



**HONG KONG  
HOUSING SOCIETY**  
香港房屋協會



**協興工程有限公司**  
**HIP HING ENGINEERING CO LTD**

周大福創建集團成員 Member of CTFS Group

# DESIGN FOR SAFETY SHARING

*DEDICATED REHOUSING ESTATE AT  
KWU TUNG NORTH AREA 24*

*16 July 2025*





# PROJECT INFORMATION



## TOWER 1 – 3 Subsidized Sale Flat (SSF)

34-STOREY RESIDENTIAL UNITS  
TOTAL 2006 UNITS

## TOWER 4 [MiC ADOPTED] Public Rental Housing (PRH)

32-STOREY RESIDENTIAL UNITS  
TOTAL 896 UNITS (28 UNITS EACH FLOOR)

1-Storey Basement  
(Carpark & Plant Rooms)







# MiC Installation



# Tower Crane

# Design For Safety Examples



# Work Sequence



# Façade



# DESIGN FOR SAFETY ON MIC INSTALLATION



## Tailor-made Access Platform

*Safety of working at height*



## Heavy Lifting Frame

*Safety of heavy lifting (CG Concern)*



## Easy-Install Safety Barrier

*Safety of working at Edge*



# DESIGN FOR SAFETY ON MIC INSTALLATION

## Tailor-made Access Platform



*Conventional:*  
*Access by scissor platform or long ladder to top of MiC module*  
*May not be a proper access method and **have potential risk on falling***



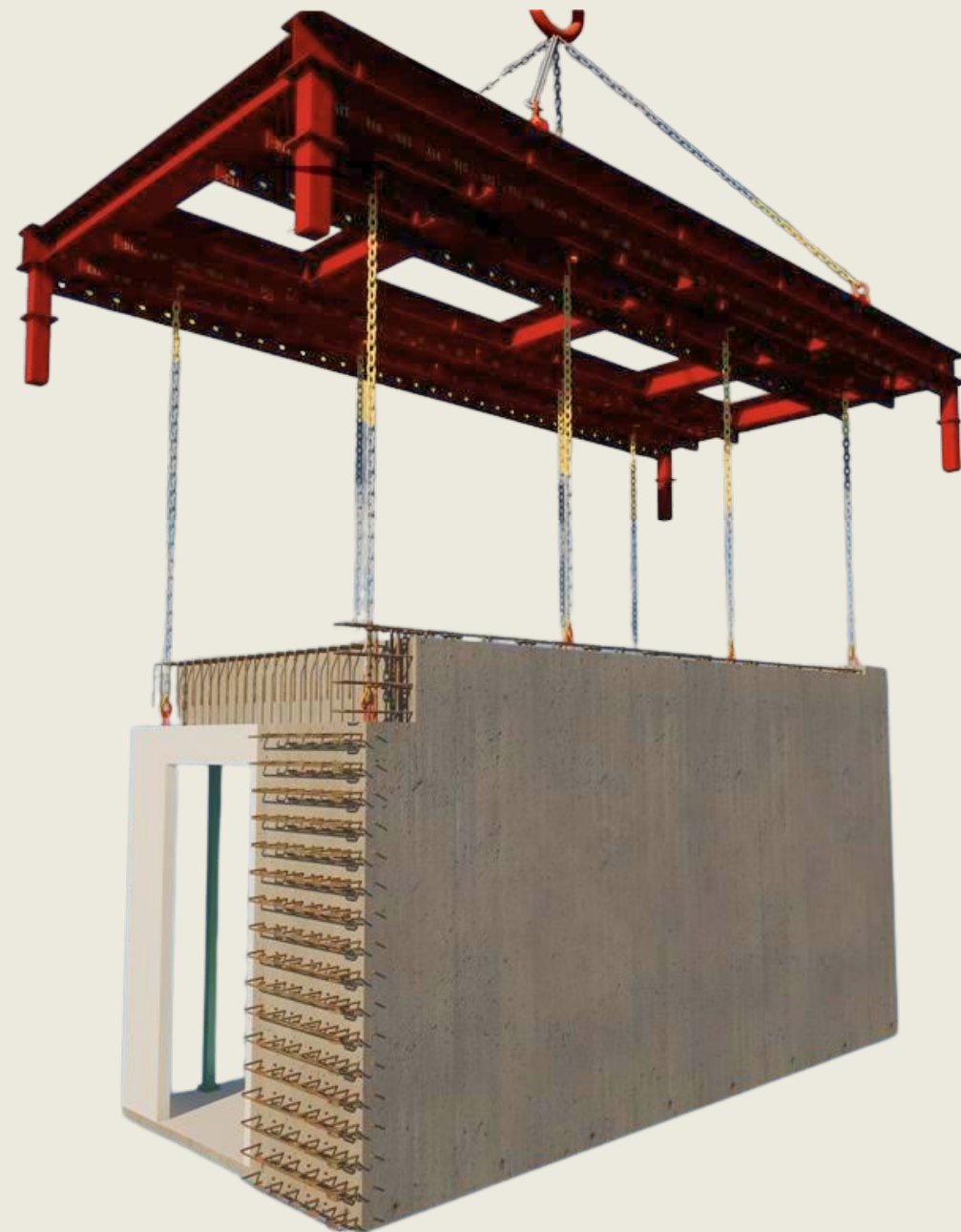
For workers' **easy and safe access** to top of MiC module





