明書

FORM WR1(A)  
THE GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION  
ELECTRICITY ORDINANCE (CAP. 406)  
ELECTRICITY (WIRING) REGULATIONS  
WORK COMPLETION (PART OF THE INSTALLATION) CERTIFICATE

致註冊電業工程人員：  
To The Registered Electrical Worker,

第 1 部 (對設計方面的證明) Part 1 (For Certification of DESIGN)	
<p>(1) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明本證明書第 3 部所指固定電力裝置的設計，符合條例的規定。</p> <p>I, <u>Sze Wing Choi</u>, a registered electrical worker(REW), pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that the Fixed Electrical Installation depicted in Part 3 of this certificate has been designed in accordance with the Ordinance.</p>	<p>註冊電業工程人員簽署： Signature of REW: <u>白榮</u></p> <p>註冊編號 Registration No.: W109623 屆滿日期 Expiry Date: 11-02-2023 級別 Grade: H 准許工程 Permitted Works: B0-H0 聯絡電話 Contact Tel. No.: 2572 8332 簽署日期 Date Signed: <u>5/9/2022</u></p>
<p>(2) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加簽。</p> <p>I, <u>Fu Hing Wah, John</u>, on behalf of <u>Savills Engineering Limited</u> (a registered electrical contractor(REC)), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406.</p>	<p>註冊電業承辦商簽署： Signature of REC:</p> <p>註冊編號 Registration No.: 001133 屆滿日期 Expiry Date: 15-06-2025 聯絡電話 Contact Tel. No.: 2534 1688 簽署日期 Date Signed: <u>5/9/2022</u></p>
第 2 部 (對安裝、檢查及測試方面的證明) Part 2 (For Certification of INSTALLATION, INSPECTION & TESTING)	
<p>(3) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指的固定電力裝置，本人認為該固定電力裝置符合條例的規定，而且操作安全。</p> <p>I, <u>Sze Wing Choi</u>, a REW, pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that I have inspected the Fixed Electrical Installation depicted in Part 3 of this certificate on <u>5/9/2022</u>. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p>	<p>註冊電業工程人員簽署： Signature of REW: <u>白榮</u></p> <p>註冊編號 Registration No.: W109623 屆滿日期 Expiry Date: 11-02-2023 級別 Grade: H 准許工程 Permitted Works: B0-H0 聯絡電話 Contact Tel No.: 2572 8332 簽署日期 Date Signed: <u>5/9/2022</u></p>
<p>(4) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加簽；並且本人已根據《電力(線路)規例》第 22 條保存此檢查紀錄的副本。</p> <p>I, <u>Fu Hing Wah, John</u>, on behalf of <u>Savills Engineering Limited</u> (a REC), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406, and confirm that copies of the above inspection records are being kept by me in accordance with regulation 22 of the Electricity (Wiring) Regulations.</p>	<p>註冊電業承辦商簽署： Signature of REC:</p> <p>註冊編號 Registration No.: 001133 屆滿日期 Expiry Date: 15-06-2025 聯絡電話 Contact Tel. No.: 2534 1688 簽署日期 Date Signed: <u>5/9/2022</u></p>

註：在適當空格內加上✓號  
NOTE: Tick the appropriate box

第 3 部 (固定電力裝置資料)

Part 3 (Particulars of The Fixed Electrical Installation)

(5) 固定電力裝置所在地址：  
Address of the Fixed Electrical Installation:  
海濱匯2座 8樓 801 單位

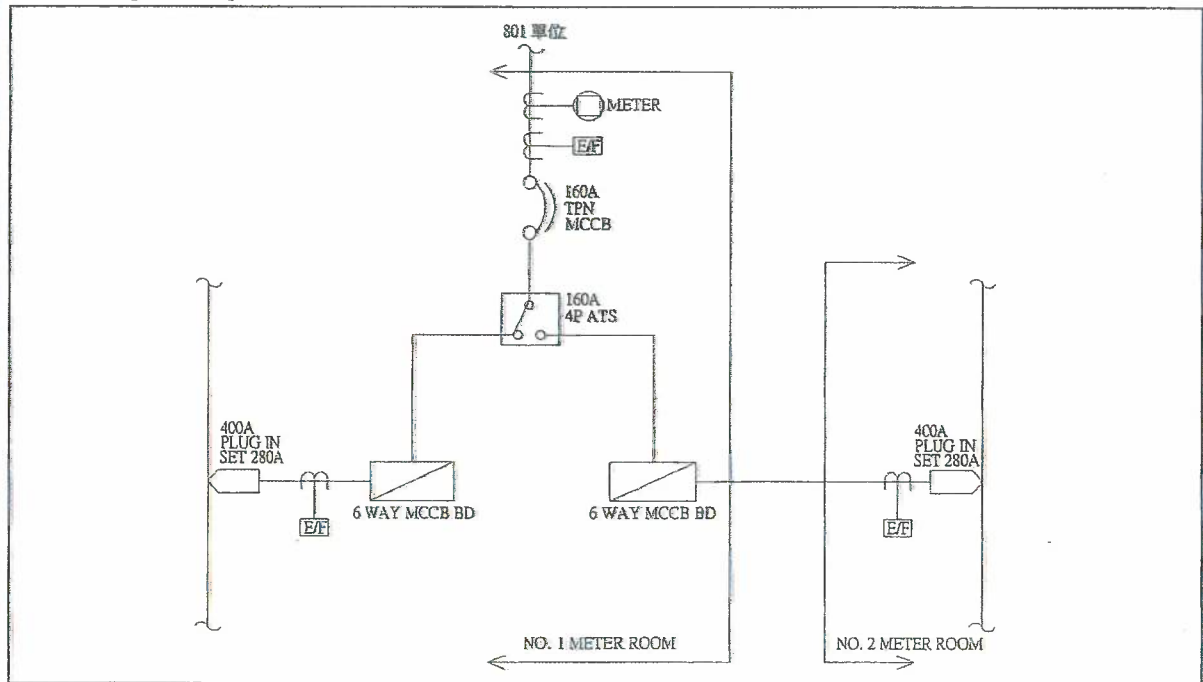
固定電力裝置擁有人的姓名或機構名稱：  
Name or Organisation of the Owner of the Fixed Electrical Installation:

固定電力裝置擁有人的聯絡地址 (如與上項不同):  
Correspondence Address of the Owner of the Fixed Electrical Installation (if different from the above):

聯絡電話：  
Contact Tel No.:

固定電力裝置的簡要說明，及/或\*簡圖 (另外夾附圖則 \_\_\_\_\_ 頁，以及說明 \_\_\_\_\_ 頁)  
Brief description of Fixed Electrical Installation and/or\* Schematic Diagrams (Additional No. of \_\_\_\_\_ drawings and \_\_\_\_\_ description sheets attached.)

(a) 單線電路圖：  
Single line diagram:



(b) 固定電力裝置受檢查部分的位置及說明  
Location & description of inspected part of the Fixed Electrical Installation:  
檢查801單位電力裝置

(c) 固定電力裝置受檢查部分的最大開關器件為 \_\_\_\_\_ 安培 \_\_\_\_\_ 伏特，單相/三相\*  
Largest Switching Device of the inspected part of the Fixed Electrical Installation \_\_\_\_\_ 160 \_\_\_\_\_ 380 \_\_\_\_\_ volts,  
single/three\*phase

\* 請將不適用的刪去  
Delete whichever is inapplicable





機電工程署  
EMSD  
表格 WR1  
香港特別行政區政府  
電力條例(第 406 章)  
電力(線路)規例  
完工證明書

FORM WR1  
THE GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION  
ELECTRICITY ORDINANCE (CAP. 406)  
ELECTRICITY (WIRING) REGULATIONS  
WORK COMPLETION CERTIFICATE

致 固定電力裝置擁有人：  
To the Owner of Fixed Electrical Installation,

第 1 部 (對設計方面的證明) Part 1 (For Certification of DESIGN)	
<p>(1) 本人 <u>YIM LAP WA</u> 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明本證明書第 3 部所指固定電力裝置的設計，符合條例的規定。</p> <p>I, _____, a registered electrical worker(REW), pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that the Fixed Electrical Installation depicted in Part 3 of this certificate has been designed in accordance with the Ordinance.</p>	<p>註冊電業工程人員簽署： Signature of REW: </p> <p>註冊編號 Registration No.: W057039 屆滿日期 Expiry Date: 2023-04-14 級別 Grade: A 准許工程 Permitted Works: A0 聯絡電話 Contact Tel. No.: 96532836 簽署日期 Date Signed: 2022-07-25</p>
<p>(2) 本人 <u>YIM LAP WA</u>，茲代表 <u>華記工程服務有限公司</u> (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加蓋。</p> <p>I, _____, on behalf of _____ (a registered electrical contractor(REC)), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406.</p>	<p>註冊電業承辦商簽署： Signature of REC: </p> <p>註冊編號 Registration No.: 024806 屆滿日期 Expiry Date: 09-MAR-2023 聯絡電話 Contact Tel. No.: 96532836 簽署日期 Date Signed: 2022-07-25</p> 
第 2 部 (對安裝、檢查及測試方面的證明) Part 2 (For Certification of INSTALLATION, INSPECTION & TESTING)	
<p>(3) 本人 <u>YIM LAP WA</u> 為註冊電業工程人員，現按照《電力條例》(第 406 章) 第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明(請選出適用的一段文字，並在其空格內加上✓號)：-</p> <p>I, _____, a REW, pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that (select the appropriate paragraph by ticking the appropriate box below) :-</p> <p><input checked="" type="checkbox"/> 本人已於 <u>2022</u> 年 <u>09</u> 月 <u>01</u> 日檢查本證明書第 3 部所指的固定電力裝置，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected the Fixed Electrical Installation depicted in Part 3 of this certificate on _____, I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p> <p><input type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指固定電力裝置的其中部分，至於該固定電力裝置並非由本人檢查的各部分，本人已按照《電力(線路)規例》第 21(3)條的規定，收到由其他註冊電業工程人員就個別部分所發出的有效證明書(表格 WR1(A))，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected only part of the Fixed Electrical Installation depicted in Part 3 of this certificate on _____, however in respect of those parts of the Fixed Electrical Installation which I have not inspected, I have received valid certificates (Form WR1(A)) certified by REWs for the individual parts as required under regulation 21(3) of the Electricity (Wiring) Regulation. I am satisfied that the Fixed Electrical installation complies with the Ordinance and is in safe working order.</p>	<p>註冊電業工程人員簽署： Signature of REW: </p> <p>註冊編號 Registration No.: W057039 屆滿日期 Expiry Date: 2023-04-14 級別 Grade: A 准許工程 Permitted Works: A0 聯絡電話 Contact Tel No.: 96532836 簽署日期 Date Signed: 2022-09-01</p>
<p>(4) 本人 <u>YIM LAP WA</u>，茲代表 <u>華記工程服務有限公司</u> (註冊電業承辦商)，現遵照《電力條例》(第 406 章) 第 34(11)條的規定，在本證明書上加蓋，並確認此檢查紀錄已送交裝置擁有人，而且本人亦根據《電力(線路)規例》第 22 條保存此紀錄的副本。</p> <p>I, _____, on behalf of _____ (a REC), endorse herewith in compliance with section 34(11) of the Electricity Ordinance, Chapter 406, and confirm that the above inspection records have been given to the owner, and copies of which are being kept by me in accordance with regulation 22 of the Electricity (Wiring) Regulations.</p>	<p>註冊電業承辦商簽署： Signature of REC: </p> <p>註冊編號 Registration No.: 024806 屆滿日期 Expiry Date: 09-MAR-2023 聯絡電話 Contact Tel. No.: 96532836 簽署日期 Date Signed: 2022-09-01</p> 

註：  在適當空格內加上✓號  
NOTE:  Tick the appropriate box

第 3 部 (固定電力裝置資料)

Part 3 (Particulars of The Fixed Electrical Installation)

(5) 固定電力裝置所在地址：

Address of the Fixed Electrical Installation:

FLAT 801 8/F TOWER 2, THE QUAYSIDE, 77 HOI BUN ROAD, KWUN TONG, KOWLOON

固定電力裝置擁有人的姓名或機構名稱：

Name or Organisation of the Owner of the Fixed Electrical Installation:

REITAR LOGTECH GROUP LIMITED

固定電力裝置擁有人的聯絡地址 (如與上項不同)：

Correspondence Address of the Owner of the Fixed Electrical Installation (if different from the above):

同上

聯絡電話： 96532836

Contact Tel No.:

固定電力裝置的簡要說明·及/或\*簡圖 (另外夾附圖則 1 頁·以及說明 / 頁)

Brief description of Fixed Electrical Installation and/or\* Schematic Diagrams (Additional No. of \_\_\_\_\_ drawings and \_\_\_\_\_ description sheets attached.)

(a) 單線電路圖：

Single line diagram:

Blank area for the single line diagram.

(b) 固定電力裝置受檢查部分的位置及說明

Location & description of inspected part of the Fixed Electrical Installation:

160A TPN MCB BOX 及全場固定電力裝置



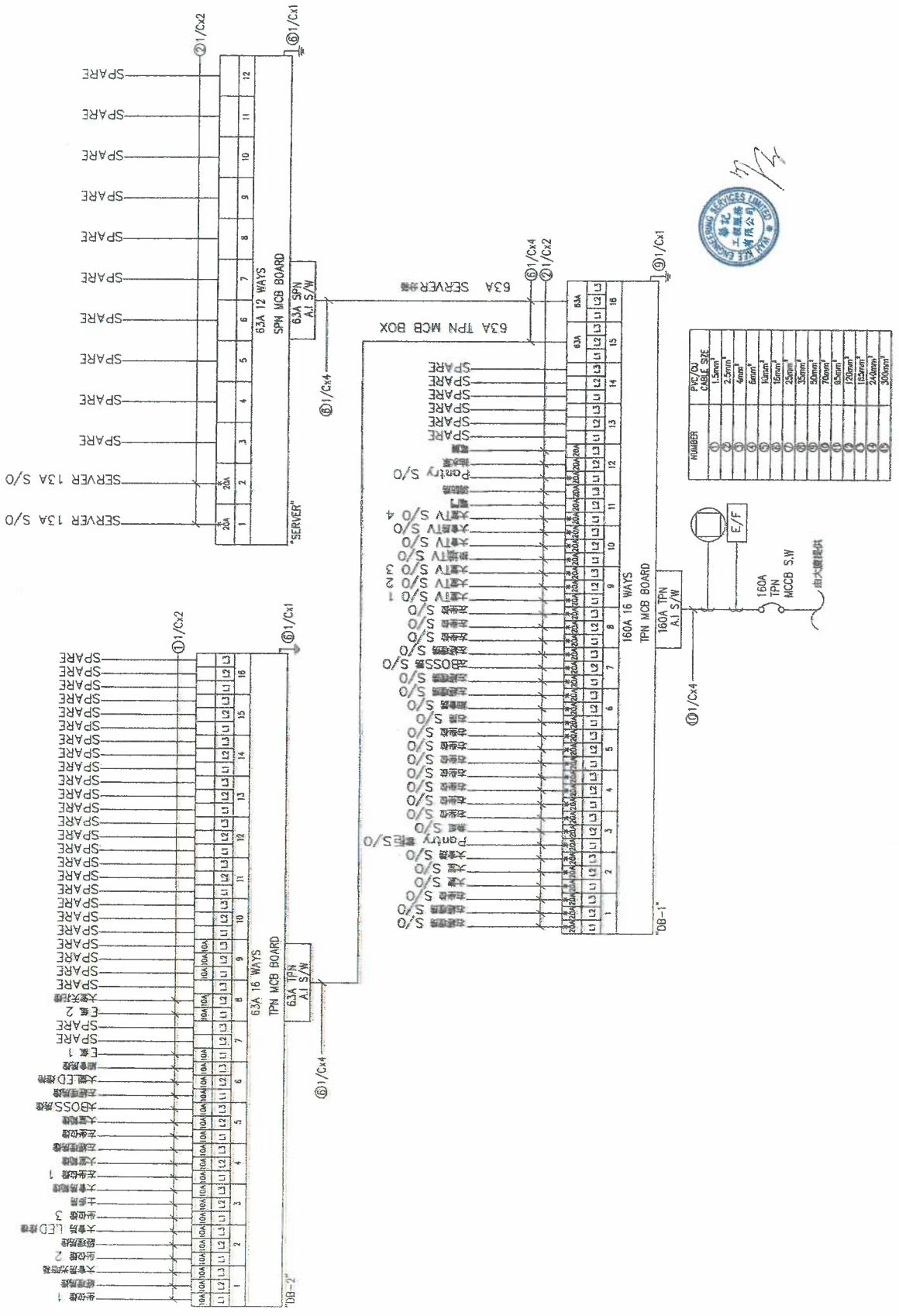
(c) 固定電力裝置受檢查部分的最大開關器件為 160 安培 380 伏特·~~單~~相/三相\*

Largest Switching Device of the inspected part of the Fixed Electrical Installation: \_\_\_\_\_ amperes \_\_\_\_\_ volts, ~~single~~/three\*phase

\* 請將不適用的刪去

Delete whichever is inapplicable

FLAT 801 8/F TOWER 2, THE QUAYSIDE, 77 HOI BUN ROAD, KWUN TONG, KOWLOON





致 固定電力裝置擁有人：  
To the Owner of Fixed Electrical Installation,

第 1 部 (對設計方面的證明) Part 1 (For Certification of DESIGN)	
<p>(1) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章)第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明本證明書第 3 部所指固定電力裝置的設計，符合條例的規定。</p> <p>I, <u>CHAN MAN ZAI</u>, a registered electrical worker(REW), pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that the Fixed Electrical Installation depicted in Part 3 of this certificate has been designed in accordance with the Ordinance.</p>	<p>註冊電業工程人員簽署： Signature of REW: </p> <p>註冊編號 Registration No.: <u>W022808</u></p> <p>屆滿日期 Expiry Date: <u>15-6-2028</u></p> <p>級別 Grade: <u>A</u></p> <p>准許工程 Permitted Works: <u>A0</u></p> <p>聯絡電話 Contact Tel. No.: <u>90210783</u></p> <p>簽署日期 Date Signed: <u>2-5-2023</u></p>
<p>(2) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章)第 34(1)條的規定，在本證明書上加蓋。</p> <p>I, <u>CHAN MAN ZAI</u>, on behalf of <u>BIBO ZENG Co., Ltd.</u> (a registered electrical contractor(REC)), endorse herewith in compliance with section 34(1) of the Electricity Ordinance, Chapter 406.</p>	<p>註冊電業承辦商簽署： Signature of REC: </p> <p>註冊編號 Registration No.: <u>012462</u></p> <p>屆滿日期 Expiry Date: <u>13-6-2024</u></p> <p>聯絡電話 Contact Tel. No.: <u>25058905</u></p> <p>簽署日期 Date Signed: <u>2-5-2023</u></p>

第 2 部 (對安裝、檢查及測試方面的證明) Part 2 (For Certification of INSTALLATION, INSPECTION & TESTING)	
<p>(3) 本人 _____ 為註冊電業工程人員，現按照《電力條例》(第 406 章)第 59 條下制定的《電力(線路)規例》第 19(1)條的規定，證明(請選出適用的一段文字，並在其空格內加上✓號)：</p> <p>I, <u>CHAN MAN ZAI</u>, a REW, pursuant to regulation 19(1) of the Electricity (Wiring) Regulations made under section 59 of the Electricity Ordinance, Chapter 406, hereby certify that (select the appropriate paragraph by ticking the appropriate box below) :-</p> <p><input type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指的固定電力裝置，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected the Fixed Electrical Installation depicted in Part 3 of this certificate on <u>1-5-23</u>. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p> <p><input type="checkbox"/> 本人已於 _____ 年 _____ 月 _____ 日檢查本證明書第 3 部所指固定電力裝置的其中部分，至於該固定電力裝置並非由本人檢查的各部分，本人已按照《電力(線路)規例》第 21(3)條的規定，收到由其他註冊電業工程人員就個別部分所發出的有效證明書(表格 WR1(A))，本人認為該固定電力裝置符合條例的規定，而且操作安全。 I have inspected only part of the Fixed Electrical Installation depicted in Part 3 of this certificate on _____, however in respect of those parts of the Fixed Electrical Installation which I have not inspected, I have received valid certificates (Form WR1(A)) certified by REWs for the individual parts as required under regulation 21(3) of the Electricity (Wiring) Regulation. I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.</p>	<p>註冊電業工程人員簽署： Signature of REW: </p> <p>註冊編號 Registration No.: <u>W022808</u></p> <p>屆滿日期 Expiry Date: <u>15-6-2028</u></p> <p>級別 Grade: <u>A</u></p> <p>准許工程 Permitted Works: <u>A0</u></p> <p>聯絡電話 Contact Tel. No.: <u>90210783</u></p> <p>簽署日期 Date Signed: <u>2-5-2023</u></p>
<p>(4) 本人 _____，茲代表 _____ (註冊電業承辦商)，現遵照《電力條例》(第 406 章)第 34(1)條的規定，在本證明書上加蓋；並確認此檢查紀錄已送交裝置擁有人，而且本人亦根據《電力(線路)規例》第 22 條保存此紀錄的副本。</p> <p>I, <u>CHAN MAN ZAI</u>, on behalf of <u>BIBO ZENG Co., Ltd.</u> (a REC), endorse herewith in compliance with section 34(1) of the Electricity Ordinance, Chapter 406, and confirm that the above inspection records have been given to the owner, and copies of which are being kept by me in accordance with regulation 22 of the Electricity (Wiring) Regulations.</p>	<p>註冊電業承辦商簽署： Signature of REC: </p> <p>註冊編號 Registration No.: <u>012462</u></p> <p>屆滿日期 Expiry Date: <u>13-6-2024</u></p> <p>聯絡電話 Contact Tel. No.: <u>25058905</u></p> <p>簽署日期 Date Signed: <u>2-5-2023</u></p>

註：  在適當空格內加上✓號  
NOTE:  Tick the appropriate box

Part 3 (Particulars of The Fixed Electrical Installation)

(5) 固定電力裝置所在地址：  
Address of the Fixed Electrical Installation:

TINGHS WONG FUNG LING MEMORIAL

固定電力裝置擁有人的姓名或機構名稱：  
Name or Organisation of the Owner of the Fixed Electrical Installation:

固定電力裝置擁有人的聯絡地址 (如與上項不同)：  
Correspondence Address of the Owner of the Fixed Electrical Installation (if different from the above):

聯絡電話：  
Contact Tel No.:

固定電力裝置的簡要說明，及/或\*簡圖 (另外夾附圖則 \_\_\_\_\_ 頁，以及說明 \_\_\_\_\_ 頁)  
Brief description of Fixed Electrical Installation and/or\* Schematic Diagrams (Additional No. of \_\_\_\_\_ drawings and \_\_\_\_\_ description sheets attached.)

(a) 單線電路圖：  
Single line diagram:

Refer to AS-built drawing

(b) 固定電力裝置受檢查部分的位置及說明  
Location & description of inspected part of the Fixed Electrical Installation:

AS- Above

(c) 固定電力裝置受檢查部分的最大開關器件為 \_\_\_\_\_ 安培 \_\_\_\_\_ 伏特，單相/三相\*

Largest Switching Device of the inspected part of the Fixed Electrical Installation 60 amperes 380 volts, single/three\*phase

\* 請將不適用的刪去  
Delete whichever is inapplicable



## TECHNICAL SPECIFICATION

### 1. GENERAL DESCRIPTION OF ELECTRICAL WORKS

#### 1.1 GENERAL

The technical specification and the requirement of products, switchgears, and associated equipment for EVCEI shall refer to General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 - Electrical Installation) in Government Buildings of the Hong Kong Special Administrative Region. The particular requirement shall refer not only to Section C of the General Specification, and shall also refer to the 'Code of Practice for the Electricity (Wiring) Regulations' hereinafter referred as the 'EMSD COP' and also compliance with "Building Energy Code" (BEC) of latest edition.

The Contractor shall be responsible for the complete supply, installation, testing and commissioning of the whole Electrical system for the EVCEI Under EHSS. Basically, it is required all connections amongst the existing Main LVSB and the new Low Voltage Switchboard (LVSB) (If any), and the new main out-going cabling(s) from the existing LVSB via the new Sub-main Distribution Boards (DBs), new final circuit DBs, new meter boards, and the wiring from each new independent Tariff meter to each independent car-park space. The contractor shall require providing all necessary information and document to the REA of the consultant to prepare all relevant submission to EMSD under the BEEO.

#### 1.2 BRIEF DESCRIPTION OF WORKS SHALL BE AS THE FOLLOWINGS:-

- a. The main electrical supply system under the EVCEI shall comprise Contractor modification works and/or A&A works of the existing LVSB, through the extension to a new 4P MCCBs integrated with electronic earth fault relay and new digital power analyzers all necessary accessories. Details and components shall be as indicated in the Schematic Diagram the Drawings.
- b. The Sub-Main Distribution System shall comprise of new power cables c/w cable containments from the new c/w all relevant cable containments, lockable Stainless-steel meter cabinets (if not inside E&M/switch room) etc., as according to the drawing.
- c. From each in-dependent meter cubicle, out-going wiring shall be installed on cable trunkings or cable trays or conduit and its fitting to IP65 weather-proof lockable isolators of each car-park space. The whole EVCEI installation Under EHSS shall be according to the Contract Documents, Specifications and Drawings. The contractor shall submit his shop drawings for approval prior to proceeding with the Works.



## 2. EQUIPMENT AND MATERIALS FOR ELECTRICAL INSTALLATION

### 2.1 GENERAL INCOMING SUPPLY SYSTEM

The electricity supply to the Building is at 380/220 volts, 3 phase, 4 wire alternating current system at a frequency of 50 Hz.

### 2.2 LOW VOLTAGE SWITCHBOARD (LVSB)

- a. The Contractor shall be responsible for the supply, installation, testing and commissioning of the factory-built assemblies (FBA) of new LVSB and necessary modification of the existing LVSB, all as indicated in the drawings, specifications and contract documents.
- b. The FBA shall comply with Section 7.2.11 of the GS.
- c. The FBA shall be assembled to Form 3 and type-tested to comply with IEC 61439-1: 2011 (or latest edition) by The Association of Short-circuit Testing Authorities (ASTA), U.K./Keuring van Electrotechnics Materia Lente Arnhem (KEMA), Holland. Appropriate technical information and literature in English language and copies of type-test certificates and drawings must be submitted for examination.
- d. A bare copper earth bar of sizes not less than 25 mm x 6 mm shall be provided along the whole length of the new LVSB with terminal for connections to all armouring or metal sheath of all incoming/outgoing circuits and the mains electrical earth.
- e. An earthing terminal shall be provided at bottom inside the FBA suitable for the connection of 25 mm x 6 mm copper tape.
- f. Instruments, meters and relays shall be of the flush mounted pattern, with bezels block finished, positioned on the front of the switchboard. All terminals shall be suitably insulated and control circuits shall be suitably fused.
- g. Ensure that the existing batteries of the existing Main LVSB could be and- tripped the new Main MCCB(s) or ACB (for 3ph 1000A or above, new in-depending batteries and the charger would be required herein) in consecutive operations without re-charging or causing permanent damage to the batteries to be observed and made certain by this Contractor before the Tendering. All the connection cables, control relays, contactor, and all necessary accessories to perform the tripping and reset operation of the MCCB would be supplied and installed by this Contractor.
- h. The Contractor shall study carefully the relevant Tender Drawings and prepare the arrangement details of the new LVSB to suit the actual site condition. Detailed construction drawings of the FBA(s) shall be submitted to The Consultant/ The Manager for approval.

### 2.3 LABELLING OF SWITCHBOARD

Laminated or similar labels of ample sizes shall be provided for each of the switchboard, engraved in English and Chinese characters.

### 2.4 SCHEMATIC DIAGRAM IN SWITCH ROOM

The Contractor shall provide an as-fitted wiring schematic housed in a wooden frame with clear glass cover-in the main switch room, indicating the new Electrical installation of EVCEI Under EHSS.

### 2.5 PAINTING OF SWITCHBOARD

All steel work shall be treated to prevent corrosion before being painted. All steel parts normally left bright shall be cadmium plated. The final coat shall be approved gloss finish and shall be given to the paint films so that the final appearance of the finished units is entirely free from blemishes, undulations, foreign inclusions, scotches, patterning or any defects whatsoever. The final colours for the switchboard shall be the manufacturer's standard colours, unless otherwise specified.

