



# Safety Forum 2022

Accident Prevention for Safeguarding Lives

# Standard Slide

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**Strictly Confidential**

**ZERO HARM**  
MAKE SAFETY PERSONAL

In Gammon, we apply the  
principle of **ZERO HARM**,  
for safeguarding of lives,





# What is Zero Harm?

- The removal of the Risk of fatal and serious injury
- A pro-active rather than re-active approach



**The Safety Management Process  
(Swiss Cheese Method) – People make mistakes  
– we need several lines of defence**

**Our 4 Layers of Protection**

**Design and Engineering**

*Remove the Fatal and Disabling Risks  
Make it Easy to Build Safety*

**Materials, Plant and Equipment**

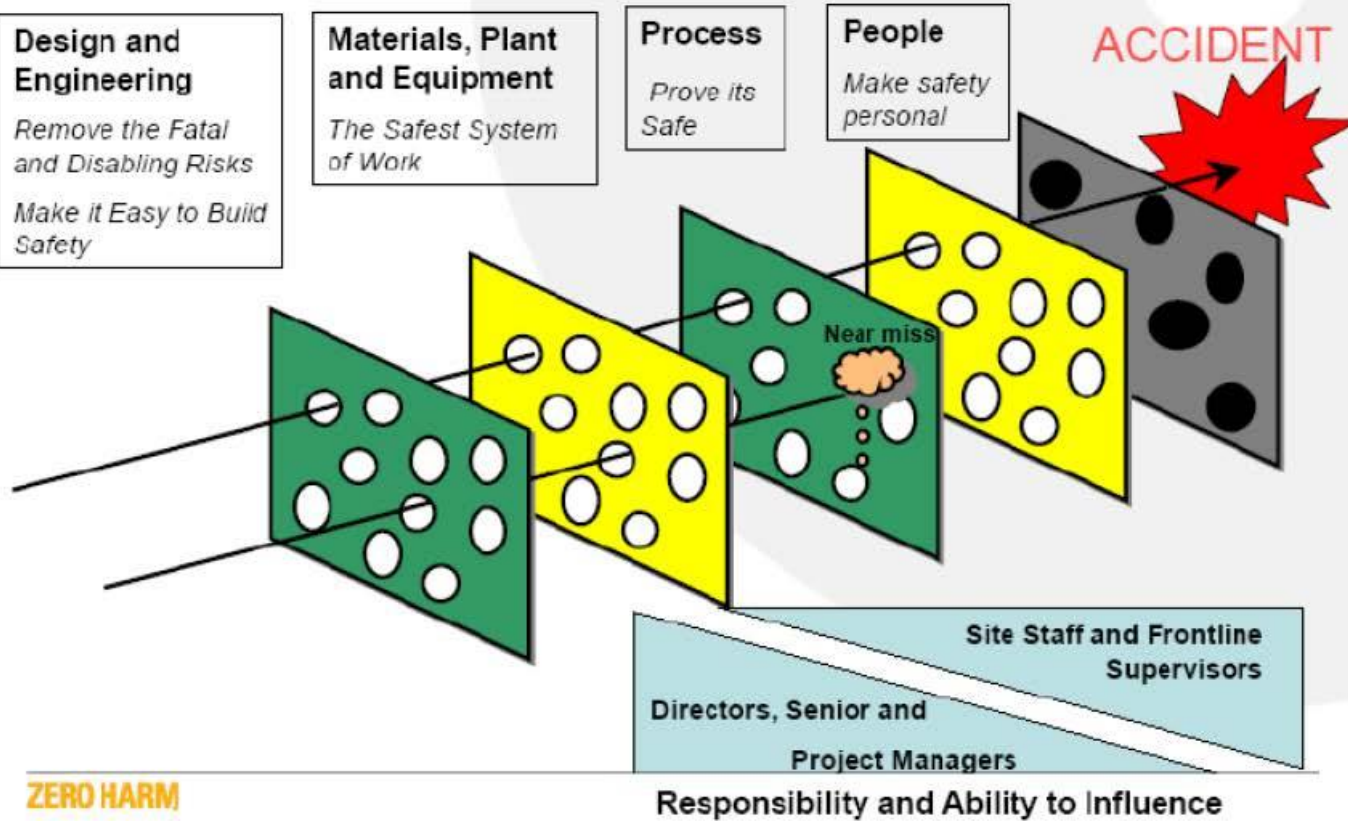
*The Safest System of Work*

**Process**

*Prove its Safe*

**People**

*Make safety personal*



