



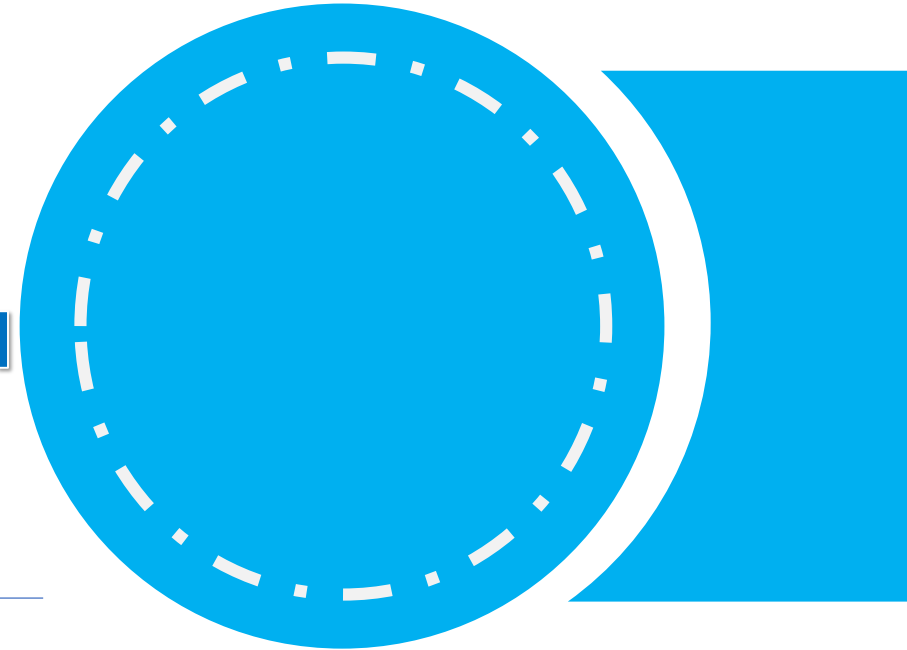
中國建築  
CHINA STATE CONSTRUCTION

# 挖掘與側向承托(ELS)工程及 關顧新人安全計劃良好作業分享

Good Practice Sharing – Excavation and lateral  
Support(ELS) Works and Implementation of  
“P” and “N” Caring Programme

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## ➤ 1.1 Work Procedure

### Strut Dismantling / I-beam Removal

- Method Statement : Provide the sequence of works with safe methods
- Temporary Works Control Plan: A system to control the temp. works
- Temporary Works Coordinator (TWC) / Engineer : Identify the sequence of each strut / I-Beam to be cut
- TWC / Engineer : Clearly mark on temporary structure (Where to cut, Sequence and the weight of it)
- Pre-work Briefing / Task Launching lead by TWC / Engineer and SC In-charge
- Pre-work Equipment and PPE check



## ➤ 1.2 Before Removal Works


- Documents Control:
  - **Approved Method Statement**
  - **Temporary Works Control Plan**
  - Lifting Plan
  - Related Permit to Work Systems, e.g. Permit to Lift, Hot Work Permit





## 1.2 Before Removal Works

- Temporary Work Control Plan describes the processes for the design, management, control, supervision, erection, operation, maintenance and dismantling of Temporary Works.

Appendix B – Guidance of Temporary Works Groups




Temporary Works Groups	Complexity	Examples
	<b>Major / Complex</b>	<ul style="list-style-type: none"> <li>• Propping of existing structures</li> <li>• Bridge erection schemes</li> <li>• Complex falsework systems or any proprietary falsework system &gt; 20m high</li> <li>• Falsework supporting inclined loads</li> <li>• Single sided formwork &gt; 6m high</li> <li>• Inclined formwork systems (except minor stairs/cranked beams)</li> <li>• Suspended scaffolds / platforms</li> <li>• Working platforms for plant / cranes / piling rigs</li> <li>• Steelwork platforms supporting mobile / crawler cranes</li> <li>• Temporary steelwork structures over public areas</li> <li>• Ground support schemes &gt; 4.5m deep</li> <li>• Struted excavations &gt; 4.5m deep</li> <li>• Excavations with complex strutting schemes</li> <li>• Excavations adjacent to sensitive structures</li> <li>• Excavations with strutting imposing high loads on other structures</li> <li>• Tower crane bases</li> <li>• Loading on existing sea walls</li> </ul>