## 2.6 L.V. SWITCHBOARD TESTING & COMMISSIONING

- a. Before leaving the factory, the FBA shall be tested in accordance with BS EN 61439-1 & 2, and results of the test shall be presented to The Consultant/ the Manager for approval. After the FBA is re-assembled on site, appropriate site test shall be carried out to the satisfaction of The Consultant/ the Manager, or his representatives and also to the satisfaction of The Power Company as required.
- b. The Contractor shall be responsible for the completion of the following minimum factory acceptance tests to provide assurance that the equipment/material/works being supplied will meet the performance requirements of this Specification. Where applicable, all tests shall be carried out in a manner as set down in ASD's T&C procedure 2022 Ed. Clause 4.7. The list provided is an indicative minimum of the tests required.
- c. The Contractor shall develop full test schedules for approval in accordance with the requirements of the other sections of the Specification.
- d. Inspection of the L.V. switchboard including wiring, electrical and mechanical connections, external and internal finish etc.
- e. Mechanical tests including checking of all mechanical and electrical connections, interlock etc.
- f. Primary and secondary injection tests to check if all measuring, protection, control circuits and associated components are operative.
- g. Continuity and dielectric tests.
- h. Functional checks of all control circuits including the shunt trip operation of circuit breaker at 70% and 110% of the rated control supply voltage.
- i. Calibration of metering instrument, CT, etc.
- j. Battery/charger load tests (if required).
- k. Mechanical operation tests of switchgears. Each switchgear to be operated through at least three (3) close-open cycles in both operating and test positions. All control circuits, changeover (only if required) operations and interlocks shall be tested for correct operation, check for ease of rack-in and rack-out of all with drawable equipment (only if required).
- l. Phase sequence tests on each outgoing unit.
- m. Service Conditions  
The site will have the following conditions of services:-
  - Climate: tropical
  - Temperature range: peak 12°C to 45°C and average 10°C to 35°C (over 24 hours)
  - Relative humidity: 99%maximum
  - Altitude: sea level to 1000 meter



## 2.7 BUSBARS AND WIRING

- a. All busbar shall be of hard drawn high conductivity copper having ratings as specified and shall be electro-bare. Busbar shall comply with BS EN 13601:2013 for rating exceeding 200A. Neutral busbars shall have CSA not smaller than that of the phase busbars, and shall have adequate number of terminals for all outgoing circuits including spare ways.
- b. Busbars shall be air insulated, and fabricated from hard drawn high conductivity copper rigidly mounted on non-hygroscopic slotted bakelite insulators of 16 mm minimum thickness and porcelain supports as appropriate.
- c. All busbars shall be neatly grouped, properly spaced and enclosed in busbar chambers of rigid steel construction complete with removable covers.
- d. Connections from the busbars to the switchgear shall be by means of copper bars or cable of rating not less than that of the switchgear, securely clamped to the busbars.
- e. Busbars shall be completely bare at the works and shall be retouched for damage tinning when all connection bars and cables are completed. The busbar system shall have an insulation voltage of 1000v d.c.
- f. Busbars shall be identified by means of plastic tape to the following colours coding:
  - Phase: Brown, Black, Grey for Phase L1, L2 & L3
  - Neutral: Blue
  - Earth: Green / Yellow
- g. All internal wiring shall be PVC insulated copper cables to BS EN 50525 not less than 1.5 sq.mm single core, with different isolation colour to distinguish the various circuit.
- h. Internal wiring shall be colour coded as follows:
  - Control neutral: Black
  - Line: Brown
  - Power neutral: Blue
  - 3 Phase: Brown, Black & Grey
  - Earth: Green / Yellow
- i. Wiring shall be terminated by means of claw washers. Cable termination sockets shall be to B.S. 91:1989 or latest edition. Where wiring passes through metal holes, PVC bushes shall be provided.
- j. Identification for wires shall be by means of numbered ferrules at all termination points with ferrules on the trip circuit marked in red and all others in black.
- k. Connections or soldered joints are not permitted in the wiring which shall, wherever possible, be grouped and placed together in a neat manner.

## 2.8 Electromechanical Type I.D.M.T. Overcurrent Protection Relay and Earth Fault Relay

- a. The electromechanical type I.D.M.T. overcurrent protection relay and earth fault relay shall be installed to comply with the Clause 7.2.11.9 of General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 - Electrical Installation).
- b. Overcurrent protection relay shall have triple elements with current setting ranging from 50% to 200% in 25% tappings and with time setting from 0 to 1.3 seconds in variable steps. The relay shall be of draw-out case type flush mounted on the front panel. The characteristic of the relay shall match with that of the Supply Company.
- c. Earth fault relay shall be one single pole earth fault relay with current setting from 10% to 40% in 5% tappings and with time setting from 0 to 1.3 seconds. The relay shall be of draw-out-case type, flush mounted on the front panel. The characteristic of the relay shall match with that of the Supply Company.
- d. Shunt-Trip Release of air circuit breakers shall be operated by a D.C. supply of 24V or 30V (other voltages may be specified to suit particular project subject to the approval of the Supervising Officer) obtained from the secondary batteries complete with battery charger, etc. of suitable rating.

## 2.9 DIGITALPOWERANALYZER: (DPA)

- a. The digital power analyzer (DPA) shall be installed to comply with the Clause 7.2.5.24 of General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 Electrical Installation).
- b. DPA shall be included both functions of DPA and Client's check meter as required by the Power Company – CLP/ HEP
- c. The microprocessor based digital power analyzer shall measure and monitor the electrical parameters as specified in this Specification by means of microprocessor technology. The digital power analyzer shall be able to communicate with PC-based Power Quality Monitoring (PQM) System as well as Building Management System via a common network protocol such as Modbus/ Lonworks via RS232/ RS485/ Ethernet communication link by means of plugging in communication module.
- d. The digital power analyzer shall continuously monitor the power system and trigger alarm/event logging for power monitoring and analysis. The stored and instantaneous measurement data shall be recalled and displayed on the front panel upon pressing of keypad on the digital power analyzer and alternatively monitored by PC-based application software supplied together with the analyzer.
- e. The digital power analyzer shall have waveform capture capability which shall be either initiated from the software or by the power analyzer as a user defined response in an alarm condition. The captured waveform samples shall be able to transmit over the network to PC-based work-station for display, archival and analysis.
- f. All setup parameters required by the digital power analyzer shall be stored in non volatile flash memory and retained in the event of control power interruption. The memory shall maintain the maximum and minimum values of each parameter measured by the unit.

- g. The measurement parameters as stated in BEC Code of Practice 2021 clause 7.7.1 to 7.7.3 should be trended every 15 minutes and include hourly, daily, monthly and annual data. The metering devices and the associated monitoring facilities should be capable of maintaining all data collected for a minimum of 36 months.

### 3. MAIN AND SUB-MAIN DISTRIBUTION SYSTEM

#### 3.1 GENERAL

- a. The Contractor shall be responsible for the supply and installation of the main and sub-main distribution system including main surface mounted MCCB DB, armoured XLPE/SWA/PVC cables, MCCBs, isolating switches, etc. all as described and shown on the Drawings.
- b. The sizes and types of DB, cables and switchgears shall be as specified and the installation shall be carried out in accordance with the relevant clauses of the General Technical Specification. The contractor shall be aware of the existing cable color code. All new cable installations shall comply with the latest EMSD COP's requirements of Code of Practice for the Electricity (Wiring) Regulation (EMSD COP) to avoid any incorrect connection.
- c. Arrangement of DB, risers and switchgear, ducts shall be carefully observed to suit the actual site condition with consideration of minimum space for maintenance and inspection. Details of the arrangement shall be submitted to the Consultant/Manager for approval.

#### 3.2 CABLES INSTALLATION

- a. All power circuits and Cables conductor shall be as specified on drawings and in accordance with COP for the Electricity (Wiring) Regulations and Technical Guidelines on Charging Facilities for electric vehicles issued by EMSD.
- b. All equipment and accessories delivered to site shall be new and shall be clearly marked to identify in different grades, materials and manufacturers.
- c. All equipment, materials and fittings shall be suitable for operation under the service conditions as specified. In general, it is assumed that the ambient temperature will be up to 40°C with relative humidity up to 100%.
- d. Ensure full discrimination between the upstream switchgear and the downstream switchgear so that overloads on the load circuits will not trip the upstream circuit breakers but will effectively isolate the faulty circuit, leaving the healthy circuits unaffected. In addition, the proposed combination of upstream switchgears (e.g. MCCBs) and downstream protection devices (e.g. RCBOs/MCBs) should have been tested and verified by the switchgear manufacturer/independent laboratory to withstand the prospective fault current at the equipment install positions without causing equipment and cable damages.
- e. Where earth fault detection is provided, discrimination shall be ensured as for overloads above. Sufficient adjustment shall be provided so that spurious tripping due to the inherent earth leakage of long cable runs and other equipment will not occur without comprising the requirements of full discrimination.



- f. In general, material of the supporting brackets and hangers shall be followed the requirements in latest version of General Specification in Government Building of HK.SAR issued by Arch ASD.

### 3.3 MCCB/MCB/RCBO

- a. Moulded case circuit breaker (MCCB) shall be as stated in the Section 7.2.5.5 of ASD's GS (2022 Edition) shall be enclosed in metal enclosures of ample size suitable for cable entry or MCCB boards.
- b. MCCB shall be of Type-Test comply with BS EN60947-2:2017 or IEC 60947-2:2013, and shall have all mechanical and live metallic components completely enclosed within an all- insulating moulded case. The operating mechanism shall be independent of operating speed and the over-current toggle action shall provide a quick-make and quick-break switching. Handles shall trip free. Contacts shall be non-welding.
- c. MCCB shall have over-current tripping mechanism of thermal-magnetic type to give time delay overload circuit protection and instantaneous short-circuit interruption. Time- current curves shall be provided for each frame size of MCCB. Earth fault protection shall be provided for those MCCBs as specified on the Drawings or as specified in the Particular Specification.
- d. MCCB shall withstand (Minimum) 40kA for over 400A frame size and/or (Minimum) 23kA within 100A-400A frame size short circuit breaking capacity, as per table 7.2.5.5.3 of ASD's GS for BS Installation 2022 Edition, and latest EMSD Code of Practice for Electrical (Wiring) Regulation (EMSD COP) "Code 9c(2)(c). Actual designed short circuit breaking capacity shall be subjected to Tender Drawing. if it is installed at Main Switch Room and/or sub-switch or meter room respectively and be capable of being mounted in any position without affecting the tripping characteristics or interrupting capacity according to EMSD COP for the electricity (wiring) regulations Table 9(2). Unless otherwise specified on Drawings, MCCBs shall withstand 40kA.
- e. Handle lock attachments complete with suitable means for padlocking the MCCB either in the open or close position, shall be provided.
- f. Catalogues of MCCB unit and MCCB board shall be submitted for approval prior to ordering/manufacturing.
- g. All RCBOs shall be incorporated with overcurrent protection. They shall be enclosed in MCB DBs and/or RCBO DBs Sample of MCB, RCBO and boards shall be submitted for approval prior to ordering/manufacturing.
- h. Except otherwise specified, MCCB/MCB/RCBO boards shall be verification tested to a short time withstand current in accordance with table 7.2.5.10.8 of ASD's GS for BS Installation 2022 Editon
- i. All DBs shall be clearly labelled, and marked with phase and neutral identification with Brown, Black, Grey color for phase L1, L2 & L3 respectively. Inside each board door, a circuit record card shall be provided.
- j. All RCBOs shall be double pole of Type A residual current tripping characteristic and comply with BS EN 61009 and IEC 61009:2013/And 2 Corr 1:2014. All RCBOs used inside residential units shall be double pole. All RCBO/MCB units shall be calibrated at 40°C.

### 3.4 BUSBARS TRUNKING SYSTEM

- a. Busbars of the DB to 7.2.6.4, Section 7.2.6 of ASD's GS for BS Installation 2022 Edition, shall be made of hard drawn, electro-tinned high conductivity, bare rectangular solid copper complied to BS EN 13601:2013. Full size phase and neutral bars shall be provided.
- b. Brace and support all busbars rigidly. The complete assembly shall be capable of withstanding the maximum mechanical stresses to which it may be subjected under fault conditions.
- c. Busbars connections and bare conductors forming part of the equipment of the DBs shall comply as regards current-carrying capacity and limits of temperature rise with the requirements of Clause 9.2 of IEC 61439-6:2012.
- d. Jointing of busbars shall be by mechanical means, silver plated or tin-plated at joints. Provide washers and locknuts to all bolts. The length of overlap at joints shall not be less than the width of busbars to be jointed.
- e. Busbar chambers shall be manufactured in compliance with BS EN 60439. Busbar chambers shall be totally enclosed type, suitable for surface mounting and marked with phase and neutral identification with Brown, Black, Grey, Blue for new colour code (installation after 1/7/2009) or red, yellow, blue and black for old colour code (installation before 1/7/2009) respectively, and clearly labelled to indicate the ratings and functions.

### 3.5 CABLE TRAY AND TRUNKING

- a. Basically, armoured cable would be mounted on cable tray, non-armoured cable would be on metal trunking.
- b. Return Flange cable tray should be used.
- c. Metal cable trays shall be perforated, formed from plain sheet steel shall be hot-dipped galvanized after perforation. They shall be in accordance with the Section 7.2.3.10 of ASD's GS of effectively earthed. Cable trays shall have the following minimum dimensions:

Table 7.2.3.10.2 Typical Dimensions of Cable Tray

Nominal Width (mm)	Minimum height of upstand (mm)	Thickness of steel sheet (mm)	Minimum height of return flange (mm)
100 and 150	12	1.2	--
225 and 250	12	1.5	--
300 and 350	20	1.5	12
400 and 450	20	1.5	12
500 and 550	20	2.0	12
600 and 700	20	2.0	12
800 and 1,000	20	2.0	12
1,200	20	2.0	12

Table 7.2.3.10.4 Location of Perforation in Bend Piece of Cable Tray

Nominal width of cable tray	Value of $\theta$
225 mm to 350 mm	45°
400 mm and above	30° and 60°

- d. Cable trunking shall be manufactured with galvanized sheet steel with the following minimum thickness of material in accordance with the Section 7.2.2.4 of ASD's GS for BS Installation 2022 Edition.



Table 7.2.2.4.4 (1)  
Size, Body and Cover Thickness, and Preferred  
Length of Steel Surface and Raised Floor Trunkings

External dimension (mm)	Minimum thickness of body with return flange (mm)	Minimum thickness of body without return flange (mm)	Minimum thickness of cover (mm)
50 x 50	1.0	1.0	1.0
75 x 50	1.2	1.2	1.2
75 x 75	1.2	1.2	1.2
100 x 50	1.2	1.2	1.2
100 x 75	1.2	1.2	1.2
100 x 100	1.2	1.4	1.2
150 x 50	1.2	1.4	1.2
150 x 75	1.2	1.4	1.2
150 x 100	1.2	1.4	1.2
150 x 150	1.4	1.6	1.2
200 x 50	1.6	--	1.4
200 x 75	1.6	--	1.4
200 x 100	1.6	--	1.4
200 x 150	1.6	--	1.4

Table 7.2.2.4.4 (1)  
Size, Body and Cover Thickness, and Preferred  
Length of Steel Surface and Raised Floor Trunkings (Cont'd)

External dimension (mm)	Minimum thickness of body with return flange (mm)	Minimum thickness of body without return flange (mm)	Minimum thickness of cover (mm)
200 x 200	1.6	--	1.4
300 x 50	1.6	--	1.6
300 x 75	1.6	--	1.6
300 x 100	1.6	--	1.6
300 x 150	1.6	--	1.6
300 x 300	2.0	--	1.6
Preferred lengths: 3m (minimum: 2m ; maximum: 3m) Minimum thickness of partitions or dividers: 1.0 mm.			

- e. Copper earth link shall be provided at the joints of the trunking to ensure good circuit protective bonding. Trunking should be of metallic to BS EN 50085-2-1. Centre Captive screw on cover type shall be used. For vertical trunking, cable support of approved type shall be provided for every three floors to take the weight of the cable running inside. Trunking shall be supported on walls or suspended from ceiling at appropriate intervals, and shall be truly vertical and horizontal so that no visible sag is observed when loaded with cables.
- f. Where trunking crosses expansion joints, an approved trunking system shall be used which will allow for expansion and maintain earth continuity. Where cables are installed in trunking which pass through floors and walls, suitable internal fire-resistant barriers shall be provided to prevent the spread of fire.

### 3.6 CONDUIT AND ACCESSORIES

- a. Galvanized Steel Conduit and Accessories
  - i. All conduits and fittings shall be galvanized iron to BS EN 61386 Conduit shall be of heavy gauge, screwed and longitudinally welded and protected against corrosion to Class 4.
  - ii. Fitting shall be to Class 4 protection against corrosion.
  - iii. Conduit boxes BS 4662 shall be hot-dipped galvanized both inside and outside to Class 4. 35mm and/or 47mm deep boxes shall be used for wiring accessories.
  - iv. Minimum size of conduit shall be 20 mm outside diameter.
  - v. When crossing construction or expansion joint, approved type expansion joint shall be employed.
  - vi. Space factor for conduit shall comply with the latest local rules, regulation and codes.
  - vii. Conduit system shall be electrically and mechanically continuous and permanently earthed.
  - viii. Cables of different voltage shall be contained in separate conduits.
  - ix. All boxes and conduit accessories shall be fully weatherproof when used in outdoor locations.
  - x. Concealed conduits will not be accepted for EVCEI installations.
- b. Flexible galvanized steel conduits shall conform to BS EN 61386-1, and shall be:-
  - i. Of the metallic watertight pattern
  - ii. Flame retardant PVC over-sheathed and,
  - iii. With a separate earthed wire enclosed for earth continuity
  - iv. Minimum outside diameter of 20 mm

### 3.7 POWERCABLEANDWIRING

- a. The system of wiring shall be in XLPE amoured and Non-amoured insulated cable with copper conductor to Sub-Section 7.2.3 of ASD's GS for BS Installation 2022 Edition. The cable shall be BASEC approval type. or the HAR scheme recognised by the European Committee for Electrotechnical Standardization, CENELEC, Fire resistant cables shall be used for all essential circuits and load (if any).
- b. XLPE Cu Non-amoured Insulated Cables, with solid or stranded conductor, with low emission of smoke and corrosive gases when affected by fire, suitable for conductor operating temperature not exceeding 900 C - IEC60502-1: 2004/Amd 1:2009.
- c. Copper core cable of this type shall be 450/750V grade, XLPE insulated complying with BS EN 50525-2-31 and/or BS EN 50525-3-41 respectively.
- d. The core of the cables shall be identified by the colour as specified below throughout the whole of the insulation.
  - Phase: Brown, Black, Grey
  - Neutral: Blue
  - Earth: Green/Yellow
- e. Minimum size of cables is to be as follows: -
  - Power Cables 2.5mm<sup>2</sup>
  - Control or Lighting Circuit 1.5mm<sup>2</sup>
- f. XLPE Insulated Steel Wire Armoured Cables, sheathed with armour copper cable, with solid or stranded conductor, with low emission of smoke and corrosive gases when affected by fire, suitable for conductor operating temperature not exceeding 900 C - IEC60502-1: 2004/Amd 1:2009
  - i. Cables of this type shall be 600/1000V grade complying with B.S. 5467, /B.S. 6724, /B.S. 7846 copper core, XLPE insulated, steel wire armoured and PVC sheathed.
  - ii. Conductors of wiring cables shall be of high-conductivity copper and all meet the requirements of IEC 60228:2004 and shall be plain annealed copper conductors complying with BS EN 60228: 2005, and each conductor core shall be of the same cross- sectional area.
  - iii. Each core of the cable shall be identified by the appropriate colour as specified in throughout the whole of the insulation.
  - iv. Wire armour shall consist of a single layer of galvanized steel wires of the size in the appropriate table (e.g. table A6(6) of COP 2020 of EMSD) comply with EN 10257-1.
  - v. The oversheath of the cables shall be an extruded layer of black PVC complying with the requirements of BS EN 60332-1-1 2004 for flame retardant.



### 3.8 CABLE GLANDS AND ACCESSORIES FOR CABLES

- a. Cables shall be terminated in approved non-ferrous mechanical glands in accordance with the of ASD's requirement.
- b. Terminations which are considered not satisfactory by the Manager shall be replaced or rectified before being connected to the switchgears or equipment. All current carrying holding bolts and fixing screws and nuts must be tightened up and re-checked for proper contact.
- c. Where cables pass through floors and walls, seal the opening made with approved fire-resistant material to maintain the same fire rating as the floors and walls penetrated. Where cables pass through expansion joints, form a cable loop of such size to allow any movement in the joint without imposing any stress to the cables.
- d. This contractor shall submit shop drawings to confirm and to indicate the route of the main and sub-main distribution system to The Consultant/The Manager for approval before commencing of the works.

### 3.9 GENERAL SMALL POWER

- a. MCB/RCBO boards, MCB's, RCBO's, trunking/conduit wiring system etc. shall be as shown on the Drawings. Any other necessary components and accessories required for the complete execution of the works should also be included.
- b. This contractor shall well coordinate with The Manager's representative for the installation of the surfaced conduit works on site and if any concealed conduit required prior approval by The Consultant/ The Manager/The Owner.
- c. Except otherwise specified, all RCBO boards (DB) shall be surface mounted on walls in electrical switch/ meter rooms.
- d. Except otherwise specified, all outgoing conduits from the DB shall also be installed on the surface of the walls up to ceiling level bended and then surface mounted on the surface of the ceiling slabs concealed by the false ceiling (if any) and approved by The Consultant/The Manager.

### 3.10 EARTHING SYSTEM

- a. The contractor shall supply and install a complete earthing system for the whole EVCEI installations comprising circuit protective conductors, equipotential bonding conductors, all fittings, all necessary and etc.,
- b. The work shall be carried out in strict accordance with the General Specification as indicated as in Sub-Section 7.1.7 of ASD's GS for BS Installation 2022 Edition. It shall be solidly and effectively bonded and earthed in accordance with IEC 60364-1:2005/Corr 1:2009 and the associated parts of the standard and the updated EMSD's COP.
- c. The earthing system shall include the bonding of all exposed conductive parts of the electrical installation, the main equipotential bonding system of all incoming services pipes at the entry point and the supplementary bonding of the extraneous conductive parts in the building.
- d. The contractor shall submit to The Consultant/ The Manager/The Owner for approval sample of the earthing clamp used for bonding water pipes prior to manufacturing. This contractor shall submit photographs to The Consultant/ The Manager/The Owner for checking and recording purpose for the concealed connection of the bonding conductors to the metal pipe, metal window frames, etc. upon completion of such connection.
- e. Equipotential bonding is required for all exposed or extraneous metal parts of the building structure under the I.E.E. Wiring Regulations and the Electricity (Wiring) Regulations promulgated under the latest Hong Kong Electricity Ordinance (Cap. 406).

#### 4. WORKMANSHIP AND INSTALLATION

##### 4.1 WORKMANSHIP

- a. Good workmanship, proper material, and proper site co-ordination and/or liaison are essential.
- b. All workmanship shall be subject to the approval of The Consultant/ Manager who reserves the right to reject any part of the installation not complying with this specification. This Contractor shall carry out all necessary remedial work or replacement, free of charge and without any delay to This Contract, on any item of work rejected by The Consultant/ the Manager/The Owner.
- c. No work shall be covered up or put out of view without the endorsement of The Consultant/ the Manager/The Owner. The Contractor shall provide sufficient advance notice to the Manager/ Project Consultants for the examination and measurement of any work required to be covered up.
- d. Endorsement or acceptance by The Consultant/ the Manager/The Owners shall not relieve the Contractor of his responsibility for the quality of materials and the standard of workmanship in the work.
- e. All works to be carried out in accordance with recommendations of the established Standard Organizations: (i) 'General Specification for Building Services Installation' (GS BS) issued by Architectural Services Department (2022 Edition) and (ii) 'Code of Practice (2020 Edition) for the Electricity (Wiring) Regulations' (EMSD COP) issued by Electrical & Mechanical Services Department and other statutory, obligation, regulation etc.
- f. Properly co-ordinate services of the various trades, carefully co-ordinate levels, setting out sequence of work and the accessibility of various services.

##### 4.2 TRADESMEN

- a. All electrical work shall be carried out by or under the direct supervision of the "registered electrical workers" of the appropriate grade in accordance with the Electricity Ordinance.
- b. All tradesmen shall be experienced in the trade and the work carried out shall be consistent with the good practice in Hong Kong and to the satisfaction of the Manager /The Owner.



#### 4.3 TOOL AND INSTRUMENT

Proper tools shall be used for carrying out the electrical installations. Adequate and accurate testing/measuring instruments shall be used to demonstrate compliance of the electrical installations with the relevant specifications and regulations. The Manager / The Consultant has the right to stop any work on which the correct tools and/or instruments are not being used. Instruments used for acceptance tests shall be calibrated at appropriate intervals and as required for the project.

#### 4.4 SAFETY ON SITE

Work shall be carried out in such a manner as to comply with all the ordinances, regulations and, etc., together with any amendments made thereto.

#### 4.5 LABEL AND NOTICE

a. Inscription of Label and Engraving.

b. Inscription of label and engraving shall be in both Chinese and English characters. Details shall be submitted to The Consultant/ the Manager/The Owner for agreement prior to engraving.

c. Material for Label

Label shall be of white plastic with black or red lettering engraved as required. Where distribution board is fitted with labels provided by the manufacturer of the distribution board, these labels may be used in lieu of the white plastic label provided that they are of equivalent quality and approved by The Consultant/ the Manager/The Owner.

d. Fixing of Label

Label shall be fixed to switchgear and distribution board by screws. Where drilling and tapping of the equipment is impracticable, approved means of glue fastening may be used subject to prior approval of The Consultant/ the Manager/The Owner.

e. Warning Notice

Warning notices shall be provided as required by the Electricity Ordinance and the Code of Practice for the Electricity (Wiring) Regulations. In addition, the following warning notices in Chinese and English shall be provided at the appropriate positions:-

i. A label having minimum size of 65 x 50mm marked with the words 'DANGER - HIGH VOLTAGE' in Chinese characters and English lettering of not less than 5 mm high to be fixed on every electrical equipment or enclosure of ancillary equipment for installations operating at voltages exceeding "low voltage".

ii. A label to indicate the maximum voltage present in an item of equipment or enclosure within which a voltage exceeding 250V exists, or items or equipment or enclosure which can be reached simultaneously and a voltage exceeding 250V exists between simultaneously accessible terminals or other fixed live parts: such voltages are normally not expected to exist with the equipment or enclosure.

#### 4.6 OTHER LABELS AND NOTICES

- a. Other labels and notices as required by the Electricity Ordinance or the Code of Practice for the Electricity (Wiring) Regulations (e.g. different cable colour codes at the same location) shall be provided where appropriate.
- b. Guard shall be of rigid of substantial construction and shall consist of heavy mild steel angle frames, hinged, and latched with either heavy galvanized and mild steel wire crimped mesh securely fastened to frames or galvanized sheet metal of 1.2mm minimum thickness. All apertures shall be such that finger access to dangerous parts is not possible. All sections shall be bolted or riveted. Railings shall be made of 32mm diameter galvanized mild steel pipe and railing fittings.

#### 4.7 FIRE SAFETY REQUIREMENT

- a. Fireman's emergency switch is specified to locate at vehicle entrance(s), fire control centre and/or other locations as considered acceptable by the Director of Fire Services, which would be easily accessible to operate by fireman enter to the building in case of fire occurred at the carpark.
- b. All the equipment and the control system associated with the power off, reset and power "on" re-statement of the Main Switches/MCCBs of the EVCEI under EHSS for the above operation by the "fireman" shall be required.
- c. Modification/ slight relocation of all B.S, services such as existing wiring, conduits and or even minor builder works etc. are required to suit the installation works of EVCEI, and/or required in order to suit the actual site condition.
- d. Metal enclosure for the meter boards and or c/w transparent window with IP and Electric Power Company requirement.

### 5. **PAINTING & LABELLING**

#### 5.1 PAINTING

- a. Conduits and trunking concealed above closed false ceiling need not be provided with finishing paint, but the Sub-Contractor shall be responsible for painting of the primer coat on all ferrous surfaces for protection against corrosion except galvanized finished metal surface. Conduits and trunking installed underneath structural ceiling soffit with no false ceiling in areas outside the plant rooms, will be provided with finishing paint by the Main Contractor. However, this Sub-Contractor shall provide with finishing paint on conduit and trunking inside transformer rooms as required and specified by Power Supply Company.
- b. All steel hangers & angles inside plant rooms shall be heavy protective paint finish or galvanized.
- c. All exposed bare metal surfaces to be painted shall be cleaned to remove all dirt, rust, grease and millscale.
- d. Apply painting as follows:-
  - i) One coat suitable primer.
  - ii) At least one coat finish painting.