**ZERO HARM**





## Process

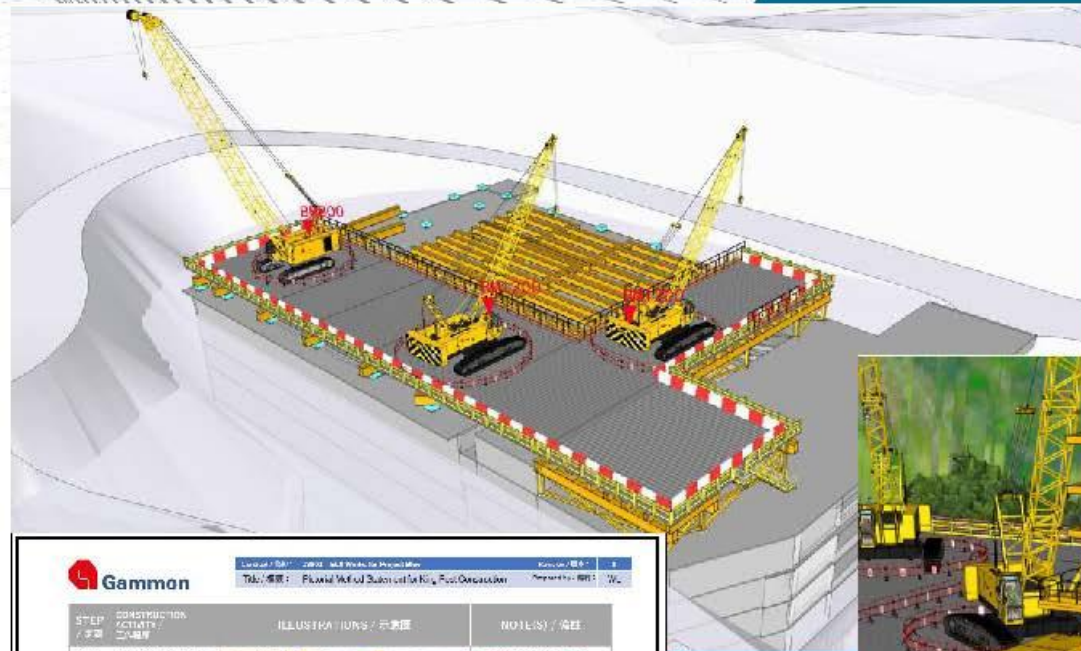
- Step-by-Step Method Statement
- iDRA





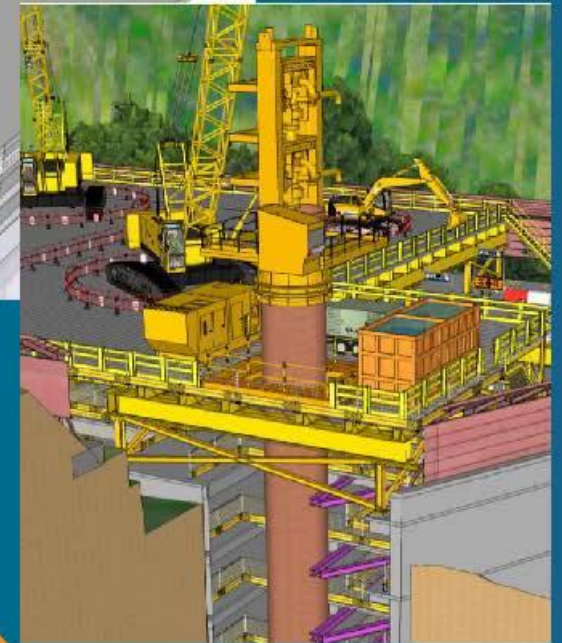
# Safety by Design - Step by Step Method Statement

STEP / 步驟	CONSTRUCTION ACTIVITY / 工作內容	ILLUSTRATIONS / 示意圖	NOTES / 備註
2	2.1 安裝鋼架橋樑 / 橋樑預埋 2.1.1 CONCRETE PRECAST BRIDGE BEAMS		<p>1. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>2. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>3. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>4. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>5. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>6. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>7. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>8. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>9. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p> <p>10. 所有鋼架橋樑必須在預先預埋的鋼架橋樑上安裝。</p>