# DESIGN FOR SAFETY ON MIC INSTALLATION

## Heavy Lifting Frame



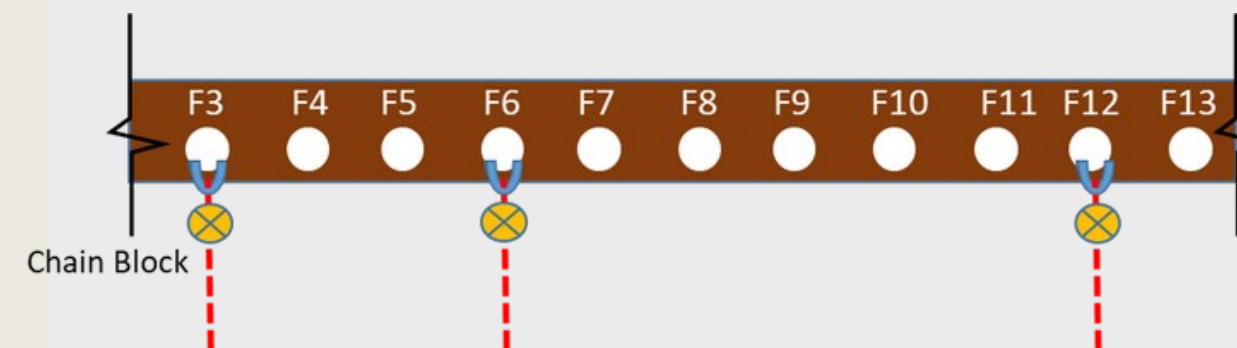
Lifting points marked on MiC Module

古洞北第24區專用安置屋邨項目

MIC 吊運參照圖

型號	吊架吊眼位置									
	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
A1	E9	-E3	E10	A9	-A3	-A10	-	-	-	-
A1A	-B16	-B7	B6	B16	-E16	-E7	E6	E16	-	-
A2	E17	E13	E1	-E8	-E16	A17	A13	-A1	-A8	-A16
A2A	-A16	-A11	A2	A10	A17	-E16	-E11	E2	E10	E17
A3	-B12	B6	B12	-F12	F4	F12	-	-	-	-
A3R	-E12	E6	E12	-A12	A4	A12	-	-	-	-
A4	-E12	-E6	E6	E12	-B12	-B6	B6	B12	-	-
B1	-	-	-	-	-	-	-	-	-	-
B1D	-C14	-C6	C8	C17	-F14	-F7	F8	F17	-	-
B1E	-	-	-	-	-	-	-	-	-	-
B1R	-	-	-	-	-	-	-	-	-	-
B1DR	-D14	-D6	D8	D17	-A14	-A7	A8	A17	-	-
B1ER	-	-	-	-	-	-	-	-	-	-
B1A	-A13	-A8	A7	A16	-E13	-E6	E7	E16	-	-
B1AR	-F13	-F8	F7	F16	-B13	-B6	B7	B16	-	-
B1C	D16	D9	D2	-D9	-D15	A16	A9	A2	-A9	-A15
B1CR	-C16	-C9	-C2	C9	C15	-F16	-F9	-F2	F9	F15
B2	-A12	A5	A11	-D12	D5	D11	-	-	-	-
B2R	-F12	F5	F11	-C12	C5	C11	-	-	-	-
B3	-E14	-E6	E6	E14	-B12	-B6	B6	B12	-	-

Lifting points table shown on site



Matching the lifting points on MiC module and lifting frame to **ensure in stable central gravity (CG)**

Need to cater **32 types** of MiC modules

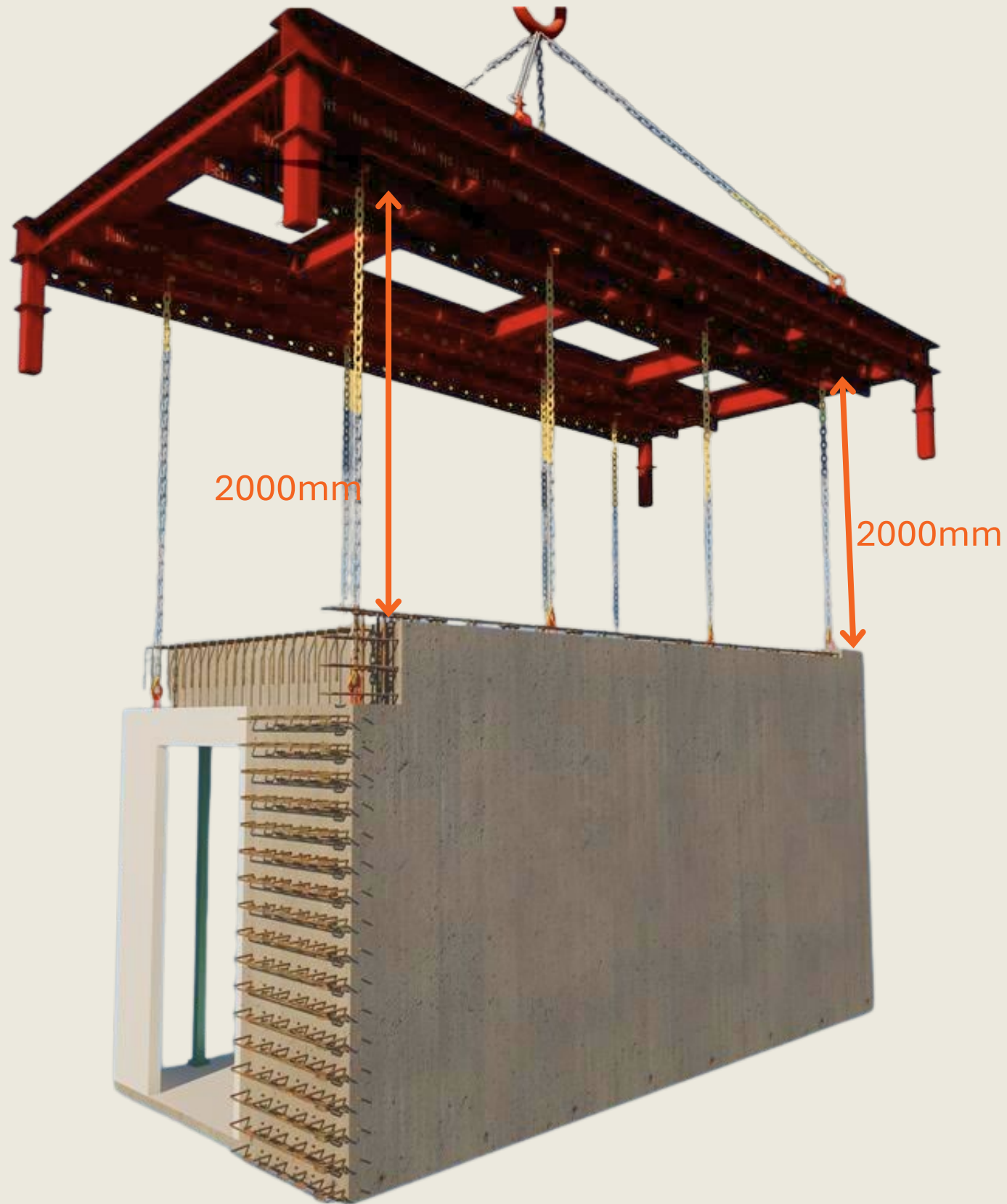
Ensure **each lifting hook in specified lifting point**