- e. Submit colour samples of the final finishing coats to the Architect for approval prior to any painting.
- f. Paints for synthetic materials such as PVC or plastic shall be chemically compatible with the material being painted.
- g. Paints for special materials such as insulation shall be as recommended by the materials manufacturer.
- h. Rubber and neoprene products shall not be painted.
- i. All galvanized exposed to view or weather, except in plant rooms, shall be painted in the primary colours by main contractor.
- j. Identify pipes concealed in false ceilings and pipe ducts with 3 colour bands – one central band and two outer bands in primary colour. Width of each band shall be equal to the external diameter, of the pipes but not less than 50mm.
- k. Space all colour bands at suitable interval.

## 5.2 LABELLING

- l. Provide labels for every panel, busbar chambers and switchgears to describe the duty of every instrument, relays and items of control equipment mounted externally and internally. The designation on these labels shall be clear and concise, and shall, where applicable, incorporate the device number.
- m. Provide labels to all fuses and links to identify the current rating.
- n. Provide a nameplate, in a conspicuous position, to every MCCB/MCB boards.
- o. All labels shall be manufactured from laminated traffolyte or similar plastic materials, engraved and fixed by screws or adhesive.
- p. All labels shall be in both English and Chinese.
- q. Label all items of plant and equipment provided under this Sub-Contract.
- r. Labels shall be fixed by screws or method approved by Architect.
- s. Each of the switchgear, busbar chamber, meters board, distribution board shall be labelled on the front cover indicating the circuit controlled by the unit.
- t. Details of lettering shall be endorsed by the Architect.
- u. Busway shall be labelled at appropriate location for easy identification.
- v. Directional arrows shall be stencilled on fuel oil pipes.
- w. This sub-contractor shall supply and install sufficient labels as required by Power Company and / or the Architect to identify the voltage rating of risers, cables, terminals, power outlets, switchgears etc. especially when both voltage supply are presented in the same area / location
- x. At the earthing terminal, a permanent label marked with the works "SAFETY ELECTRICAL EARTH - DO NOT REMOVE" in English and Chinese shall be permanently attached to the final earthing leads connection. In addition to the above label, a further label shall be attached to the earth indicating the system to



which the system belongs and the number of pits involved, e.g. "NEUTRAL EARTH -PIT NO. 2 OF 4".

## 6. TESTING & COMMISSIONING

### 6.1 GENERAL

- A. This part of Specification covers the requirements on testing and commissioning to determine full compliance with the Specification and the design intent.
- B. To carry out all necessary testing and commissioning procedures in addition to those called for elsewhere in this Specification comprising tests at manufacturer's works, site tests during construction, commissioning and acceptance tests, all as specified in Appendix E & F and below.
- C. The following shall be general guideline for testing and commissioning, but the actual procedure shall be submitted by Sub-Contractor and approved by the Architect.
  - 1. The appropriate British Standard or BS Code of Practice.
  - 2. The relevant CIBS Commissioning Code.
  - 3. The latest edition of IEE regulations.
  - 4. EMSD Code of Practice for Electricity (Wiring) Regulations.
- D. All tests shall be witnessed by the Architect and shall be properly certified in a manner to be agreed with the Architect and triplicate copies of all certificates shall be issued to the Architect on completion unless approval separately
- E. These test records, certificates and performance curves shall be supplied for all tests, whether or not they have been witnessed by the Architect. The information given on such test certificate and services shall be sufficient to identify the material or equipment to which the certificate refers, and shall also bear all reference and heading given in equipment sections.
- F. Only when the installations have been so certified and all test figures and other relevant information have been recorded in the prescribed manner and accepted by the Architect should the works be considered fit for handing over to the Employer.
- G. The tender sum shall be deemed to have included all costs associated with the above mentioned testing and commissioning procedures including the cost of making good any defects arising out of such tests and having the work retested. Such costs shall also include for the provision of all instruments necessary for the test.
- H. To supply all testing equipment necessary for the testing and commissioning of the entire system.

### 6.2 FACTORY ACCEPTANCE TESTS (FAT)

#### 6.2.1 GENERAL

Carry out the following minimum tests including Ductor test to provide assurance that the equipment/plant/material being supplied will meet the performance requirements of this Specification. Where applicable, all tests shall be carried out in a manner as set down in relevant BS. The list provided is an indicative minimum of the tests required. Develop and submit full test schedules, procedures, circuit diagrams for approval in accordance with the requirements of the other sections of the Specification. Use standard testing forms attached to the Specification as appropriate, otherwise, develop and submit testing forms for approval.

#### 6.2.2 LV SWITCHBOARD

- A. Visual Checks
1. Carry out visual inspection of the general construction of the switchboard, the busbar system, switchgear, instrumentation, cabling provisions, etc. to determine if the switchboard is ready for further testing and subsequent delivery to site.
- B. Verification of Measuring Instrument Accuracy
1. With the secondary injection test set connected to the ammeter terminals, inject currents ranging from 0 to 100% of the rated value in steps of 25%. Compare the meter readings with the calibrated ammeter readings.
  2. With a 3-phase variac connected to the voltmeter terminals, vary the voltage from 0 to 100% of the rated value in steps of 25%. Compare the meter readings with the calibrated voltmeter readings.
  3. Follow manufacturer's instructions for the calibration of voltage, current and power transducers.
  4. With a 3-phase variac connected to the under-voltage relay circuit, vary the supply voltage gradually to record the drop-off and pick-up voltages of the relay.
- C. Dielectric Test
1. With all switching devices in open positions, carry out 1000V meggar test for phase to phase, phase to neutral, and phase to earth and neutral to earth to measure the insulation resistance.
  2. Repeat the above test with all switching devices in closed position.
  3. Apply 2kV AC between all live parts and the exposed conductive parts (ie between R+Y+B+N and E) for 60 seconds and measure the leakage current.
  4. Repeat the above test between each pole and all the other poles connected to the exposed conductive parts (ie between R and Y+B+N+E, Y and R+B+N+E, B and R+Y+N+E, N and R+Y+B+E).
  5. The test voltage at the moment of application shall not exceed 1000V and shall then be increased steadily within a few seconds to 2000V and maintained for 60 seconds.
  6. Prior to the HV test, disconnect all electrical equipment which are designed for a lower test voltage, and current-consuming apparatus such as measuring instruments in which the application of the test voltage would cause the flow of a current.
  7. Repeat the meggar test with all switching devices in closed position after the HV test.
- D. Primary Injection Test
1. Record the following information for every circuit being tested:-
    - a. Circuit number.
    - b. Make, type, serial number, CT ratio, class, burden of every PCT and MCT.
  2. Inject primary current at the rated value to individual phase and neutral conductors and measure the secondary current of the associated CT to be tested.
  3. Repeat the above measurement with primary current set at 50% of the rated value.
- E. Secondary Injection Test

1. Record the following information for every circuit being tested:-
  - a. Circuit number.
  - b. Make, type, serial number, rated current, trip coil voltage of every O/C and E/F relay.
  - c. Nominal full load current and CT ratio of the associated PCT.
2. Inject secondary current in increasing amount to the relay and measure the minimum current that the relay starts to pick up, and the minimum operating current that the relay operates.
3. After the relay contacts are made, reduce the injected current slowly and measure the minimum reset current when the relay resets to its normal position.
4. With the O/L relay PSM at 100% and TMS at 1.0, inject secondary current at 2 times the rated value and measure the operating time. Repeat the test at 5 times and 10 times the rated secondary current.
5. Repeat the above test at any other relay settings as directed during the test.
6. With the E/F relay PSM at 20% and TMS at 1.0, inject secondary current at 2 times, 5 times and 10 times the rated secondary current and measure the operating time. Repeat the test at any other relay settings as directed during the test.
7. Compare the measured operating times and the theoretical nominal operating times read from the manufacturer's published relay characteristic curves.
8. Record the relay settings being left at the end of the test.

#### F. Battery Test

1. Under fully charged condition, open the input switchgear to the battery charger. Record the battery voltage against time and operate the ACBs and controlgear to verify that the battery provided is adequate for its intended duty.
2. After the battery discharge test, resume the power supply to the battery charger. Record the charging voltage and charging current against time to verify that the battery charger and battery provided is adequate for its intended duty.

#### G. Functional Tests

1. Carry out functional tests to check that all control circuits are correctly wired, and that all control schemes specified are fully incorporated.
2. Carry out mechanical operation tests of switchgears to verify that all switching mechanisms are functional, and all drawout type switchgears are correctly aligned.

### 6.3 ON-SITE TESTING AND COMMISSIONING

- 6.3.1 At appropriate stages of the installation, inspection, and testing prior to the energising of equipment, carry out insulation tests and submit records for approval.
- 6.3.2 At appropriate stages of the installation and prior to operational testing, carry out potential tests of equipment and submit records for approval.
- 6.3.3 Carry out operational tests of all electrical equipment in proper staged phases prior to energising and submit records for approval.
- 6.3.4 Develop a complete and detailed plan for the site testing of the power supply systems beginning with the incoming breakers and following a logical plan which will allow energisation



of the system in a safe and secure manner and to interface and co-ordinate with the other electrical and mechanical installations. For example, the battery charger and batteries shall be checked prior to furnishing the DC control power for the circuit breakers. The circuit breaker control shall be operationally checked for all local control, including testing up to interface terminal points for signals and control interconnection to other system or installation prior to carrying out operational tests of the circuit breaker.

- 6.3.5 Carry out surveillance and security check of the power supply systems including padlocking or otherwise maintaining control of the power supply, padlocking of switchgear and circuit breaker units, distribution switchboards, etc. throughout all energisation stages of the installation. Co-ordinate with the other specialist contractors and sub-contractors to assure no downstream cables or other electrical equipment is energised before being tested and before other specialist contractors' and sub-contractors' facilities are ready and secure. This requirement shall remain in force for each part of the system until such a time that the complete installation is certified complete in writing by the Employer's Authorized Representative.
- 6.3.6 Take precautionary measures during testing and the method of tests shall be such that no danger to persons or property can occur even if the circuit being tested is defective.

#### 6.4 SITE ACCEPTANCE TESTS (SAT)

##### 6.4.1 General

6.4.1.1 Perform tests to verify that the complete installation will meet the requirements of this Specification. Develop full test schedules for the approval in accordance with the requirements of the Specification.

6.4.1.2 SAT shall show, inter alia, the following as a minimum:

- A. All equipment, cabling, etc. are electrically and mechanically safe.
- B. All interlocks, isolators and door and cover securing mechanisms are properly fitted and adjusted.
- C. All exposed metal work is properly bonded and earthed in accordance with IEE Wiring Regulations, relevant BSCP and statutory requirements and that all connections and points required to be earthed for safety and satisfactory operation are properly earthed in accordance with the manufacturer's requirements.
- D. All cables, cores and terminations are properly made off, secure, properly supported and correctly identified and coloured.
- E. All phases, polarities, neutral and common connections are correctly switched as required, that power is correctly available at all points and that voltage and frequency at all equipment are correct and in accordance with requirement for correct working.
- F. All supplies are properly fused, or otherwise protected to give satisfactory discrimination and safe disconnection under fault conditions.
- G. All contacts are properly aligned and not subject to excessive wear or erosion.
- H. All protective covers are properly fitted, all warning and designating labels are correct and in position and the inside of all boxes and cubicles are clean and free of "swarf" and cable strippings.
- I. Batteries, if provided, are properly ventilated, installed, connected, and fitted, and that battery chargers are working correctly.
- J. Insulation resistance of all cabling and equipment is not less than that required by BS.
- K. All instruments and meters are energised with correct polarity and working properly.
- L. All fault indications and alarms are working correctly.

- M. All essential equipment fed from battery systems continues to function correctly and without disturbance during all supply failure, restoration, and standby sequences.
- N. All interlocks, sequences and protection for normal and emergency operations are in order.
- O. Compliance of performance as required by Code of Practice for the Electricity (Wiring) Regulations.

6.4.1.3 The list provided below is an indicative minimum of the tests required.

#### 6.4.1.3.1 Cables

- A. Continuity Test.
- B. Insulation Resistance Test.
- C. Earthing Test.
- D. Polarity Test

#### 6.4.1.3.2 LV Switchboard

- A. Visual Checks
  - 1. Carry out visual inspection of the general construction of the switchboard, the busbar system, switchgear, instrumentation, cabling provisions, etc. to determine if the switchboard is ready for further testing and subsequent delivery to site.
- B. Dielectric Test
  - 1. With all switching devices in open positions, carry out 1000V meggar test for phase to earth, phase to phase, phase to neutral, and phase to earth to measure the insulation resistance.
  - 2. Repeat the above test with all switching devices in closed position.
  - 3. Apply 2kV AC between all live parts and the exposed conductive parts (ie between R+Y+B+N and E) for 60 seconds and measure the leakage current.
  - 4. Repeat the above test between each pole and all the other poles connected to the exposed conductive parts (ie between R and Y+B+N+E, Y and R+B+N+E, B and R+Y+N+E, N and R+Y+B+E).
  - 5. The test voltage at the moment of application shall not exceed 1000V and shall then be increased steadily within a few seconds to 2000V and maintained for 60 seconds.
  - 6. Prior to the HV test, disconnect all electrical equipment which are designed for a lower test voltage, and current-consuming apparatus such as measuring instruments in which the application of the test voltage would cause the flow of a current.
  - 7. Repeat the meggar test with all switching devices in closed position after the HV test.
- C. Secondary Injection Test
  - 1. Record the following information for every circuit being tested:-
    - a. Circuit number.
    - b. Make, type, serial number, rated current, trip coil voltage of every O/C and E/F relay.
    - c. Nominal full load current and CT ratio of the associated PCT.
  - 2. Inject secondary current in increasing amount to the relay and measure the minimum current that the relay starts to pick up, and the minimum operating current that the relay operates.
  - 3. After the relay contacts are made, reduce the injected current slowly and measure the minimum reset current when the relay resets to its normal position.
  - 4. With the O/L relay PSM at 100% and TMS at 1.0, inject secondary

- current at 2 times the rated value and measure the operating time. Repeat the test at 5 times and 10 times the rated secondary current.
5. Repeat the above test at any other relay settings as directed during the test.
  6. With the E/F relay PSM at 20% and TMS at 1.0, inject secondary current at 2 times, 5 times and 10 times the rated secondary current and measure the operating time. Repeat the test at any other relay settings as directed during the test.
  7. Compare the measured operating times and the theoretical nominal operating times read from the manufacturer's published relay characteristic curves.
  8. Record the relay settings being left at the end of the test.

D. Functional Tests

1. Carry out functional tests to check that all control circuits are correctly wired, and that all control schemes specified are fully incorporated.
2. Carry out mechanical operation tests of switchgears to verify that all switching mechanisms are functional, and all drawout type switchgears are correctly aligned.

6.4.1.3.3 LV System

Carry out tests for the following items, where relevant, in the sequence indicated.

- A. Continuity of ring final circuit conductors.
- B. Continuity of protective conductors, including main and supplementary equipment bonding.
- C. Earth electrode resistance.
- D. Insulation resistance.
- E. Insulation of site-built assemblies.
- F. Protection by electrical separation.
- G. Polarity.
- H. Earth fault loop impedance.
- I. Functions of all items of equipment



## TECHNICAL SPECIFICATION

### 1. GENERAL DESCRIPTION OF ELECTRICAL WORKS

#### 1.1 GENERAL

The technical specification and the requirement of products, switchgears, and associated equipment for EVCEI shall refer to General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 - Electrical Installation) in Government Buildings of the Hong Kong Special Administrative Region. The particular requirement shall refer not only to Section C of the General Specification, and shall also refer to the 'Code of Practice for the Electricity (Wiring) Regulations' hereinafter referred as the 'EMSD COP' and also compliance with "Building Energy Code" (BEC) of latest edition.

The Contractor shall be responsible for the complete supply, installation, testing and commissioning of the whole Electrical system for the EVCEI Under EHSS. Basically, it is required all connections amongst the existing Main LVSB and the new Low Voltage Switchboard (LVSB) (If any), and the new main out-going cabling(s) from the existing LVSB via the new Sub-main Distribution Boards (DBs), new final circuit DBs, new meter boards, and the wiring from each new independent Tariff meter to each independent car-park space. The contractor shall require providing all necessary information and document to the REA of the consultant to prepare all relevant submission to EMSD under the BEEO.

#### 1.2 BRIEF DESCRIPTION OF WORKS SHALL BE AS THE FOLLOWINGS:-

- a. The main electrical supply system under the EVCEI shall comprise Contractor modification works and/or A&A works of the existing LVSB, through the extension to a new 4P MCCBs integrated with electronic earth fault relay and new digital power analyzers all necessary accessories. Details and components shall be as indicated in the Schematic Diagram the Drawings.
- b. The Sub-Main Distribution System shall comprise of new power cables c/w cable containments from the new c/w all relevant cable containments, lockable Stainless-steel meter cabinets (if not inside E&M/switch room) etc., as according to the drawing.
- c. From each in-dependent meter cubicle, out-going wiring shall be installed on cable trunkings or cable trays or conduit and its fitting to IP65 weather-proof lockable isolators of each car-park space. The whole EVCEI installation Under EHSS shall be according to the Contract Documents, Specifications and Drawings. The contractor shall submit his shop drawings for approval prior to proceeding with the Works.

## 2. EQUIPMENT AND MATERIALS FOR ELECTRICAL INSTALLATION

### 2.1 GENERAL INCOMING SUPPLY SYSTEM

The electricity supply to the Building is at 380/220 volts, 3 phase, 4 wire alternating current system at a frequency of 50 Hz.

### 2.2 LOW VOLTAGE SWITCHBOARD (LVSB)

- a. The Contractor shall be responsible for the supply, installation, testing and commissioning of the factory-built assemblies (FBA) of new LVSB and necessary modification of the existing LVSB, all as indicated in the drawings, specifications and contract documents.
- b. The FBA shall comply with Section 7.2.11 of the GS.
- c. The FBA shall be assembled to Form 3 and type-tested to comply with IEC 61439-1: 2011 (or latest edition) by The Association of Short-circuit Testing Authorities (ASTA), U.K./Keuring van Electrotechnics Materia Lente Arnhem (KEMA), Holland. Appropriate technical information and literature in English language and copies of type-test certificates and drawings must be submitted for examination.
- d. A bare copper earth bar of sizes not less than 25 mm x 6 mm shall be provided along the whole length of the new LVSB with terminal for connections to all armouring or metal sheath of all incoming/outgoing circuits and the mains electrical earth.
- e. An earthing terminal shall be provided at bottom inside the FBA suitable for the connection of 25 mm x 6 mm copper tape.
- f. Instruments, meters and relays shall be of the flush mounted pattern, with bezels block finished, positioned on the front of the switchboard. All terminals shall be suitably insulated and control circuits shall be suitably fused.
- g. Ensure that the existing batteries of the existing Main LVSB could be and- tripped the new Main MCCB(s) or ACB (for 3ph 1000A or above, new in-depending batteries and the charger would be required herein) in consecutive operations without re-charging or causing permanent damage to the batteries to be observed and made certain by this Contractor before the Tendering. All the connection cables, control relays, contactor, and all necessary accessories to perform the tripping and reset operation of the MCCB would be supplied and installed by this Contractor.
- h. The Contractor shall study carefully the relevant Tender Drawings and prepare the arrangement details of the new LVSB to suit the actual site condition. Detailed construction drawings of the FBA(s) shall be submitted to The Consultant/ The Manager for approval.

### 2.3 LABELLING OF SWITCHBOARD

Laminated or similar labels of ample sizes shall be provided for each of the switchboard, engraved in English and Chinese characters.

### 2.4 SCHEMATIC DIAGRAM IN SWITCH ROOM

The Contractor shall provide an as-fitted wiring schematic housed in a wooden frame with clear glass cover in the main switch room, indicating the new Electrical installation of EVCEI Under EHSS.

### 2.5 PAINTING OF SWITCHBOARD

All steel work shall be treated to prevent corrosion before being painted. All steel parts normally left bright shall be cadmium plated. The final coat shall be approved gloss finish and shall be given to the paint films so that the final appearance of the finished units is entirely free from blemishes, undulations, foreign inclusions, scotches, patterning or any defects whatsoever. The final colours for the switchboard shall be the manufacturer's standard colours, unless otherwise specified.



## 2.6 L.V. SWITCHBOARD TESTING & COMMISSIONING

- a. Before leaving the factory, the FBA shall be tested in accordance with BS EN 61439-1 & 2, and results of the test shall be presented to The Consultant/ the Manager for approval. After the FBA is re-assembled on site, appropriate site test shall be carried out to the satisfaction of The Consultant/ the Manager, or his representatives and also to the satisfaction of The Power Company as required.
- b. The Contractor shall be responsible for the completion of the following minimum factory acceptance tests to provide assurance that the equipment/material/works being supplied will meet the performance requirements of this Specification. Where applicable, all tests shall be carried out in a manner as set down in ASD's T&C procedure 2022 Ed. Clause 4.7. The list provided is an indicative minimum of the tests required.
- c. The Contractor shall develop full test schedules for approval in accordance with the requirements of the other sections of the Specification.
- d. Inspection of the L.V. switchboard including wiring, electrical and mechanical connections, external and internal finish etc.
- e. Mechanical tests including checking of all mechanical and electrical connections, interlock etc.
- f. Primary and secondary injection tests to check if all measuring, protection, control circuits and associated components are operative.
- g. Continuity and dielectric tests.
- h. Functional checks of all control circuits including the shunt trip operation of circuit breaker at 70% and 110% of the rated control supply voltage.
- i. Calibration of metering instrument, CT, etc.
- j. Battery/charger load tests (if required).
- k. Mechanical operation tests of switchgears. Each switchgear to be operated through at least three (3) close-open cycles in both operating and test positions. All control circuits, changeover (only if required) operations and interlocks shall be tested for correct operation, check for ease of rack-in and rack-out of all with drawable equipment (only if required).
- l. Phase sequence tests on each outgoing unit.
- m. Service Conditions  
The site will have the following conditions of services:-
  - Climate: tropical
  - Temperature range: peak 12°C to 45°C and average 10°C to 35°C (over 24 hours)
  - Relative humidity: 99%maximum
  - Altitude: sea level to 1000 meter

## 2.7 BUSBARS AND WIRING

- a. All busbar shall be of hard drawn high conductivity copper having ratings as specified and shall be electro-bare. Busbar shall comply with BS EN 13601:2013 for rating exceeding 200A. Neutral busbars shall have CSA not smaller than that of the phase busbars, and shall have adequate number of terminals for all outgoing circuits including spare ways.
- b. Busbars shall be air insulated, and fabricated from hard drawn high conductivity copper rigidly mounted on non-hygroscopic slotted bakelite insulators of 16 mm minimum thickness and porcelain supports as appropriate.
- c. All busbars shall be neatly grouped, properly spaced and enclosed in busbar chambers of rigid steel construction complete with removable covers.
- d. Connections from the busbars to the switchgear shall be by means of copper bars or cable of rating not less than that of the switchgear, securely clamped to the busbars.
- e. Busbars shall be completely bare at the works and shall be retouched for damage tinning when all connection bars and cables are completed. The busbar system shall have an insulation voltage of 1000v d.c.
- f. Busbars shall be identified by means of plastic tape to the following colours coding:
  - Phase: Brown, Black, Grey for Phase L1, L2 & L3
  - Neutral: Blue
  - Earth: Green / Yellow
- g. All internal wiring shall be PVC insulated copper cables to BS EN 50525 not less than 1.5 sq.mm single core, with different isolation colour to distinguish the various circuit.
- h. Internal wiring shall be colour coded as follows:
  - Control neutral: Black
  - Line: Brown
  - Power neutral: Blue
  - 3 Phase: Brown, Black & Grey
  - Earth: Green / Yellow
- i. Wiring shall be terminated by means of claw washers. Cable termination sockets shall be to B.S. 91:1989 or latest edition. Where wiring passes through metal holes, PVC bushes shall be provided.
- j. Identification for wires shall be by means of numbered ferrules at all termination points with ferrules on the trip circuit marked in red and all others in black.
- k. Connections or soldered joints are not permitted in the wiring which shall, wherever possible, be grouped and placed together in a neat manner.

## 2.8 Electromechanical Type I.D.M.T. Overcurrent Protection Relay and Earth Fault Relay

- a. The electromechanical type I.D.M.T. overcurrent protection relay and earth fault relay shall be installed to comply with the Clause 7.2.11.9 of General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 - Electrical Installation).
- b. Overcurrent protection relay shall have triple elements with current setting ranging from 50% to 200% in 25% tappings and with time setting from 0 to 1.3 seconds in variable steps. The relay shall be of draw-out case type flush mounted on the front panel. The characteristic of the relay shall match with that of the Supply Company.
- c. Earth fault relay shall be one single pole earth fault relay with current setting from 10% to 40% in 5% tappings and with time setting from 0 to 1.3 seconds. The relay shall be of draw-out-case type, flush mounted on the front panel. The characteristic of the relay shall match with that of the Supply Company.
- d. Shunt-Trip Release of air circuit breakers shall be operated by a D.C. supply of 24V or 30V (other voltages may be specified to suit particular project subject to the approval of the Supervising Officer) obtained from the secondary batteries complete with battery charger, etc. of suitable rating.

## 2.9 DIGITALPOWERANALYZER: (DPA)

- a. The digital power analyzer (DPA) shall be installed to comply with the Clause 7.2.5.24 of General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 Electrical Installation).
- b. DPA shall be included both functions of DPA and Client's check meter as required by the Power Company – CLP/ HEP
- c. The microprocessor based digital power analyzer shall measure and monitor the electrical parameters as specified in this Specification by means of microprocessor technology. The digital power analyzer shall be able to communicate with PC-based Power Quality Monitoring (PQM) System as well as Building Management System via a common network protocol such as Modbus/ Lonworks via RS232/ RS485/ Ethernet communication link by means of plugging in communication module.
- d. The digital power analyzer shall continuously monitor the power system and trigger alarm/event logging for power monitoring and analysis. The stored and instantaneous measurement data shall be recalled and displayed on the front panel upon pressing of keypad on the digital power analyzer and alternatively monitored by PC-based application software supplied together with the analyzer.
- e. The digital power analyzer shall have waveform capture capability which shall be either initiated from the software or by the power analyzer as a user defined response in an alarm condition. The captured waveform samples shall be able to transmit over the network to PC-based work-station for display, archival and analysis.
- f. All setup parameters required by the digital power analyzer shall be stored in non volatile flash memory and retained in the event of control power interruption. The memory shall maintain the maximum and minimum values of each parameter measured by the unit.



## TECHNICAL SPECIFICATION

### 1. GENERAL DESCRIPTION OF ELECTRICAL WORKS

#### 1.1 GENERAL

The technical specification and the requirement of products, switchgears, and associated equipment for EVCEI shall refer to General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 - Electrical Installation) in Government Buildings of the Hong Kong Special Administrative Region. The particular requirement shall refer not only to Section C of the General Specification, and shall also refer to the 'Code of Practice for the Electricity (Wiring) Regulations' hereinafter referred as the 'EMSD COP' and also compliance with "Building Energy Code" (BEC) of latest edition.

The Contractor shall be responsible for the complete supply, installation, testing and commissioning of the whole Electrical system for the EVCEI Under EHSS. Basically, it is required all connections amongst the existing Main LVSB and the new Low Voltage Switchboard (LVSB) (If any), and the new main out-going cabling(s) from the existing LVSB via the new Sub-main Distribution Boards (DBs), new final circuit DBs, new meter boards, and the wiring from each new independent Tariff meter to each independent car-park space. The contractor shall require providing all necessary information and document to the REA of the consultant to prepare all relevant submission to EMSD under the BEEO.

#### 1.2 BRIEF DESCRIPTION OF WORKS SHALL BE AS THE FOLLOWINGS:-

- a. The main electrical supply system under the EVCEI shall comprise Contractor modification works and/or A&A works of the existing LVSB, through the extension to a new 4P MCCBs integrated with electronic earth fault relay and new digital power analyzers all necessary accessories. Details and components shall be as indicated in the Schematic Diagram the Drawings.
- b. The Sub-Main Distribution System shall comprise of new power cables c/w cable containments from the new c/w all relevant cable containments, lockable Stainless-steel meter cabinets (if not inside E&M/switch room) etc., as according to the drawing.
- c. From each in-dependent meter cubicle, out-going wiring shall be installed on cable trunkings or cable trays or conduit and its fitting to IP65 weather-proof lockable isolators of each car-park space. The whole EVCEI installation Under EHSS shall be according to the Contract Documents, Specifications and Drawings. The contractor shall submit his shop drawings for approval prior to proceeding with the Works.

