



ARCHITECTURAL SERVICES DEPARTMENT

Design and Construction of  
Redevelopment of Queen Mary Hospital, Phase 1  
at Pok Fu Lam Road, Hong Kong

CONTRACT NO: SS F501 (PWP NO. 70MM)

# CIC Site Safety Gathering Sharing Session for Working-at-height Safety

Date: 4<sup>th</sup> November 2019 (Monday)



PAUL Y. - ABLE JOINT VENTURE







# 1. Project Information

Contract No.: SS F501

Contract Title: Design and Construction of Redevelopment of Queen Mary Hospital, Phase 1 Main Works at Pok Fu Lam Road, Hong Kong

Nature: Design and Build Project

Contract Sum: \$9,450,000,000.00

Commencement Date: 31/10/2018

Completion Date: 27/4/2023

Contract Period: 1640 Days



# 1. Project Information

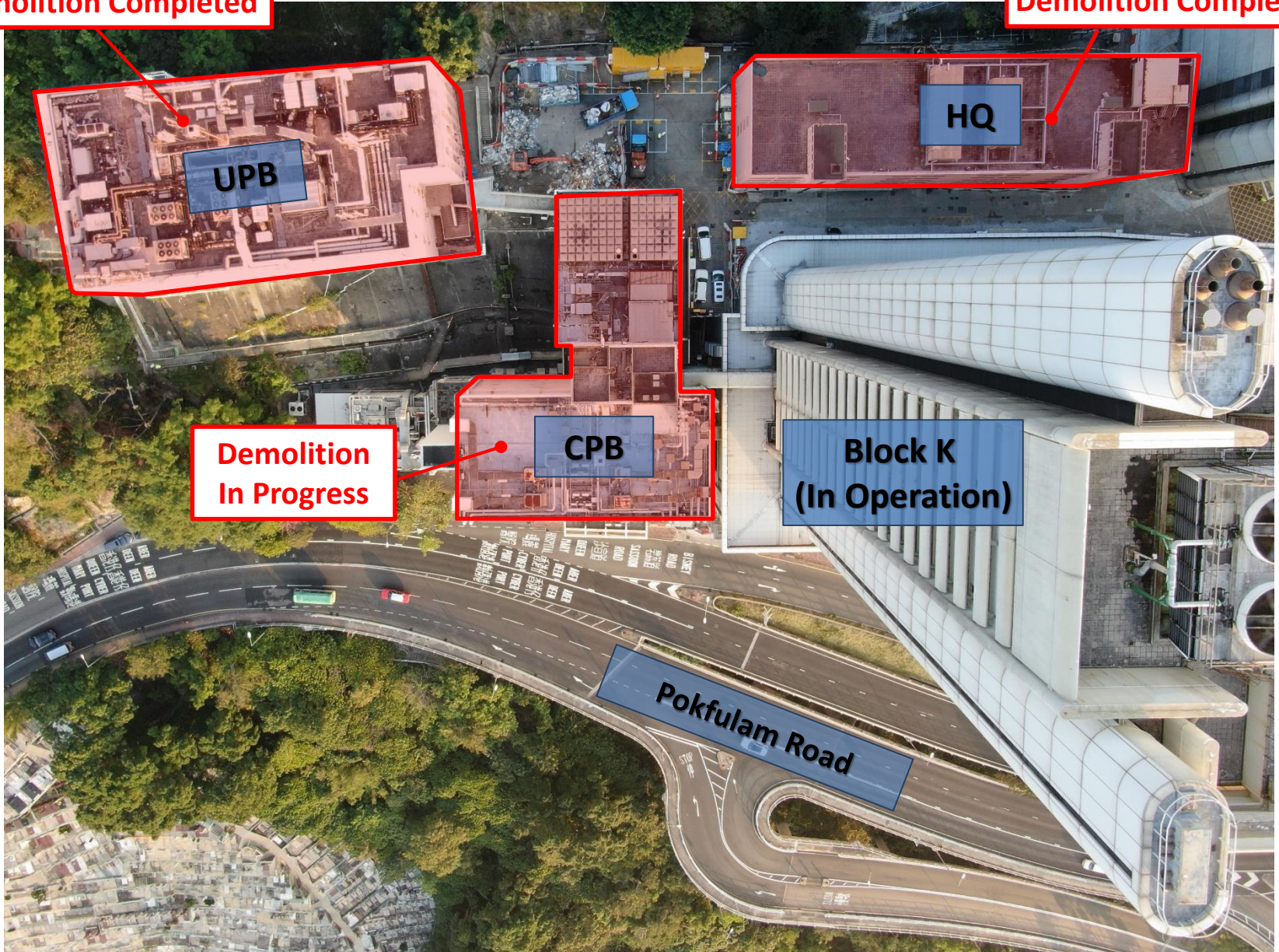
- Demolition of 3 nos. of buildings – HQ, UPB and CPB; ← **Completed Works**
- Site formation works
  - *Slope clearance and stabilization works* ← **Existing Stage of Works**
- Construction of a new 33-storey block; and
- Construction of 5 nos. of link-bridge at LG4, Level 1, 3, 11 and 19 btw. new block and existing block K.