	<b>Medium</b>	<ul style="list-style-type: none"> <li>• Temporary site compound facilities</li> <li>• Noise enclosures / Temporary roofs</li> <li>• Any proprietary falsework system 10m-20m high (or &gt;2 storeys)</li> <li>• Any proprietary falsework system supporting &gt; 1.4m thick slab</li> <li>• Scaffold supporting loading platforms (&gt;5kPa)</li> <li>• Working platform (&gt;5kPa)</li> <li>• Cantilever scaffold (&gt;0.9m) and 'bridge over' scaffolds &gt; 3m using proprietary system</li> <li>• Double sided formwork &gt; 3m high</li> <li>• Single sided formwork 3-6m high</li> <li>• Column forms &gt; 10m high</li> <li>• Complex back-propping systems</li> <li>• Earth platforms and ramps (on sloping sites) for construction traffic or crawler crane</li> <li>• Ground support schemes 2m – 4.5m deep</li> <li>• Struted excavations 2m – 4.5m deep</li> <li>• Open cut excavations &gt; 4.5m deep</li> <li>• Major temporary support to utilities suspended over excavations</li> </ul>
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	<b>Minor / Simple</b>	<ul style="list-style-type: none"> <li>• Minor temporary site compound facilities</li> <li>• Any proprietary falsework system &lt; 10m high (or 2 storeys)</li> <li>• Table forms or repetitive formwork systems</li> <li>• Scaffold supporting loading platforms (&gt;1.5kPa and &lt; 5kPa)</li> <li>• General duty working platform (&gt;1.5kPa and &lt; 5kPa)</li> <li>• 'Bridge over' scaffolds using proprietary system &lt; 3m</li> <li>• Column forms &lt; 10m high</li> <li>• Double sided formwork &lt; 3m high</li> <li>• Single sided formwork &lt; 3m high</li> <li>• Scaffolding access on slopes</li> <li>• Weather retaining scaffold structure or subject to high wind loads</li> <li>• Simple back-propping systems</li> <li>• Covers to protect utilities / openings</li> <li>• Earth platforms for cranes &lt; 120T</li> <li>• Ground support schemes &lt; 2m deep</li> <li>• Struted excavations &lt; 2m deep</li> <li>• Open cut excavations 1.2m - 4.5m deep (Open cut &lt; 1.2m are exempt)</li> <li>• Vertical blinding &lt; 3m deep</li> <li>• Simple life line systems</li> </ul>
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### Temporary Works Control Plan