**Designated lifting point** for each type of module  
On site **lifting table** for reference and checking



# DESIGN FOR SAFETY ON MIC INSTALLATION

## Lifting Frame Chain-sling



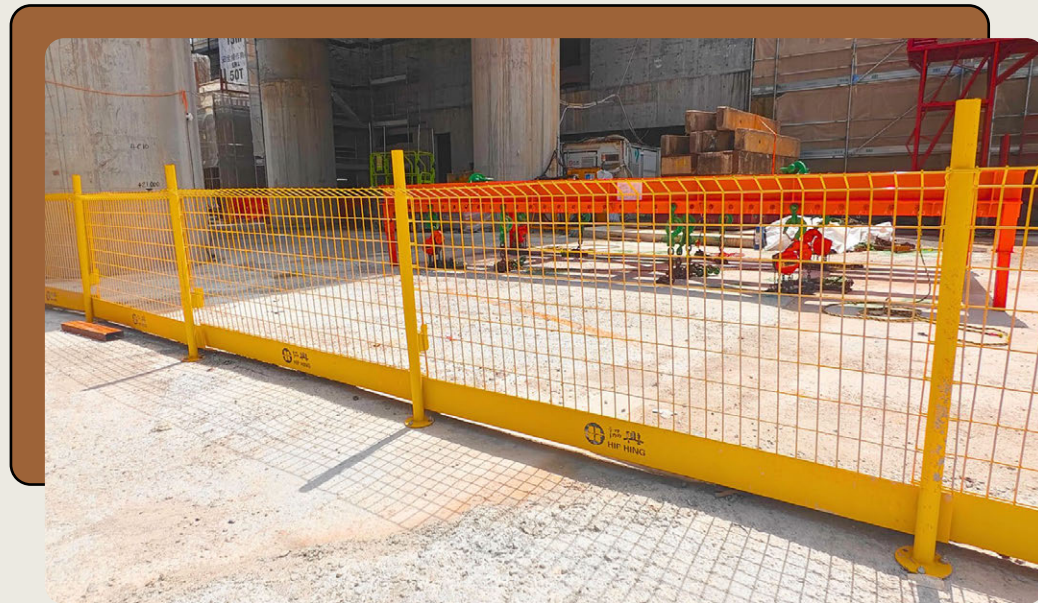
Use **2m length** chain-sling instead of 1.2 - 1.5m length as conventional

Allow more headroom while working on MiC  
**Prevent lifting frame hitting workers**



# DESIGN FOR SAFETY ON MIC INSTALLATION

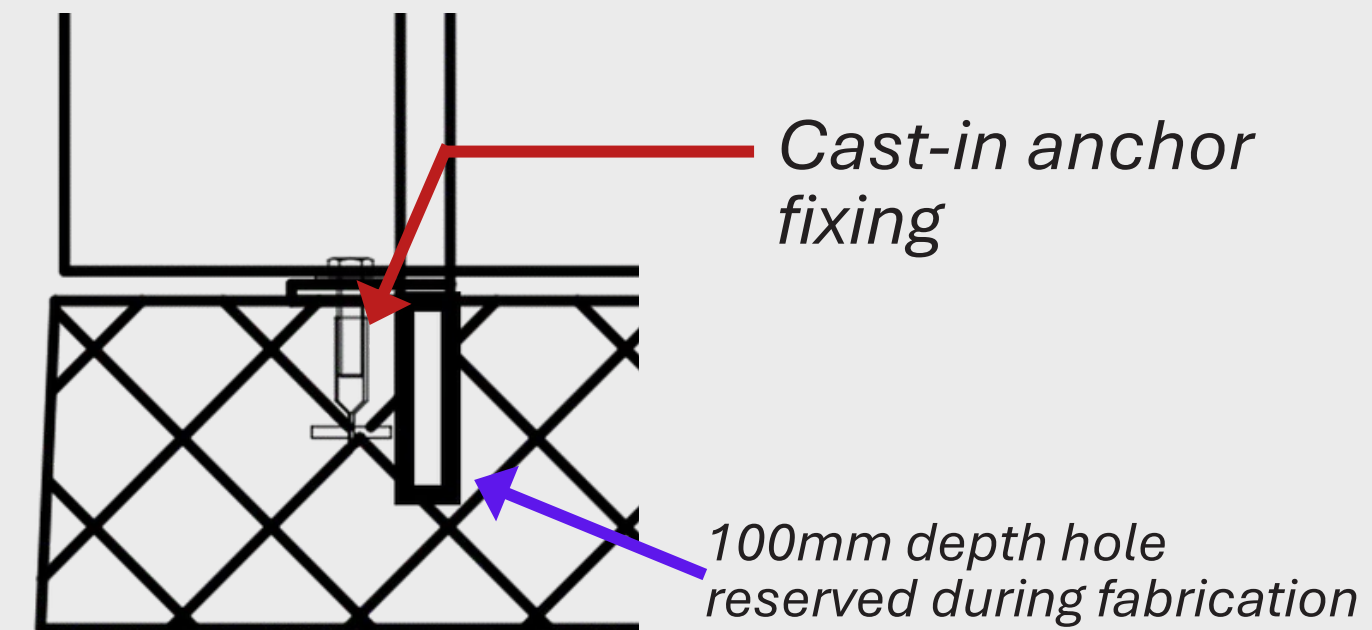
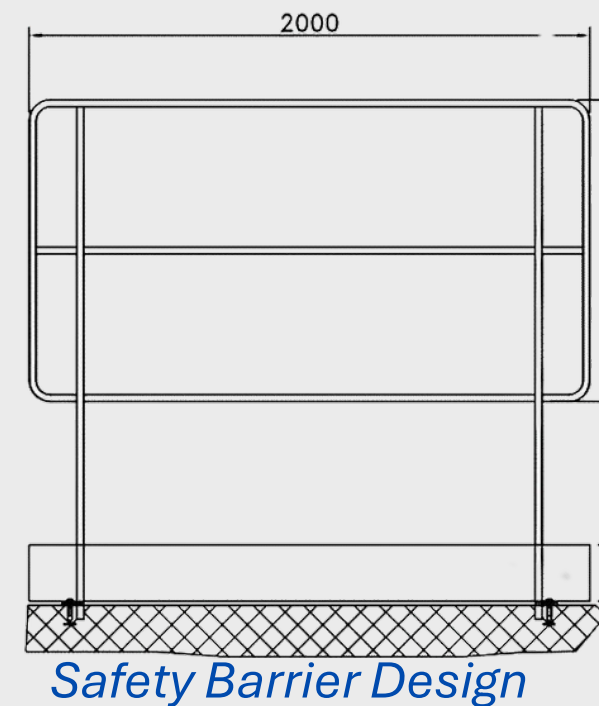
## Easy-Install Safety Barrier



3 nos. anchor bolts per rod

*Conventional barrier installation is fussy, making workers less motivation to install*