# 1. Bird View Photo A – November 2018

Demolition Completed

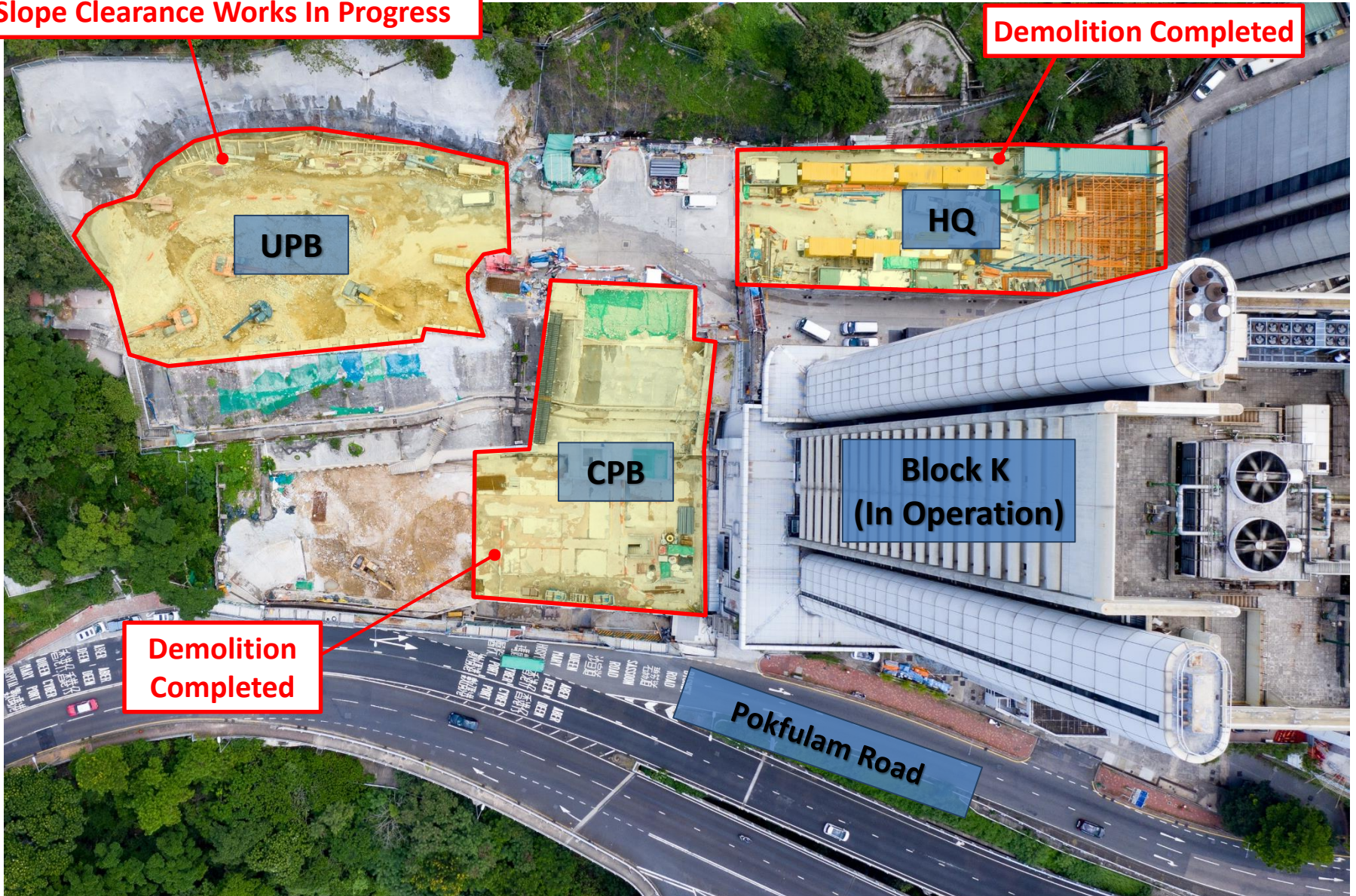
Demolition Completed



# 1. Bird View Photo B – October 2019

Demolition Completed  
Slope Clearance Works In Progress

Demolition Completed



UPB

HQ

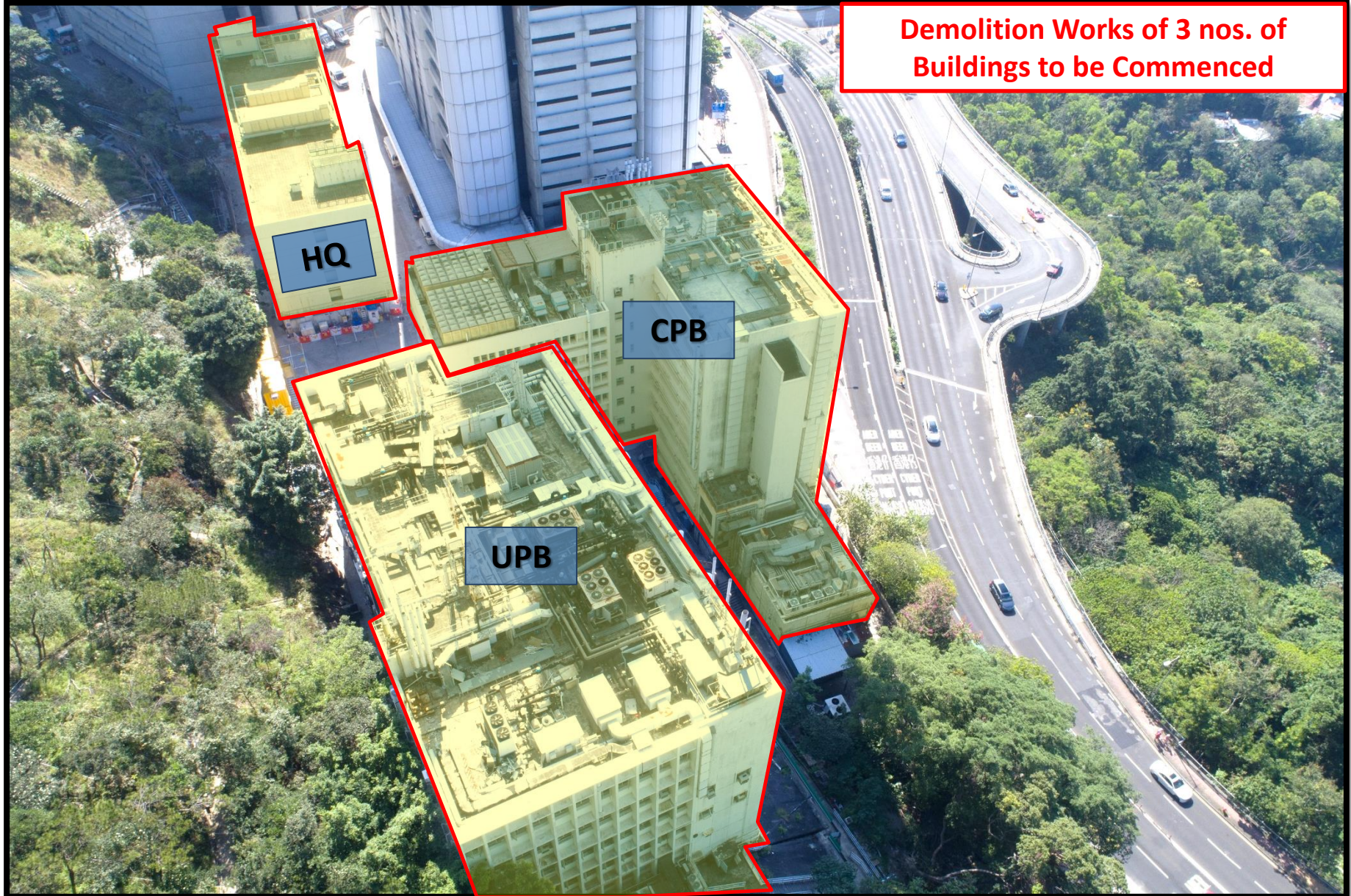
CPB

Block K  
(In Operation)