STEP / 步驟	CONSTRUCTION ACTIVITY / 工作內容	ILLUSTRATIONS / 示意圖	NOTES / 備註
4	4.1 安裝電纜橋 4.1.1 Flaying the cable		<p>1. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>2. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>3. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>4. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>5. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>6. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>7. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>8. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>9. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p> <p>10. 所有電纜橋必須在預先預埋的鋼架橋樑上安裝。</p>

STEP / 步驟	CONSTRUCTION ACTIVITY / 工作內容	ILLUSTRATIONS / 示意圖	NOTES / 備註
3.3	解開鋼架吊具，再穿上鋼行化索頭，接上塔機摩打頭		<p>Engineering Party 工程師</p> <ol style="list-style-type: none"> <li>1. 解開鋼架吊具</li> <li>2. 再穿上鋼行化索頭</li> <li>3. 接上塔機摩打頭</li> <li>4. 接上塔機摩打頭</li> <li>5. 接上塔機摩打頭</li> <li>6. 接上塔機摩打頭</li> <li>7. 接上塔機摩打頭</li> <li>8. 接上塔機摩打頭</li> <li>9. 接上塔機摩打頭</li> <li>10. 接上塔機摩打頭</li> </ol> <p>大柱吊機</p> <p>危險提示 / Hazardous: 安裝注意吊機技術 / 花籃螺絲 / 鋼索夾等</p>



# Process - iDRA

## Dynamic Risk Assessment

The last chance that Gammon has to ensure work will be undertaken safely

This is a continual process of identifying what might go wrong, taking action to remove or control the risk and continually monitoring the rapidly changing circumstances on your site.







# Material & Equipment

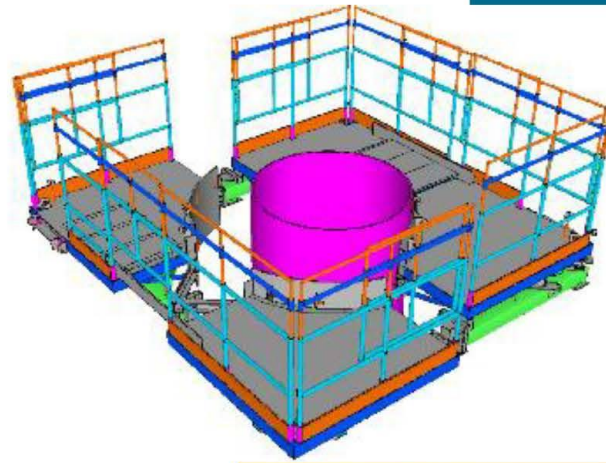
- Standardization and New Tools



## Design out of RISK – New Tools

# Automatic Retractable Working Platform

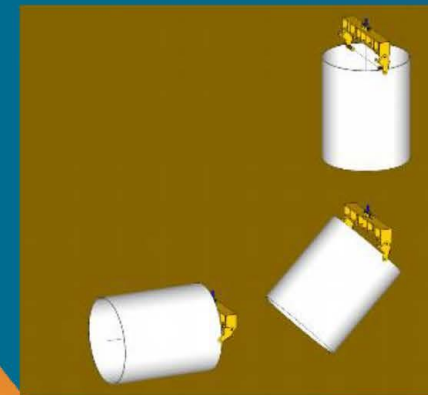
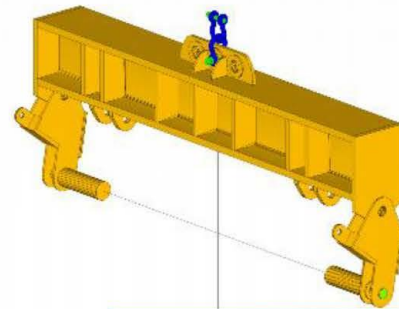
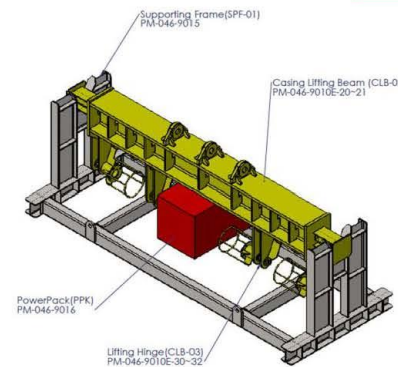
- *4 nos Hydraulic system installed inside the platform to allow the worker to control the hydraulic cylinder to extend or retract the platform to suit the size from 2.0m to 3.3m Bored Pile standard size.*



# Design out of RISK – NEW TOOLS

## Casing Load spreader Beam

- Hydraulic system installed at the two lifting Point to allow the worker to control the hydraulic power pack at ground level to avoid using the man cage to release the shackle at the top of the casing





# “BlokCam” System for Lifting

- **Wireless CCTV** Camera System installed at Hook block of Tower cranes for operator to have **live view** and sounds about the surrounding lifting area. Working in the **blind would never allow**.