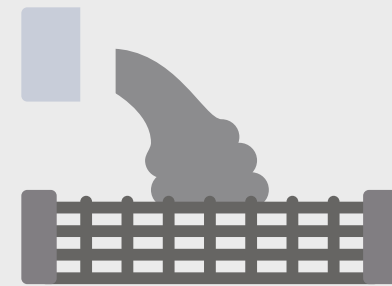
***Increase potential risk of falling hazard***



**Reduce time** required on barrier installation  
Better protection to against **falling from edge**



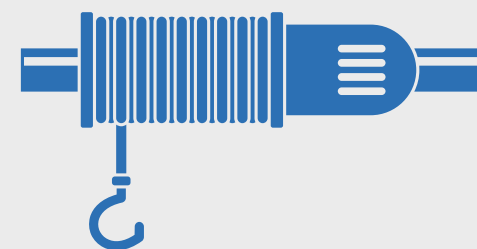
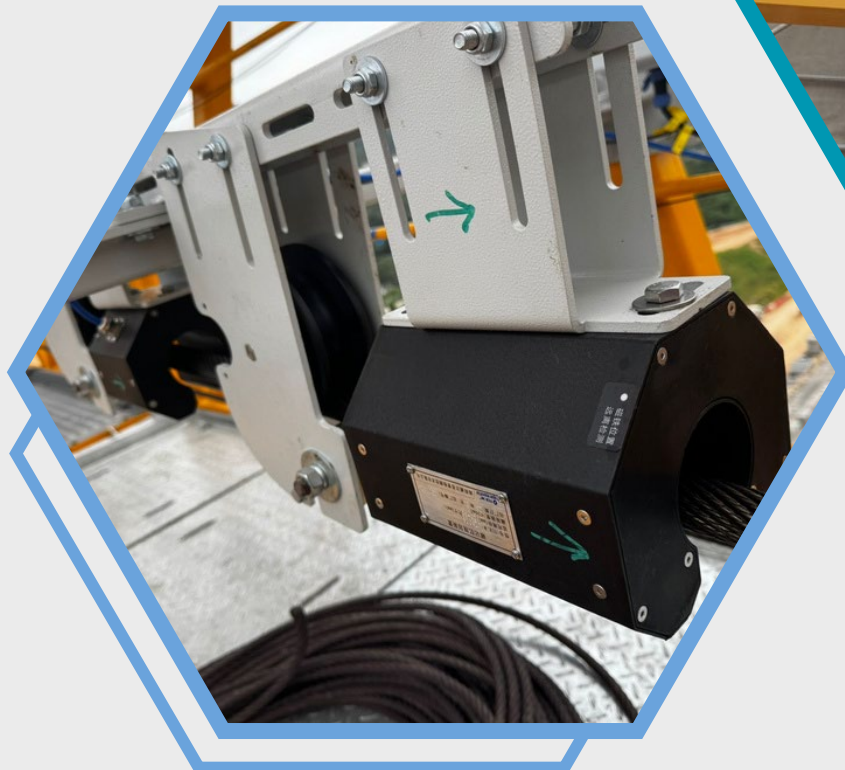
# DESIGN FOR SAFETY ON TOWER CRANE



Cast in Tower Crane Footing in foundation stage



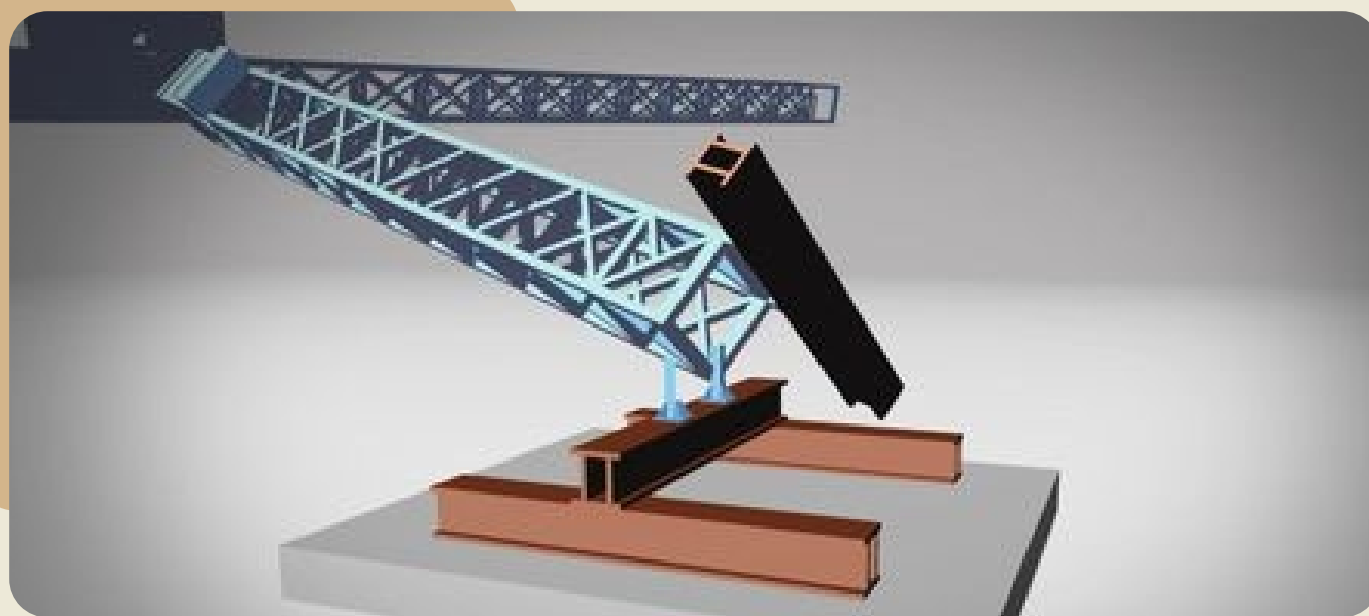
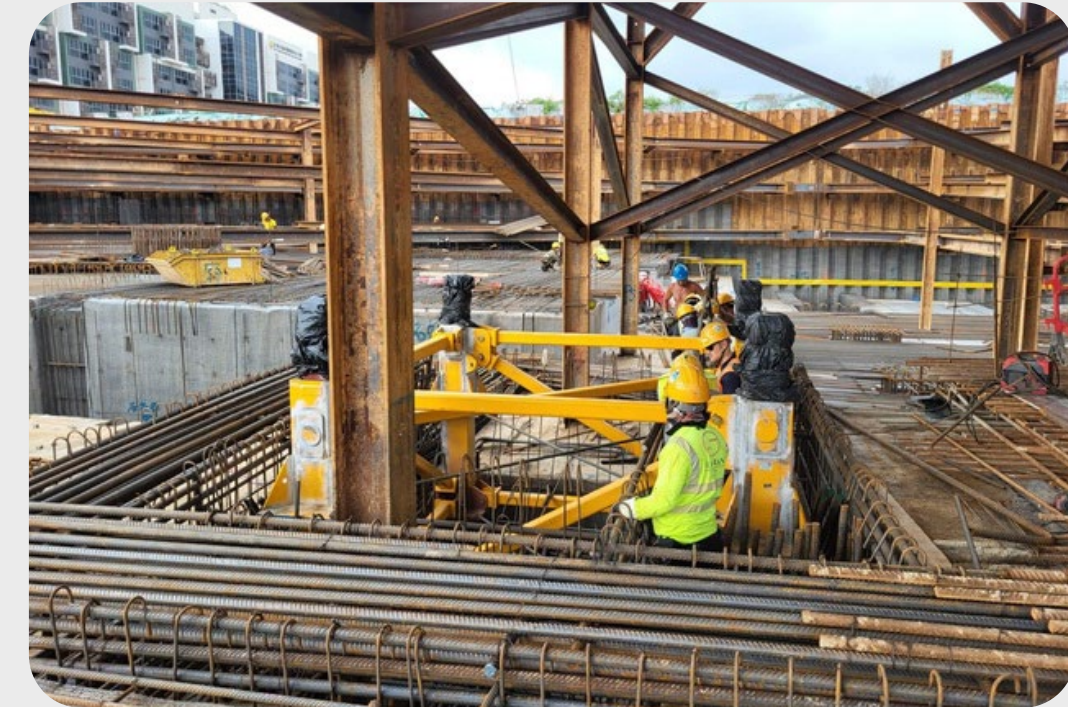
Mast and Jib monitoring system on metal fatigue