Demolition  
Completed

Pokfulam Road

# 1. Bird View Photo B – November 2018





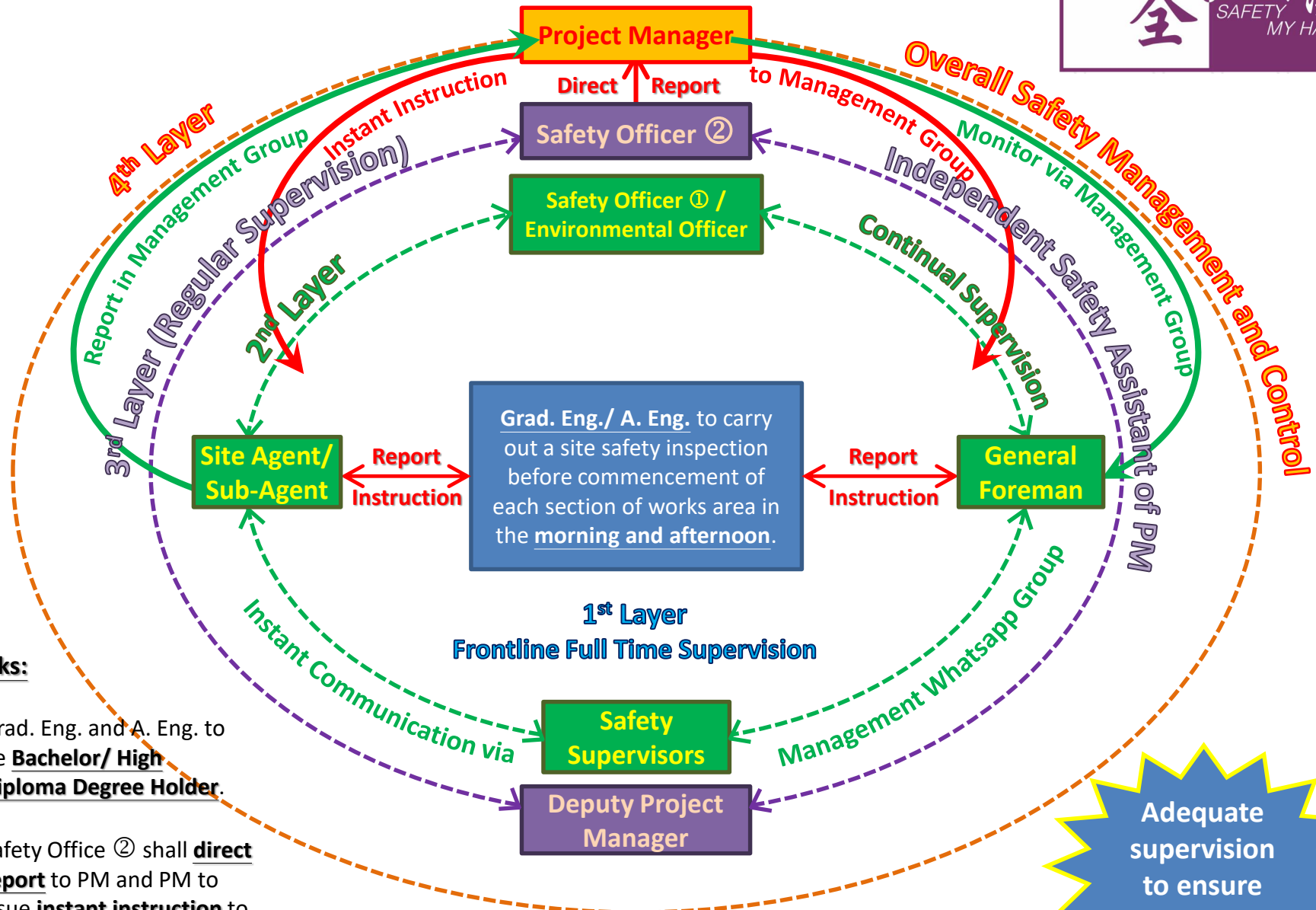
# 1. Bird View Photo B – October 2019



**Demolition Completed  
Slope Clearance Works In Progress**



# 2.1 Multi-layer Safety Control Model



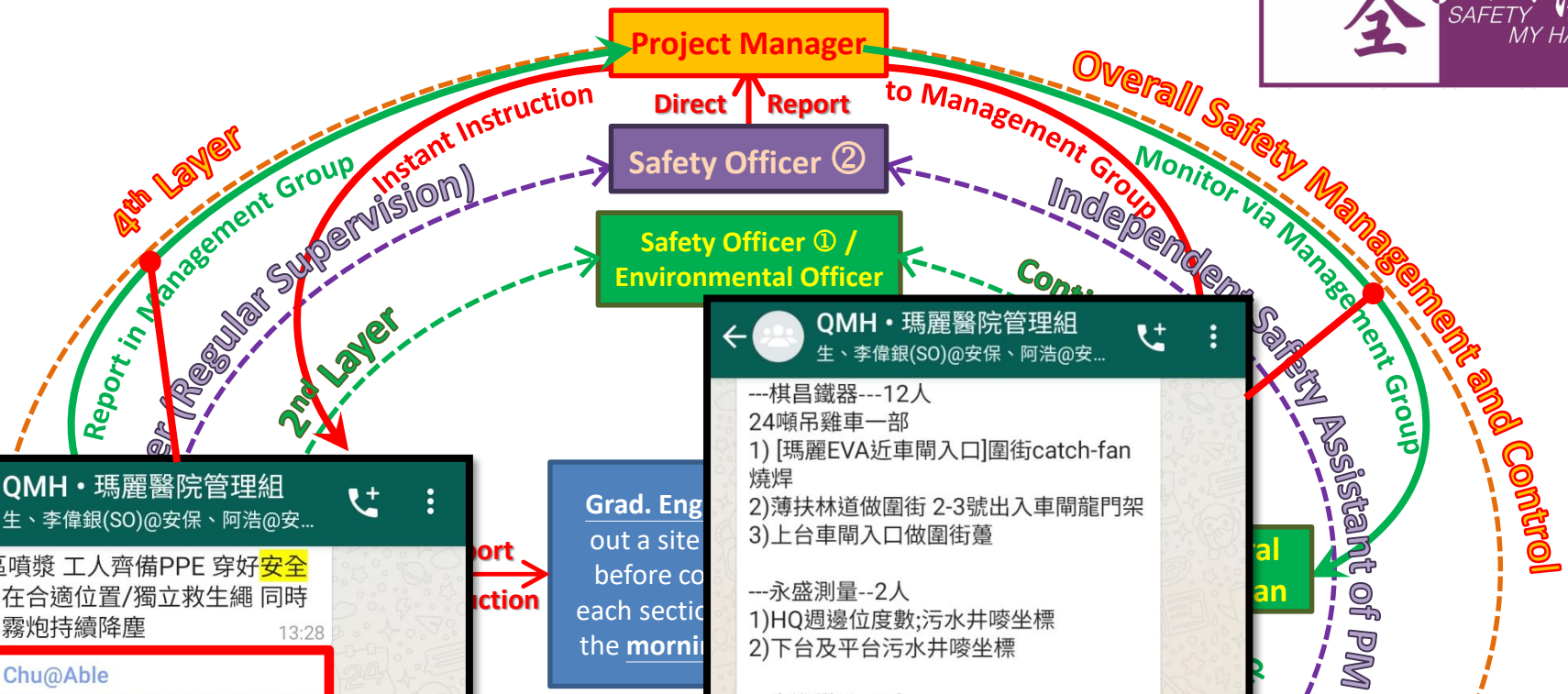
**Remarks:**

1. Grad. Eng. and A. Eng. to be **Bachelor/ High Diploma Degree Holder.**
2. Safety Office ② shall **direct report** to PM and PM to issue **instant instruction** to management Whatsapp group.



**Multi-Layers Safety and Environmental Control Model**

# 2.1 Multi-layer Safety Control Model



Grad. Eng  
out a site  
before co  
each secti  
the morn

1  
Frontline Ful

Communication via

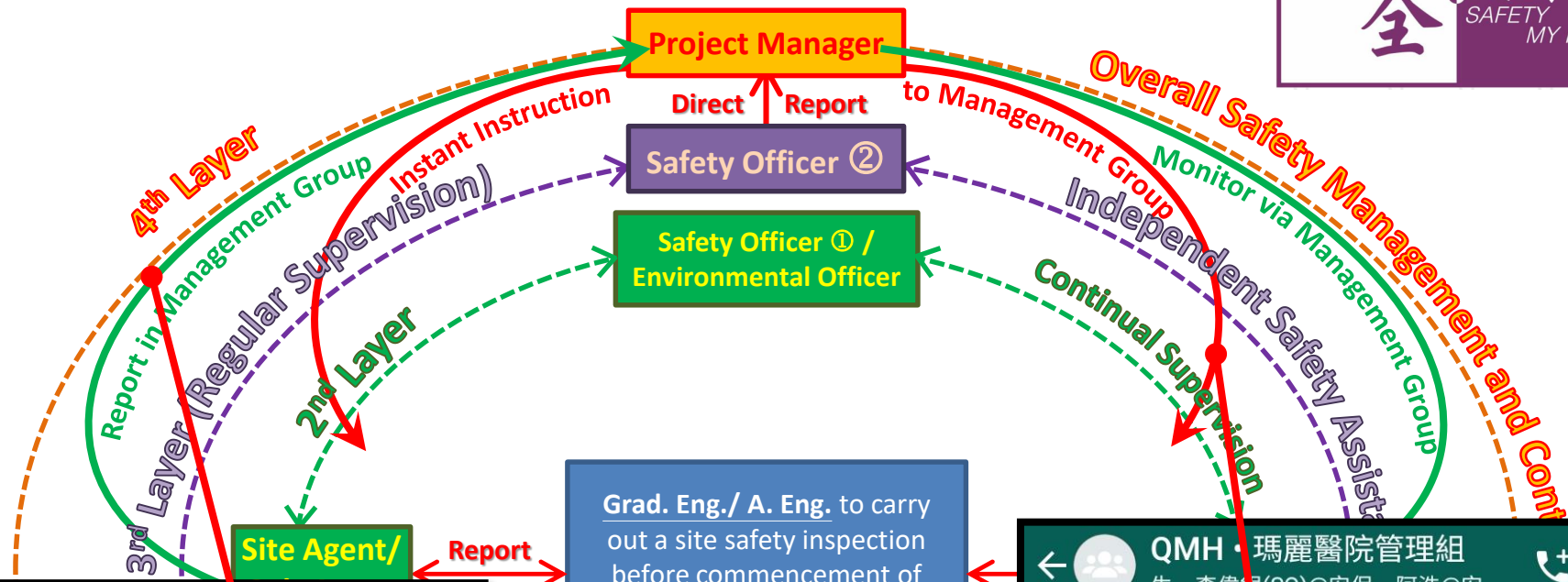
Su

Dep

M



# 2.1 Multi-layer Safety Control Model

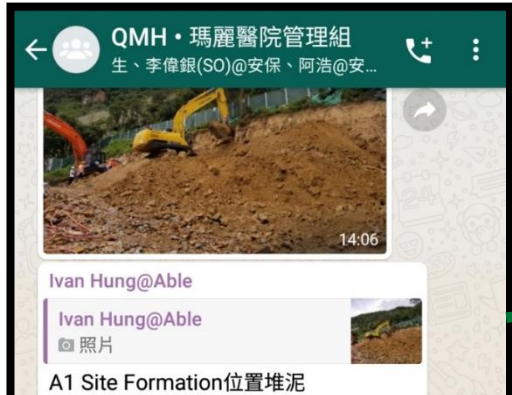


Grad. Eng./ A. Eng. to carry out a site safety inspection before commencement of each section of works area in the morning and afternoon.

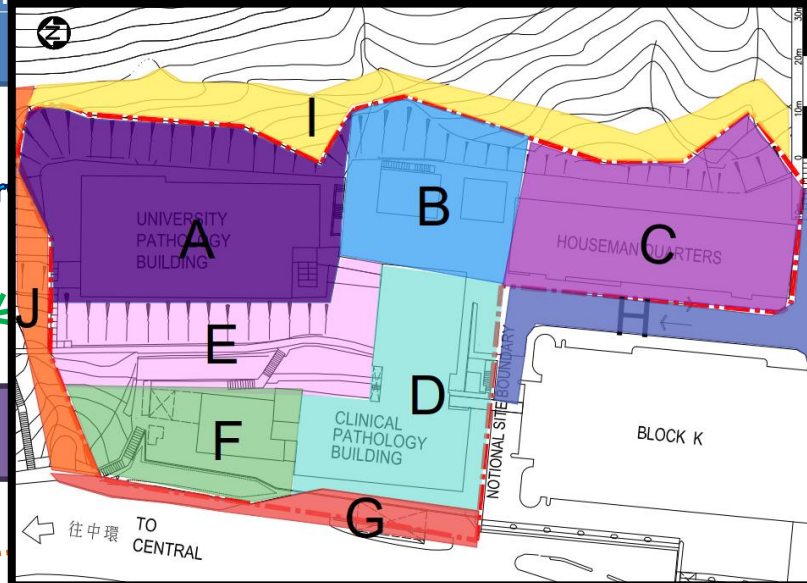
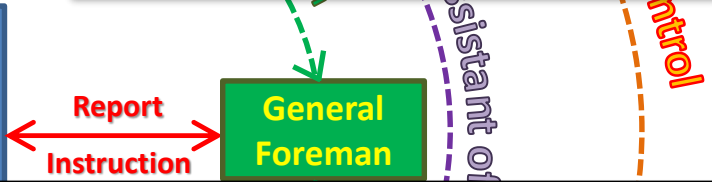
## 1st Layer Frontline Full Time Supervision