## 2. EQUIPMENT AND MATERIALS FOR ELECTRICAL INSTALLATION

### 2.1 GENERAL INCOMING SUPPLY SYSTEM

The electricity supply to the Building is at 380/220 volts, 3 phase, 4 wire alternating current system at a frequency of 50 Hz.

### 2.2 LOW VOLTAGE SWITCHBOARD (LVSB)

- a. The Contractor shall be responsible for the supply, installation, testing and commissioning of the factory-built assemblies (FBA) of new LVSB and necessary modification of the existing LVSB, all as indicated in the drawings, specifications and contract documents.
- b. The FBA shall comply with Section 7.2.11 of the GS.
- c. The FBA shall be assembled to Form 3 and type-tested to comply with IEC 61439-1: 2011 (or latest edition) by The Association of Short-circuit Testing Authorities (ASTA), U.K./Keuring van Electrotechnics Materia Lente Arnhem (KEMA), Holland. Appropriate technical information and literature in English language and copies of type-test certificates and drawings must be submitted for examination.
- d. A bare copper earth bar of sizes not less than 25 mm x 6 mm shall be provided along the whole length of the new LVSB with terminal for connections to all armouring or metal sheath of all incoming/outgoing circuits and the mains electrical earth.
- e. An earthing terminal shall be provided at bottom inside the FBA suitable for the connection of 25 mm x 6 mm copper tape.
- f. Instruments, meters and relays shall be of the flush mounted pattern, with bezels block finished, positioned on the front of the switchboard. All terminals shall be suitably insulated and control circuits shall be suitably fused.
- g. Ensure that the existing batteries of the existing Main LVSB could be and- tripped the new Main MCCB(s) or ACB (for 3ph 1000A or above, new in-depending batteries and the charger would be required herein) in consecutive operations without re-charging or causing permanent damage to the batteries to be observed and made certain by this Contractor before the Tendering. All the connection cables, control relays, contactor, and all necessary accessories to perform the tripping and reset operation of the MCCB would be supplied and installed by this Contractor.
- h. The Contractor shall study carefully the relevant Tender Drawings and prepare the arrangement details of the new LVSB to suit the actual site condition. Detailed construction drawings of the FBA(s) shall be submitted to The Consultant/ The Manager for approval.

### 2.3 LABELLING OF SWITCHBOARD

Laminated or similar labels of ample sizes shall be provided for each of the switchboard, engraved in English and Chinese characters.

### 2.4 SCHEMATIC DIAGRAM IN SWITCH ROOM

The Contractor shall provide an as-fitted wiring schematic housed in a wooden frame with clear glass cover in the main switch room, indicating the new Electrical installation of EVCEI Under EHSS.

### 2.5 PAINTING OF SWITCHBOARD

All steel work shall be treated to prevent corrosion before being painted. All steel parts normally left bright shall be cadmium plated. The final coat shall be approved gloss finish and shall be given to the paint films so that the final appearance of the finished units is entirely free from blemishes, undulations, foreign inclusions, scotches, patterning or any defects whatsoever. The final colours for the switchboard shall be the manufacturer's standard colours, unless otherwise specified.



## 2.6 L.V. SWITCHBOARD TESTING & COMMISSIONING

- a. Before leaving the factory, the FBA shall be tested in accordance with BS EN 61439-1 & 2, and results of the test shall be presented to The Consultant/ the Manager for approval. After the FBA is re-assembled on site, appropriate site test shall be carried out to the satisfaction of The Consultant/ the Manager, or his representatives and also to the satisfaction of The Power Company as required.
- b. The Contractor shall be responsible for the completion of the following minimum factory acceptance tests to provide assurance that the equipment/material/works being supplied will meet the performance requirements of this Specification. Where applicable, all tests shall be carried out in a manner as set down in ASD's T&C procedure 2022 Ed. Clause 4.7. The list provided is an indicative minimum of the tests required.
- c. The Contractor shall develop full test schedules for approval in accordance with the requirements of the other sections of the Specification.
- d. Inspection of the L.V. switchboard including wiring, electrical and mechanical connections, external and internal finish etc.
- e. Mechanical tests including checking of all mechanical and electrical connections, interlock etc.
- f. Primary and secondary injection tests to check if all measuring, protection, control circuits and associated components are operative.
- g. Continuity and dielectric tests.
- h. Functional checks of all control circuits including the shunt trip operation of circuit breaker at 70% and 110% of the rated control supply voltage.
- i. Calibration of metering instrument, CT, etc.
- j. Battery/charger load tests (if required).
- k. Mechanical operation tests of switchgears. Each switchgear to be operated through at least three (3) close-open cycles in both operating and test positions. All control circuits, changeover (only if required) operations and interlocks shall be tested for correct operation, check for ease of rack-in and rack-out of all with drawable equipment (only if required).
- l. Phase sequence tests on each outgoing unit.
- m. Service Conditions  
The site will have the following conditions of services:-
  - Climate: tropical
  - Temperature range: peak 12°C to 45°C and average 10°C to 35°C (over 24 hours)
  - Relative humidity: 99% maximum
  - Altitude: sea level to 1000 meter

## 2.7 BUSBARS AND WIRING

- a. All busbar shall be of hard drawn high conductivity copper having ratings as specified and shall be electro-bare. Busbar shall comply with BS EN 13601:2013 for rating exceeding 200A. Neutral busbars shall have CSA not smaller than that of the phase busbars, and shall have adequate number of terminals for all outgoing circuits including spare ways.
- b. Busbars shall be air insulated, and fabricated from hard drawn high conductivity copper rigidly mounted on non-hygroscopic slotted bakelite insulators of 16 mm minimum thickness and porcelain supports as appropriate.
- c. All busbars shall be neatly grouped, properly spaced and enclosed in busbar chambers of rigid steel construction complete with removable covers.
- d. Connections from the busbars to the switchgear shall be by means of copper bars or cable of rating not less than that of the switchgear, securely clamped to the busbars.
- e. Busbars shall be completely bare at the works and shall be retouched for damage tinning when all connection bars and cables are completed. The busbar system shall have an insulation voltage of 1000v d.c.
- f. Busbars shall be identified by means of plastic tape to the following colours coding:
  - Phase: Brown, Black, Grey for Phase L1, L2 & L3
  - Neutral: Blue
  - Earth: Green / Yellow
- g. All internal wiring shall be PVC insulated copper cables to BS EN 50525 not less than 1.5 sq.mm single core, with different isolation colour to distinguish the various circuit.
- h. Internal wiring shall be colour coded as follows:
  - Control neutral: Black
  - Line: Brown
  - Power neutral: Blue
  - 3 Phase: Brown, Black & Grey
  - Earth: Green / Yellow
- i. Wiring shall be terminated by means of claw washers. Cable termination sockets shall be to B.S. 91:1989 or latest edition. Where wiring passes through metal holes, PVC bushes shall be provided.
- j. Identification for wires shall be by means of numbered ferrules at all termination points with ferrules on the trip circuit marked in red and all others in black.
- k. Connections or soldered joints are not permitted in the wiring which shall, wherever possible, be grouped and placed together in a neat manner.

## 2.8 Electromechanical Type I.D.M.T. Overcurrent Protection Relay and Earth Fault Relay

- a. The electromechanical type I.D.M.T. overcurrent protection relay and earth fault relay shall be installed to comply with the Clause 7.2.11.9 of General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 - Electrical Installation).
- b. Overcurrent protection relay shall have triple elements with current setting ranging from 50% to 200% in 25% tappings and with time setting from 0 to 1.3 seconds in variable steps. The relay shall be of draw-out case type flush mounted on the front panel. The characteristic of the relay shall match with that of the Supply Company.
- c. Earth fault relay shall be one single pole earth fault relay with current setting from 10% to 40% in 5% tappings and with time setting from 0 to 1.3 seconds. The relay shall be of draw-out-case type, flush mounted on the front panel. The characteristic of the relay shall match with that of the Supply Company.
- d. Shunt-Trip Release of air circuit breakers shall be operated by a D.C. supply of 24V or 30V (other voltages may be specified to suit particular project subject to the approval of the Supervising Officer) obtained from the secondary batteries complete with battery charger, etc. of suitable rating.

## 2.9 DIGITALPOWERANALYZER: (DPA)

- a. The digital power analyzer (DPA) shall be installed to comply with the Clause 7.2.5.24 of General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 Electrical Installation).
- b. DPA shall be included both functions of DPA and Client's check meter as required by the Power Company – CLP/ HEP
- c. The microprocessor based digital power analyzer shall measure and monitor the electrical parameters as specified in this Specification by means of microprocessor technology. The digital power analyzer shall be able to communicate with PC-based Power Quality Monitoring (PQM) System as well as Building Management System via a common network protocol such as Modbus/ Lonworks via RS232/ RS485/ Ethernet communication link by means of plugging in communication module.
- d. The digital power analyzer shall continuously monitor the power system and trigger alarm/event logging for power monitoring and analysis. The stored and instantaneous measurement data shall be recalled and displayed on the front panel upon pressing of keypad on the digital power analyzer and alternatively monitored by PC-based application software supplied together with the analyzer.
- e. The digital power analyzer shall have waveform capture capability which shall be either initiated from the software or by the power analyzer as a user defined response in an alarm condition. The captured waveform samples shall be able to transmit over the network to PC-based work-station for display, archival and analysis.
- f. All setup parameters required by the digital power analyzer shall be stored in non volatile flash memory and retained in the event of control power interruption. The memory shall maintain the maximum and minimum values of each parameter measured by the unit.



## TECHNICAL SPECIFICATION

### 1. GENERAL DESCRIPTION OF ELECTRICAL WORKS

#### 1.1 GENERAL

The technical specification and the requirement of products, switchgears, and associated equipment for EVCEI shall refer to General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 - Electrical Installation) in Government Buildings of the Hong Kong Special Administrative Region. The particular requirement shall refer not only to Section C of the General Specification, and shall also refer to the 'Code of Practice for the Electricity (Wiring) Regulations' hereinafter referred as the 'EMSD COP' and also compliance with "Building Energy Code" (BEC) of latest edition.

The Contractor shall be responsible for the complete supply, installation, testing and commissioning of the whole Electrical system for the EVCEI Under EHSS. Basically, it is required all connections amongst the existing Main LVSB and the new Low Voltage Switchboard (LVSB) (If any), and the new main out-going cabling(s) from the existing LVSB via the new Sub-main Distribution Boards (DBs), new final circuit DBs, new meter boards, and the wiring from each new independent Tariff meter to each independent car-park space. The contractor shall require providing all necessary information and document to the REA of the consultant to prepare all relevant submission to EMSD under the BEEO.

#### 1.2 BRIEF DESCRIPTION OF WORKS SHALL BE AS THE FOLLOWINGS:-

- a. The main electrical supply system under the EVCEI shall comprise Contractor modification works and/or A&A works of the existing LVSB, through the extension to a new 4P MCCBs integrated with electronic earth fault relay and new digital power analyzers all necessary accessories. Details and components shall be as indicated in the Schematic Diagram the Drawings.
- b. The Sub-Main Distribution System shall comprise of new power cables c/w cable containments from the new c/w all relevant cable containments, lockable Stainless-steel meter cabinets (if not inside E&M/switch room) etc., as according to the drawing.
- c. From each in-dependent meter cubicle, out-going wiring shall be installed on cable trunkings or cable trays or conduit and its fitting to IP65 weather-proof lockable isolators of each car-park space. The whole EVCEI installation Under EHSS shall be according to the Contract Documents, Specifications and Drawings. The contractor shall submit his shop drawings for approval prior to proceeding with the Works.

## 2. EQUIPMENT AND MATERIALS FOR ELECTRICAL INSTALLATION

### 2.1 GENERAL INCOMING SUPPLY SYSTEM

The electricity supply to the Building is at 380/220 volts, 3 phase, 4 wire alternating current system at a frequency of 50 Hz.

### 2.2 LOW VOLTAGE SWITCHBOARD (LVSB)

- a. The Contractor shall be responsible for the supply, installation, testing and commissioning of the factory-built assemblies (FBA) of new LVSB and necessary modification of the existing LVSB, all as indicated in the drawings, specifications and contract documents.
- b. The FBA shall comply with Section 7.2.11 of the GS.
- c. The FBA shall be assembled to Form 3 and type-tested to comply with IEC 61439-1: 2011 (or latest edition) by The Association of Short-circuit Testing Authorities (ASTA), U.K./Keuring van Electrotechnics Materia Lente Arnhem (KEMA), Holland. Appropriate technical information and literature in English language and copies of type-test certificates and drawings must be submitted for examination.
- d. A bare copper earth bar of sizes not less than 25 mm x 6 mm shall be provided along the whole length of the new LVSB with terminal for connections to all armouring or metal sheath of all incoming/outgoing circuits and the mains electrical earth.
- e. An earthing terminal shall be provided at bottom inside the FBA suitable for the connection of 25 mm x 6 mm copper tape.
- f. Instruments, meters and relays shall be of the flush mounted pattern, with bezels block finished, positioned on the front of the switchboard. All terminals shall be suitably insulated and control circuits shall be suitably fused.
- g. Ensure that the existing batteries of the existing Main LVSB could be and- tripped the new Main MCCB(s) or ACB (for 3ph 1000A or above, new in-depending batteries and the charger would be required herein) in consecutive operations without re-charging or causing permanent damage to the batteries to be observed and made certain by this Contractor before the Tendering. All the connection cables, control relays, contactor, and all necessary accessories to perform the tripping and reset operation of the MCCB would be supplied and installed by this Contractor.
- h. The Contractor shall study carefully the relevant Tender Drawings and prepare the arrangement details of the new LVSB to suit the actual site condition. Detailed construction drawings of the FBA(s) shall be submitted to The Consultant/ The Manager for approval.

### 2.3 LABELLING OF SWITCHBOARD

Laminated or similar labels of ample sizes shall be provided for each of the switchboard, engraved in English and Chinese characters.

### 2.4 SCHEMATIC DIAGRAM IN SWITCH ROOM

The Contractor shall provide an as-fitted wiring schematic housed in a wooden frame with clear glass cover-in the main switch room, indicating the new Electrical installation of EVCEI Under EHSS.

### 2.5 PAINTING OF SWITCHBOARD

All steel work shall be treated to prevent corrosion before being painted. All steel parts normally left bright shall be cadmium plated. The final coat shall be approved gloss finish and shall be given to the paint films so that the final appearance of the finished units is entirely free from blemishes, undulations, foreign inclusions, scotches, patterning or any defects whatsoever. The final colours for the switchboard shall be the manufacturer's standard colours, unless otherwise specified.



## 2.6 L.V. SWITCHBOARD TESTING & COMMISSIONING

- a. Before leaving the factory, the FBA shall be tested in accordance with BS EN 61439-1 & 2, and results of the test shall be presented to The Consultant/ the Manager for approval. After the FBA is re-assembled on site, appropriate site test shall be carried out to the satisfaction of The Consultant/ the Manager, or his representatives and also to the satisfaction of The Power Company as required.
- b. The Contractor shall be responsible for the completion of the following minimum factory acceptance tests to provide assurance that the equipment/material/works being supplied will meet the performance requirements of this Specification. Where applicable, all tests shall be carried out in a manner as set down in ASD's T&C procedure 2022 Ed. Clause 4.7. The list provided is an indicative minimum of the tests required.
- c. The Contractor shall develop full test schedules for approval in accordance with the requirements of the other sections of the Specification.
- d. Inspection of the L.V. switchboard including wiring, electrical and mechanical connections, external and internal finish etc.
- e. Mechanical tests including checking of all mechanical and electrical connections, interlock etc.
- f. Primary and secondary injection tests to check if all measuring, protection, control circuits and associated components are operative.
- g. Continuity and dielectric tests.
- h. Functional checks of all control circuits including the shunt trip operation of circuit breaker at 70% and 110% of the rated control supply voltage.
- i. Calibration of metering instrument, CT, etc.
- j. Battery/charger load tests (if required).
- k. Mechanical operation tests of switchgears. Each switchgear to be operated through at least three (3) close-open cycles in both operating and test positions. All control circuits, changeover (only if required) operations and interlocks shall be tested for correct operation, check for ease of rack-in and rack-out of all with drawable equipment (only if required).
- l. Phase sequence tests on each outgoing unit.
- m. Service Conditions  
The site will have the following conditions of services:-
  - Climate: tropical
  - Temperature range: peak 12°C to 45°C and average 10°C to 35°C (over 24 hours)
  - Relative humidity: 99% maximum
  - Altitude: sea level to 1000 meter

## 2.7 BUSBARS AND WIRING

- a. All busbar shall be of hard drawn high conductivity copper having ratings as specified and shall be electro-bare. Busbar shall comply with BS EN 13601:2013 for rating exceeding 200A. Neutral busbars shall have CSA not smaller than that of the phase busbars, and shall have adequate number of terminals for all outgoing circuits including spare ways.
- b. Busbars shall be air insulated, and fabricated from hard drawn high conductivity copper rigidly mounted on non-hygroscopic slotted bakelite insulators of 16 mm minimum thickness and porcelain supports as appropriate.
- c. All busbars shall be neatly grouped, properly spaced and enclosed in busbar chambers of rigid steel construction complete with removable covers.
- d. Connections from the busbars to the switchgear shall be by means of copper bars or cable of rating not less than that of the switchgear, securely clamped to the busbars.
- e. Busbars shall be completely bare at the works and shall be retouched for damage tinning when all connection bars and cables are completed. The busbar system shall have an insulation voltage of 1000v d.c.
- f. Busbars shall be identified by means of plastic tape to the following colours coding:
  - Phase: Brown, Black, Grey for Phase L1, L2 & L3
  - Neutral: Blue
  - Earth: Green / Yellow
- g. All internal wiring shall be PVC insulated copper cables to BS EN 50525 not less than 1.5 sq.mm single core, with different isolation colour to distinguish the various circuit.
- h. Internal wiring shall be colour coded as follows:
  - Control neutral: Black
  - Line: Brown
  - Power neutral: Blue
  - 3 Phase: Brown, Black & Grey
  - Earth: Green / Yellow
- i. Wiring shall be terminated by means of claw washers. Cable termination sockets shall be to B.S. 91:1989 or latest edition. Where wiring passes through metal holes, PVC bushes shall be provided.
- j. Identification for wires shall be by means of numbered ferrules at all termination points with ferrules on the trip circuit marked in red and all others in black.
- k. Connections or soldered joints are not permitted in the wiring which shall, wherever possible, be grouped and placed together in a neat manner.

## 2.8 Electromechanical Type I.D.M.T. Overcurrent Protection Relay and Earth Fault Relay

- a. The electromechanical type I.D.M.T. overcurrent protection relay and earth fault relay shall be installed to comply with the Clause 7.2.11.9 of General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 - Electrical Installation).
- b. Overcurrent protection relay shall have triple elements with current setting ranging from 50% to 200% in 25% tappings and with time setting from 0 to 1.3 seconds in variable steps. The relay shall be of draw-out case type flush mounted on the front panel. The characteristic of the relay shall match with that of the Supply Company.
- c. Earth fault relay shall be one single pole earth fault relay with current setting from 10% to 40% in 5% tappings and with time setting from 0 to 1.3 seconds. The relay shall be of draw-out-case type, flush mounted on the front panel. The characteristic of the relay shall match with that of the Supply Company.
- d. Shunt-Trip Release of air circuit breakers shall be operated by a D.C. supply of 24V or 30V (other voltages may be specified to suit particular project subject to the approval of the Supervising Officer) obtained from the secondary batteries complete with battery charger, etc. of suitable rating.

## 2.9 DIGITALPOWERANALYZER: (DPA)

- a. The digital power analyzer (DPA) shall be installed to comply with the Clause 7.2.5.24 of General Specification for Building Services Installation in Government Buildings of The Hong Kong Special Administrative Region issued by Architectural Services Department (2022 Edition) - (Part 7 Electrical Installation).
- b. DPA shall be included both functions of DPA and Client's check meter as required by the Power Company – CLP/ HEP
- c. The microprocessor based digital power analyzer shall measure and monitor the electrical parameters as specified in this Specification by means of microprocessor technology. The digital power analyzer shall be able to communicate with PC-based Power Quality Monitoring (PQM) System as well as Building Management System via a common network protocol such as Modbus/ Lonworks via RS232/ RS485/ Ethernet communication link by means of plugging in communication module.
- d. The digital power analyzer shall continuously monitor the power system and trigger alarm/event logging for power monitoring and analysis. The stored and instantaneous measurement data shall be recalled and displayed on the front panel upon pressing of keypad on the digital power analyzer and alternatively monitored by PC-based application software supplied together with the analyzer.
- e. The digital power analyzer shall have waveform capture capability which shall be either initiated from the software or by the power analyzer as a user defined response in an alarm condition. The captured waveform samples shall be able to transmit over the network to PC-based work-station for display, archival and analysis.
- f. All setup parameters required by the digital power analyzer shall be stored in non volatile flash memory and retained in the event of control power interruption. The memory shall maintain the maximum and minimum values of each parameter measured by the unit.



- g. The measurement parameters as stated in BEC Code of Practice 2021 clause 7.7.1 to 7.7.3 should be trended every 15 minutes and include hourly, daily, monthly and annual data. The metering devices and the associated monitoring facilities should be capable of maintaining all data collected for a minimum of 36 months.

### 3. MAIN AND SUB-MAIN DISTRIBUTION SYSTEM

#### 3.1 GENERAL

- a. The Contractor shall be responsible for the supply and installation of the main and sub-main distribution system including main surface mounted MCCB DB, armoured XLPE/SWA/PVC cables, MCCBs, isolating switches, etc. all as described and shown on the Drawings.
- b. The sizes and types of DB, cables and switchgears shall be as specified and the installation shall be carried out in accordance with the relevant clauses of the General Technical Specification. The contractor shall be aware of the existing cable color code. All new cable installations shall comply with the latest EMSD COP's requirements of Code of Practice for the Electricity (Wiring) Regulation (EMSD COP) to avoid any incorrect connection.
- c. Arrangement of DB, risers and switchgear, ducts shall be carefully observed to suit the actual site condition with consideration of minimum space for maintenance and inspection. Details of the arrangement shall be submitted to the Consultant/Manager for approval.

#### 3.2 CABLES INSTALLATION

- a. All power circuits and Cables conductor shall be as specified on drawings and in accordance with COP for the Electricity (Wiring) Regulations and Technical Guidelines on Charging Facilities for electric vehicles issued by EMSD.
- b. All equipment and accessories delivered to site shall be new and shall be clearly marked to identify in different grades, materials and manufacturers.
- c. All equipment, materials and fittings shall be suitable for operation under the service conditions as specified. In general, it is assumed that the ambient temperature will be up to 40°C with relative humidity up to 100%.
- d. Ensure full discrimination between the upstream switchgear and the downstream switchgear so that overloads on the load circuits will not trip the upstream circuit breakers but will effectively isolate the faulty circuit, leaving the healthy circuits unaffected. In addition, the proposed combination of upstream switchgears (e.g. MCCBs) and downstream protection devices (e.g. RCBOs/MCBs) should have been tested and verified by the switchgear manufacturer/independent laboratory to withstand the prospective fault current at the equipment install positions without causing equipment and cable damages.
- e. Where earth fault detection is provided, discrimination shall be ensured as for overloads above. Sufficient adjustment shall be provided so that spurious tripping due to the inherent earth leakage of long cable runs and other equipment will not occur without comprising the requirements of full discrimination.

- f. In general, material of the supporting brackets and hangers shall be followed the requirements in latest version of General Specification in Government Building of HK.SAR issued by Arch ASD.

### 3.3 MCCB/MCB/RCBO

- a. Moulded case circuit breaker (MCCB) shall be as stated in the Section 7.2.5.5 of ASD's GS (2022 Edition) shall be enclosed in metal enclosures of ample size suitable for cable entry or MCCB boards.
- b. MCCB shall be of Type-Test comply with BS EN60947-2:2017 or IEC 60947-2:2013, and shall have all mechanical and live metallic components completely enclosed within an all- insulating moulded case. The operating mechanism shall be independent of operating speed and the over-current toggle action shall provide a quick-make and quick-break switching. Handles shall trip free. Contacts shall be non-welding.
- c. MCCB shall have over-current tripping mechanism of thermal-magnetic type to give time delay overload circuit protection and instantaneous short-circuit interruption. Time- current curves shall be provided for each frame size of MCCB. Earth fault protection shall be provided for those MCCBs as specified on the Drawings or as specified in the Particular Specification.
- d. MCCB shall withstand (Minimum) 40kA for over 400A frame size and/or (Minimum) 23kA within 100A-400A frame size short circuit breaking capacity, as per table 7.2.5.5.3 of ASD's GS for BS Installation 2022 Edition, and latest EMSD Code of Practice for Electrical (Wiring) Regulation (EMSD COP) "Code 9c(2)(c). Actual designed short circuit breaking capacity shall be subjected to Tender Drawing. if it is installed at Main Switch Room and/or sub-switch or meter room respectively and be capable of being mounted in any position without affecting the tripping characteristics or interrupting capacity according to EMSD COP for the electricity (wiring) regulations Table 9(2). Unless otherwise specified on Drawings, MCCBs shall withstand 40kA.
- e. Handle lock attachments complete with suitable means for padlocking the MCCB either in the open or close position, shall be provided.
- f. Catalogues of MCCB unit and MCCB board shall be submitted for approval prior to ordering/manufacturing.
- g. All RCBOs shall be incorporated with overcurrent protection. They shall be enclosed in MCB DBs and/or RCBO DBs Sample of MCB, RCBO and boards shall be submitted for approval prior to ordering/manufacturing.
- h. Except otherwise specified, MCCB/MCB/RCBO boards shall be verification tested to a short time withstand current in accordance with table 7.2.5.10.8 of ASD's GS for BS Installation 2022 Editon
- i. All DBs shall be clearly labelled, and marked with phase and neutral identification with Brown, Black, Grey color for phase L1, L2 & L3 respectively. Inside each board door, a circuit record card shall be provided.
- j. All RCBOs shall be double pole of Type A residual current tripping characteristic and comply with BS EN 61009 and IEC 61009:2013/And 2 Corr 1:2014. All RCBOs used inside residential units shall be double pole. All RCBO/MCB units shall be calibrated at 40°C.

### 3.4 BUSBARS TRUNKING SYSTEM

- a. Busbars of the DB to 7.2.6.4, Section 7.2.6 of ASD's GS for BS Installation 2022 Edition, shall be made of hard drawn, electro-tinned high conductivity, bare rectangular solid copper complied to BS EN 13601:2013. Full size phase and neutral bars shall be provided.
- b. Brace and support all busbars rigidly. The complete assembly shall be capable of withstanding the maximum mechanical stresses to which it may be subjected under fault conditions.
- c. Busbars connections and bare conductors forming part of the equipment of the DBs shall comply as regards current-carrying capacity and limits of temperature rise with the requirements of Clause 9.2 of IEC 61439-6:2012.
- d. Jointing of busbars shall be by mechanical means, silver plated or tin-plated at joints. Provide washers and locknuts to all bolts. The length of overlap at joints shall not be less than the width of busbars to be jointed.
- e. Busbar chambers shall be manufactured in compliance with BS EN 60439. Busbar chambers shall be totally enclosed type, suitable for surface mounting and marked with phase and neutral identification with Brown, Black, Grey, Blue for new colour code (installation after 1/7/2009) or red, yellow, blue and black for old colour code (installation before 1/7/2009) respectively, and clearly labelled to indicate the ratings and functions.