Crane Rope monitoring system to prevent failure







**No additional supporting frame** for footing required

# Current approach enhance the tower crane

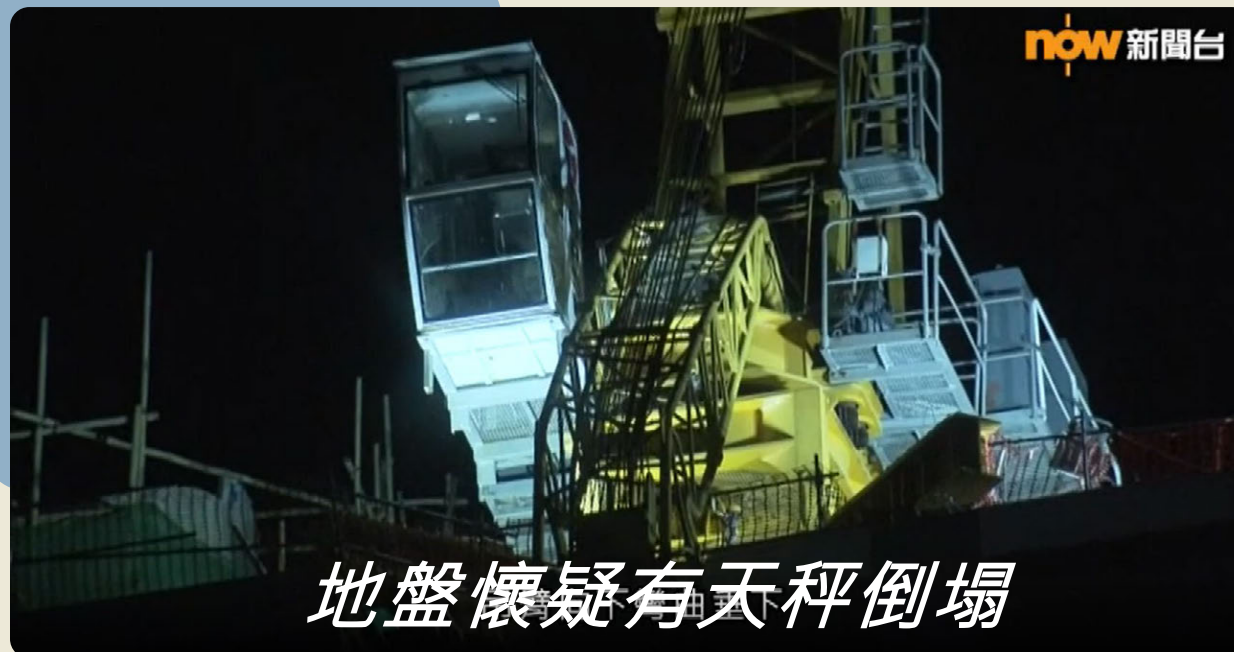
## Stability and Safety

**Potential risk** on conventional tower crane supporting design

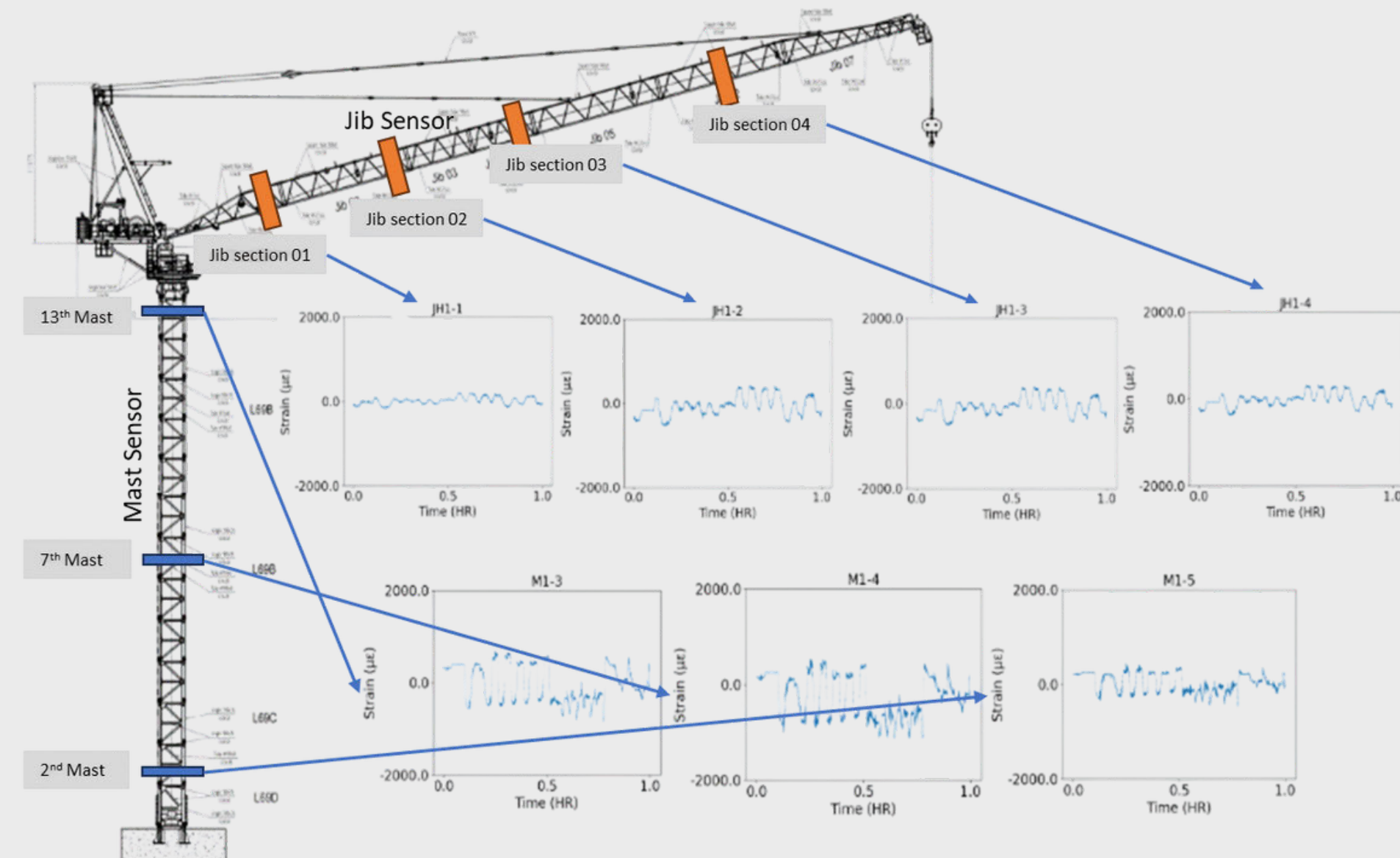