# 2.2 Factory Style Monitoring System

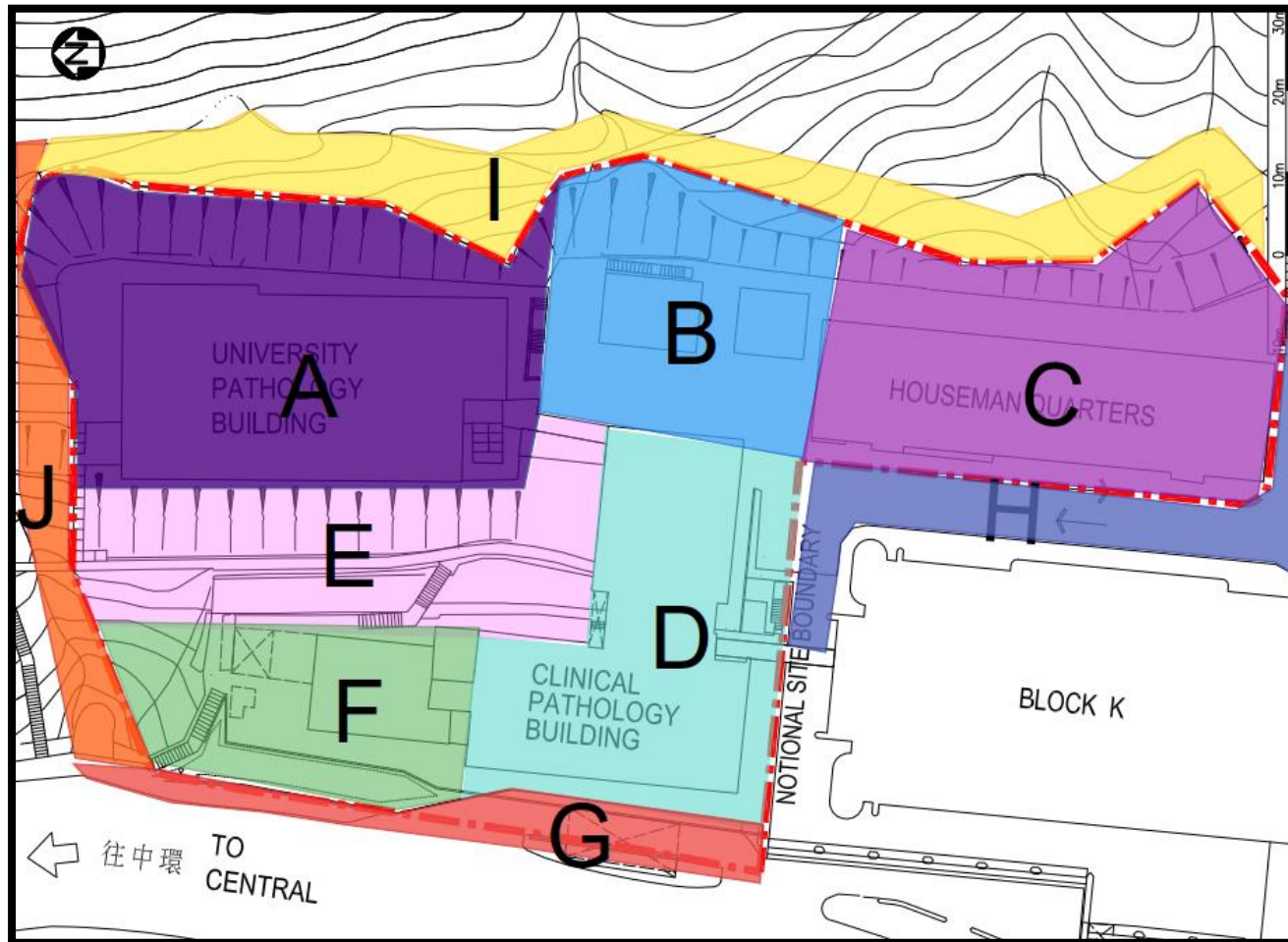


Eng. to carry out inspection before start of each section in the morning and afternoon.



## 2.2 Factory Style Monitoring System

### Step 1 – Demarcate Construction Site into Various Working Zones



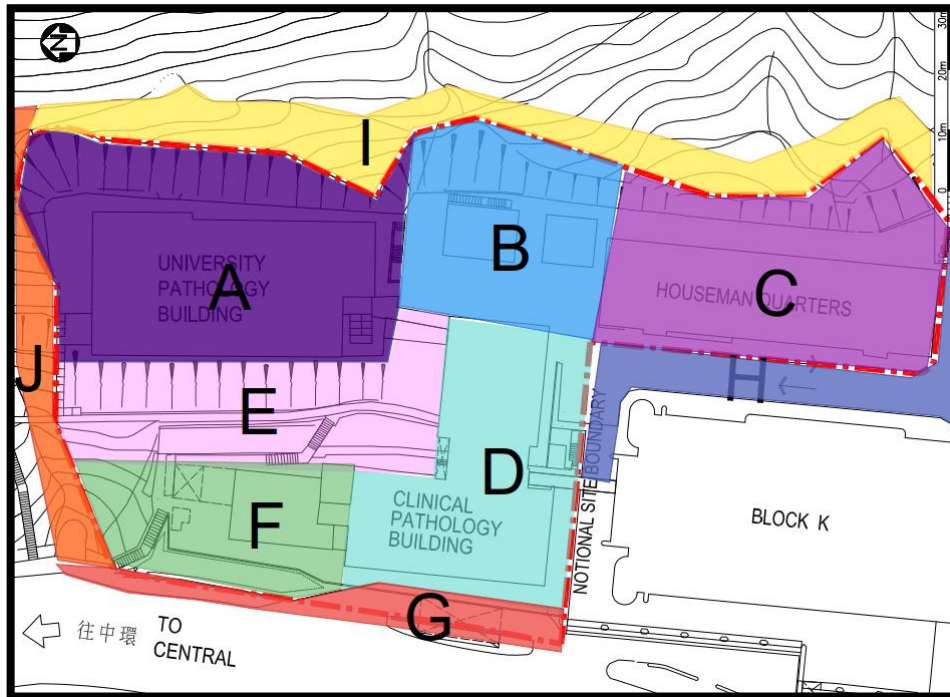
- A: 舊UPB
- B: 舊上台停車場
- C: 舊HQ
- D: 舊CPB
- E: 舊中台斜坡
- F: 舊CPB Annex
- G: 下台薄扶林道及閘口
- H: 上台EVA及閘口
- I: 東面後山外圍
- J: 北面外圍

## 2.2 Factory Style Monitoring System

### Step 2 –

### Designate Responsible Construction Supervisor to Working Zone

### List Out Daily Activities



- A1: 2-5線打石開山
- A2: Grouting 石位
- C1: 向急症室方向做圍街 (需封路)
- C2: 舊HQ位置反地腳
- C3: 安裝洗手間貨櫃
- C4: 落石屎架步村
- H1: Gantry 4 人閘燒焊
- H2: Block K 對出風槽位外裝隔音板圍街
- D1: CPB R/F 拆卸工程
- D2: CPB 拆橋工字及糟鐵
- F1: 外欄大樹位做圍街
- G1: Gantry 1 圍街燒焊及油油
- G2: Gantry 1 安裝1號閘牌

### Responsible Supervising Staff –

Zone A:	Ivan Hung,	Denis Leung ( <i>Assistant</i> )
Zone C & H:	Wilson Chu,	Yiu Lam ( <i>Assistant</i> )
Zone D & G:	Ricky Chan,	Wilson Ng ( <i>Assistant</i> )

***(Zoning, Activities and Responsible Persons shall be reviewed regularly.)***



## 2.2 Factory Style Monitoring System

### Step 3 –

### Report Performance of Works (Incl. Safety, Quality, Progress) in Specified Period in Whatsapp Management Group


QMH · 瑪麗醫院管理組  
生、李偉銀(SO)@安保、阿浩@安...

預報14/6/2019 工程項目，總共13項。

- A1: 2-5線打石開山
- A2: Grouting 石位
- C1: 向急症室方向做圍街 (需封路)
- C2: 舊HQ位置反地腳
- C3: 安裝洗手間貨櫃
- C4: 落石屎架步村
- H1: Gantry 4 人閘燒焊
- H2: Block K 對出風槽位外裝隔音板圍街
- D1: CPB R/F 拆卸工程
- D2: CPB 拆橋工字及槽鐵
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- G1: Gantry 1 圍街燒焊及油油
- G2: Gantry 1 安裝1號閘牌

注釋:  
A區. 舊UPB, B區. 舊上台停車場, C區. 舊HQ, D區. 舊CPB, E區. 舊中台斜坡, F區. 舊CPB Annex, G區. 下台薄扶林道及閘口, H區. 上台EVA及閘口, I區. 東面後山外圍, J區. 北面外圍

19:39



QMH · 瑪麗醫院管理組  
生、李偉銀(SO)@安保、阿浩@安...




H2 圍街外隔音板工字鐵上油 工人齊備PPE 包括手套及眼罩 13:45

Wilson Chu@Able




H3 上台圍街加設人閘 現場沒有易燃物品, 設置了滅火筒, 已申請熱工序許可證, 工人齊備PPE, 現場亦圍封好。 13:45

QMH · 瑪麗醫院管理組  
生、李偉銀(SO)@安保、阿浩@安...