## Advantages of BlokCam

### Enhanced Lifting Safety

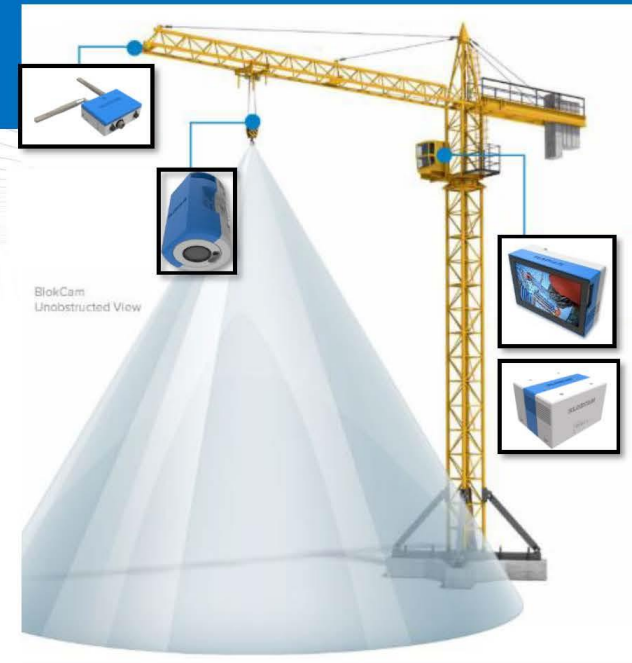
- Hook block is lowered down to designed level in a safely manner, correctly and efficiently
- TC operator can have clear views in the lifting zone to make the necessary corrections to avoid any incidents

### Improved Communication

- BlokCam allows the TC operator to have clear eyes from the hook block
- Allowing detailed views of the load and its surroundings
- Enhances the ability to communicate more efficiently with the riggers

### Reducing Blind Lift

- BlokCam reduces the blind lift by giving the TC operator live video footage and the ability to see what is going on below the hook and around the load
- Clear view when lifting under large height difference
- Vivid view when lifting inside building opening



(BlokCam)  
✓ Camera installed on hook block  
✓ Independent of Hook Height



(Tradition CCTV Camera)  
Large height difference and the view may be affected by fog layer



Whole set-up on the Hook block

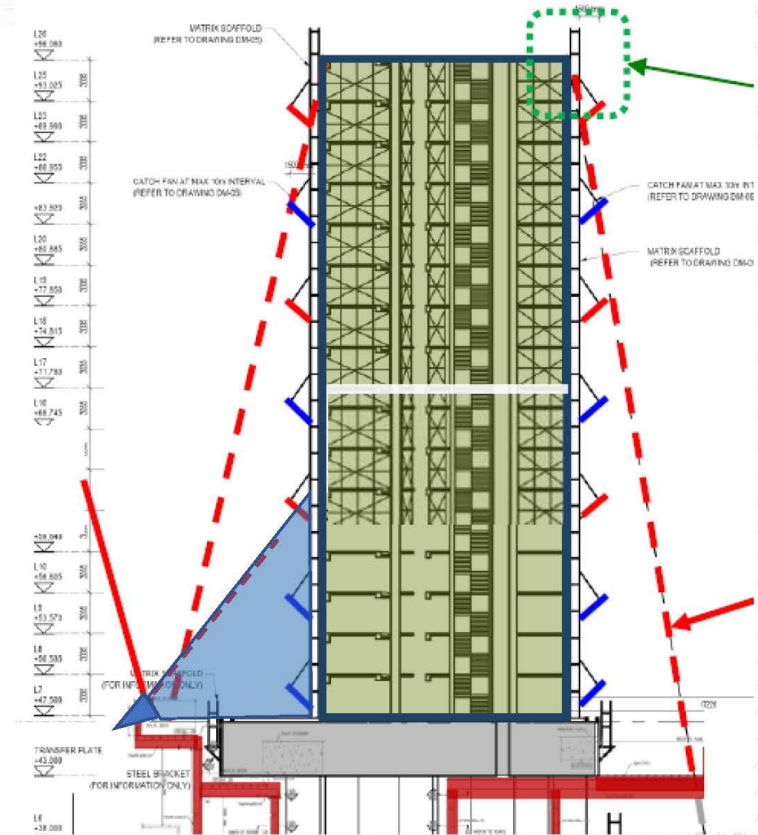
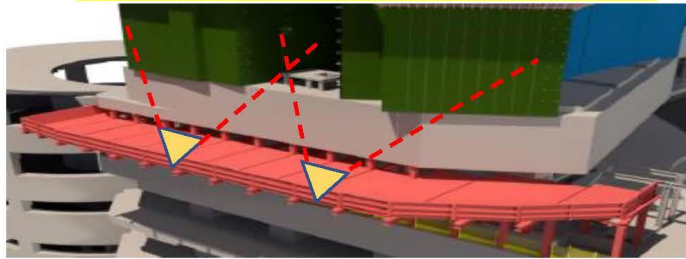