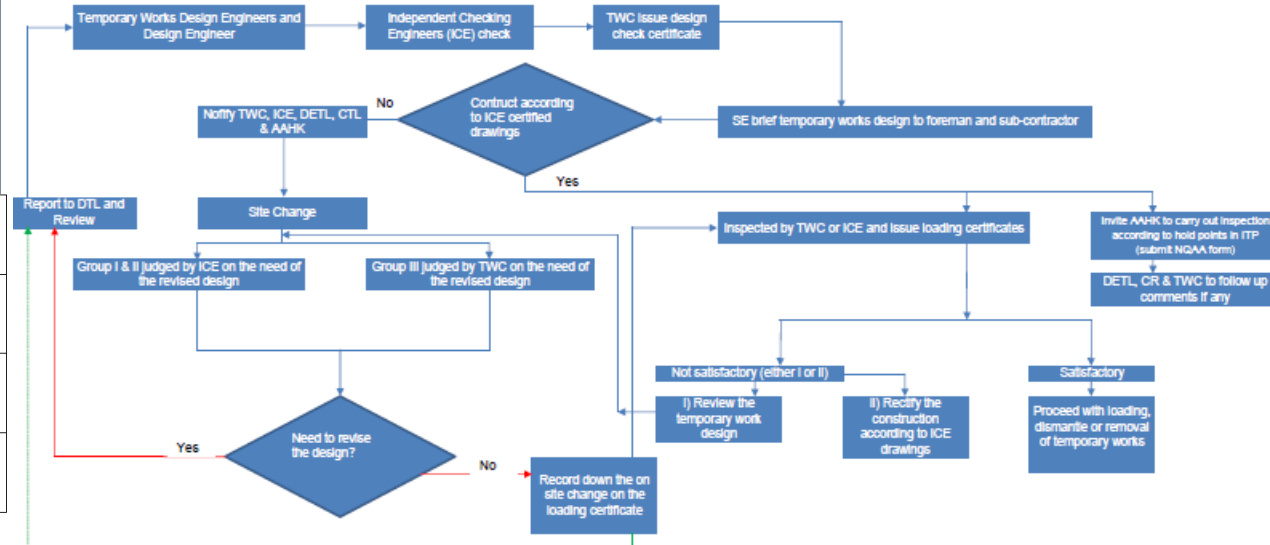
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Group	Description of TW Structure	Main Designer	Independent Design Check	Site Inspection
	MAJOR / COMPLEX	DTW	ICE	ICE & TWC
	MEDIUM	DTW	ICE	ICE & TWC
	SIMPLE / MINOR	DTW	DETL / ICE	TWC