D2 CPB拆金屬棚 工友已配戴及扣好安全帶 15:16

Wilson Chu@Able



C1 HQ向急症室安裝圍街 已暫停電焊工序 現場沒有留下火種 及 註銷熱工序許可証 水碼歸回原狀並綁好 沒有留下垃圾 17:50

**Planning / Forecast of Each Day's Activities Before Commencement of Works**

## 2.2 Factory Style Monitoring System

### Step 3 –

### Report Performance of Works (Incl. Safety, Quality, Progress) in Specified Period in Whatsapp Management Group

**1st Tick Morning**

**2nd Tick Afternoon (i.e. after lunch)**

**3rd Tick Before End of Works**

**Affected/Suspended due to Inclement Weather**

**No Works**

**QMH · 瑪麗醫院管理組**  
生、李偉銀(SO)@安保、阿浩@安...

A1: 2-5線打石開山 ☁️ AM ✓✓✓

C1: 向急症室方向做圍街 ☁️ AM ✓✓✓

C2: 舊HQ位置反地腳 ☁️ AM ✓✓

C3: 安裝洗手間貨櫃 ☁️ AM ✓✓✓

H1: Block K 對出封canopy ☁️ AM ✓✓✓

H2: Block K 對出風槽位外裝隔音板圍街 ✓✓✓

H3: 上台圍街加設人閘 ✓✓✓

D1: CPB R/F 拆卸工程 ☁️ AM ✓✓

D2: CPB 拆橋工字及槽鐵 ☁️ AM ✓✓

F1: 外欄大樹位做圍街 ☁️ AM \* \* \*

G1: Gantry 1 燒焊及油油 ☁️ AM \* \* \*

G2: Gantry 1 安裝1號閘牌 ☁️ AM \* \* \*

☁️ 天雨關係影響工程

\* 未有開工

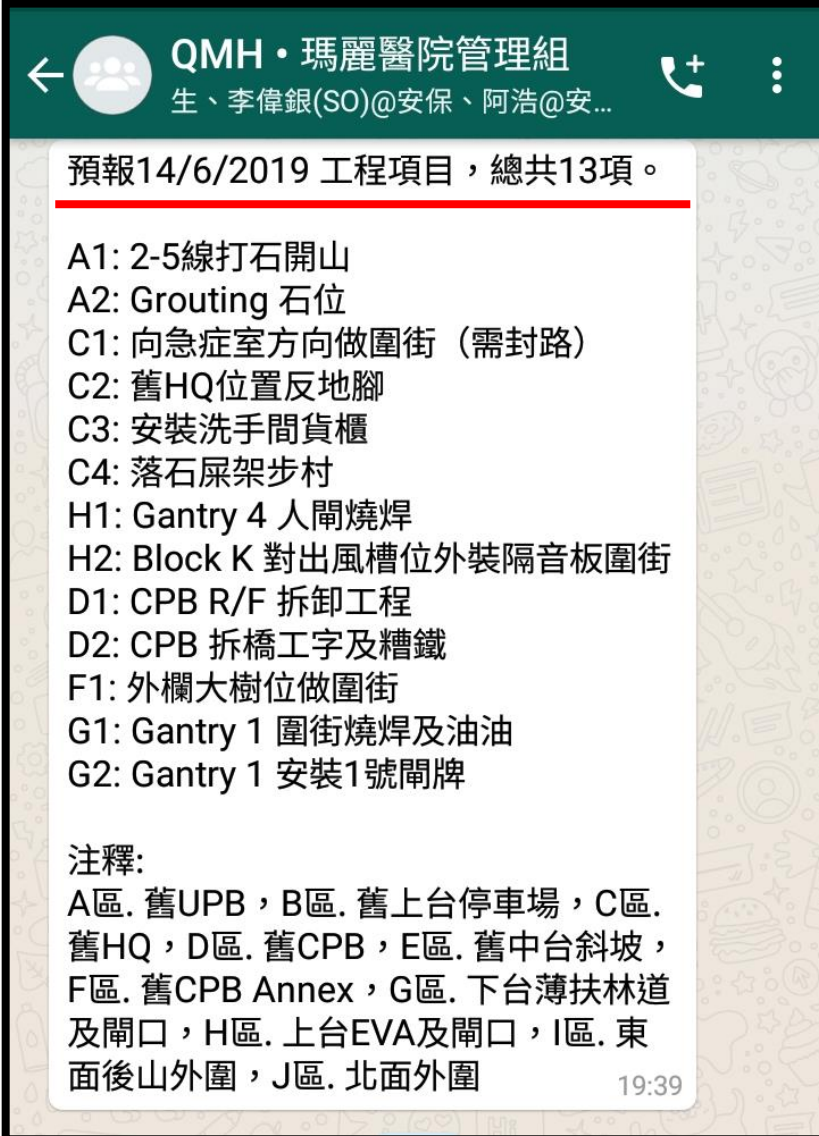
注釋:  
A區 舊IPB, R區 舊上台停車場, C區




**K C. Ng@Able**  
Louis@安保  
預報12/6/2019 工程項目，總共11項。  
A1: 2-5線打石開山 ✓✓...  
就是這樣，確保全部開工位置都有做安全檢查，大家堅持💪💪  
14:19

**Louis@安保**  
K C. Ng@Able  
就是這樣，確保全部開工位置都有做安全檢查，大家堅持💪💪  
知道。  
14:34

## 2.2 Factory Style Monitoring System

### Step 4 – Forecast Next Day's Site Activities



←  QMH · 瑪麗醫院管理組  
生、李偉銀(SO)@安保、阿浩@安...  

預報14/6/2019 工程項目，總共13項。

- A1: 2-5線打石開山
- A2: Grouting 石位
- C1: 向急症室方向做圍街 (需封路)
- C2: 舊HQ位置反地腳
- C3: 安裝洗手間貨櫃
- C4: 落石屎架步村
- H1: Gantry 4 人閘燒焊
- H2: Block K 對出風槽位外裝隔音板圍街
- D1: CPB R/F 拆卸工程
- D2: CPB 拆橋工字及槽鐵
- F1: 外欄大樹位做圍街
- G1: Gantry 1 圍街燒焊及油油
- G2: Gantry 1 安裝1號閘牌

注釋:  
A區. 舊UPB, B區. 舊上台停車場, C區.  
舊HQ, D區. 舊CPB, E區. 舊中台斜坡,  
F區. 舊CPB Annex, G區. 下台薄扶林道  
及閘口, H區. 上台EVA及閘口, I區. 東  
面後山外圍, J區. 北面外圍

19:39

## 2.3 Pre-work Training to Workers

1



2



1. **Safety training** provided by Competent Person to workers for the operation of **Scissor Working Platforms**;
2. **Pre-work meeting** must be held with RSS and Sub-contractors on **safety working procedures before any work-at-height commences.**

## **4. Innovativeness and Creativity on Safety Measures**

### **4.1 Safety Management, Control and Supervisions**

### **4.2 Safety Training**

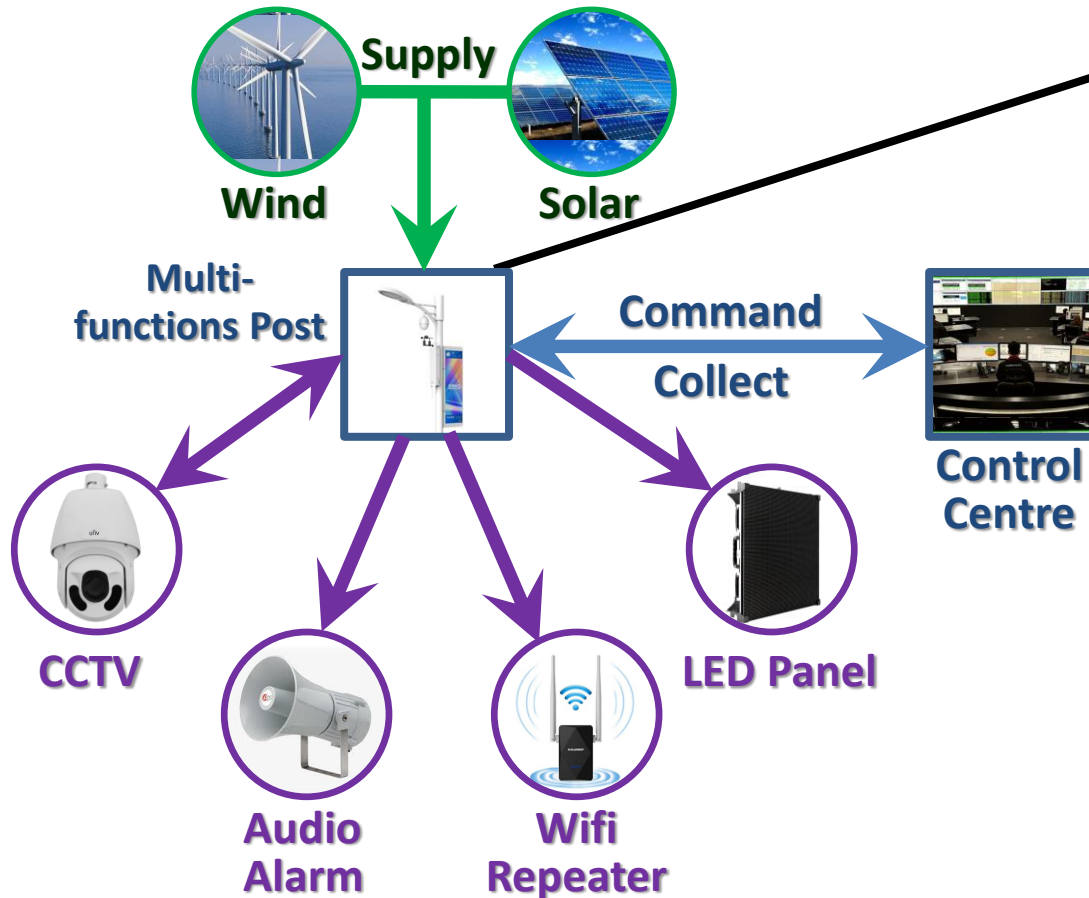
### **4.3 Application/ Installation of Safety Equipment**

### **4.4 Innovative/ Smart System for Site Safety**



## 4.1 Multi-functions Post and Control & Command Centre

- Multi-functions posts are installed to enhance real-time supervision on workers' behavior, to immediately suspend any malpractice observed and to instruct rectifications.
- The data is transferred to the "Control & Command Centre", in which our personnel can monitor the site in a more comprehensive way.