Strong magnets and Wire sling tie up as Secondary safety control measure

# “G-Eye” for falling object detection



G-Eye Camera







# Design & Engineering

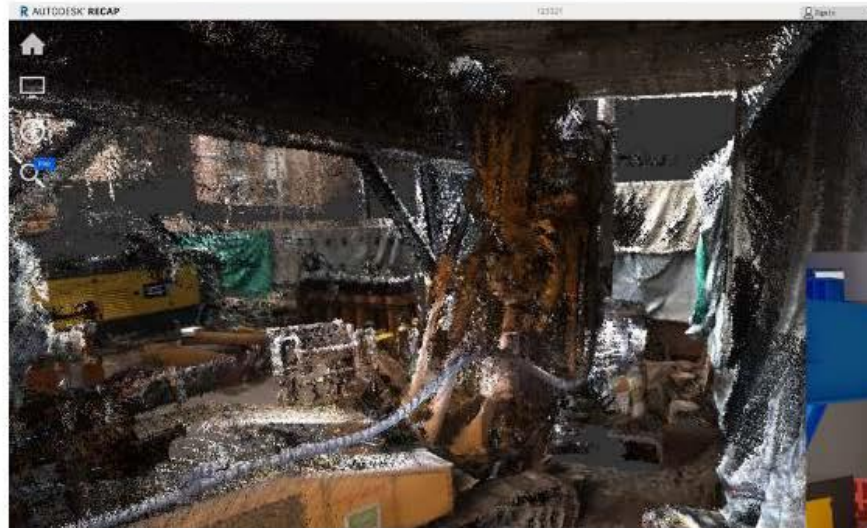
- Digitization & Technology

digital@





# 3D Scan to Plan for the Low Head Room Pipe Piles



- 3D scanner allows taking full detail of actual site condition within a very short period
- Provides sufficient accuracy in dimensions for planning and operation stages to evaluate safety and feasibility of construction method including size of plant & equipment, path of mobilization and working space etc.



# e-Inventory System

- Fast (Mobile Apps)
- Systematic
- Real time



- Minimize material and document handling
- Release Supervisor for Safety monitoring

2021/4/20

**Gammon**

Material Management Project Transfer | Summary (Reference)

From Job No. 由地盤編號: 18998

From Job Description 由地盤名稱: GI & PP Depot

To Job No. 由地盤編號: 13631

To Job Description 由地盤名稱: Yuen LongFB4 & U TurnBridgeFDN

號碼 物品編號 物品 數量 單位 牌子 型號 序號 機械編號

1	HAMMER	Hammer	1	No	24"	DTH Hammer (c	
2	HAMMER	Hammer	1	No	24"	DTH Hammer (c	
3	GUIDE-DEVICE	Guide Device	1	No	560mm	Guide Devic	
4	GUIDE DEVICE	Guide Device	1	No	560mm	Guide Devic	
5	BIT	Bit	1	No	560mm	Pilot Bit	02-2407
6	BIT	鑽仔	1	No	SUS 560mm	Bit	02-4832
7	BIT	鑽仔	1	No	560mm	segment bit (one set 3 nos)	02-6319
8	BIT	鑽仔	1	No	560mm	segment bit	02-6809
9	BIT	鑽仔	1	No	560mm	segment	02-6353
10	BIT	鑽仔	1	No	560mm	Segment	02-6810
11	BIT	鑽仔	1	No	560mm	segment	02-6366
12	BIT	鑽仔	1	No	560mm	Segment	6811