### 3.5 CABLE TRAY AND TRUNKING

- a. Basically, armoured cable would be mounted on cable tray, non-armoured cable would be on metal trunking.
- b. Return Flange cable tray should be used.
- c. Metal cable trays shall be perforated, formed from plain sheet steel shall be hot-dipped galvanized after perforation. They shall be in accordance with the Section 7.2.3.10 of ASD's GS of effectively earthed. Cable trays shall have the following minimum dimensions:

Table 7.2.3.10.2 Typical Dimensions of Cable Tray

Nominal Width (mm)	Minimum height of upstand (mm)	Thickness of steel sheet (mm)	Minimum height of return flange (mm)
100 and 150	12	1.2	--
225 and 250	12	1.5	--
300 and 350	20	1.5	12
400 and 450	20	1.5	12
500 and 550	20	2.0	12
600 and 700	20	2.0	12
800 and 1,000	20	2.0	12
1,200	20	2.0	12

Table 7.2.3.10.4 Location of Perforation in Bend Piece of Cable Tray

Nominal width of cable tray	Value of $\theta$
225 mm to 350 mm	45°
400 mm and above	30° and 60°

- d. Cable trunking shall be manufactured with galvanized sheet steel with the following minimum thickness of material in accordance with the Section 7.2.2.4 of ASD's GS for BS Installation 2022 Edition.

Table 7.2.2.4.4 (1)  
Size, Body and Cover Thickness, and Preferred  
Length of Steel Surface and Raised Floor Trunkings

External dimension (mm)	Minimum thickness of body with return flange (mm)	Minimum thickness of body without return flange (mm)	Minimum thickness of cover (mm)
50 x 50	1.0	1.0	1.0
75 x 50	1.2	1.2	1.2
75 x 75	1.2	1.2	1.2
100 x 50	1.2	1.2	1.2
100 x 75	1.2	1.2	1.2
100 x 100	1.2	1.4	1.2
150 x 50	1.2	1.4	1.2
150 x 75	1.2	1.4	1.2
150 x 100	1.2	1.4	1.2
150 x 150	1.4	1.6	1.2
200 x 50	1.6	--	1.4
200 x 75	1.6	--	1.4
200 x 100	1.6	--	1.4
200 x 150	1.6	--	1.4

Table 7.2.2.4.4 (1)  
Size, Body and Cover Thickness, and Preferred  
Length of Steel Surface and Raised Floor Trunkings (Cont'd)

External dimension (mm)	Minimum thickness of body with return flange (mm)	Minimum thickness of body without return flange (mm)	Minimum thickness of cover (mm)
200 x 200	1.6	--	1.4
300 x 50	1.6	--	1.6
300 x 75	1.6	--	1.6
300 x 100	1.6	--	1.6
300 x 150	1.6	--	1.6
300 x 300	2.0	--	1.6
Preferred lengths: 3m (minimum: 2m ; maximum: 3m) Minimum thickness of partitions or dividers: 1.0 mm.			

- e. Copper earth link shall be provided at the joints of the trunking to ensure good circuit protective bonding. Trunking should be of metallic to BS EN 50085-2-1. Centre Captive screw on cover type shall be used. For vertical trunking, cable support of approved type shall be provided for every three floors to take the weight of the cable running inside. Trunking shall be supported on walls or suspended from ceiling at appropriate intervals, and shall be truly vertical and horizontal so that no visible sag is observed when loaded with cables.
- f. Where trunking crosses expansion joints, an approved trunking system shall be used which will allow for expansion and maintain earth continuity. Where cables are installed in trunking which pass through floors and walls, suitable internal fire-resistant barriers shall be provided to prevent the spread of fire.

### 3.6 CONDUIT AND ACCESSORIES

- a. Galvanized Steel Conduit and Accessories
  - i. All conduits and fittings shall be galvanized iron to BS EN 61386 Conduit shall be of heavy gauge, screwed and longitudinally welded and protected against corrosion to Class 4.
  - ii. Fitting shall be to Class 4 protection against corrosion.
  - iii. Conduit boxes BS 4662 shall be hot-dipped galvanized both inside and outside to Class 4. 35mm and/or 47mm deep boxes shall be used for wiring accessories.
  - iv. Minimum size of conduit shall be 20 mm outside diameter.
  - v. When crossing construction or expansion joint, approved type expansion joint shall be employed.
  - vi. Space factor for conduit shall comply with the latest local rules, regulation and codes.
  - vii. Conduit system shall be electrically and mechanically continuous and permanently earthed.
  - viii. Cables of different voltage shall be contained in separate conduits.
  - ix. All boxes and conduit accessories shall be fully weatherproof when used in outdoor locations.
  - x. Concealed conduits will not be accepted for EVCEI installations.
- b. Flexible galvanized steel conduits shall conform to BS EN 61386-1, and shall be:-
  - i. Of the metallic watertight pattern
  - ii. Flame retardant PVC over-sheathed and,
  - iii. With a separate earthed wire enclosed for earth continuity
  - iv. Minimum outside diameter of 20 mm

### 3.7 POWERCABLEANDWIRING

- a. The system of wiring shall be in XLPE amoured and Non-amoured insulated cable with copper conductor to Sub-Section 7.2.3 of ASD's GS for BS Installation 2022 Edition. The cable shall be BASEC approval type. or the HAR scheme recognised by the European Committee for Electrotechnical Standardization, CENELEC, Fire resistant cables shall be used for all essential circuits and load (if any).
- b. XLPE Cu Non-amoured Insulated Cables, with solid or stranded conductor, with low emission of smoke and corrosive gases when affected by fire, suitable for conductor operating temperature not exceeding 900 C - IEC60502-1: 2004/Amd 1:2009.
- c. Copper core cable of this type shall be 450/750V grade, XLPE insulated complying with BS EN 50525-2-31 and/or BS EN 50525-3-41 respectively.
- d. The core of the cables shall be identified by the colour as specified below throughout the whole of the insulation.
  - Phase: Brown, Black, Grey
  - Neutral: Blue
  - Earth: Green/Yellow
- e. Minimum size of cables is to be as follows: -
  - Power Cables 2.5mm<sup>2</sup>
  - Control or Lighting Circuit 1.5mm<sup>2</sup>
- f. XLPE Insulated Steel Wire Armoured Cables, sheathed with armour copper cable, with solid or stranded conductor, with low emission of smoke and corrosive gases when affected by fire, suitable for conductor operating temperature not exceeding 900 C - IEC60502-1: 2004/Amd 1:2009
  - i. Cables of this type shall be 600/1000V grade complying with B.S. 5467, /B.S. 6724, /B.S. 7846 copper core, XLPE insulated, steel wire armoured and PVC sheathed.
  - ii. Conductors of wiring cables shall be of high-conductivity copper and all meet the requirements of IEC 60228:2004 and shall be plain annealed copper conductors complying with BS EN 60228: 2005, and each conductor core shall be of the same cross- sectional area.
  - iii. Each core of the cable shall be identified by the appropriate colour as specified in throughout the whole of the insulation.
  - iv. Wire armour shall consist of a single layer of galvanized steel wires of the size in the appropriate table (e.g. table A6(6) of COP 2020 of EMSD) comply with EN 10257-1.
  - v. The oversheath of the cables shall be an extruded layer of black PVC complying with the requirements of BS EN 60332-1-1 2004 for flame retardant.



### 3.8 CABLE GLANDS AND ACCESSORIES FOR CABLES

- a. Cables shall be terminated in approved non-ferrous mechanical glands in accordance with the of ASD's requirement.
- b. Terminations which are considered not satisfactory by the Manager shall be replaced or rectified before being connected to the switchgears or equipment. All current carrying holding bolts and fixing screws and nuts must be tightened up and re-checked for proper contact.
- c. Where cables pass through floors and walls, seal the opening made with approved fire-resistant material to maintain the same fire rating as the floors and walls penetrated. Where cables pass through expansion joints, form a cable loop of such size to allow any movement in the joint without imposing any stress to the cables.
- d. This contractor shall submit shop drawings to confirm and to indicate the route of the main and sub-main distribution system to The Consultant/The Manager for approval before commencing of the works.

### 3.9 GENERAL SMALL POWER

- a. MCB/RCBO boards, MCB's, RCBO's, trunking/conduit wiring system etc. shall be as shown on the Drawings. Any other necessary components and accessories required for the complete execution of the works should also be included.
- b. This contractor shall well coordinate with The Manager's representative for the installation of the surfaced conduit works on site and if any concealed conduit required prior approval by The Consultant/ The Manager/The Owner.
- c. Except otherwise specified, all RCBO boards (DB) shall be surface mounted on walls in electrical switch/ meter rooms.
- d. Except otherwise specified, all outgoing conduits from the DB shall also be installed on the surface of the walls up to ceiling level bended and then surface mounted on the surface of the ceiling slabs concealed by the false ceiling (if any) and approved by The Consultant/The Manager.

### 3.10 EARTHING SYSTEM

- a. The contractor shall supply and install a complete earthing system for the whole EVCEI installations comprising circuit protective conductors, equipotential bonding conductors, all fittings, all necessary and etc.,
- b. The work shall be carried out in strict accordance with the General Specification as indicated as in Sub-Section 7.1.7 of ASD's GS for BS Installation 2022 Edition. It shall be solidly and effectively bonded and earthed in accordance with IEC 60364-1:2005/Corr 1:2009 and the associated parts of the standard and the updated EMSD's COP.
- c. The earthing system shall include the bonding of all exposed conductive parts of the electrical installation, the main equipotential bonding system of all incoming services pipes at the entry point and the supplementary bonding of the extraneous conductive parts in the building.
- d. The contractor shall submit to The Consultant/ The Manager/The Owner for approval sample of the earthing clamp used for bonding water pipes prior to manufacturing. This contractor shall submit photographs to The Consultant/ The Manager/The Owner for checking and recording purpose for the concealed connection of the bonding conductors to the metal pipe, metal window frames, etc. upon completion of such connection.
- e. Equipotential bonding is required for all exposed or extraneous metal parts of the building structure under the I.E.E. Wiring Regulations and the Electricity (Wiring) Regulations promulgated under the latest Hong Kong Electricity Ordinance (Cap. 406).

#### 4. WORKMANSHIP AND INSTALLATION

##### 4.1 WORKMANSHIP

- a. Good workmanship, proper material, and proper site co-ordination and/or liaison are essential.
- b. All workmanship shall be subject to the approval of The Consultant/ Manager who reserves the right to reject any part of the installation not complying with this specification. This Contractor shall carry out all necessary remedial work or replacement, free of charge and without any delay to This Contract, on any item of work rejected by The Consultant/ the Manager/The Owner.
- c. No work shall be covered up or put out of view without the endorsement of The Consultant/ the Manager/The Owner. The Contractor shall provide sufficient advance notice to the Manager/ Project Consultants for the examination and measurement of any work required to be covered up.
- d. Endorsement or acceptance by The Consultant/ the Manager/The Owners shall not relieve the Contractor of his responsibility for the quality of materials and the standard of workmanship in the work.
- e. All works to be carried out in accordance with recommendations of the established Standard Organizations: (i) 'General Specification for Building Services Installation' (GS BS) issued by Architectural Services Department (2022 Edition) and (ii) 'Code of Practice (2020 Edition) for the Electricity (Wiring) Regulations' (EMSD COP) issued by Electrical & Mechanical Services Department and other statutory, obligation, regulation etc.
- f. Properly co-ordinate services of the various trades, carefully co-ordinate levels, setting out sequence of work and the accessibility of various services.

##### 4.2 TRADESMEN

- a. All electrical work shall be carried out by or under the direct supervision of the "registered electrical workers" of the appropriate grade in accordance with the Electricity Ordinance.
- b. All tradesmen shall be experienced in the trade and the work carried out shall be consistent with the good practice in Hong Kong and to the satisfaction of the Manager /The Owner.

#### 4.3 TOOL AND INSTRUMENT

Proper tools shall be used for carrying out the electrical installations. Adequate and accurate testing/measuring instruments shall be used to demonstrate compliance of the electrical installations with the relevant specifications and regulations. The Manager / The Consultant has the right to stop any work on which the correct tools and/or instruments are not being used. Instruments used for acceptance tests shall be calibrated at appropriate intervals and as required for the project.

#### 4.4 SAFETY ON SITE

Work shall be carried out in such a manner as to comply with all the ordinances, regulations and, etc., together with any amendments made thereto.

#### 4.5 LABEL AND NOTICE

- a. Inscription of Label and Engraving.
- b. Inscription of label and engraving shall be in both Chinese and English characters. Details shall be submitted to The Consultant/ the Manager/The Owner for agreement prior to engraving.
- c. Material for Label

Label shall be of white plastic with black or red lettering engraved as required. Where distribution board is fitted with labels provided by the manufacturer of the distribution board, these labels may be used in lieu of the white plastic label provided that they are of equivalent quality and approved by The Consultant/ the Manager/The Owner.

- d. Fixing of Label

Label shall be fixed to switchgear and distribution board by screws. Where drilling and tapping of the equipment is impracticable, approved means of glue fastening may be used subject to prior approval of The Consultant/ the Manager/The Owner.

- e. Warning Notice

Warning notices shall be provided as required by the Electricity Ordinance and the Code of Practice for the Electricity (Wiring) Regulations. In addition, the following warning notices in Chinese and English shall be provided at the appropriate positions:-

- i. A label having minimum size of 65 x 50mm marked with the words 'DANGER - HIGH VOLTAGE' in Chinese characters and English lettering of not less than 5 mm high to be fixed on every electrical equipment or enclosure of ancillary equipment for installations operating at voltages exceeding "low voltage".
- ii. A label to indicate the maximum voltage present in an item of equipment or enclosure within which a voltage exceeding 250V exists, or items or equipment or enclosure which can be reached simultaneously and a voltage exceeding 250V exists between simultaneously accessible terminals or other fixed live parts: such voltages are normally not expected to exist with the equipment or enclosure.



#### 4.6 OTHER LABELS AND NOTICES

- a. Other labels and notices as required by the Electricity Ordinance or the Code of Practice for the Electricity (Wiring) Regulations (e.g. different cable colour codes at the same location) shall be provided where appropriate.
- b. Guard shall be of rigid of substantial construction and shall consist of heavy mild steel angle frames, hinged, and latched with either heavy galvanized and mild steel wire crimped mesh securely fastened to frames or galvanized sheet metal of 1.2mm minimum thickness. All apertures shall be such that finger access to dangerous parts is not possible. All sections shall be bolted or riveted. Railings shall be made of 32mm diameter galvanized mild steel pipe and railing fittings.

#### 4.7 FIRE SAFETY REQUIREMENT

- a. Fireman's emergency switch is specified to locate at vehicle entrance(s), fire control centre and/or other locations as considered acceptable by the Director of Fire Services, which would be easily accessible to operate by fireman enter to the building in case of fire occurred at the carpark.
- b. All the equipment and the control system associated with the power off, reset and power "on" re-statement of the Main Switches/MCCBs of the EVCEI under EHSS for the above operation by the "fireman" shall be required.
- c. Modification/ slight relocation of all B.S, services such as existing wiring, conduits and or even minor builder works etc. are required to suit the installation works of EVCEI, and/or required in order to suit the actual site condition.
- d. Metal enclosure for the meter boards and or c/w transparent window with IP and Electric Power Company requirement.

### 5. **PAINTING & LABELLING**

#### 5.1 PAINTING

- a. Conduits and trunking concealed above closed false ceiling need not be provided with finishing paint, but the Sub-Contractor shall be responsible for painting of the primer coat on all ferrous surfaces for protection against corrosion except galvanized finished metal surface. Conduits and trunking installed underneath structural ceiling soffit with no false ceiling in areas outside the plant rooms, will be provided with finishing paint by the Main Contractor. However, this Sub-Contractor shall provide with finishing paint on conduit and trunking inside transformer rooms as required and specified by Power Supply Company.
- b. All steel hangers & angles inside plant rooms shall be heavy protective paint finish or galvanized.
- c. All exposed bare metal surfaces to be painted shall be cleaned to remove all dirt, rust, grease and millscale.
- d. Apply painting as follows:-
  - i) One coat suitable primer.
  - ii) At least one coat finish painting.

- e. Submit colour samples of the final finishing coats to the Architect for approval prior to any painting.
- f. Paints for synthetic materials such as PVC or plastic shall be chemically compatible with the material being painted.
- g. Paints for special materials such as insulation shall be as recommended by the materials manufacturer.
- h. Rubber and neoprene products shall not be painted.
- i. All galvanized exposed to view or weather, except in plant rooms, shall be painted in the primary colours by main contractor.
- j. Identify pipes concealed in false ceilings and pipe ducts with 3 colour bands – one central band and two outer bands in primary colour. Width of each band shall be equal to the external diameter, of the pipes but not less than 50mm.
- k. Space all colour bands at suitable interval.

## 5.2 LABELLING

- l. Provide labels for every panel, busbar chambers and switchgears to describe the duty of every instrument, relays and items of control equipment mounted externally and internally. The designation on these labels shall be clear and concise, and shall, where applicable, incorporate the device number.
- m. Provide labels to all fuses and links to identify the current rating.
- n. Provide a nameplate, in a conspicuous position, to every MCCB/MCB boards.
- o. All labels shall be manufactured from laminated traffolyte or similar plastic materials, engraved and fixed by screws or adhesive.
- p. All labels shall be in both English and Chinese.
- q. Label all items of plant and equipment provided under this Sub-Contract.
- r. Labels shall be fixed by screws or method approved by Architect.
- s. Each of the switchgear, busbar chamber, meters board, distribution board shall be labelled on the front cover indicating the circuit controlled by the unit.
- t. Details of lettering shall be endorsed by the Architect.
- u. Busway shall be labelled at appropriate location for easy identification.
- v. Directional arrows shall be stencilled on fuel oil pipes.
- w. This sub-contractor shall supply and install sufficient labels as required by Power Company and / or the Architect to identify the voltage rating of risers, cables, terminals, power outlets, switchgears etc. especially when both voltage supply are presented in the same area / location
- x. At the earthing terminal, a permanent label marked with the works "SAFETY ELECTRICAL EARTH - DO NOT REMOVE" in English and Chinese shall be permanently attached to the final earthing leads connection. In addition to the above label, a further label shall be attached to the earth indicating the system to

which the system belongs and the number of pits involved, e.g. "NEUTRAL EARTH -PIT NO. 2 OF 4".

## 6. TESTING & COMMISSIONING

### 6.1 GENERAL

- A. This part of Specification covers the requirements on testing and commissioning to determine full compliance with the Specification and the design intent.
- B. To carry out all necessary testing and commissioning procedures in addition to those called for elsewhere in this Specification comprising tests at manufacturer's works, site tests during construction, commissioning and acceptance tests, all as specified in Appendix E & F and below.
- C. The following shall be general guideline for testing and commissioning, but the actual procedure shall be submitted by Sub-Contractor and approved by the Architect.
  - 1. The appropriate British Standard or BS Code of Practice.
  - 2. The relevant CIBS Commissioning Code.
  - 3. The latest edition of IEE regulations.
  - 4. EMSD Code of Practice for Electricity (Wiring) Regulations.
- D. All tests shall be witnessed by the Architect and shall be properly certified in a manner to be agreed with the Architect and triplicate copies of all certificates shall be issued to the Architect on completion unless approval separately
- E. These test records, certificates and performance curves shall be supplied for all tests, whether or not they have been witnessed by the Architect. The information given on such test certificate and services shall be sufficient to identify the material or equipment to which the certificate refers, and shall also bear all reference and heading given in equipment sections.
- F. Only when the installations have been so certified and all test figures and other relevant information have been recorded in the prescribed manner and accepted by the Architect should the works be considered fit for handing over to the Employer.
- G. The tender sum shall be deemed to have included all costs associated with the above mentioned testing and commissioning procedures including the cost of making good any defects arising out of such tests and having the work retested. Such costs shall also include for the provision of all instruments necessary for the test.
- H. To supply all testing equipment necessary for the testing and commissioning of the entire system.

### 6.2 FACTORY ACCEPTANCE TESTS (FAT)

#### 6.2.1 GENERAL

Carry out the following minimum tests including Ductor test to provide assurance that the equipment/plant/material being supplied will meet the performance requirements of this Specification. Where applicable, all tests shall be carried out in a manner as set down in relevant BS. The list provided is an indicative minimum of the tests required. Develop and submit full test schedules, procedures, circuit diagrams for approval in accordance with the requirements of the other sections of the Specification. Use standard testing forms attached to the Specification as appropriate, otherwise, develop and submit testing forms for approval.

#### 6.2.2 LV SWITCHBOARD

- A. Visual Checks
1. Carry out visual inspection of the general construction of the switchboard, the busbar system, switchgear, instrumentation, cabling provisions, etc. to determine if the switchboard is ready for further testing and subsequent delivery to site.
- B. Verification of Measuring Instrument Accuracy
1. With the secondary injection test set connected to the ammeter terminals, inject currents ranging from 0 to 100% of the rated value in steps of 25%. Compare the meter readings with the calibrated ammeter readings.
  2. With a 3-phase variac connected to the voltmeter terminals, vary the voltage from 0 to 100% of the rated value in steps of 25%. Compare the meter readings with the calibrated voltmeter readings.
  3. Follow manufacturer's instructions for the calibration of voltage, current and power transducers.
  4. With a 3-phase variac connected to the under-voltage relay circuit, vary the supply voltage gradually to record the drop-off and pick-up voltages of the relay.
- C. Dielectric Test
1. With all switching devices in open positions, carry out 1000V meggar test for phase to phase, phase to neutral, and phase to earth and neutral to earth to measure the insulation resistance.
  2. Repeat the above test with all switching devices in closed position.
  3. Apply 2kV AC between all live parts and the exposed conductive parts (ie between R+Y+B+N and E) for 60 seconds and measure the leakage current.
  4. Repeat the above test between each pole and all the other poles connected to the exposed conductive parts (ie between R and Y+B+N+E, Y and R+B+N+E, B and R+Y+N+E, N and R+Y+B+E).
  5. The test voltage at the moment of application shall not exceed 1000V and shall then be increased steadily within a few seconds to 2000V and maintained for 60 seconds.
  6. Prior to the HV test, disconnect all electrical equipment which are designed for a lower test voltage, and current-consuming apparatus such as measuring instruments in which the application of the test voltage would cause the flow of a current.
  7. Repeat the meggar test with all switching devices in closed position after the HV test.
- D. Primary Injection Test
1. Record the following information for every circuit being tested:-
    - a. Circuit number.
    - b. Make, type, serial number, CT ratio, class, burden of every PCT and MCT.
  2. Inject primary current at the rated value to individual phase and neutral conductors and measure the secondary current of the associated CT to be tested.
  3. Repeat the above measurement with primary current set at 50% of the rated value.
- E. Secondary Injection Test



1. Record the following information for every circuit being tested:-
    - a. Circuit number.
    - b. Make, type, serial number, rated current, trip coil voltage of every O/C and E/F relay.
    - c. Nominal full load current and CT ratio of the associated PCT.
  2. Inject secondary current in increasing amount to the relay and measure the minimum current that the relay starts to pick up, and the minimum operating current that the relay operates.
  3. After the relay contacts are made, reduce the injected current slowly and measure the minimum reset current when the relay resets to its normal position.
  4. With the O/L relay PSM at 100% and TMS at 1.0, inject secondary current at 2 times the rated value and measure the operating time. Repeat the test at 5 times and 10 times the rated secondary current.
  5. Repeat the above test at any other relay settings as directed during the test.
  6. With the E/F relay PSM at 20% and TMS at 1.0, inject secondary current at 2 times, 5 times and 10 times the rated secondary current and measure the operating time. Repeat the test at any other relay settings as directed during the test.
  7. Compare the measured operating times and the theoretical nominal operating times read from the manufacturer's published relay characteristic curves.
  8. Record the relay settings being left at the end of the test.
- F. Battery Test
1. Under fully charged condition, open the input switchgear to the battery charger. Record the battery voltage against time and operate the ACBs and controlgear to verify that the battery provided is adequate for its intended duty.
  2. After the battery discharge test, resume the power supply to the battery charger. Record the charging voltage and charging current against time to verify that the battery charger and battery provided is adequate for its intended duty.
- G. Functional Tests
1. Carry out functional tests to check that all control circuits are correctly wired, and that all control schemes specified are fully incorporated.
  2. Carry out mechanical operation tests of switchgears to verify that all switching mechanisms are functional, and all drawout type switchgears are correctly aligned.

### 6.3 ON-SITE TESTING AND COMMISSIONING

- 6.3.1 At appropriate stages of the installation, inspection, and testing prior to the energising of equipment, carry out insulation tests and submit records for approval.
- 6.3.2 At appropriate stages of the installation and prior to operational testing, carry out potential tests of equipment and submit records for approval.
- 6.3.3 Carry out operational tests of all electrical equipment in proper staged phases prior to energising and submit records for approval.
- 6.3.4 Develop a complete and detailed plan for the site testing of the power supply systems beginning with the incoming breakers and following a logical plan which will allow energisation

of the system in a safe and secure manner and to interface and co-ordinate with the other electrical and mechanical installations. For example, the battery charger and batteries shall be checked prior to furnishing the DC control power for the circuit breakers. The circuit breaker control shall be operationally checked for all local control, including testing up to interface terminal points for signals and control interconnection to other system or installation prior to carrying out operational tests of the circuit breaker.

- 6.3.5 Carry out surveillance and security check of the power supply systems including padlocking or otherwise maintaining control of the power supply, padlocking of switchgear and circuit breaker units, distribution switchboards, etc. throughout all energisation stages of the installation. Co-ordinate with the other specialist contractors and sub-contractors to assure no downstream cables or other electrical equipment is energised before being tested and before other specialist contractors' and sub-contractors' facilities are ready and secure. This requirement shall remain in force for each part of the system until such a time that the complete installation is certified complete in writing by the Employer's Authorized Representative.
- 6.3.6 Take precautionary measures during testing and the method of tests shall be such that no danger to persons or property can occur even if the circuit being tested is defective.

#### 6.4 SITE ACCEPTANCE TESTS (SAT)

##### 6.4.1 General

6.4.1.1 Perform tests to verify that the complete installation will meet the requirements of this Specification. Develop full test schedules for the approval in accordance with the requirements of the Specification.

6.4.1.2 SAT shall show, inter alia, the following as a minimum:

- A. All equipment, cabling, etc. are electrically and mechanically safe.
- B. All interlocks, isolators and door and cover securing mechanisms are properly fitted and adjusted.
- C. All exposed metal work is properly bonded and earthed in accordance with IEE Wiring Regulations, relevant BSCP and statutory requirements and that all connections and points required to be earthed for safety and satisfactory operation are properly earthed in accordance with the manufacturer's requirements.
- D. All cables, cores and terminations are properly made off, secure, properly supported and correctly identified and coloured.
- E. All phases, polarities, neutral and common connections are correctly switched as required, that power is correctly available at all points and that voltage and frequency at all equipment are correct and in accordance with requirement for correct working.
- F. All supplies are properly fused, or otherwise protected to give satisfactory discrimination and safe disconnection under fault conditions.
- G. All contacts are properly aligned and not subject to excessive wear or erosion.
- H. All protective covers are properly fitted, all warning and designating labels are correct and in position and the inside of all boxes and cubicles are clean and free of "swarf" and cable strippings.
- I. Batteries, if provided, are properly ventilated, installed, connected, and fitted, and that battery chargers are working correctly.
- J. Insulation resistance of all cabling and equipment is not less than that required by BS.
- K. All instruments and meters are energised with correct polarity and working properly.
- L. All fault indications and alarms are working correctly.

- M. All essential equipment fed from battery systems continues to function correctly and without disturbance during all supply failure, restoration, and standby sequences.
- N. All interlocks, sequences and protection for normal and emergency operations are in order.
- O. Compliance of performance as required by Code of Practice for the Electricity (Wiring) Regulations.