# DESIGN FOR SAFETY ON TOWER CRANE

## Mast and Jib monitoring system on metal fatigue



*Metal fatigue may induced in potential tower crane incidence*



**Sensors** installed on masts and jib sections

Analysis the metal condition and create crane AI model for **future crane health prediction**

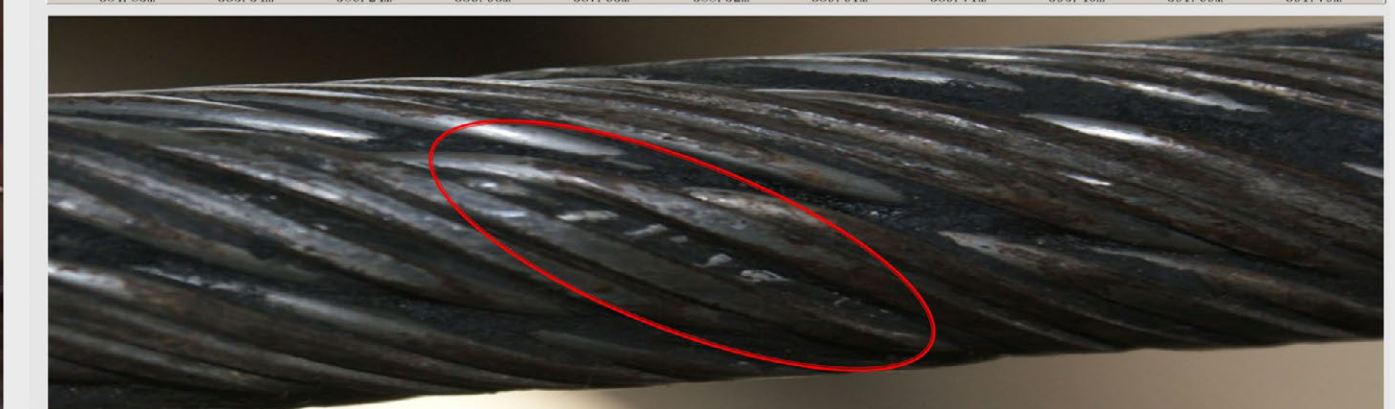
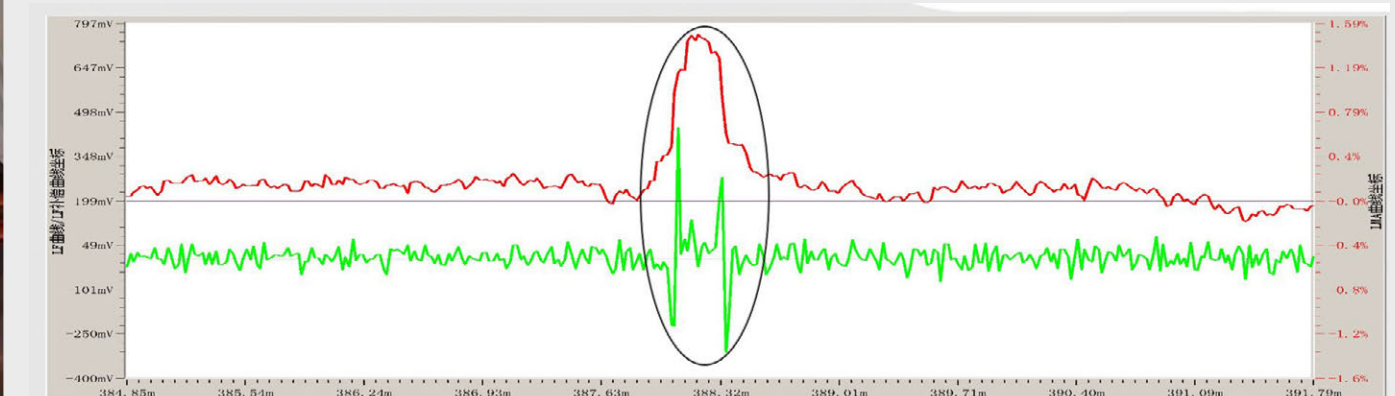