**IN Electronic Transfer Note**



The screenshot shows the Gammon web application interface. The main content area displays a perspective view of a warehouse aisle with high industrial shelving units. A sidebar menu on the right contains several navigation options in Chinese, including 'Home', 'Inventory', 'Transfer', 'Reports', and 'Settings'. The top navigation bar includes the Gammon logo and user information.

The screenshot shows a traditional paper-based inventory transfer form. It features a table with columns for item details and a section for handwritten notes. A prominent red stamp is overlaid on the form, reading "OUT Tradition Transfer Note (hand writing)". The form includes a header with the Gammon logo and a title in Chinese. The table contains several rows of data, including item numbers, descriptions, and quantities. A hand is visible at the bottom right, holding a pen over the form.



# Sensors for Site logistics monitoring

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# Automation for Site Monitoring

## GEOMON

## digital



### Automated GROUND WATER LEVEL Monitoring

- Monitor the **WATER LEVEL** of the sensor in mm
- Alert will be sent by **EMAIL** when the value measured exceed  
250 mm, 375 mm and 500 mm



### Automated Vibration Monitoring

- Monitor the **VELOCITY** of the sensor in mm/s
- Alert will be sent by **EMAIL** when the value measured exceed specified level



### Automated Settlement Monitoring

- Monitor the **X-Y-Z DISPLACEMENT** of the target
- Alert will be sent by **EMAIL** when the value measured exceed specified level
- Due to high power consumption, it comprise a **SOLAR PANEL** and an **ELECTRIC BOX**.

# Automation for Environmental Monitoring



Weather Sensor for multi-meteorological parameters monitoring:

- Temperature 
- Precipitation 
- Humidity 
- Noise level 
- Wind 



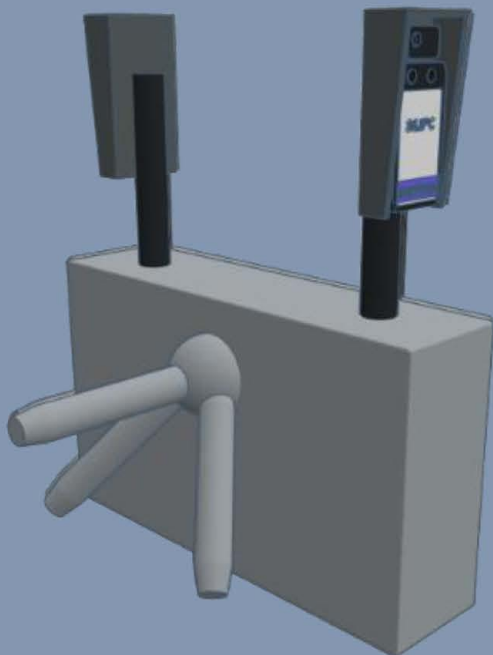
- Monitoring the Site AIR QUALITY
- PM2.5 Detection
- Alert through Line and Email will be triggered when the PM2.5 EXCEED DESIGNATED VALUE

50 µg/m3 according to The Air Pollution Control Ordinance



# Workforce Attendance & Thermal scanners

Workforce attendance data with facial recognition to control authorized access and egress





# Safety Accessories

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## Monitoring Construction Workers' vital signs

- Heart Rate Alert (keeping 148BPM for 6 minutes)
- Body Temperature Alert (keeping 38.5°C for 10 minutes)
- Fall Alert (fast vertical motion for 2 seconds)
- Motionless Alert
- Outdoor and Indoor Location Tracking
- Restricted Area Management
- Public Announcement



digital

# Safety Accessories

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## Official Dashboard

The screenshot shows the 'Beelivator IoT' dashboard. The left sidebar contains a navigation menu with items: Overview, Risk Assessment, Devices, Workers, Plans, Reports, Risk Plans, RPMs, Areas, Statistics, Reports, Logs, and Settings. The main content area is titled 'Public Announcement' and features a progress bar for 'Public Announcement: 1 / 3 devices completed...'. Below this are sections for 'Audio Tracks' and 'Device List'. The 'Audio Tracks' section contains a list of announcements with play buttons. The 'Device List' section shows a table of devices with checkboxes and 'SELECT' buttons. On the right side, there is an 'Alert list' table with columns for 'Alert' and 'Time'. At the bottom of the dashboard, there are several charts and graphs, including a 'Device Location' map area. The dashboard is overlaid with several red boxes and labels: 'Locus' points to the top header area; 'Worker Info' points to the top right area; 'Alert list' points to the right-hand table; 'Announcement list' points to the audio tracks section; 'Target Device' points to the device list section; and 'Device Location' points to the bottom right area.