6.4.1.3 The list provided below is an indicative minimum of the tests required.

#### 6.4.1.3.1 Cables

- A. Continuity Test.
- B. Insulation Resistance Test.
- C. Earthing Test.
- D. Polarity Test

#### 6.4.1.3.2 LV Switchboard

- A. Visual Checks
  1. Carry out visual inspection of the general construction of the switchboard, the busbar system, switchgear, instrumentation, cabling provisions, etc. to determine if the switchboard is ready for further testing and subsequent delivery to site.
- B. Dielectric Test
  1. With all switching devices in open positions, carry out 1000V meggar test for phase to earth, phase to phase, phase to neutral, and phase to earth to measure the insulation resistance.
  2. Repeat the above test with all switching devices in closed position.
  3. Apply 2kV AC between all live parts and the exposed conductive parts (ie between R+Y+B+N and E) for 60 seconds and measure the leakage current.
  4. Repeat the above test between each pole and all the other poles connected to the exposed conductive parts (ie between R and Y+B+N+E, Y and R+B+N+E, B and R+Y+N+E, N and R+Y+B+E).
  5. The test voltage at the moment of application shall not exceed 1000V and shall then be increased steadily within a few seconds to 2000V and maintained for 60 seconds.
  6. Prior to the HV test, disconnect all electrical equipment which are designed for a lower test voltage, and current-consuming apparatus such as measuring instruments in which the application of the test voltage would cause the flow of a current.
  7. Repeat the meggar test with all switching devices in closed position after the HV test.
- C. Secondary Injection Test
  1. Record the following information for every circuit being tested:-
    - a. Circuit number.
    - b. Make, type, serial number, rated current, trip coil voltage of every O/C and E/F relay.
    - c. Nominal full load current and CT ratio of the associated PCT.
  2. Inject secondary current in increasing amount to the relay and measure the minimum current that the relay starts to pick up, and the minimum operating current that the relay operates.
  3. After the relay contacts are made, reduce the injected current slowly and measure the minimum reset current when the relay resets to its normal position.
  4. With the O/L relay PSM at 100% and TMS at 1.0, inject secondary

- current at 2 times the rated value and measure the operating time. Repeat the test at 5 times and 10 times the rated secondary current.
5. Repeat the above test at any other relay settings as directed during the test.
  6. With the E/F relay PSM at 20% and TMS at 1.0, inject secondary current at 2 times, 5 times and 10 times the rated secondary current and measure the operating time. Repeat the test at any other relay settings as directed during the test.
  7. Compare the measured operating times and the theoretical nominal operating times read from the manufacturer's published relay characteristic curves.
  8. Record the relay settings being left at the end of the test.

D. Functional Tests

1. Carry out functional tests to check that all control circuits are correctly wired, and that all control schemes specified are fully incorporated.
2. Carry out mechanical operation tests of switchgears to verify that all switching mechanisms are functional, and all drawout type switchgears are correctly aligned.

6.4.1.3.3 LV System

Carry out tests for the following items, where relevant, in the sequence indicated.

- A. Continuity of ring final circuit conductors.
- B. Continuity of protective conductors, including main and supplementary equipment bonding.
- C. Earth electrode resistance.
- D. Insulation resistance.
- E. Insulation of site-built assemblies.
- F. Protection by electrical separation.
- G. Polarity.
- H. Earth fault loop impedance.
- I. Functions of all items of equipment





## CHRIS KWAN

### MANAGING DIRECTOR

#### Project Experience

Chris Kwan is Managing Director of REITHUB and has over 19 years on extensive design, construction & project management experience for awarding sustainable landmark building projects, ranging from shopping malls to high-rise commercial Grade A office buildings, residential & serviced apartments and luxury hotels in Hong Kong, Macau and PRC.

Before founding REITHUB, Chris has been Executive Director of Egis M&E Limited, Senior Project Manager of Link REIT and Engineer in global E&M consultant firm, Ove Arup & Partners HK Limited. He has participated in a variety of building projects to building services engineering design and energy audit in commercial offices, recreational and residential buildings in Hong Kong, Macau and PRC. In 2006, Chris was appointed as the Resident Engineer in Sands Macau, supervising E&M services installation of this mega project. He is a Chartered Engineer and energy professional as REA, BEAM Pro and BESTAA.

#### Data Centre Job Reference

##### Capital Research Company - Data Centre, Hong Kong

Project mechanical engineer for the expansion of the existing data centre of investment bank. The project included the review of existing data centre building services' facilities and the design for expansion of data centre of which the facilities include CRAC units, Water Leakage Detection System, FM200 System, UPS System and Isolation Transformer, etc.

##### Project Tiger - DCs for DB at COL Tower, Wharf T&T Square, 123 Hoi Bun Road, Kwun Tong, Kowloon

Project Manager for BSE detail design development in new data hall extension and T&C Management which consists of approximate 8,000 m2 GFA. The project involved technical data hall design, operation and facilities management from project handover to operation team. The key role of the project act as independent Commissioning Authority (CxA) to certify BEAM Plus NB.

## EDUCATION

- MEng in Building Services Engineering (Distinction Award), 2005
- BEng (Hons) in Building Services Engineering (First Class Honour Award), 2005
- High Diploma in Building Services Engineering (Credit Award), 2002

## EXPERIENCE

- **Managing Director**  
REITHUB Consulting Limited
- **Executive Director**  
Egis M&E Company Limited (SunlandAL (International) Company Limited)
- **Senior Project Manager**  
Link Asset Management Limited
- **Engineer**  
Ove Arup & Partners Hong Kong Limited

## YEARS OF EXPERIENCE

- 19 years

## PROFESSIONAL MEMBERSHIPS

- BEST Authorized Assessor, The Hong Kong Green Building Council Limited RCx Professional
- Registered Professional Engineer (BSS)
- Member of The American Society of Heating, Refrigerating and Air-Conditioning Engineers
- Fellow of The Hong Kong Institution of Engineers
- Member of The Hong Kong Green Building Council Limited
- Member of Hong Kong Institution of Building and Services Engineers
- Member of Professional Review Panel of Green Building Product Labelling Scheme, The Hong Kong Green Building Council Limited
- Registered Energy Assessor, Electrical and Mechanical Services Department
- BEAM Professional, The Hong Kong Green Building Council Limited

### Goodman – Proposed Data Centre Development at Lot313 and 49 Sha Tsui Road

Project MEP Director for new base building MEP development in Tsuen Wan, Hong Kong, with a total GFA of approximately 60,000m<sup>2</sup>. Total HK\$3,000 million estimated development cost, with Gold grade of BEAM Plus (C&S) certification. The project involved dual feed 2x75MVA plus 2x50MVA HV CLP transformer application for Tier 3 provision of data center. The scope involved from inception master planning and detail design development in new building extension and T&C Management. The project involved technical advisory on operation and facilities management from project handover to operation team. The key role of the project act as Registered Energy Assessor (REA) for COCR submission to EMSD, Registered Professional Engineer (RPE), independent Commissioning Authority (iCxA) to certify BEAM Plus NB / LEED certification.

Goodman Tsuen Wan West has significant dedicated high-voltage power supply and is leading the area to become a major data storage, IT and industrial hub when completed in 2022.

- 2 x 50MVA High Voltage (HV 132KV CLP Infrastructure) + 2 x 75MVA High Voltage (HV 132KV CLP Infrastructure)
- 2 Deep basement with 2 x 60,000 non-FSI fuel tank provision

### Goodman – Proposed Data Centre Development for 3/F, 5/F, 6/F Data Hall at TWTL 428, Ma Kok Street (Zone 1), Tsuen Wan

Project T&C Director for multi-purpose Zone 1 development in T&C Management which consists of approximate 6,000 m<sup>2</sup> GFA. The project involved technical advisory on operation and facilities management from project handover to operation team. The T&C manager is responsible for all the MEP system, Testing and Commissioning and Checking/ Vetting of all related Maintenance Contracts. All Testing Procedure, Method Statement and T&C Script was prepared by the team.

### SUNeVision – Project Yoda – Proposed Data Centre Development at No.11, On Chuen Street, Fanling

Project T&C Director for Inception master planning for multi-purpose central chiller plant development in T&C Management which consists of approximate 20,000 m<sup>2</sup> GFA. The project involved technical advisory on operation and facilities management from project handover to operation team. The T&C manager is responsible for all the MEP system, Testing and Commissioning and



- Fellow of The Chartered Institution of Building Services Engineers, Chartered Engineer CEng
- Chartered Engineer

## LANGUAGE

English • Cantonese • Mandarin

Checking/ Vetting of all related Maintenance Contracts. All Testing Procedure, Method Statement and T&C Script was prepared by the team.

### Proposed Data Centre Development for QNet at Zun Shan, Shanghai

Worked as MEP Project Director, Testing & Commissioning Manager and supervisor to the PPM team, there are 5000 (server) racks in two buildings and 5 floors for each building for Tier 3 configuration. The MEP system including Water Cooled Chiller Plant, Thermal Storage Tank, Generator Yard (both 2N), UPS and Power Management System, Hot and Cold Aisle Server Rooms, FM 200 etc. The Factory Acceptance Tests for critical equipment were carried out in 6 cities in PRC and United State.

### Industrial Building Job Reference

#### Reitar LogTech Group Limited - Project Comboxx – Proposed Development of Smart Logistics Park in Yuen Long

Project Director and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant. More than 30 land plots and right of way for vehicular access will be acquired at Ha Che Village, Pat Heung, N.T., Hong Kong for the development, total GFA involved 300,000sq.ft. It is a single storey RC structure warehouse with fully automated robotic storage and air-conditioning system. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

#### Reitar LogTech Group Limited - Project Chilltube – Proposed Temporary Storage and Distribution of Chilled Poultry/ Meat at D.D. 89, Man Kam Road, Sandy Ridge, New Territories

Project Director and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant The development involved total GFA 300,000 sq. ft and it is a single storey RC structure warehouse with fully automated robotic storage and cold chain refrigeration system with operated -18C. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

## Goodman Interlink – Proposed Godown Development at 35-47 Tsing Yi Road

Project Manager and Mechanical Leader for the design development which consists of approximate 100,000 m<sup>2</sup> GFA. The building services' provision included high hazard system type 3 (HHS3) sprinkler, mode of operation for mechanical ventilation and dynamic smoke extraction / class B staircase pressurization system.

Project Interlink was one of the buildings that change the business mode of the Industrial Building Industry in Hong Kong. A 2.8 million sq. ft. industrial building developed and operated by global Facility Management Group – Goodman Group of Australia. They bring the new management mechanisms and skillset on the Operation Method and Facility Management to Hong Kong market. In which Goodman gained their expertise from doing the same business on Airports, Piers and Container Terminals around the world. The building is divided into 3 zones: Ramp Floors, Cargo Lift Floors and Lift Floors (office tower) with total 25-storey. Such arrangement providing two advantages: -

Flexibility for potential tenants to choose which type of floors:

- Cargo Lift Floors: whether their goods come in small batches and relatively light weight
- Ramp Floors: the goods are heavy, large quantity and even in containers

And if the tenant needs their warehouse and office at the same time, they can locate the office right above the warehouse. Scope of Professional Services involved full scope from Concept Design to Post Handover Stage (More than 60% floor area tenant area fitting-out work also handled by the team including DHL Express Logistic Centre at U/G and 3/F. The material handling system are the fastest of same type in Asia – except airports.) The team subsequently completed another Logistic Centre (as BSE) of the same client in 2018 at 9/F and 10/F CML Building Tsing Yi. It is also the fastest of the same type.

Reitar LogTech Group Limited – Conversion to Cold Storage at Wing Shing Industrial Building, 26-30 Wing Kin Road, Kwai Chung

Medfort Mask Lab – Clean Room & Mask Factory

ATL Logistics Centre – Proposed Warehouse Storage at Block B



## Government Building Job Reference

### West Kowloon Cultural District Authority ("WKCD") – Provision of Testing and Commissioning Management Consultancy Services for Art Park

Project Director for Inception master planning for multi-purpose central chiller plant development in Art Park and T&C Management which consists of approximate 200,000 m<sup>2</sup> GFA. The project involved technical advisory on operation and facilities management from project handover to operation team. The T&C manager of Art Park is responsible for all the MEP system, Testing and Commissioning and Checking/ Vetting of all related Maintenance Contracts. All Testing Procedure, Method Statement and T&C Script was prepared by the team. Full load test was carried out in July/ August of 2020 and completed. The WKCD is dividing into three main parts:

- Xiqu Centre 戲曲中心
- Art Park
- M+ Museum

The team is also the BSE for the FSD submission of Xiqu Centre. Smoke extraction and make up system is provided for the auditorium and adjacent open area. Both the submission and inspection were both approved and accepted by HKFSD in one single submission, he involved as design checker and lead FSD inspection.

### Cotai Strip Master Plan Development, Macau

Mechanical Discipline Engineer responsible for the infrastructure provisions for the Cotai development area of about 620 hectares in total, which is located between the islands of Taipa and Coloane south of the main isthmus of the Macau SAR.

### The Peak Tower Revitalisation, Hong Kong

Building Services Discipline Leader for the proposed refurbishment works of existing retail complex and peak tram building. This project is to enhance the commercial value of the Peak Tower through re-planning of the internal space and the improvement of the circulation.

### New Life Psychiatric Rehabilitation Association – Long Stay Care Home at Siu Lam Integrated Services Complex

### Hong Kong Convention and Exhibition Centre (HKCEC) – Atrium Link Extension

Mechanical Engineer responsible for the design of the mechanical ventilation and air conditioning system and fire services system. The project is to extend the existing mechanical and electrical engineering services to suit the new partitioning of the existing systems in Phase I & II. Involved in OTTV and Cooling Load calculations, mechanical system design, and assist project engineer in project coordination work.

### Hospital Authority – Architectural and Associated Consultancy Services for Hospital Authority's Minor Capital Project (2016/17)

- 1) Additional and Enhancement of Passenger Lifts at Pamela Youde Nether sole Eastern Hospital
- 2) Renovation of Shum Wan Laundry at Shum Wan Laundry, 26 Shum Wan Road, Wong Chuk Hang, Hong Kong

The laundry had been operating for more than 20 years to support the facilities of Hospital Authority. It is also the biggest in island side. The facility was stopped the operation since 2013 due to the outbreak of Rosacea among staff. As advised by certain healthcare experts of the territory, i.e. Professor Yuen Kok Yung (袁國勇) of HKU, HA decided to have complete overhaul to the venue. Two main issues to be addressed: -

- Make a true "clean" and "dirty" path for the linen.
- Strictly control of humanity of environment at the "Clean" side. A new cargo lift is added on order.

The entire "Clean Zone" is temperature and humidity controlled, positive pressurized. The T&C of Building Services system had been carried out three times: -

- Upon completion of base building B.S. system
- Upon completion of the laundry system (with real load of linens)
- Upon the operator on board and with modified operation requirements

### EMSD Contract No.: 1496EM21C – Retro-commissioning

- Ngau Chi Wan Municipal Services Building
- Hammer Hill Road Swimming Pool
- Fa Yuen Street Municipal Services Building
- Lam Tin Polyclinic

**EMSD Contract No.: 1498EM21C - Retro-commissioning**

- Tseung Kwan O Police Station
- Kowloon City District HQ
- Hunghom Divisional Police Station
- Mongkok Police Station

**EMSD Contract No.: 1506EM12C RCx for Police Stations at**

- Tsing Yi
- Tsuen Wan
- Sham Shui Po
- Cheung Sha Wan

**EMSD Contract No.: 1497EM21C Retro-commissioning**

- Yuen Long District Office Building
- Tai Po Government Office
- Hong Kong Wetland Park

Hong Kong Baptist Hospital - E&M, Structural, Building, Topographic and Tree Survey Works for Proposed Redevelopment of Blocks A, B and C

Hong Kong Housing Society - Consultancy Services for Escalator Improvement Works at Kai Tak Garden Shopping Arcade (22062/KG) (BSC/20220142/KG)

Hong Kong Exchange - Connect Hall 2.5

Kai Tak Sports Park - Fan Static Calculation

**Hotel/ Casino/ Clubhouse Job Reference****Las Vegas Sands Casino, Macau**

Building Services Discipline Engineer for an eight-storey public entertainment building with gaming, restaurant, theatre, leisure and car parking facilities, complete with 60 luxury guest suites. This is a fast-track project and the construction of total floor area of 99,000m<sup>2</sup> is completed in 12 months.

**Sands Podium and Tower, Macau**

Building Services Discipline Engineer for a twenty-five storeys hotel tower and an eight storeys podium. The podium is 18,000m<sup>2</sup> in total comprising a lobby level, a mezzanine level for back of



house offices, 3 floors of gaming area, a conference and meeting room floor and associated areas of plant rooms and services linked into the existing Sands Casino.

#### Shangri-La Hotel Resort and Development in Lhasa, Tibet, PRC

Project mechanical engineer for a 21-storey business class hotel with 510 rooms, two restaurants, a coffee shop, a roof level swimming pool, and drive-through vehicle access with hotel services facilities. A central A/C plant is provided for the hotel for cooling and a steam plant with heater exchanger is provided for winter heating. 4-pipe air-conditioning system is provided for the development.

#### Shangri-La Hotel Resort and Development in Ulaanbaatar, Mongolia, PRC

Project Manager and Mechanical Team Leader for a 21-storey business class hotel with 600 rooms, services apartment and commercial facilities. A central A/C plant is provided for the hotel for cooling and a steam plant with heater exchanger is provided for winter heating. 4-pipe air-conditioning system is provided for the development. He was responsible for overall project management of E&M design and operation issues involved from design competition team up with project architect to win engineering consultancy contract during various stage in conceptual, schematic, preliminary design deliverable for Design and Build Contract for construction.

#### Ma On Shan Hotel/Commercial Development, Hong Kong

Project Manager responsible for the building services design for the hotel development. The development is a 3-star resort hotel of 800 rooms, 2-storey podium and 1 level basement of total floor area 72,000 m<sup>2</sup> providing full fit-out gym, swimming pool, café, lounge and restaurant.

#### The Olympian Hong Kong

Project Director for asset enhancement for a luxury hotel located in Olympic with 58,100 ft<sup>2</sup> GFA. Different engineering solutions to the existing problems of mouldy environment, condensation on wall and ceiling, short circuit of cooled air ventilation, and lighting malfunction have been advised. Registered Energy Assessor service is provided upon completion of the construction.



K18 Hotel – Commercial Redevelopment at 18 Kimberley Hotel

Shun Tak Holdings Limited – Renovation Works in Artyzen Club at Shop 401/401A Shun Tak Centre, Hong Kong

Bauhinia Hotel – A&A Works for Lantau Yacht Club (LYC) at Area 22, Discovery Bay, Lantau Island – Major Renovation Work

Bauhinia Hotel – Major Renovation Works (BEAM Plus)

InterContinental Grad Stanford Hotel – M&E Consultancy Services for Lift Extension and Replacement (Ref. ICGS-20T-025)

Goster Resources Limited – Due Diligence Study for Hotel, Wanchai

#### Office Building Job Reference

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Gaw Capital – Re-generation of 625 King's Road Commercial Development

Project Director for a large A&A asset enhancement project located in North Point with 32,000 ft<sup>2</sup> GFA. An avalanche of innovative and diversified M&E designs were successfully put in place, namely solar-desiccant dehumidification system, chiller plant optimization and reconfiguration, indoor air quality improvement works, destination control system for vertical transportation, luxurious lighting design, plumbing works for vertical greens of the building, security and surveillance system upgrade, new additional electrical vehicle charging system, plumbing and drainage replacement works, smart performance display showing the green energy generated and indoor air quality improvement result, centralized thermal detection system for human, full building services design installation to earn BEAM Plus (Platinum EB) and WELL (Platinum EB) certifications, and Registered Energy Assessor services.

SoHo House Hong Kong – Major Renovation Works for SoHo House Building, Hong Kong

Project director for A&A works and fitting-out works for retails / office with 25,000 m<sup>2</sup> GFA. As well as the building services design, the consultancy works involve the studies of various air-side systems, computational cooling load simulation, headroom level improvement and project cost analysis.

### Reitar LogTech Group Limited - Office Renovation for Reitar at 8/F, The Quayside, 77 Hoi Bun Road, Kwun Tong

#### AXA - Major Office Renovation & Restack for AXA Tower

Project Director for an interior fitting-out project at AXA Tower with 19,130 ft<sup>2</sup> GFA. Variety of building services consultancy was provided to suit the multifunctional training centre, including deluxe lighting design, air side redistribution and air balancing, and statutory submission for Building Energy Code compliance.

#### The Quayside, Proposed Commercial Development at 77 Hoi Bun Road

Chief Project MEP Director for new grade A office-cum-retail development situated in the Kowloon Bay Action Area in Kwun Tong, Hong Kong, with a total GFA of approximately 82,000 m<sup>2</sup>. The project envisions a welcoming, sustainable and healthy architecture in the heart of Kowloon East, where accordingly to the vision of Energizing Kowloon East Office, the once industrial neighbourhood would become a green and highly liveable CBD of Hong Kong. In line with the community's visionary future, this project advocates a delightful balance between optimal user experience and community engagement, and a harmonic design vision that encompasses concepts of commercial viability and environmental responsibility.

This is a JV project with Nam Fung developer with total HK\$9.9billions estimated development cost, with Platinum grade of BEAM Plus (NB), LEED (C&S) and WELL Standard. He managed as E&M project leader for overall project management and budget control during tender stage. The supervision of in-house E&M design issues during the conceptual design and schematic design stages.

#### The Boys' & Girls' Clubs Association of Hong Kong (BGCA) - Provision of Consultancy Services of Architectural Design and Construction for Fitting-out Works to HQs and Parent Wellness Centre

Project Director for fitting-out works for NGO office from G/F to 9/F (except 2/F & 3/F) with 30,000 ft<sup>2</sup> GFA. The building services provisions incorporate the concept of sustainability design including energy efficiency, reliability of system, maintainability and environmental issue to meet Beam Plus Silver target. Building Service

provisions embedded AV system in hall, lobby, boardroom, offices to improve existing headroom and atmosphere to higher levels of indoor comfort environment.

Fitting-out works for 3/F Parent Wellness Centre and educational function rooms with 650 m<sup>2</sup> GFA. The building services provisions incorporate the concept of special aspirations of students. Sustainable solutions are also involving suiting wide flexibility of education.

#### Interpublic Group Office for 3 floors at One Taikoo Place

Project Director for fitting-out works at IPG office for 3 floors with 51,000 ft<sup>2</sup> GFA. The works included REA services and achieved LEED / Gold Standard.

#### Rider Levett Bucknall Limited - Office Renovation

Project Director for renovation and improvement works at the office of RLB with 43,000 ft<sup>2</sup> GFA.

#### SINO - Proposed Wholesale Conversion of Industrial Building to Commercial Building at Westin Centre

Eltee Enterprise Limited - Alteration and Additional Works at Eltee Building, No.3 Ning Foo Street, Chai Wan, Hong Kong

The Hong Kong University of Science and Technology (HKUST) - Hong Kong Care Prefabricated Centre for Construction Robotics Limited at 17W Hong Kong Science Park

The Bank of New York Mellon Hong Kong - Office Consolidation at 25/F & 26/F, Three Pacific Place, Admiralty

Tung Wah Group of Hospitals (TWGHs) - Interior Design for Renovation of Conference Room at the 10/F, Administration Headquarters, Wong Fung Ling Memorial Building

Tung Wah Group of Hospitals (TWGHs) - Feasibility Study & Interior Design for Meeting Rooms at the LG1/F, LG2/F & G/F, Administration Headquarters, Wong Fung Ling Memorial Building

JLL - Manson House - Enhancement Works



## Institution Job Reference

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### Munsang College - Construction of AN Assembly Hall at 8 Dumbarton Road, Kowloon City

Project Director for Inception master planning and detail design development in new building extension and T&C Management which consists of approximate 10,000 m<sup>2</sup> GFA. The project involved technical advisory on operation and facilities management from project handover to operation team. The key role of the project act as Registered Energy Assessor (REA) and independent Commissioning Authority (CxA) to certify BEAM Plus NB.

### The Conservancy Association - Urban Forestry Education Centre in Sham Shui Po

Project Director for one of the ten shortlisted new building projects in Green Building Award in 2021, and the first Urban Forestry Education Centre in Hong Kong. The project demonstrates a sustainable lifestyle and inspirational ideas through re-using the land right underneath a flyover. Apart from comprehensive E&M design in a green manner to achieve BEAM Plus (Platinum NB) certifications, a pilot scheme called Salt-water Cooling System using flush water was carried out by collaborating amongst Water Supplies Department, the Conservancy Association and REITHUB to advocate the sustainable concept in Hong Kong.

### Lingnan University - Project Tender for 9 Floors at Staff Quarters

Project Director for new base building works at Lingnan University Staff Quarters for 9 floors with 58,900 ft<sup>2</sup> GFA. The works included Drainage Submission, WSD Submission, Plant room design preparation, E&M provision design, statutory submission preparation, master programme preparation, etc.

### Hong Kong Institute of Construction (HKIC) - A&A, Repairs and Improvement Works for Campuses

Project Director for alteration, addition, repair, and improvement works for the Hong Kong Institute of Construction (HKIC), in which the Construction Industry Council with 560,000 ft<sup>2</sup> GFA. The building services consultancy works involve designing, upgrading, and renovating all existing classrooms, workshops, lecture theatres and other auxiliary facilities, lecture hall in all campuses with advanced technologies and sustainable systems.



### The Hong Kong Examinations and Assessment Authority (HKEAA) – Renovation Works at Tai Hing Assessment Centre

Project Director for the renovation and improvement works of Tai Hing Assessment Centre with 30,000 ft<sup>2</sup> GFA. The scope of works includes the renovation of classrooms, toilets, school halls and the covered playground of the existing building in accordance with the specifications and requirements of The Hong Kong Examinations and Assessment Authority and the latest statutory requirement.

### Hong Kong Science and Technology Park – Conversion of Chinese Restaurant to Sports Space Area in Building 12W

#### Eastern Sports Club – Proposed Development of Sports Facilities in Whitehead, Ma On Shan (Site 1)

Project Director for a new development project with 180,000 ft<sup>2</sup> site area which consisted of four blocks building facilities, outdoor sports facilities, and outdoor parking spaces.

The scope of services was BSE design exclusively for professional sport players' usage, especially the lighting design, air ventilation, temperature control, etc.

### Hong Kong Polytechnic University – Alterations, Additions, Repairs and Improvements Works 20/21 (Package 2)

- A3: Renovation of Cryo-Transmission electron Microscopy Laboratory at W205 for Material Characterization and Device Fabrication.
- A4: Renovation of Cryo-electron Microscopy Laboratory at CF004 and CF004a for Life Science
- B1: Conversion of Research Office into Acoustic Laboratory at DE503

### English School Foundation – Facilities Asset Enhancement Project at Year 22/23 for South Island School

### Kellett School – Renovation of Zone 1, 3, & 4, Kowloon Bay

### Residential Job Reference

Aedas Limited – Residential Development at Dai Nam Building, Tai Po

### Fulam Construction Engineering Company Limited – Residential Development at No.8 Chuk Kok Road, Sai Kung

Project Director for the proposed building development to supervise electrical and Team Leader for the design of the mechanical ventilation and air conditioning system, fire services installation, plumbing system and pool filtration system of the whole development.

### Residential Development at Hung Shui Kiu, Hong Kong

Mechanical Engineer responsible for the design of the mechanical ventilation and air conditioning system, fire services installation, plumbing system and pool filtration system of the whole development.

### Residential Development at 16 – 18 Conduit Road, Hong Kong

Mechanical Engineer responsible for the design of the mechanical ventilation and air conditioning system, fire services installation, plumbing system and pool filtration system of the whole development.

### Chun Wo Property Development Limited – Proposed Composite Development at 437-441 Castle Peak Road

Project Director for the proposed composite building development. This project includes 20 residential floors and 2 commercial floors of approximate 320,000ft<sup>2</sup> floor area. Full range of consultancy for building services installation from site forming, utility coordination, tendering and construction of main building. The building services incorporated consideration with proven technique for healthy indoor environment, cost effectiveness, maintainability and ease of operational requirement.

### Asia Standard International Group Limited – Residential Development at 6 Goldsmith Road, Jardine's Lookout, Hong Kong

### Regari Nominees Limited – New Residential Development at G/F Apartment, 7 Headland Road, Repulse Bay

### Gold Palace Limited – New Residential Development at No.7 Lincoln Road, Kowloon Tong

### Hong Kong Housing Society – Lift Improvement for Lok Man Sun Chuen (Block H & I)

Lorna Villa - Design and Installation Works under The EHSS

Block 5, Mandarin Court - Design and Installation Works under The EHSS

Cassia Court - Design and Installation Works under The EHSS

The Lamma Palace - Design & Installation Works under The EHSS

Shatin 33 - Design and Installation Works under The EHSS

### **Mall Job Reference**

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#### **LinkREIT - Energy Audit / Retro-commissioning Work**

- Tin Wan Shopping Centre & Carpark
- Lok Fu Shopping Centre
- Chung Fu Shopping Centre & Carpark

#### **LinkREIT - Renovation Works at Tai Wo Plaza**

An iconic shopping mall which is situated next to Tai Wo MTR station, this A&A asset enhancement project with over 41000 ft<sup>2</sup> GFA involved stringent and comprehensive M&E design, especially plumbing and drainage system upgrade, additional vertical transportation installation, to greatly enhance the living quality of the community. We also played the Registered Energy Assessor to consolidate, endorse, and submit the Form of Compliance to government agency.

#### **LinkREIT - Asset Enhancement Work**

Project Manager for asset enhancement projects in Hong Kong, with a total GFA of approximately 80,000m<sup>2</sup>. Total HK\$5billions estimated development cost.