# 4.1 Multi-functions Post and Control & Command Centre

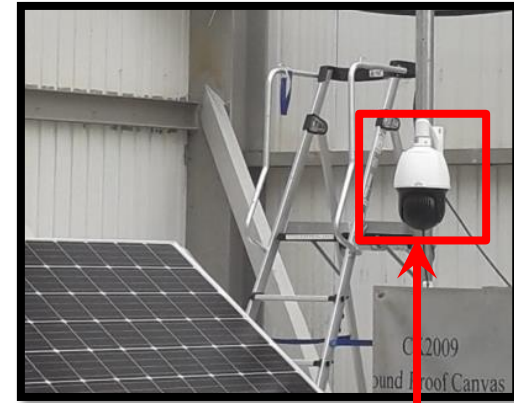


**Real-time Monitoring Station** for

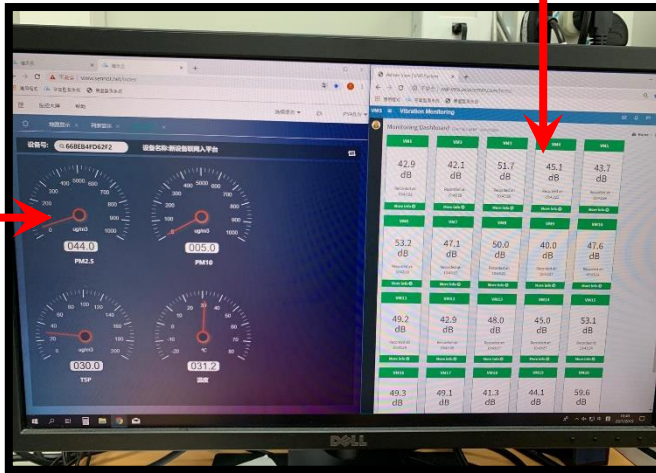
- 1. Dust Concentration (PM Values);
- 2. Noise Level (dB);
- 3. Wind Direction and Speed;
- 4. Temperature; and
- 5. Humidity.



**Real-time Vibration Monitoring Checkpoints**



**Long Distance CCTV Camera**



## **CONTROL & COMMAND CENTRE**

A **Control and Command Centre** is established at site office with multiple LCD monitors for **real-time monitoring of various sets of data** and to **control the devices on intelligent lamp post.**





## 4.2.1 Virtual Reality (VR) Safety Training



Target: VR Training  
to **100%** Workers



Virtual Reality (VR) device was provided for safety training to the workers and site personnel.

## 4.2.1 Virtual Reality (VR) Safety Training

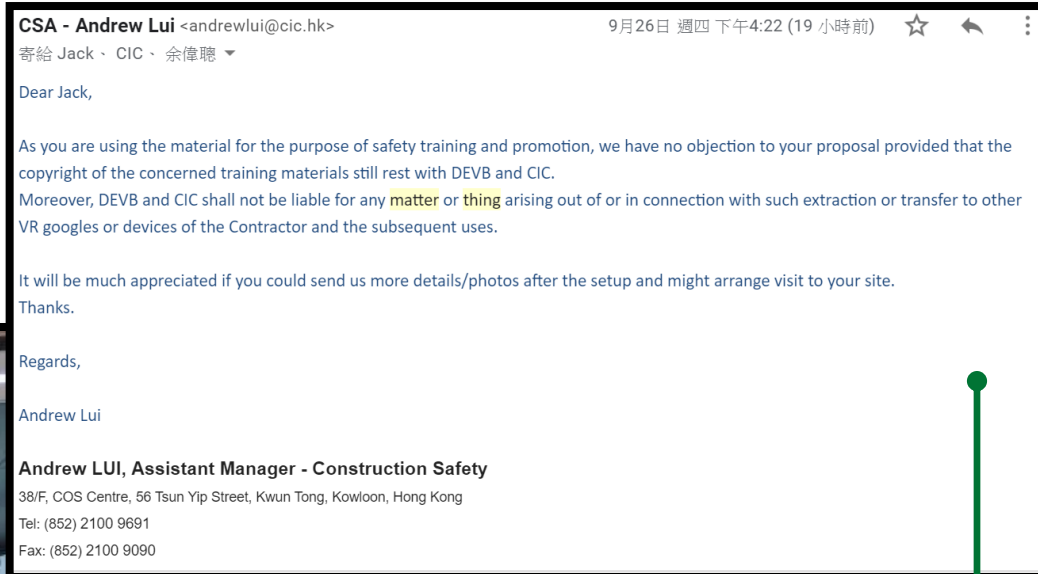
According to our safety survey statistics, **before** implementation of “***100% VR Safety Training***”, the **non-compliance (NC)** of the workers’ behaviors during work-above-ground is approximately **28%**.

**After** implementation of the VR training programme, **the percentage of NC substantially dropped to around 6%!!!**



## 4.2.1 Virtual Reality (VR) Safety Training – **Future Development**

As an advanced/ evolved type of VR, Cave can allow multi-users simultaneously enjoy immersive experience in the same space to make collaboration and communication easier.



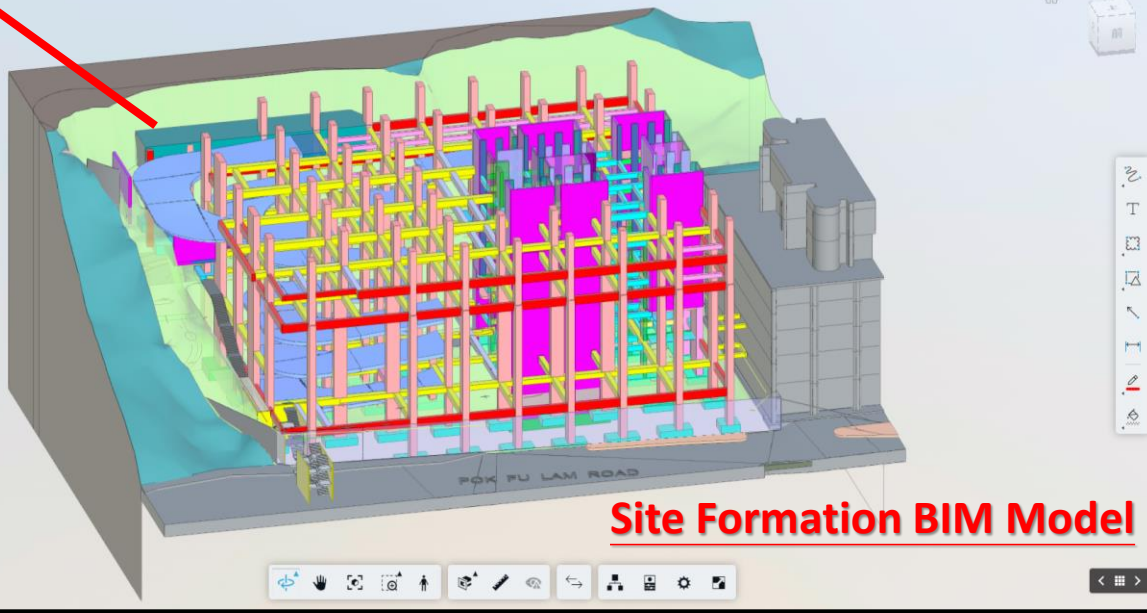
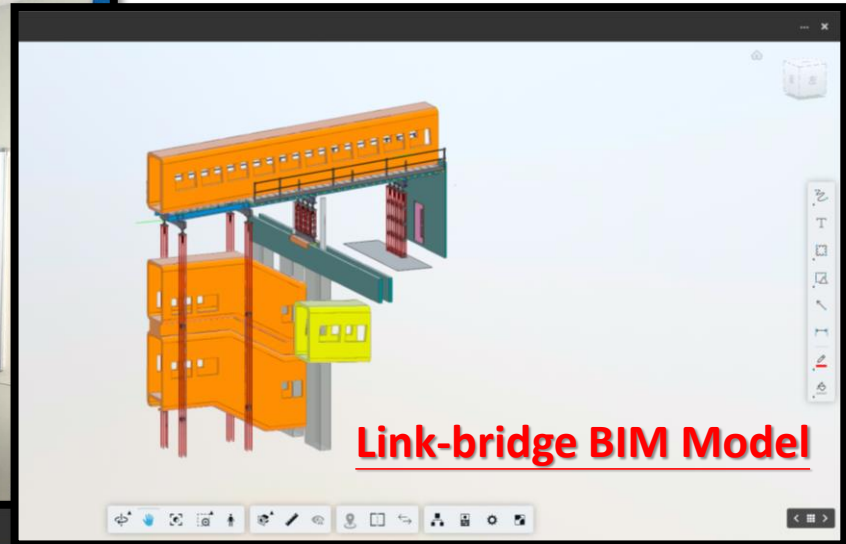
**CIC agreed the safety training material can be used in VR Cave.**



The planning and coordination work for introduction of VR Cave to our construction site is in progress.