[INNO@SAFETY.HUB](https://www.inno@afety.hub)  
to monitoring and control



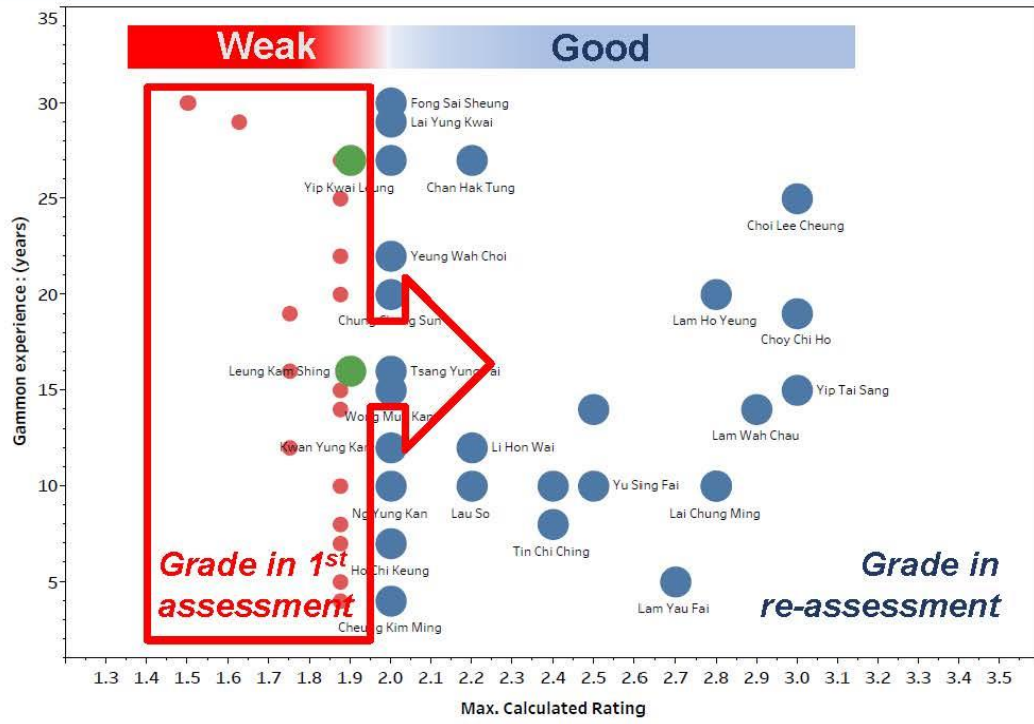


# People

- Culture Assessment



# Safe Culture Assessment



Date of Interview	Name of Interviewee	Employee Number	Trade / Position	Project Number	Project Name	Construction Experience (Years)	Gammon Experience (Years)	Grade
2020.12.17	Mo Shi Chong	497778	Piling Operative	23920	Ma On Shan	2	3/12	Strong 2.50
	Deng Guiyun 鄧國雲	463611	Bankman	23831	Yuen Long FB4 & D-T	7	1.5	
	Liu Wai Jang 劉偉生	248309	Bankman	23831	Yuen Long FB4 & D-T	14	9	

Employee Number	Describe the requirements of that site and its importance	How do you maintain an attitude in zone/safe distance in lifting operation	What do you check prior to using and lift	What needs to arrange/prep for working at height	How to provide effective communication among the team	What is the response if something goes wrong in the course of rigging/lifting operation	Requested what has gone wrong	Any suggestion or instructions known to prevent recurrence
248309	Good	Good	Good	Average	Good	Average	Average	Average

Employee Number	If available, Supervisor makes comment on interviewee's safety performance	Supervisor Comments	Project safety team comments to interviewee's safety performance	Safety Team Comments
248309	Good	穩定提供	Average	有安全意識, 做事細心