- Wan Tsui Shopping Centre
- Hau Tak Shopping Centre
- Lei Tung Shopping Centre
- Long Ping Shopping Centre
- Mei Lam Shopping Centre
- Tin Yiu Shopping Centre
- Tin Shing Shopping Centre
- Choi Wan Shopping Centre



**LinkREIT - Design and Project Consultancy Services Contract for Renovation Works at Mei Lam Commercial Centre & Market**

Project Director for renovation works at Mei Lam Commercial Centre & Market with 10,610 ft<sup>2</sup> GFA. The works included Drainage Submission, WSD Submission, E&M provision design, statutory submission preparation, master programme preparation, etc.

**LinkREIT - Renovation Works at Tung Tau Market****LinkREIT - Asset Enhancement Works at Lei Yue Mun Plaza****LinkREIT - Asset Enhancement Works at Fu Shin Cooked Food Stalls Building****MTRC - Toilet Renovation at Two International Finance Centre**

Project-In-Charge for a large fitting-out work for the skyscraper with 18 storeys lavatories (mock-up design and statutory submission) at 2IFC. The consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, IAQ enhancement, headroom level improvement and project cost analysis.

**MTRC - Term Contract for Provision of Consultancy & Authorized Person Services for Alterations & Additions Works for Investment Properties (Contract No. Q070105)**

Project Director for Inception master planning for multi-purpose of major retrofit works at MTRC retails refurbishment and asset enhancement works order. The project involved technical advisory on MEP design, operation and facilities management from project handover to operation team in 3-year term contract.

**MTRC - Major Renovation Work at Element Toilets (Contract No. Q065255)**

Project Director for A&A works and fitting-out works for retails with 10 toilets (mock-up design and statutory submission) at Elements Shopping Mall. As well as the building services design, the consultancy works involve the studies of various air-side systems, computational cooling load simulation, headroom level improvement and project cost analysis.

**Henderson Land Development - Toilet Renovation at Hysan Place, Causeway Bay**



**T.O.P – Proposed Refurbishment of Commercial Tower & Podium, No.700 Nathan Road, Mongkok**

Project MEP Director for new retail podium and office tower refurbishment project in Mongkok, Hong Kong, with a total GFA of approximately 40,000m<sup>2</sup>. Total HK\$ 5.9 billion estimated development cost, with Gold grade of BEAM Plus (Interior) certification. This is a fast-track project and completed in 18 months.

**Sunlink Holding (HK) Ltd. – Asset Enhancement Works at Sun Tin Wai Estate, Shatin**

SINO - Shopping Mall Toilet Renovation at Citywalk 1 & Citywalk 2, Tsuen Wan

SINO - Renovation and A&A Works at UG/F, G/F & 1/F for Tuen Mun Town Plaza

SINO - Island Resort Mall, Chai Wan, Hong Kong - Refurbishment of Shopping Mall toilets Renovation on G/F, UG/F, 1/F

SINO - Arcade Ceiling Improvement Renovation Work at 1/F for Tuen Mun Town Plaza Phase 1, Tuen Mun

SINO - A&A Works of G/F-3/F and Podium Façade at Pacific Plaza, Sheung Wan

GAW Capital - Solar PV Panels Installation at Lee On Shopping Centre & Kwai Fong Plaza

GAW Capital – A&A Works at Kwai Shing East Shopping Centre

GAW Capital - A&A Works at H.A.N.D.S, Tuen Mun

HKRI - Commercial Development Project at Tai Pak Commercial Centre (Area9A), D.D. 352 Lot 385 R.P. & the Extensions thereto, Discovery Bay (Phase 2 – Renovation of Existing Shopping Arcade)

HKRI - Refurbishment of DB Pier and Pier 3

Legoland Discovery Centre - Places of Public Entertainment (PPE) License

## Cold Storage Refrigeration and Chiller Plant Job Reference

### Cold Store at Unit 402, 4/F SF Logistic Hub, TY, Hong Kong

Project Director and Lead Consultant role for the Project team to lead Project Manager, Building Services Engineer and Refrigeration Engineer. Also managing the Authorized Person (Architecture), RSE (Structural), Licensing Consultant and QS (Costing). The project role involved overall project management of E&M and operation design issues, from design competition to successfully win this engineering consultancy contract, during various stages (conceptual, schematic, preliminary, detail design and tendering stage) as well as construction stage until project completion in 2020. Express delivery giant entered a new line business – Cold Chain. The new cold store(s) including “Public Store – operated by SF Cold Chain” and “Private Store – Operate by tenant’s team”. Temperature Ranging from 18°C to 24°C (Temperature Control Store), 0°C to 10°C (Chilled Room/ Low Temperature Store), -18°C (Frozen Store – Cold Store for meat product), -25°C (Cold Store for milk product).

### Dairy Farm - Design & Build for ATL Fulfilment Centre – Wellcome Cold Store

Project Director for the fast-track Design & Build project for a dark store of Dairy Farm Group for 29,800 ft<sup>2</sup> GFA. This project consists of various usages such as storage, office, food factory, chilled storeroom (0oC), and freeze storeroom (-18oC), featured by using an environmentally friendly refrigerant R448A.

### Dairy Farm - Provision of Consultancy Service for 7-11 Hong Kong Chill Distribution Centre at ATL Logistics Centre Hong Kong Limited

Project Director for the project which includes a cold store (0-4°C), 9 nos. freezer (-18°C) and associated FEHD inspection room, office area of total 27,000 ft<sup>2</sup> floor area. It involves designing the refrigerant system as well as the MEP system in order to maintain the Old Cold Store in operation and cool down the new Cold Store at the same time, making sure the total power consumption of old and new cold store will not exceed the limitation of power source.

### English Schools Foundation - Chiller Replacement at Renaissance College

### Kerry Properties – Design and Build of “Kerry Warehouse” Cold Store at 9/F – 11/F and 13/F, Block B, Kerry Temperature Control Warehouse I, Kwai Chung

Lead Consultant, MEP and Licensing Consultant for Submission to FEHD. Setting up Cold Store and Food Factory at  $-18^{\circ}\text{C}$  to  $-25^{\circ}\text{C}$ . The role involved renovation and improvement work for Centralized Chiller Plant.

### CLPe – Chiller Replacement Work at Shui On Centre

Project Director as lead consultant role to supervise AP / RSE / QS on project programme and budget control from feasibility study to project execution of major retrofit works at conversion from existing seawater cooled into water-cooled chiller replacement at Shui On Centre total 2,100 tons of cooling capacity with phasing control strategy in order to safeguard uninterrupted chiller plant operation.

### Temperature Controlled Storage Warehouse at 3/F & 7/F Asia Logistic Hub SF Centre, 36 Tsing Yi, Hong Wan Road

Setting up 3/F ‘S.F. Cold Chain’ Cold Storage for warehouse with 65,000 ft<sup>2</sup> GFA and office with 3,200 ft<sup>2</sup> GFA, which consist of public warehouse and private warehouse at  $-25^{\circ}\text{C}$ ,  $-18^{\circ}\text{C}$ ,  $0^{\circ}\text{C}$  to  $4^{\circ}\text{C}$  and  $18^{\circ}\text{C}$  to  $22^{\circ}\text{C}$ . 7/F Cold store set up for warehouse with 30,000 ft<sup>2</sup> GFA and office with 2,500 ft<sup>2</sup> GFA.

### LinkREIT – Chiller Replacement FY22/23

- Fu Shin Shopping Centre
- Tin Yiu Shopping Centre
- Tin Chak Shopping Centre
- Temple Mall North
- Lok Fu Place
- Un Chau Shopping Centre
- Hiu Lai Shopping Centre
- Po Tat Shopping Centre
- Stanley Plaza
- TKO Gateway
- TKO SPOT
- Choi Ming Plaza

### KAMUI – Fitting Out of Cold Store Work in Unit 801 at 8/F Asia Logistics Hub-SF Centre, 36 Tsing Yi, Hong Wan Road



### DCH Logistics – Cold Store at G/F of DCH food Processing & Logistic Centre

Setting up Cold Store for warehouse with 32,000 ft<sup>2</sup> GFA and office with 4,500 ft<sup>2</sup> GFA. The role involved Fresh Water-Cooling Towers Scheme for Air Conditioning System.

### Cold Store at 7/F & 8/F China Merchants Logistics Building at 38 Tsing Yi, Hong Wan Road

Setting up Cold Store Warehouse and food factory for Asia Life Company Limited. Phase 1 with 70,000 ft<sup>2</sup> GFA at -18°C to -25°C and Phase 2 with 62,000 ft<sup>2</sup> GFA at -18°C to -25°C.

### Racecourse Job Reference

#### Hong Kong Jockey Club – All-In Consultancy Services for Satellite Treadmill Structure in Quarantine A Stable Blocks and Olympic Stable Compound at Sha Tin Stable Precinct

#### Hong Kong Jockey Club – AC Infrastructure on Happy Valley Racecourse (HVRC) – New Energy Centre District Cooling

Project mechanical engineer for Inception master planning for multi-purpose central chiller plant development in HVRC which consists of District Cooling of 15,000 tons of cooling capacity and infrastructure plumbing system.

#### Hong Kong Jockey Club – AC Infrastructure on Shatin Racecourse (STRC) – New Energy Centre District Cooling

Project mechanical engineer for Inception master planning for multi-purpose central chiller plant development in STRC which consists of District Cooling of 12,000 tons of cooling capacity and infrastructure plumbing system.

#### Hong Kong Jockey Club – Olympic Chiller Plant Replacement

Project Director to supervise project programme and budget control from feasibility study to project execution of major retrofit works at water-cooled chiller replacement at Olympic Stable total 500 tons of cooling capacity with phasing control strategy in order to safeguard uninterrupted chiller plant operation 24x7.



### Hong Kong Jockey Club – Proposed Re-development at Penfold Park Shatin

Project Director role for the HKJC re-development. The development includes open park, 4 office / admin blocks of total 120,000 m<sup>2</sup> floor area. Covered Sports Compound at 2/F of Shatin Racecourse Grandstand II & Redevelopment of Penfold Park. HKJC is planning to improve the existing community facilities at Penfold Park for the general enjoyment of public while at the same time promoting Equine interest through horse show stables and occasional equestrian events throughout the year. Part of the plan is to make available existing facilities within the Shatin Racecourse for community use, targeting schools, NGOs and sporting associations.

### FS(CP)O Job Reference

LinkREIT – Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance (“FS(CP)O”), CAP 502 at Cheung Wah Carpark No.1 and No.2 (Contract No. 20-071221) – Batch 1

- Temple Mall North
- Hoi Fu Shopping Centre
- Homantin Plaza
- Nam Cheong Place
- Yat Tung Shopping Centre

LinkREIT – Design and Project Consultancy Services for Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance (“FS(CP)O”), CAP 502 (Contract No. 21-119000) – Batch 1

- Ping Tin Shopping Centre
- Sau Mau Ping Shopping Centre
- Lei Yue Mun Plaza
- Oi Tung Shopping Centre
- Hing Wah Plaza

Gaw Capital – FS(CP)O for Commercial/Car Park Block at 326 Ap Lei Chau Bridge Road

### Feasibility Study Job Reference

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Goster Resources Limited – Due Diligence Study for Hotel, Wanchai

KaiLong – Feasibility Study for Wing Shing Industrial Building

Dairy Farm – Feasibility Study for Wellcome Fresh Food Centre

Angelo, Gordon Asia Limited – Feasibility Study for Kai Bo Group Centre into Cold Storage

### Food and Beverage Job Reference

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Lai Sun Dining Limited – Proposed Fit-out Work for the Restaurant at B1/F, G/F & 1/F, No.1 Duddell Street, Central, Hong Kong

Project Director for a fine dining restaurant covers approximately 7000 ft<sup>2</sup> GFA including hot kitchen, open kitchen, semi-closed food preparation area, open bar, casual drinking area, leisure lounge, and private dining room. The scope of services covers the role of BSE planning, design, construction management, statutory submissions, and coordination with other consultant team such as interior designer, licensing consultant, kitchen consultant, elevator NSC, etc.

West Kowloon Cultural District (WKCD) – 11/F M Plus Lounge at 38 Museum Drive, Kowloon

## ADDY WONG

### SENIOR PROJECT ENGINEER

#### EDUCATION

- Diploma in Professional Studies (Electrical)

#### YEARS OF EXPERIENCE

- 26 years

#### EXPERIENCE

- Senior Project Engineer • REITHUB Consulting Limited
- Project Engineer • Egis M&E Co. Ltd.
- Spiral Engineering Limited
- Leighton Contractors (Asia) Limited
- Laing O'Rourke Construction Hong Kong Limited
- Joint Effort Engineering (Asia) Limited
- IBI Limited
- BPS-Global B S Engineering & Consultancy Company Ltd.
- Wing Tak Engineering Co.
- Fu Shing Electrical Appliance
- Super Electrical Contracting Limited

#### Data Centre Job Reference

##### SUNeVision - Project Yoda - Proposed Data Centre Development at No.11, On Chuen Street, Fanling

Project T&C Engineer for Inception master planning for multi-purpose central chiller plant development in T&C Management which consists of approximate 20,000 m<sup>2</sup> GFA. The project involved technical advisory on operation and facilities management from project handover to operation team. The T&C engineer is responsible for all the MEP system, Testing and Commissioning and Checking/ Vetting of all related Maintenance Contracts. All Testing Procedure, Method Statement and T&C Script was prepared by the team.

##### SUNeVision - Project TWTL 428 - Proposed Data Centre Development at Ma Kok Street, Tsuen Wan (T&C Engineer)

#### Office Building Project Reference

##### JLL - Manson House - Enhancement Works

Tung Wah Group of Hospitals (TWGHs) - Interior Design for Renovation of Conference Room at the 10/F, Administration Headquarters, Wong Fung Ling Memorial Building

Tung Wah Group of Hospitals (TWGHs) - Feasibility Study & Interior Design for Meeting Rooms at the LG1/F, LG2/F & G/F, Administration Headquarters, Wong Fung Ling Memorial Building

Manulife - Fitting-Out works for Office at Manulife Plaza

HSBC - HQ Office Fitting-Out works

KPMG International Limited - Fitting-Out & A&A works for Office at Hysan Plaza

Prosperity Millennia Plaza - A&A works and Renovation

Savino Del Bene - Office and Warehouse at New Trade Plaza



## PROFESSIONAL MEMBERSHIPS

Certificate of Registration of Electrical Worker, Grade A0

### Government Building Project Reference

#### EMSD (Building Services Inspection)

- Replacement of pump control system and water piping system for fresh and flush water pump installation and associated accessories at Tin Yiu Community Centre;
- Replacement of Gaseous fire suppression system and associated accessories at Tsuen Wan Government Offices generator room and TBE room;
- Replacement of fire services control panel of FM200 system room at Cheung Sha Wan Government Office;
- Improvement of efficiency of chiller plant and associated accessories at Wu Shan Road Community Hall;
- Improvement of efficiency of chiller plant and associated accessories at Tin Fai Community Hall;
- Replacement of five sets of chiller unit and chilled water pump and associated accessories at Yuen Long Government Offices;
- Replacement of chiller unit and chilled water pump and associated accessories at Yuen Long District Offices Buildings;
- Replacement of 4 nos. Air Cooled Chillers of 410kw at To Kwa Wan Market and Government Offices

Water Services Department (Inspector) - Consultancy Service for Inspection of Plumbing Works constructed by Modular Integrated Construction Method (MiC Project)

Fire Services Department - (Programme No. 64JA) - Design and Construction of Rank-and-File Quarters at Area 106, Pak Shing Kok, Tseung Kwan O

Architectural Services Department - TSW Hospital - Inspection on T&C for E&M installations

Architectural Services Department - Factory Inspection of Building Services works in Modular Integrated Construction (MiC) Modules and Precast Concrete component (PCC) Outside Hong Kong - Contract No. SS E502 Design and Construction of Rank and File Quarters for Fire Services Department at Area 106, Pak Shing Kok, Tseung Kwan O (Programme No. 64JA)





Hospital Authority – Architectural and Associated Consultancy Services for Hospital Authority’s Minor Capital Project (2015/16) – Renovation of Rehabaid Center of Gascoigne Road (BSI)

West Kowloon Cultural District Authority (“WKCDA”) – Quotation No. 004/19/PMB203 – Provision of Testing and Commissioning Management Consultancy Services for Art Park (T&C Manager)

Hong Kong Baptist Hospital – E&M, Structural, Building, Topographic and Tree Survey Works for Proposed Redevelopment of Blocks A, B and C

### Industrial Building Project Reference

Reitar LogTech Group Limited – Project Comboxx – Proposed Development of Smart Logistics Park in Yuen Long

Project Engineer and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultants. More than 30 land plots and right of way for vehicular access will be acquired at Ha Che Village, Pat Heung, N.T., Hong Kong for the development, total GFA involved 300,000 ft<sup>2</sup>. It is a single storey RC structure warehouse with fully automated robotic storage and air-conditioning system. The building services’ provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

Reitar LogTech Group Limited – Feasibility Study Conversion to Cold Storage at Wing Shing Industrial Building, 26-30 Wing Kin Road, Kwai Chung

SINO – Proposed Wholesale Conversion at Westin Centre

ATL Logistics Centre – Proposed Warehouse Storage at Block B

Woo Kee Hong Building – External Wall Renovation Project

### Hotel Project Reference

Goster Resources Limited – Due Diligence Study for Hotel, Wanchai

K18 Hotel – Commercial Redevelopment at 18 Kimberley Hotel

## Mall Project Reference

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### MTRC - Major Renovation Work at Element Toilets (Contract No. Q065255)

Project Engineer for A&A works and fitting-out works for retails with 10 toilets (mock-up design and statutory submission) at Elements Shopping Mall. The consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, headroom level improvement and project cost analysis.

### MTRC - Toilet Renovation at Two International Finance Centre

Project Engineer for a large fitting-out work for the skyscraper with 18 storeys lavatories (mock-up design and statutory submission) at 2IFC. The consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, IAQ enhancement, headroom level improvement and project cost analysis.

### LinkREIT - Renovation Works at Tung Tau Market

### LinkREIT - Asset Enhancement Works at Lei Yue Mun Plaza

### LinkREIT - Asset Enhancement Works at Fu Shin Cooked Food Stalls Building

### SINO - Shopping Mall Toilet Renovation at Citywalk 1 & Citywalk 2, Tsuen Wan

### LinkREIT - Renovation Works at Leung King Shopping Centre

### Cheung Kong Holdings - Fortune City One Shopping Centre - A&A works at Shatin

### Apple Shop (South Chain)

## Railway Project Reference

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### Shatin to Central Link - Kam Tin Depot

### Hong Kong Express Rail Link Project - West Kowloon Terminus Station South (Contract No.: 810B) Warehouse - Renovation

### Tseung Kwan O MTR station

## Residential Project Reference

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### Fulam Construction Engineering Company Limited – Residential Development at No.8 Chuk Kok Road, Sai Kung

Project Engineer for the proposed building development to supervise electrical and Team Leader for the design of the mechanical ventilation and air conditioning system, fire services installation, plumbing system and pool filtration system of the whole development.

Aedas Limited - Residential Development at Dai Nam Building, Tai Po

Lorna Villa - Design and Installation Works under The EHSS

Block 5, Mandarin Court - Design and Installation Works under The EHSS

Cassia Court - Design and Installation Works under The EHSS

Caribbean Coast - Phase 2 at Tung Chung

The Lamma Palace - Design and Installation Works under The EHSS

Shatin 33 - Design and Installation Works under The EHSS

Tierra Verde - Phase 1 & 2 at Tsing Yi

Yoho Town - Phase 2 Show Flat

Costa Bello - Design and Installation Works under The EHSS

Marbella - Design and Installation Works under The EHSS

Meadowlands - Design and Installation Works under The EHSS

Harmony Garden - Design and Installation Works under The EHSS

## Food and Beverage Job Reference

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Lai Sun Dining Limited - Proposed Fit-out Work for the Restaurant at B1/F, G/F & 1/F, No.1 Duddell Street, Central, Hong Kong

Project Engineer for a fine dining restaurant covers approximately 7000 ft<sup>2</sup> GFA including hot kitchen, open kitchen, semi-closed



food preparation area, open bar, casual drinking area, leisure lounge, and private dining room. The scope of services covers the role of BSE planning, design, construction management, statutory submissions, and coordination with other consultant team such as interior designer, licensing consultant, kitchen consultant, elevator NSC, etc.



## HUGO CHAN

ASSOCIATE

### EDUCATION

- MSc in Fire and Safety Engineering
- BEng (Hons) in Industrial Engineering and Engineering Management
- High Diploma in Mechanical Engineering

### PROFESSIONAL MEMBERSHIPS

- Member of The Chartered Institution of Building Services Engineers, Chartered Engineer (2015)
- Member of The Society of Operations Engineers, Chartered Engineer (2014)
- Member of The Institution of Plant Engineers (IPlantE) (2014)

### YEARS OF EXPERIENCE

- 16 years

### Government Building Project Reference

- ASD - Fanling Sport Centre
- ASD - Hong Kong Boundary Crossing Facilities
- ASD - Kwun Tong Methadone Clinic
- ASD - Tamar
- Integrated Waste Management Facility Phase 1

### Residential Project Reference

- Existing Yuen Long Estate (Housing Project)
- Tuen Mun Area 54 Site 2 (Housing Project)
- Shek Mun Estate Phase 2 (Housing Project)
- So Uk Estate Phase 2 (Housing Project)
- Cheung Sha Wan Wholesale Food Market Site 3 & Site 5 (Housing Project)
- Residential Development at Sha Tin Town Lot. 610 at Tai Po Road
- Residential Development at CSR1
- Residential Development at Tai Po Road
- Residential Development at Broadwood Road
- Residential Development at Lok Wo Sha
- Residential Development at Boundary Street

### Industrial Building Project Reference

- Café de Coral - Food Factory Building

## EXPERIENCE

- **Senior Associate** • REITHUB Consulting Limited
- **Manager (Fire service)** • Kin Ying Contracting Limited
- **Associate Director (Fire service)** • Wong & Ouyang (Building Services) Limited
- **Senior Engineer (Fire service)** • Arcadis Design & Engineering Limited
- **Contract Building Services Inspection Officer** • Hong Kong Fire Services Department (Fire Services Installations Division)
- **Contract Building Services Inspection Officer** • Hong Kong Fire Services Department (Railway Development Strategy Division)
- **Executive Engineer (Fire service)** • Wong & Ouyang (Building Services) Limited
- **Project Engineer (Fire service)** • AECOM
- **Engineer (Fire service)** • J. Roger Preston Limited

## LANGUAGE

English • Cantonese • Mandarin

### Office Building Project Reference

Science Park – Advanced Manufacturing Centre

Hang Seng Tower at Kowloon Bay (A&A Work)

Canadian Consulate (A&A Work)

Wing On Life Building – Shop & F&B (Development / Re-development)

Wing On Central Building – Shop & Office (Development / Re-development)

LHT – Shop & Office (Development / Re-development)

LKF – F&B & Office (Development / Re-development)

### Railway Project Reference

MTR – Guangzhou-Shenzhen-Hong Kong Express Rail Link – West Kowloon Terminus in Hong Kong Section

MTR – Shatin to Central Link

MTR – Hung Hom Station

### Institution Project Reference

HKU – The Swire Institute of Marine Science

Poly U – Hotel, Staff Quarter, School Portion (Development / Re-development)

### Hotel/ Theme Park Project Reference

373 QRE Hotel Development

Hong Kong Disneyland



### Mainland China Project Reference

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Shenyang Hang Lung

Wuxi Hang Lung

Wuxi Time Square

## EDUCATION

- MEng in Building Services Engineering
- MSc in Mechanical Engineering
- BEng (Hons) in Mechanical Engineering
- BSc (Hons) in Physics

## EXPERIENCE

- **Senior Engineer** • REITHUB Consulting Limited
- **Project Engineer** • Egis M&E Company Limited (Sunland.AL (International) Company Limited)
- **Engineer** • Midea Electric (HK) Limited
- **Assistant Engineer** • Jun Feng Company Limited
- **Assistant Engineer** • European Gondola System Company Limited

## YEARS OF EXPERIENCE

- 8 years

## LANGUAGE

English • Cantonese • Mandarin

## JEZ LAU

### ASSOCIATE

#### Institution Job Reference

#### The Conservancy Association - Urban Forestry Education Centre in Sham Shui Po

Project-In-Charge for one of the ten shortlisted new building projects in Green Building Award in 2021, and the first Urban Forestry Education Centre in Hong Kong. The project demonstrates a sustainable lifestyle and inspirational ideas through re-using the land right underneath a flyover. Apart from comprehensive E&M design in a green manner to achieve BEAM Plus (Platinum NB) certifications, a pilot scheme called Salt-water Cooling System using flush water was carried out by collaborating amongst Water Supplies Department, the Conservancy Association and REITHUB to advocate the sustainable concept in Hong Kong.

#### Eastern Sports Club - Proposed Development of Sports Facilities in Whitehead, Ma On Shan (Site 1)

Project-In-Charge for a new development project with 180,000 ft<sup>2</sup> site area which consisted of four blocks building facilities, outdoor sports facilities, and outdoor parking spaces.

The scope of services was BSE design exclusively for professional sport players' usage, especially the lighting design, air ventilation, temperature control, etc.

#### German Swiss International School - Phase V

Project-In-Charge for a new central HVAC system using chilled beam, 100% fresh air supply system, and hot water system were installed in a private international primary school.

#### German Swiss International School - Phase III

Project-In-Charge for a new small air-cooled chiller and AHU installation for the drama room of a private international secondary school.



## PROFESSIONAL MEMBERSHIPS

- BEAM Professional, The Hong Kong Green Building Council Limited

### Hong Kong Polytechnic University – Classrooms Improvement Works on 2/F of AG, GH, HJ Wings, and 3/F of DE Wing

A fitting-out project consists of classrooms, offices, and lecture theatre to achieve high level of indoor environmental quality such as lighting performance, thermal comfort, and noise control.

### Hong Kong Baptist University – MVAC, Heating, & Solar Panels System for the Swimming Pool

### La Salle Primary School – Enhancement of HVAC System for Natatorium

Project-In-Charge for a Design and Build Project which aimed to enhance the indoor thermal comfort and efficiency of the system.

### Kellett School – Renovation of Zone 1, 3, & 4, Kowloon Bay

### Hong Kong Science and Technology Park – Conversion of Chinese Restaurant to Sports Space Area in Building 12W

## Office Building Job Reference

### Gaw Capital – Re-generation of 625 King's Road Commercial Development

Project-In-Charge for a large A&A asset enhancement project located in North Point with 32,000 ft<sup>2</sup> GFA. An avalanche of innovative and diversified M&E designs were successfully put in place, namely solar-desiccant dehumidification system, chiller plant optimization and reconfiguration, indoor air quality improvement works, destination control system for vertical transportation, luxurious lighting design, plumbing works for vertical greens of the building, security and surveillance system upgrade, new additional electrical vehicle charging system, plumbing and drainage replacement works, smart performance display showing the green energy generated and indoor air quality improvement result, centralized thermal detection system for human, full building services design installation to earn BEAM Plus (Platinum EB) and WELL (Platinum EB) certifications, and Registered Energy Assessor services.



#### **AXA – Major Office Renovation & Restack for AXA Tower**

Project-In-Charge for an interior fitting-out project at AXA Tower with 19,130 ft<sup>2</sup> GFA. Variety of building services consultancy was provided to suit the multifunctional training centre, including deluxe lighting design, air side redistribution and air balancing, and statutory submission for Building Energy Code compliance.

#### **SoHo House Hong Kong – Major Renovation Works for SoHo House Building, Hong Kong**

Project-In-Charge for A&A works and fitting-out works for retails / office with 25,000 m<sup>2</sup> GFA. As well as the building services design, the consultancy works involve the studies of various air-side systems, computational cooling load simulation, headroom level improvement and project cost analysis.

Reitar LogTech Group Limited – Office Renovation for Reitar at 8/F, The Quayside, 77 Hoi Bun Road, Kwun Tong

Tung Wah Group of Hospitals (TWGHs) – Interior Design for Renovation of Conference Room at the 10/F, Administration Headquarters, Wong Fung Ling Memorial Building

Tung Wah Group of Hospitals (TWGHs) – Feasibility Study & Interior Design for Meeting Rooms at the LG1/F, LG2/F & G/F, Administration Headquarters, Wong Fung Ling Memorial Building

JLL – Manson House – Enhancement Works

#### **Industrial Building Job Reference**

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#### **Dairy Farm – Provision of Consultancy Service for 7-11 Hong Kong Chill Distribution Centre at ATL Logistics Centre Hong Kong Limited**

Project-In-Charge for the project which includes a cold store (0-4°C), 9 nos. freezer (-18°C) and associated FEHD inspection room, office area of total 27,000 ft<sup>2</sup> floor area. It involves designing the refrigerant system as well as the MEP system in order to maintain the Old Cold Store in operation and cool down the new Cold Store at the same time, making sure the total power consumption of old and new cold store will not exceed the limitation of power source.