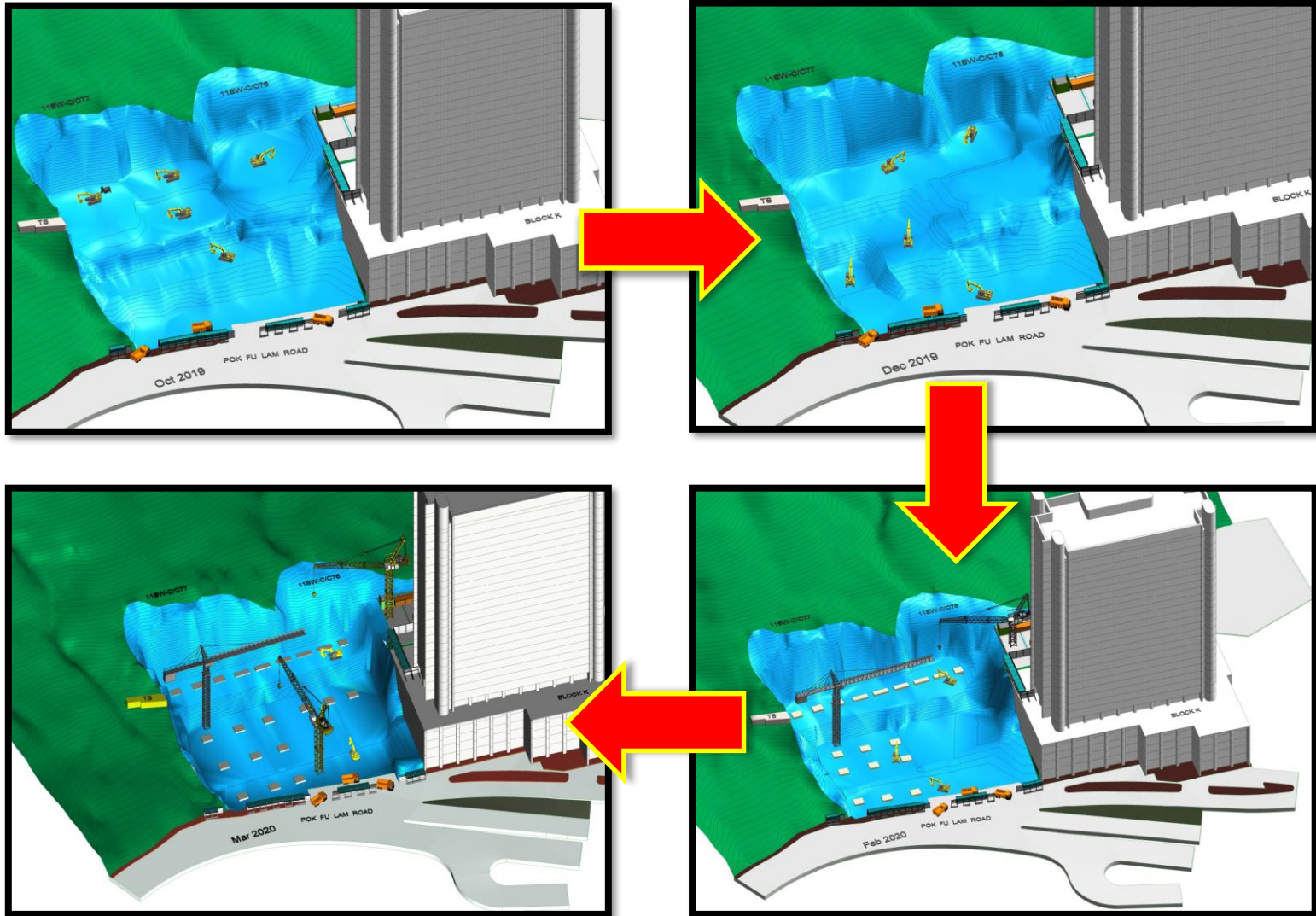
## 4.2.2 BIM Safety Training

BIM Models can be accessed easily in our PDMS – BIM360 System.



**3D (BIM) Model** is presented during the pre-work meeting with subcontractor's representatives to **facilitate the site planning and safety management.**

## 4.2.2 BIM Safety Training



**BIM Models** which illustrates the **various stages of site formation works** are created to facilitate the **site planning** and **safety management**.

## **4. Innovativeness and Creativity on Safety Measures**

4.1 Safety Management, Control and Supervisions

4.2 Safety Training

**4.3 Application/ Installation of Safety Equipment**

4.4 Innovative/ Smart System for Site Safety

### 4.3.1 Digitized Site Work Planning Board

Daily major site activities, i.e. from Monday to Sunday, are disclosed to public on a digital planning board to promote the culture of “**TRANSPARENT CONSTRUCTION**” (透明工序·絕無疑慮) and to enhance site planning and management.

每週工程計劃 Weekly Construction Works Planning	
地盤主要工程 MAJOR SITE ACTIVITIES	
星期一 (MON)	(5/8): 清拆病理大樓 3/F; 斜坡加固工程; 地盤清潔
星期二 (TUE)	(6/8): 清拆病理大樓 3/F; 斜坡加固工程; 滅蚊行動
星期三 (WED)	(7/8): 清拆病理大樓 3/F; 斜坡加固工程; 地盤清潔
星期四 (THU)	(8/8): 清拆病理大樓 3/F; 斜坡加固工程; 地盤清潔
星期五 (FRI)	(9/8): 清拆病理大樓 3/F; 斜坡噴漿工程; 滅蚊行動
星期六 (SAT)	(10/8): 清拆病理大樓 3/F; 斜坡加固工程; 地盤清潔
星期日 (SUN)	(11/8): 地盤休息

查詢熱線: 余先生 9424 8423 ENQUIRY HOTLINE: MR. YU 9424 8423

Paul Y PAUL Y. - ABLE JOINT VENTURE

安全·我的習慣 SAFETY MY HABIT





## 4.3.2 Innovative Measure for Safety of Work-above-ground

Warning signal emitted when **NOT** secured



Warning signal stopped when secured



A **warning device** is setup at the working platform to **remind the worker to secure the railing** before commencing any work-at-height, i.e. **visual signal emitted until the railing is closed**.

### 4.3.2 Innovative Measure for Safety of Work-above-ground



**DEMONSTRATION VIDEO FOR  
USAGE OF WARNING DEVICE**

**4.4 Innovative/ Smart System for Site Safety**

**4.4.1 Hilti On!Track System - Management of Plant & Equipment**

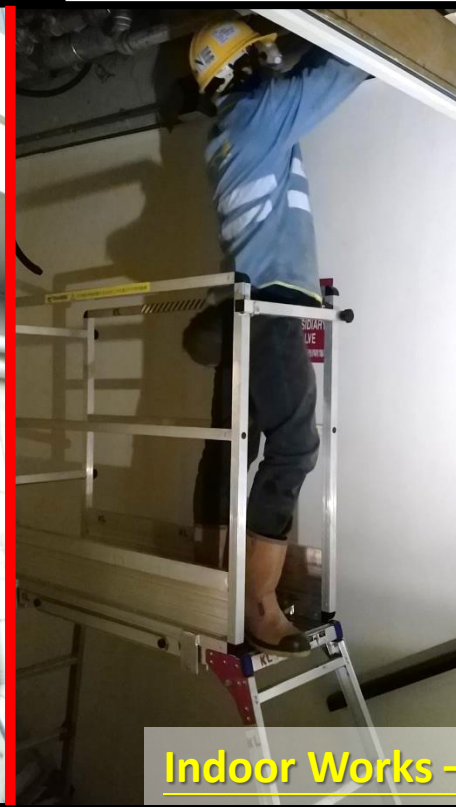
**4.4.2 Novade System – Digitized Application for Permit-to-work**

## 4.4.1 Management and Control on Safety Working Platform

1.2 For any work-above-ground, suitable working platforms should be the primary means of support to be considered for use. For work-above-ground below 2m where working platforms could not be erected under special working conditions (e.g. restrictive workplace), suitable light-duty working platforms should be used.

Use Hilti  
**ON!Track** to  
Manage!!!

**Outdoor Works – (Height Over 2m)**



**Indoor Works – (Height Below 2m)**

- All safety working platform shall be **owned**, **registered**, **checked** and **maintained by JV**.
- **All types of ladders are prohibited** in this project!

## 4.4.1 Management and Control on Safety Working Platform

1



2



3

← 資產詳細資料

您沒有關閉維護的權限

Able	
Eye Bolt	
自訂名稱	Eye Bolt
資產群組	牛眼圈
資產狀態	可運行
資產狀態	在倉庫
掃描代碼	445160024
掃描代碼類型	條碼
備用代碼	LG28
機器序號	C8
資產類別	專屬資產

地點

現在地點	Queen Mary Hospital 瑪麗醫院
預設地點	Queen Mary Hospital 瑪麗醫院

所有權

**Hilti On Track System** is applied to manage working platforms:

1. **QR code tag** is adhered/fixed to equipment and appliance, including all working platforms, eyebolts and LALG, etc.;
2. Scan QR code to access the information of the asset, **including the certificates and the expiry date**;
3. All relevant info. of the assets is recorded inside the system to **enhance checking and maintenance**.