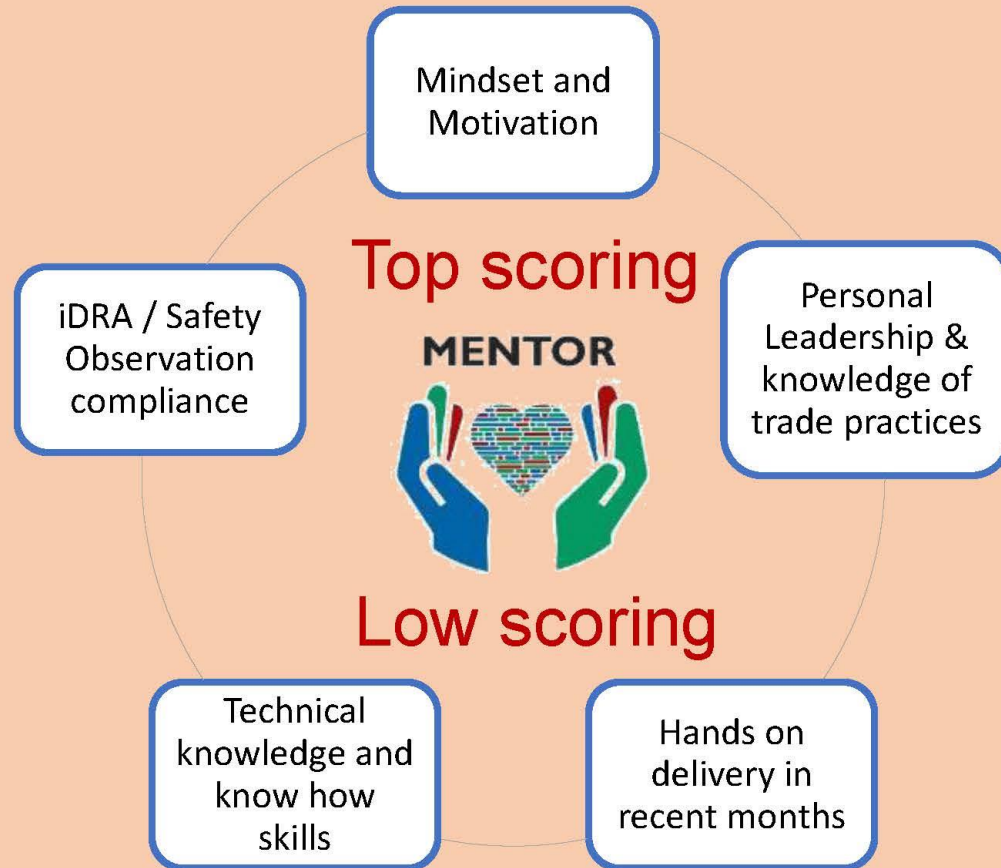


Individual Interview and Cultural assessment sheet - Rigger				
Interviewer Name (Interviewer)	Interviewee Name (Interviewee)			
Project Name (Interviewee)	Job Title (Interviewee)	Trade (Interviewee)	Project (Interviewee)	Site (Interviewee)
Interviewee's Safety Performance (Interviewee's Safety Performance)				
1. How do you maintain an attitude in zone/safe distance in lifting operation?				
2. What do you check prior to using and lift?				
3. How do you provide effective communication among the team?				
4. What is the response if something goes wrong in the course of rigging/lifting operation?				
5. Any other comments or instructions known to prevent recurrence?				
Interviewer's Safety Performance (Interviewer's Safety Performance)				
6. How do you maintain an attitude in zone/safe distance in lifting operation?				
7. What do you check prior to using and lift?				
8. How do you provide effective communication among the team?				
9. What is the response if something goes wrong in the course of rigging/lifting operation?				
Other Comments (Other Comments)				
Interviewer's Name (Interviewer)				
Interviewee's Name (Interviewee)				
Interview Date (Interview Date)				

- Mentoring and re-assessment of riggers with “weak” rating conducted
- Improvement in their safety mindset and attitude
- Culture assessment to be ongoing (bi-monthly for weak workers and twice a year for average and good workers) and extended to newcomers and other trades

# Cultural Assessment & Coaching

## Zero Harm Mentorship Programme in Project



### Zero Harm Mentorship Scheme

- Highest three staffs be the Mentor of the lowest three staffs
- Regular review mentee's safety performance



**END**