Dairy Farm - E-Com Fulfilment Centre Project at ATL Logistics Centre B, Berth No.3, Kwai Chung Container Terminal, Kwai Chung

Reitar LogTech Group Limited - Project Comboxx - Proposed Development of Smart Logistics Park in Yuen Long

Project-In-Charge and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultants. More than 30 land plots and right of way for vehicular access will be acquired at Ha Che Village, Pat Heung, N.T., Hong Kong for the development, total GFA involved 300,000 ft<sup>2</sup> It is a single storey RC structure warehouse with fully automated robotic storage and air-conditioning system. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

Reitar LogTech Group Limited - Project Chilltube - Proposed Temporary Storage and Distribution of Chilled Poultry/ Meat at D.D. 89, Man Kam Road, Sandy Ridge, New Territories

Project-In-Charge and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant The development involved total GFA 300,000 ft<sup>2</sup> and it is a single storey RC structure warehouse with fully automated robotic storage and cold chain refrigeration system with operated -18C. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

Reitar LogTech Group Limited - Conversion to Cold Storage at Wing Shing Industrial Building, 26-30 Wing Kin Road, Kwai Chung

SINO - Proposed Wholesale Conversion at Westin Centre

ATL Logistics Centre - Proposed Warehouse Storage at Block B

KAMUI - Fitting Out of Cold Store Work in Unit 801 at 8/F Asia Logistics Hub-SF Centre, 36 Tising Yi, Hong Wan Road

#### Mall Job Reference

SINO - Shopping Mall Toilet Renovation at Citywalk 1 & Citywalk 2, Tsuen Wan



### MTRC - Major Renovation Work at Element Toilets (Contract No. Q065255)

Project-In-Charge for A&A works and fitting-out works for retails with 10 toilets (mock-up design and statutory submission) at Elements Shopping Mall. The consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, headroom level improvement and project cost analysis.

### MTRC - Toilet Renovation at Two International Finance Centre

Project-In-Charge for a large fitting-out work for the skyscraper with 18 storeys lavatories (mock-up design and statutory submission) at 2IFC. The consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, IAQ enhancement, headroom level improvement and project cost analysis.

### LinkREIT - Renovation Works & Asset Enhancement at Tai Wo Plaza

An iconic shopping mall which is situated next to Tai Wo MTR station, this A&A asset enhancement project with over 41000 ft<sup>2</sup> GFA involved stringent and comprehensive M&E design, especially plumbing and drainage system upgrade, additional vertical transportation installation, to greatly enhance the living quality of the community. We also played the Registered Energy Assessor to consolidate, endorse, and submit the Form of Compliance to government agency.

### LinkREIT - Renovation Works at Tung Tau Market

### LinkREIT - Asset Enhancement Works at Lei Yue Mun Plaza

### LinkREIT - Asset Enhancement Works at Fu Shin Cooked Food Stalls Building

### Racecourse Job Reference

Hong Kong Jockey Club - All-In Consultancy Services for Satellite Treadmill Structure in Quarantine A Stable Blocks and Olympic Stable Compound at Sha Tin Stable Precinct





## Hotel Job Reference

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### The Olympian Hong Kong

Project-In-Charge for asset enhancement for a luxury hotel located in Olympic with 58,100 ft<sup>2</sup> GFA. Different engineering solutions to the existing problems of mouldy environment, condensation on walls and ceiling, short circuit of cooled air ventilation, and lighting malfunction have been advised. Registered Energy Assessor service is provided upon completion of the construction.

Grand Lisboa Palace, Macau

Bauhinia Hotel - Major Renovation Work (BEAM Plus)

K18 Hotel - Commercial Redevelopment at 18 Kimberley Hotel

## Residential Job Reference

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### Fulam Construction Engineering Company Limited - Residential Development at No.8 Chuk Kok Road, Sai Kung

Project-In-Charge for the proposed building development to supervise electrical and Team Leader for the design of the mechanical ventilation and air conditioning system, fire services installation, plumbing system and pool filtration system of the whole development.

Kerry Properties - Phase II Beacon Hill - New Building

Henderson Land Development - Eden Manor, Kwun Tung North - New Building

Aedas Limited - Residential Development at Dai Nam Building, Tai Po

Lorna Villa - Design and Installation Works under The EHSS

Block 5, Mandarin Court - Design and Installation Works under The EHSS

Cassia Court - Design and Installation Works under The EHSS

The Lamma Palace - Design & Installation Works under The EHSS

Caribbean Coast - Phase 2 at Tung Chung

## Government Job Reference

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### EMSD

- Replacement of three sets of air-cooled chillers at Sai Kung Government Offices
- Replacement of CCMS system at Mongkok Government Office
- Conversion of Three sets of Air-cooled chillers to water-cooled chillers at WSD Office in East Region
- Replacement of VRV system in Tsing Sha Control Area
- Replacement of CCMS system at North Point Government Offices
- Replacement of BMS system and Air-cooled chiller at Kennedy Town Community Complex
- Study of Existing High Mast Lightings Design and Modification at Eastern Harbour Crossing
- Replacement of Air-conditioning System in Tate's Cairn Tunnel
- Refurbishment of Lift No. 1, 2 and 5 at APB Centre
- Replacement of Cooling Tower and Associated Dosing System at Lai Chi Kok Government Offices

Hong Kong Baptist Hospital - E&M, Structural, Building, Topographic and Tree Survey Works for Proposed Redevelopment of Blocks A, B and C

Hong Kong Housing Society - Consultancy Services for Escalator Improvement Works at Kai Tak Garden Shopping Arcade (22062/KG) (BSC/20220142/KG)

Transport Department - The Automated Parking System at Open Space with Public Vehicle Part at Yen Chow Street West, Sham Shui Po

Transport Department - The Automated Parking System at Joint-user Complex at Junction of Shing Tai Road and Sheung Mau Street, Chai Wan

Architectural Services Department - Liantang Boundary Infrastructure Control Point

### FS(CP)O Job Reference

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LinkREIT - Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance ("FS(CP)O"), CAP 502 at Cheung Wah Carpark No.1 and No.2 (Contract No. 20-071221) - Batch 1

- Temple Mall North
- Hoi Fu Shopping Centre
- Homantin Plaza
- Nam Cheong Place
- Yat Tung Shopping Centre

LinkREIT - Design and Project Consultancy Services for Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance ("FS(CP)O"), CAP 502 (Contract No. 21-119000) - Batch 1

- Ping Tin Shopping Centre
- Sau Mau Ping Shopping Centre
- Lei Yue Mun Plaza
- Oi Tung Shopping Centre
- Hing Wah Plaza

Gaw Capital - FS(CP)O for Commercial/Car Park Block at 326 Ap Lei Chau Bridge Road

### Food and Beverage Job Reference

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Lai Sun Dining Limited - Proposed Fit-out Work for the Restaurant at B1/F, G/F & 1/F, No.1 Duddell Street, Central, Hong Kong

Project-In-Charge for a fine dining restaurant covers approximately 7000 ft<sup>2</sup> GFA including hot kitchen, open kitchen, semi-closed food preparation area, open bar, casual drinking area, leisure lounge, and private dining room. The scope of services covers the role of BSE planning, design, construction management, statutory submissions, and coordination with other consultant team such as interior designer, licensing consultant, kitchen consultant, elevator NSC, etc.

## EDUCATION

- Diploma in Building Service Engineering, 2005
- Higher Diploma in Building Service Engineering, 2006

## YEARS OF EXPERIENCE

- 12 years

## EXPERIENCE

- Engineer • Integral Electrical & Mechanical Engineering
- Engineer • Sunland.AL (International) Co., Limited
- Engineer • Tung Fat Plumbing Engineering Co., Ltd.
- Assistant Engineer • Far East Consulting Engineers Limited
- Technical Officer • Fotton Surveyors Limited

## LANGUAGE

- English • Cantonese • Mandarin

## CHRIS CHAN

### PROJECT ENGINEER

#### Hotel/ Casino Job Reference

Nina Hospitality – Conference Lodge in The Hong Kong University of Science and Technology

Regal Oriental Hotel in Kowloon City

iClub Sheung Wan Hotel

iClub Fortress Hill Hotel

#### Government Building Job Reference

Architectural Services Department – Renovation Work at Tai Po Civic Centre

Architectural Services Department – 30-Classroom Primary School in Sham Shui Po

Architectural Services Department – 30-Classroom at TWGHs Tsoi Wing Sing Primary School in Shui Chuen O

Hong Kong International Airport – P581 East Hall Expansion Work

Chun Wo Construction Holdings Company Limited – Ying Wa Module Community – Transitional Social Housing (20-storey) – Steel MiC System

#### Institution Job Reference

The City University of Hong Kong – Dairy Farm at Tai Po

French International School at Tseung Kwan O

#### Mall Job Reference

Hysan Place – Toilet Renovation



### Industrial Building Job Reference

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Goodman - Sha Tsui Road Tsuen Wan Block 1

Goodman - Sha Tsui Road Tsuen Wan Block 2

### Residential Job Reference

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Residential Development at 7 Lincoln Road, Kowloon Tong

Residential Development at Catchick Street, Kennedy Town

Residential Development at Kotewall Road, Mid-Levels

Residential Development at Hankow Road, Tsim Sha Tsui

Residential Development at Portland Street, Mongkok

Residential Development at Siu Lam, Tuen Mun

Residential Development at Tai Lam, Tuen Mun

### Racecourse Job Reference

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Hong Kong Jockey Club - Asset Enhancements at Happy Valley Clubhouse

## EDUCATION

- BEng (Hons) Degree in Building Services Engineering
- Associate in Engineering

## YEARS OF EXPERIENCE

- 5 years

## EXPERIENCE

- Project Engineer • REITHUB Consulting Limited
- Engineer • AECOM Asia Company Limited
- Engineer • Egis M&E Company Limited (Sunland.AL (International) Company Limited)
- ATAL Building Services Engineering Limited
- BYME Engineering (HK) Limited

## LANGUAGE

English • Cantonese • Mandarin

## JOHN FUNG

### PROJECT ENGINEER

#### Government Building Project Reference

EMSD (Contract No.: 2077EM19C) - Replacement of Air Conditioning System in Administration Building of E.H.T.

EMSD (Contract No.: 2077EM19C) - Replacement of A/C System for Administration Building and Workshop & Canteen Building of Tate's Cairn Tunnel

EMSD (Contract No.: 2419EM20M) - Replacement of Chillers at Fanling Law Courts Building

EMSD (Contract No.: 2930EM20M) - Replacement of CCMS, Air-cooled Package Chiller and Chilled Water Pump at Kennedy Town Community Complex

Hong Kong Housing Society - Consultancy Services for Escalator Improvement Works at Kai Tak Garden Shopping Arcade (22062/KG) (BSC/20220142/KG)

Hong Kong Baptist Hospital - E&M, Structural, Building, Topographic and Tree Survey Works for Proposed Redevelopment of Blocks A, B and C

#### Racecourse Project Reference

Hong Kong Jockey Club - All-In Consultancy Services for Satellite Treadmill Structure in Quarantine A Stable Blocks and Olympic Stable Compound at Sha Tin Stable Precinct

Hong Kong Jockey Club - E&M Installation Works at Happy Valley Racecourse

- Members Stand II 8/F & Members Stand III 9/F Dining Room
- Members Stand III 1/F & 5/F
- New LED Screen & UPS for Floodlight
- Grandstand G/F

## Industrial Building Project Reference

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### Reitar LogTech Group Limited – Project Comboxx – Proposed Development of Smart Logistics Park in Yuen Long

Project Engineer and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant. More than 30 land plots and right of way for vehicular access will be acquired at Ha Che Village, Pat Heung, N.T., Hong Kong for the development, total GFA involved 300,000 ft<sup>2</sup>. It is a single storey RC structure warehouse with fully automated robotic storage and air-conditioning system. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

### Reitar LogTech Group Limited – Project Chilltube – Proposed Temporary Storage and Distribution of Chilled Poultry/ Meat at D.D. 89, Man Kam Road, Sandy Ridge, New Territories

Project Engineer and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant. The development involved total GFA 300,000 ft<sup>2</sup> and it is a single storey RC structure warehouse with fully automated robotic storage and cold chain refrigeration system with operated -18C. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

DHL – Main Contract Works for DHL KWC – Tuen Mun Town Lot No. 544, Siu Lang Shui Road, Area 49, Tuen Mun, New Territories, H.K.

HK Aerospace Technology Group – Supply, Install, T&C of the B.S Installation for HKATG, Manufacturing, Test, Monitoring & Control Facility at HKSTP, TKO Site

NTT Communications Corporation – Design and Build of Wonder 9 Data Centre EXP003 at Tseung Kwan O Industrial Estate

Digital Realty – HKG10 Phase 3, Proposed A&A Works at 33 Chun Choi Street, Tseung Kwan O Industrial Estate, Tseung Kwan O, N.T., T.K.O.T.L No. 39

Reitar LogTech Group Limited - Feasibility Study Conversion to Cold Storage at Wing Shing Industrial Building, 26-30 Wing Kin Road, Kwai Chung

SINO - Proposed Wholesale Conversion at Westin Centre

KAMUI - Fitting Out of Cold Store Work in Unit 801 at 8/F Asia Logistics Hub-SF Centre, 36 Tsing Yi, Hong Wan Road

ATL Logistics Centre - Proposed Warehouse Storage at Block B

#### **Mall Job Reference**

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#### **MTRC - Major Renovation Work at Element Toilets (Contract No. Q065255)**

Project Engineer for A&A works and fitting-out works for retails with 10 toilets (mock-up design and statutory submission) at Elements Shopping Mall. The consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, headroom level improvement and project cost analysis.

#### **MTRC - Toilet Renovation at Two International Finance Centre**

Project Engineer for a large fitting-out work for the skyscraper with 18 storeys lavatories (mock-up design and statutory submission) at 2IFC. The consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, IAQ enhancement, headroom level improvement and project cost analysis.

LinkREIT - Renovation Works at Tung Tau Market

LinkREIT - Asset Enhancement Works at Lei Yue Mun Plaza

LinkREIT - Asset Enhancement Works at Fu Shin Cooked Food Stalls Building

SINO - Shopping Mall Toilet Renovation at Citywalk 1 & Citywalk 2, Tsuen Wan

HKRI - Commercial Development Project at Tai Pak Commercial Centre (Area9A), D.D. 352 Lot 385 R.P. & the Extensions thereto, Discovery Bay (Phase 2 - Renovation of Existing Shopping Arcade)



## Office Building Project Reference

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### Gaw Capital - Re-generation of 625 King's Road Commercial Development

Project Engineer for a large A&A asset enhancement project located in North Point with 32,000 ft<sup>2</sup> GFA. An avalanche of innovative and diversified M&E designs were successfully put in place, namely solar-desiccant dehumidification system, chiller plant optimization and reconfiguration, indoor air quality improvement works, destination control system for vertical transportation, luxurious lighting design, plumbing works for vertical greens of the building, security and surveillance system upgrade, new additional electrical vehicle charging system, plumbing and drainage replacement works, smart performance display showing the green energy generated and indoor air quality improvement result, centralized thermal detection system for human, full building services design installation to earn BEAM Plus (Platinum EB) and WELL (Platinum EB) certifications, and Registered Energy Assessor services.

ATAL - Proposed Conversion Works for Topyy Tower, No. 45-51 Kwok Shui Road, Kwai Chung, New Territories

Reitar LogTech Group Limited - Office Renovation for Reitar at 8/F, The Quayside, 77 Hoi Bun Road, Kwun Tong

Tung Wah Group of Hospitals (TWGHs) - Interior Design for Renovation of Conference Room at the 10/F, Administration Headquarters, Wong Fung Ling Memorial Building

Tung Wah Group of Hospitals (TWGHs) - Feasibility Study & Interior Design for Meeting Rooms at the LG1/F, LG2/F & G/F, Administration Headquarters, Wong Fung Ling Memorial Building

JLL - Manson House - Enhancement Works

## Hotel Job Reference

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Bauhinia Hotel - Major Renovation Work (BEAM Plus)

K18 Hotel - Commercial Redevelopment at 18 Kimberley Hotel

### Food and Beverage Job Reference

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#### Lai Sun Dining Limited - Proposed Fit-out Work for the Restaurant at B1/F, G/F & 1/F, No.1 Duddell Street, Central, Hong Kong

Project-In-Charge for a fine dining restaurant covers approximately 7000 ft<sup>2</sup> GFA including hot kitchen, open kitchen, semi-closed food preparation area, open bar, casual drinking area, leisure lounge, and private dining room. The scope of services covers the role of BSE planning, design, construction management, statutory submissions, and coordination with other consultant team such as interior designer, licensing consultant, kitchen consultant, elevator NSC, etc.

### FS(CP)O Job Reference

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#### LinkREIT - Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance ("FS(CP)O"), CAP 502 at Cheung Wah Carpark No.1 and No.2 (Contract No. 20-071221) - Batch 1

- Temple Mall North
- Hoi Fu Shopping Centre
- Homantin Plaza
- Nam Cheong Place
- Yat Tung Shopping Centre

#### LinkREIT - Design and Project Consultancy Services for Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance ("FS(CP)O"), CAP 502 (Contract No. 21-119000) - Batch 1

- Ping Tin Shopping Centre
- Sau Mau Ping Shopping Centre
- Lei Yue Mun Plaza
- Oi Tung Shopping Centre
- Hing Wah Plaza

#### Gaw Capital - FS(CP)O for Commercial/Car Park Block at 326 Ap Lei Chau Bridge Road

## Residential Job Reference

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### Fulam Construction Engineering Company Limited – Residential Development at No.8 Chuk Kok Road, Sai Kung

Project Engineer for the proposed building development to supervise electrical and Team Leader for the design of the mechanical ventilation and air conditioning system, fire services installation, plumbing system and pool filtration system of the whole development.

Aedas Limited – Residential Development at Dai Nam Building, Tai Po

Lorna Villa – Design and Installation Works under The EHSS

Block 5, Mandarin Court – Design and Installation Works under The EHSS

Cassia Court – Design and Installation Works under The EHSS

Caribbean Coast – Phase 2 at Tung Chung

The Lamma Palace – Design and Installation Works under The EHSS

Shatin 33 – Design and Installation Works under The EHSS

## Institution Project Reference

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### Eastern Sports Club – Proposed Development of Sports Facilities in Whitehead, Ma On Shan (Site 1)

Project Engineer for a new development project with 180,000 ft<sup>2</sup> site area which consisted of four blocks building facilities, outdoor sports facilities, and outdoor parking spaces.

The scope of services was BSE design exclusively for professional sport players' usage, especially the lighting design, air ventilation, temperature control, etc.

The Hong Kong Polytechnic University – Antirational, Additions, Repairs and Improvement Works 2021 (Package 1 to Package 3)

English Schools Foundation – Chiller Replacement at Renaissance College



English School Foundation - Facilities Asset Enhancement Project  
at Year 22/23 for South Island School

Hong Kong Science and Technology Park - Conversion of  
Chinese Restaurant to Sports Space Area in Building 12W



## SIMON CHAN

### ENGINEER

#### EDUCATION

- High Diploma in Building Services Engineering

#### YEARS OF EXPERIENCE

- 15 years

#### EXPERIENCE

- **Project Engineer** • REITHUB Consulting Limited
- **Project Engineer** • Egis M&E Company Limited (Sunland.AL (International) Company Limited)
- WSP (Asia) Limited
- J. Roger Preston Limited
- Hanme Engineering Co. Limited
- ATAL Engineering Limited

#### LANGUAGE

English • Cantonese • Mandarin

#### FS(CP)O Job Reference

LinkREIT - Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance ("FS(CP)O"), CAP 502 at Cheung Wah Carpark No.1 and No.2 (Contract No. 20-071221) - Batch 1

- Temple Mall North
- Hoi Fu Shopping Centre
- Homantin Plaza
- Nam Cheong Place
- Yat Tung Shopping Centre

LinkREIT - Design and Project Consultancy Services for Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance ("FS(CP)O"), CAP 502 (Contract No. 21-119000) - Batch 1

- Ping Tin Shopping Centre
- Sau Mau Ping Shopping Centre
- Lei Yue Mun Plaza
- Oi Tung Shopping Centre
- Hing Wah Plaza

LinkREIT - Fire Safety Compliance and Improvement Works Prescribed Under Fire Safety (Commercial Premises) Ordinance for 15 Properties Under Batch 2 - Yiu Tung

SINO - Shopping Mall Toilet Renovation at Citywalk 1 & Citywalk 2, Tsuen Wan

Gaw Capital - FS(CP)O for Commercial/Car Park Block at 326 Ap Lei Chau Bridge Road

#### Hotel Project Reference

K18 Hotel - Commercial Redevelopment at 18 Kimberley Hotel

Venetian Macao Resort Hotel, Cotai Parcel 3, Macau

Grand Marina Resort Hotel, Garapan, Saipan

### Institution Project Reference

---

#### Eastern Sports Club – Proposed Development of Sports Facilities in Whitehead, Ma On Shan (Site 1)

Project Engineer for a new development project with 180,000 ft<sup>2</sup> site area which consisted of four blocks building facilities, outdoor sports facilities, and outdoor parking spaces. The scope of services was BSE design exclusively for professional sport players' usage, especially the lighting design, air ventilation, temperature control, etc.

#### Hong Kong Science and Technology Park – Conversion of Chinese Restaurant to Sports Space Area in Building 12W

The Chinese University of Hong Kong – Centralized General Research Laboratories Complex (Block 2), Area 39

#### English Schools Foundation – Chiller Replacement at Renaissance College

English School Foundation – Facilities Asset Enhancement Project at Year 22/23 for South Island School

### Industrial Building Project Reference

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#### Goodman – Proposed Industrial Development at Lot 313 and TWIL 49 Sha Tsui Road, Tsuen Wan, N.T.

Project Engineer for new base building MEP development in Tsuen Wan, Hong Kong, with a total GFA of approximately 60,000m<sup>2</sup>. Total HK\$3,000 million estimated development cost, with Gold grade of BEAM Plus (C&S) certification. The project involved dual feed 2x75MVA plus 2x50MVA HV CLP transformer application for Tier 3 provision of data center. The scope involved from inception master planning and detail design development in new building extension and T&C Management. The project involved technical advisory on operation and facilities management from project handover to operation team. The key role of the project act as Registered Energy Assessor (REA) for COCR submission to EMSD, Registered Professional Engineer (RPE), independent Commissioning Authority (iCxA) to certify BEAM Plus NB / LEED certification.

### Reitar LogTech Group Limited - Project Comboxx – Proposed Development of Smart Logistics Park in Yuen Long

Project Engineer and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant. More than 30 land plots and right of way for vehicular access will be acquired at Ha Che Village, Pat Heung, N.T., Hong Kong for the development, total GFA involved 300,000sq.ft. It is a single storey RC structure warehouse with fully automated robotic storage and air-conditioning system. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

### Reitar LogTech Group Limited - Project Chilltube – Proposed Temporary Storage and Distribution of Chilled Poultry/ Meat at D.D. 89, Man Kam Road, Sandy Ridge, New Territories

Project Engineer and lead consultant role to manage and supervise Architectural, Structural, Lands and Sustainability Consultant The development involved total GFA 300,000 sq. ft and it is a single storey RC structure warehouse with fully automated robotic storage and cold chain refrigeration system with operated -18C. The building services' provision included high hazard automatic sprinkler system category 3, ST4 storage configuration which shall provide in-rack sprinkler in one go for OP / FSD inspection.

### Reitar LogTech Group Limited - Conversion to Cold Storage at Wing Shing Industrial Building, 26-30 Wing Kin Road, Kwai Chung

KAMUI - Fitting Out of Cold Store Work in Unit 801 at 8/F Asia Logistics Hub-SF Centre, 36 Tsing Yi, Hong Wan Road

SINO - Proposed Wholesale Conversion at Westin Centre

### Feasibility Study Job Reference

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KaiLong - Feasibility Study for Wing Shing Industrial Building





## Mall Project Reference

### MTRC - Major Renovation Work at Element Toilets (Contract No. Q065255)

Project Engineer for A&A works and fitting-out works for retails with 10 toilets (mock-up design and statutory submission) at Elements Shopping Mall. the consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, headroom level improvement and project cost analysis.

### MTRC - Toilet Renovation at Two International Finance Centre

Project-In-Charge for a large fitting-out work for the skyscraper with 18 storeys lavatories (mock-up design and statutory submission) at 2IFC. The consultancy works involve the building services design, the studies of various air-side systems, computational cooling load simulation, IAQ enhancement, headroom level improvement and project cost analysis.

### LinkREIT - Renovation Works at Tung Tau Market

### LinkREIT - Asset Enhancement Works at Lei Yue Mun Plaza

### LinkREIT - Asset Enhancement Works at Fu Shin Cooked Food Stalls Building

### LinkREIT - Consultancy Services Contract for Asset Enhancement Works at Fu Shin Market and Tai Yuen Market

### SINO - Shopping Mall Toilet Renovation at Citywalk 1 & Citywalk 2, Tsuen Wan

### Shun Tak Holdings Limited - Renovation Works in Artyzen Club at Shop 401/401A Shun Tak Centre, Hong Kong

## Office Building Project Reference

### Reitar LogTech Group Limited - Office Renovation for Reitar at 8/F, The Quayside, 77 Hoi Bun Road, Kwun Tong

### Tung Wah Group of Hospitals (TWGHs) - Interior Design for Renovation of Conference Room at the 10/F, Administration Headquarters, Wong Fung Ling Memorial Building



Tung Wah Group of Hospitals (TWGHs) – Feasibility Study & Interior Design for Meeting Rooms at the LG1/F, LG2/F & G/F, Administration Headquarters, Wong Fung Ling Memorial Building

JLL - Manson House - Enhancement Works

WuHang CTF Finance Centre, China

Thai Boon Roong Sihanoukville World Trade Centre, Cambodia

Phnom Penh Twin Tower World Trade Centre, Cambodia

### Residential Project Reference

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Fulam Construction Engineering Company Limited – Residential Development at No.8 Chuk Kok Road, Sai Kung

Project-In-Charge for the proposed building development to supervise electrical and Team Leader for the design of the mechanical ventilation and air conditioning system, fire services installation, plumbing system and pool filtration system of the whole development.

Crown Treasure Investments Limited – Residential development at Lok Wo Sha, Ma On Shan (STTL 574)

Albany Investments Limited – Residential development at Site H, Tseung Kwan O Area 86 (TKOTL 70)

Oxford Investments Limited – TW5 Cityside Property Development at Tai Ho Road, Tsuen Wan West (TWTL 417)

Aedas Limited – Residential Development at Dai Nam Building, Tai Po

Lorna Villa – Design and Installation Works under The EHSS

Block 5, Mandarin Court – Design and Installation Works under The EHSS

Cassia Court – Design and Installation Works under The EHSS

The Lamma Palace – Design & Installation Works under The EHSS

Shatin 33 – Design and Installation Works under The EHSS



### Racecourse Project Reference

Hong Kong Jockey Club - Shatin Racecourse Community Projects Mechanical, Electrical & Plumbing (MEP) Engineer Consultancy Services (Ref. CS/2017/085)

- Covered Concourse;
- Penfold Park and Subway

Hong Kong Jockey Club - All-In Consultancy Services for Satellite Treadmill Structure in Quarantine A Stable Blocks and Olympic Stable Compound at Sha Tin Stable Precinct

### Food and Beverage Job Reference

Lai Sun Dining Limited - Proposed Fit-out Work for the Restaurant at B1/F, G/F & 1/F, No.1 Duddell Street, Central, Hong Kong

Project Engineer for a fine dining restaurant covers approximately 7000 ft<sup>2</sup> GFA including hot kitchen, open kitchen, semi-closed food preparation area, open bar, casual drinking area, leisure lounge, and private dining room. The scope of services covers the role of BSE planning, design, construction management, statutory submissions, and coordination with other consultant team such as interior designer, licensing consultant, kitchen consultant, elevator NSC, etc.