Remarks: ICE shall as a minimum be an AP, RSE or RGE under Building Ordinance

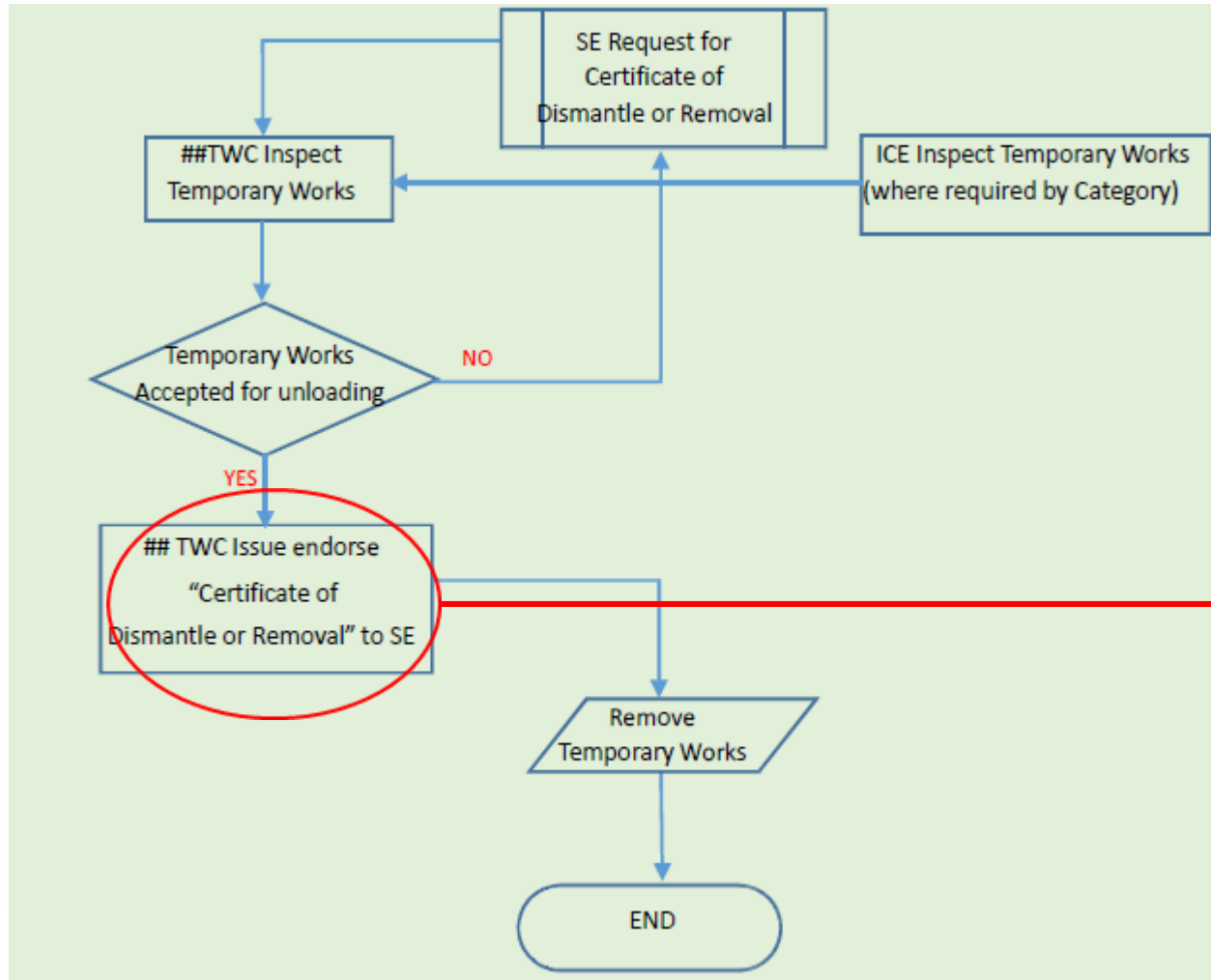
#### APPENDIX A

Flow Chart for Temporary Works Control / Temporary Work Checking Process and Documents



## 1.2 Before Removal Works

### • Temporary Work Control Plan



CERTIFICATION OF REMOVAL OF TEMPORARY WORKS  
Certificate No.: C318/CLDR/TWC/XXXX

A2.3.1 Loading of Temporary Work  
Part 1: To be signed by the Temporary Works Co-ordinator.  
For and on behalf of the China State Construction Engineering (Hong Kong) Ltd.  
Description of Temporary Works: \_\_\_\_\_  
Location: \_\_\_\_\_  
ICE Design Certificate No. Reference: \_\_\_\_\_  
Drawing Reference: \_\_\_\_\_  
Subsequent Works after Certificate Gained: \_\_\_\_\_

a) I certify that any structure supported by the falsework described above has been checked by the undersigned and that it has become self supporting and that the Temporary Works may be removed.

Date \_\_\_\_\_ Signed \_\_\_\_\_

Name [Temporary Works Co-ordinator]  
For and on behalf of the China State Construction Engineering (Hong Kong) Ltd.

Part 2: To be signed by the Checking Engineer Representative  
I confirmed that the Temporary Works described above have been checked and the checking result has been completely reported to the Checking Engineer.

Date \_\_\_\_\_ Signed \_\_\_\_\_

Name [Checking Engineer Representative]

Part 3: To be signed by the Checking Engineer

a) I certify that any structure supported by the Temporary Works described above has become self supporting and that the Temporary Works may be removed.

Date \_\_\_\_\_ Signed \_\_\_\_\_

Name of Checking Engineer, qualifications, and name of any company he represents \_\_\_\_\_

拆 Certificate of Dismantle / Removal of Temporary Works

CERTIFICATION OF REMOVAL OF TEMPORARY WORKS  
Certificate No.: C318/CLDR/TWC/XXXX

A2.3.1 Removal of Temporary Work  
Part 1: To be signed by the Temporary Works Co-ordinator.  
Description of Temporary Works: \_\_\_\_\_  
Location: \_\_\_\_\_  
ICE Design Certificate No. Reference: \_\_\_\_\_  
Drawing Reference: \_\_\_\_\_  
Subsequent Works after Certificate Gained: \_\_\_\_\_

a) I certify that any structure supported by the falsework described above has been checked by the undersigned and that it has become self supporting and that the Temporary Works may be removed.