# DESIGN FOR SAFETY ON TOWER CRANE

## Crane Rope monitoring system to prevent failure



Essential to have **close monitoring** on tower crane rope



Wire damage presented rapid change in magnetic field

Detect rope defect by electromagnetic  
**Early Warning** on rope replacement

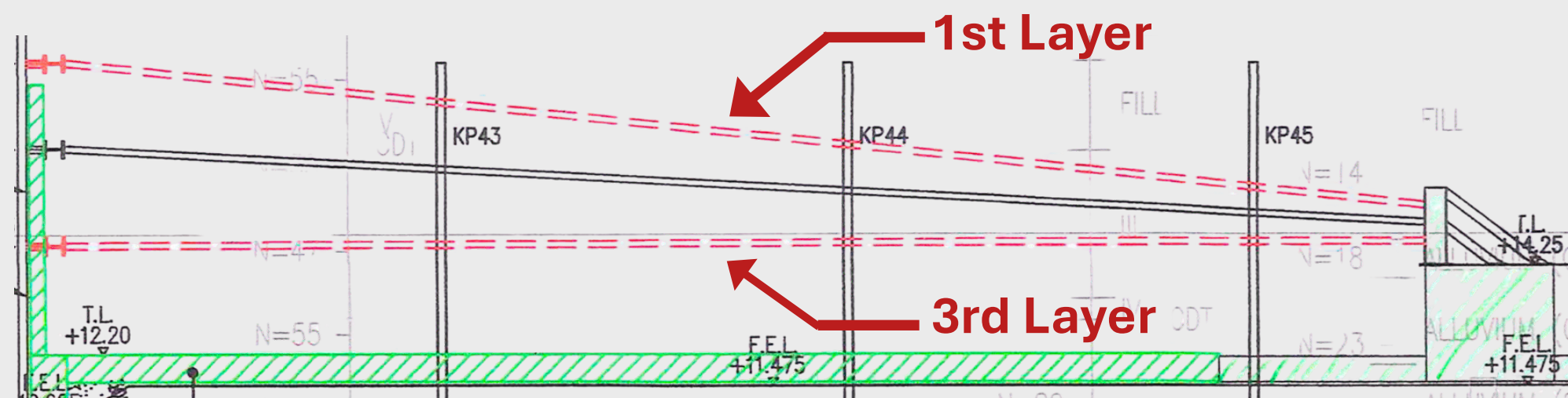


# DESIGN FOR SAFETY ON WORK SEQUENCES

## ELS Removal Sequence

*Removing ELS after completion of top slab:*

*High risk on **lifting** and difficult for **fire hazard control***

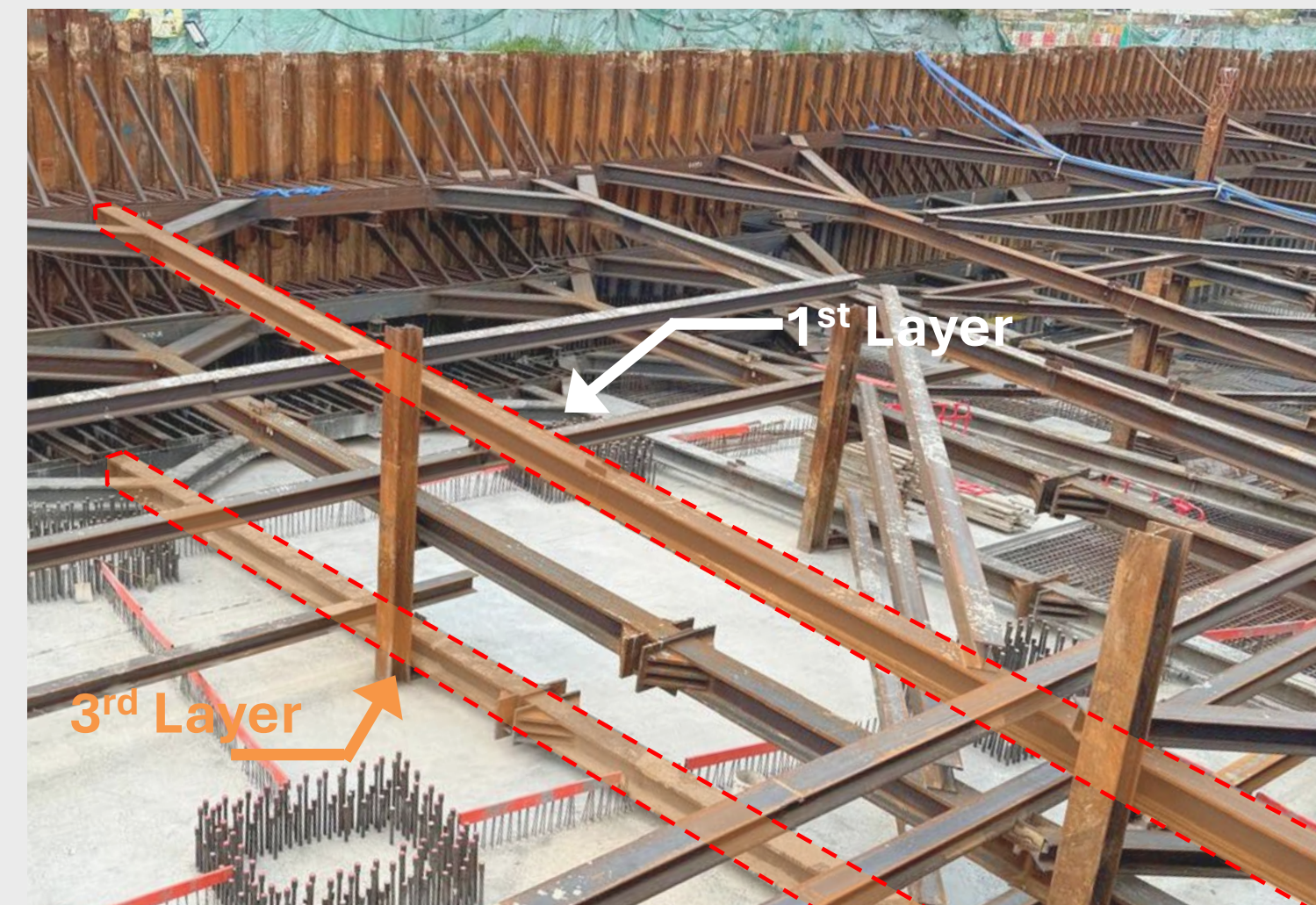


**Strengthen** the screen wall design

Allow removing 1st and 3rd layer ELS **before**  
**G/F slab construction**

Enhance the safety on

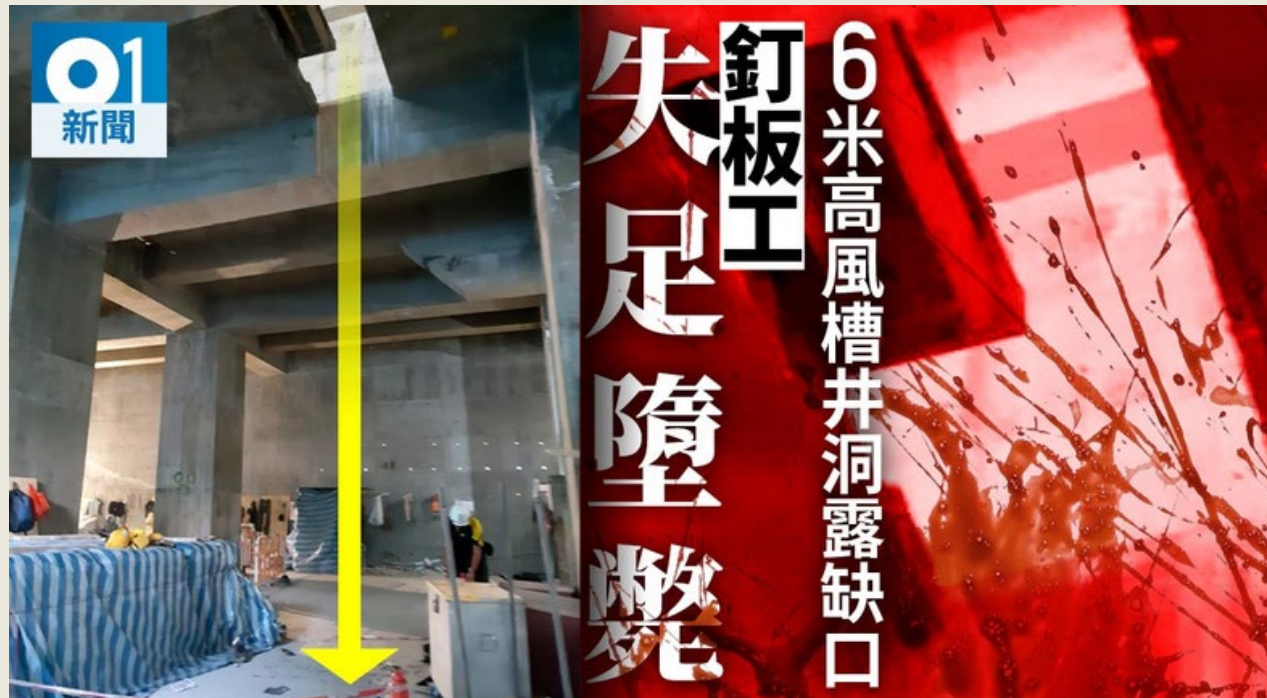
## Lifting and Fire Hazard





# DESIGN FOR SAFETY ON WORK SEQUENCES

## Safety Provision on Slab Opening and Starter-bar



High risk on falling from height for  
**uncovered floor opening**

Type	Type I (Low Risk)	Type II (High Risk)
Opening Size	Shortest side <500mm	Shortest side ≥500mm
Fall Arrest Measures	<b>Cast-in metal wire mesh, grid size 100 x 100mm</b>	
	Cover opening by min 19mm thick plywood	<b>U-shape starter-bar as fencing purpose</b>



Easy on implementation  
**Minimize potential risk**  
of falling from height in  
transition period



# DESIGN FOR SAFETY ON WORK SEQUENCES

## Fully Adoption of Metal Scaffolding



*Conventional bamboo scaffolding*



*Special color identifying access route / staircase*



*Weekly checking by CP*

Metal scaffolding inherently **fire-resistant**

Provide more **secure and stable** platform for workers

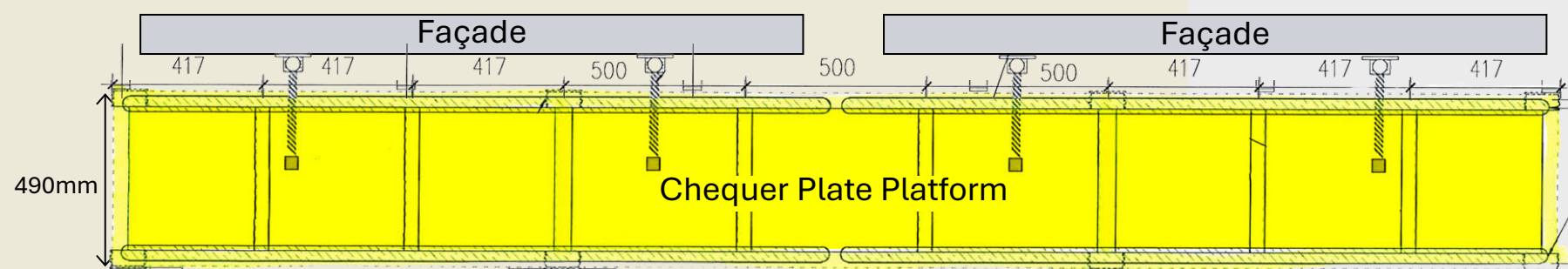