## 4.4.1 Hilti On!Track System - Management of Plant & Equipment

Easy to register and easy to access data. Effective management of assets.

**Step 1 –**  
**Fix the QR Code**  
**Tag** onto the site  
plant or equipment.



**Step 2 –**  
**Register the plant/ equipment** to Hilti OnTrack  
online system by mobile phone.



Contract SS F501 – Design and Construction of Redevelopment of Queen Mary Hospital, Phase 1

機械許可證 Plant Permit

機械種類 Plant Type	Hydraulic Access Platform
機械許可證編號 Permit No.	LA 46
所屬公司 Company	JV
證書有效期至 Cert. Expired Date:	06/04/2020
安全操作負荷 S.W.L.:	227kg/2person
機械牌子 Brand / Maker:	Honor
型號 Model / Owner's No.:	G52632
機身編號 Serial No.:	G53207-87598

警告: 除指定人員外, 其他人仕嚴禁操作此機械

請掃描此  
QR CODE  
看取證書



# 4.4.1 Hilti On!Track System - Management of Plant & Equipment



## To Check the Cert. of an Eyebolt

**Hilti OnTrack System** is widely adopt for **management of site plant and equipment**, i.e. LALG.

The screenshot shows the Hilti On!Track software interface. On the left, there is a sidebar with a search bar and a list of locations. The main area displays a table of equipment. The 'Eye Bolt C8' entry is highlighted with a red box. A red arrow points from this entry to a detailed view window.

別名	掃描條碼	搜索代碼	製造商	型號
Shackle B414	445141125	LG75	Able	
升降台 樣昌	445159957	LA18	樣昌	GS1930
<input checked="" type="checkbox"/> Eye Bolt C8	445160024	LG28	Able	
Eye Bolt C3	445160032	LG33	Able	
Eye Bolt C1	445160035	LG35		

The screenshot shows the detailed view window for 'Eye Bolt C8'. The window is titled '牛眼圈' and contains a table of detailed information.

詳細資料	過往紀錄
別名	: Eye Bolt C8
負責員工	: Kevin Yu
現在地點	: Queen Mary Hospital 瑪麗醫院
目前地點狀態	: 常用的
狀況	: 操作中
狀況	: 在倉庫
物品群組	: 牛眼圈
掃描條碼	: 445160024
掃描條碼類型	: 條碼
搜索代碼	: LG28
機身編號	: C8
物品類別	: 物品
描述	: 牛眼圈
製造商	: Able
管理方式	: 擁有
預設位置	: Queen Mary Hospital 瑪麗醫院
持有人姓名	: Kevin Yu
儲存地點	: 2樓 8/F
服務	: 1已指派
證書	: 未指派

At the bottom, there is a section for '未處理維護 (1) (1)' with a table:

LALG Form 687	2019.11.02
附件 (1)	
LG28 - Eye Bolt (For Safety Lifeline) C8_20190504.pdf	

The screenshot shows a Certificate of Test and Thorough Examination of Chains, Ropes and Lifting Gear (FORM 6). The certificate is for an eyebolt used at Queen Mary Hospital. The test was conducted on 04-May-19 by Kevin Yu, a Registered Professional Engineer (RPE) with qualification RPE (No. RPE181153) in Mechanical. The test load applied was 1.1 ton, and the safe working load is 0.55 ton. The certificate is valid until 04-May-19.

Description of chain, rope or lifting gear tested and distinguishing marks	Test load applied (tonnes)	Safe working load (tonnes)	Defects noted
Eyebolt for Safety Lifeline Location: 8/F, CPB Owner's: C8 Mounting: On wall Bolt size: M16	1.1 ton (J&P 21-11-18)	0.55 ton	If none enter "None" and state whether in safe working order 如無不妥, 則填 [無] 字 並註明是否處於安全狀態 "None" In safe working order

Once registered, **all info., cert. and statutory forms** can be easily retrieved at any time.

# 4.4.1 Hilti On!Track System - Management of Plant & Equipment

## Ensuring the timely checking and maintenance of the plant and equipment in compliance with statutory requirement!!!



Alert email will be sent to Site Agent.

Dear Kevin Yu,

A new **Service Due** alert is generated for the below asset.

**Asset Details**

- Alert Message : Asset service has expired
- Friendly Name : Eye Bolt
- Location Name : Queen Mary Hospital 瑪麗醫院
- Asset code/Emp ID : 445160032
- Description : Eye Bolt
- Alert Type : Service Due
- Event Date : 05/05/2019
- Owner : Kevin Yu
- Service Name : 每日吊具檢查

Best regards,  
The ON!Track Team

ontrack@hilti.com  
收件人 kevinyu@ableeng.com.hk  
於今天 09:15

Dear Kevin Yu,

A new **Service Due** alert is generated for the below asset.

**Asset Details**

- Alert Message : Asset service is due in 1 days
- Friendly Name : Bamboo scaffolding
- Location Name : Queen Mary Hospital 瑪麗醫院
- Asset code/Emp ID : 422277149
- Manufacturer : Able
- Alert Type : Service Due
- Event Date : 06/14/2019
- Owner : Kevin Yu
- Service Name : CSSR Form 5

Best regards,  
The ON!Track Team

**HILTI ON!Track**

94 提示訊息

94 服務到期

### Overdue Items

物品狀態

動作	別名	現在地點	物品代碼/員工 ID	製造商	型號	描述	提示訊息
⋮	挖鬆機	Queen Mary Hos...	422205692	Takeuchi	TB215SR		物品服務今天後到期
⋮	滅蚊位置13	Queen Mary Hos...	422205689	Able		滅蚊位置 13	物品服務已到期

**Outstanding/ overdue items** would be **shown in the online control interface** and an **alert email** would be sent to the designated person-in-charge, i.e. Site Agent.



## 4.4.2 Digitized Application for Permit-to-work Working-at-height Permit (高空工作許可證)

The image displays four sequential screenshots of a mobile application interface for applying for a Working-at-height Permit (高空工作許可證).

- Step 1:** Home screen showing 'PTW' and a list of permit types. '高空工作許可證 WORKING AT HEIG...' is highlighted with a red box.
- Step 2:** 'Select Area' screen showing a list of site areas (A區 to I區).
- Step 3:** '熱工序檢查表 HOT WORK PERMIT TO WORK CHECKLIST' form. Fields include: Company (公司), Foreman in Charge (負責管工), Description of work (詳述工作), Date (Time Limit From) (日期 (時間 由)), and Date (Time Limit To) (日期 (時間 至)).
- Step 4:** '檢查項目 INSPECTION ITEM' checklist. Items include: 1. 滅火筒 (Extinguishers), 2. 消防喉 (Fire hose), 3. 逃生通道 (Emergency escape route), and 4. 易燃物品 (Flammable substances). Each item has a status indicator (checkmark, X, or N/A) and a '跟進行動' (Follow-up Action) button.

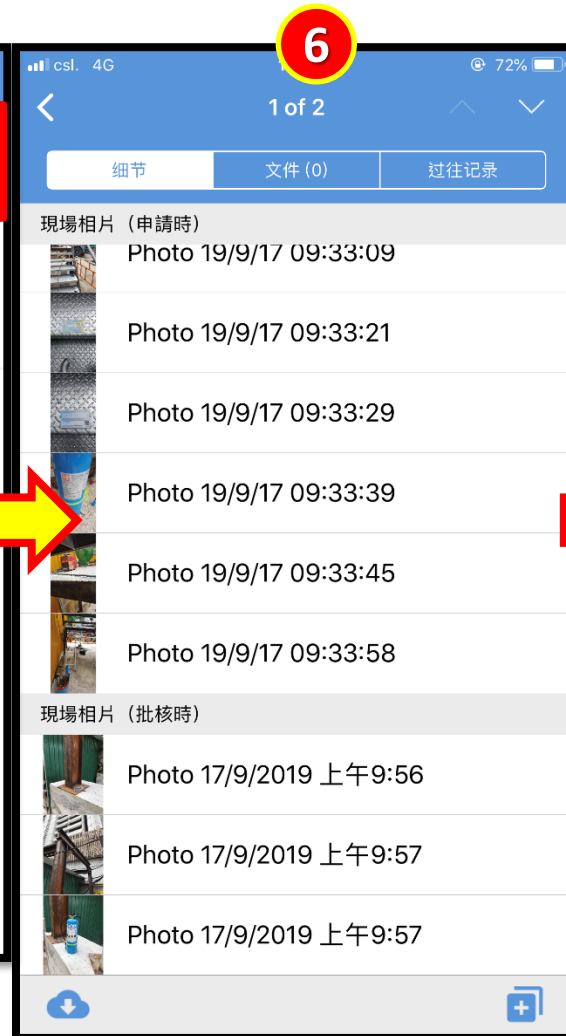
1. Choose type of permit to be applied.

2. Select site area.

3. Fill in the application form.

4. Complete the checklist with real-time photo uploaded.

## 4.4.2 Digitized Application for Permit-to-work Working-at-height Permit (高空工作許可證)



5. The permit to be **approved by S.O after his inspection.**

6. **Real-time photos** must also be uploaded during **S.O's inspection.**

7. The permit can be **generated in printed form.** The form can then be placed at the working area.

end | thank you