Enhance the safety on

**Fire hazard and Working at Height**



# DESIGN FOR SAFETY ON FAÇADE

## Façades Temporary Storage Frame



KTN 24 Façades Storage Frame Plan View



Conventional façade storage frame

Façades vertically stored with **2 sides support**  
Workers easily **walk through on top**

Prevent façade **Falling Hazard**  
**Easy access** for workers





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Dedicated Rehousing Estate at Kwu Tung North Area 24 Project



# VR SAFETY TRAINING FOR MIC INSTALLATION



*Hip Hing BIM Cave*



Training to familiar with *installation procedures* and *safety precaution measures*




# Hong Kong Housing Society

## Pay for Safety Scheme

## Pay for SSSS(4S) Scheme



OSHC Safety Workshop

- 
- Uplift Safety Management System
  - Appoint Safety Personnels (Safety Officer and Safety Supervisor) on site
  - Organise Safety Workshop and Safety Audit
  - Health and Safety Performance Incentive Scheme (HASPIS)



CMP Room for centralized monitoring



安全智慧工地系統標籤計劃  
SMART SITE SAFETY SYSTEM  
LABELLING SCHEME

Obtained 4S Label

**CIC-4SLS 10 Main Categories** of 4S products adopted in KTN project

HKHS pay for each completion item and monthly maintenance

**Encourage the use of 4S on site**



# MIC COLLABORATION CENTER - 協<sup>3</sup>箱

## Safety and Welfare Facilities



Basketball Court in 協<sup>3</sup>箱



Safety Training Room



BIM Cave (VR) Training



Workers' Living Room



Collaboration Room

Provide **safety and welfare facilities** for workers

Promote and enhance the **safety atmosphere**





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Thank  
you