Date \_\_\_\_\_ Signed \_\_\_\_\_

Name [Temporary Works Co-ordinator]  
For and on behalf of the China State Construction Engineering (Hong Kong) Ltd.

Temporary works Group III shall refer to Appendix B of Temporary Works Control Plan.

拆 Certificate of Dismantle / Removal of Temporary Works

## ➤ 1.2 Before Removal Works

- Identify the designated cutting positions by Engineer or TWC
- Mark the weight on each component to be cut



Identify the positions to be cut on strut



Mark the Weight on the strut

## ➤ 1.2 Before Removal Works

- Mark the cutting sequence in order on the strut according to the approved method statement
- Review the cutting sequence if necessary due to site constraint, the procedures shall be in line to the method statement

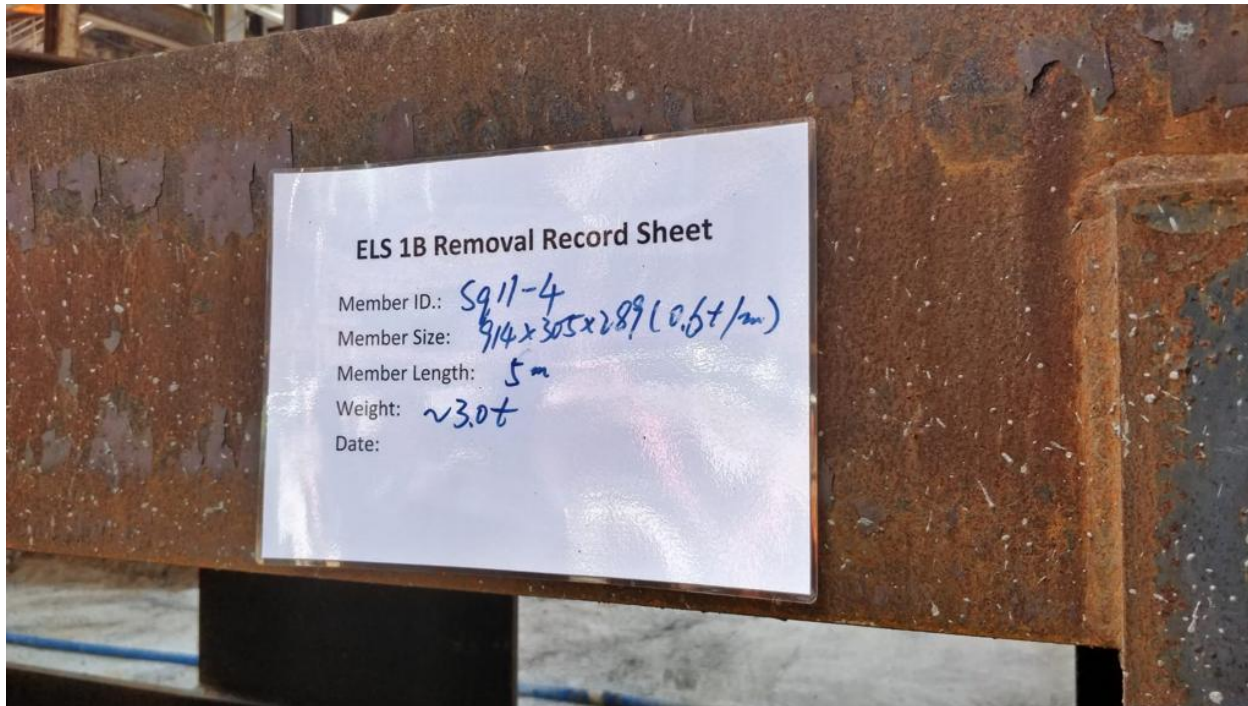


**Mark the number in order according to the agreed cutting sequence**

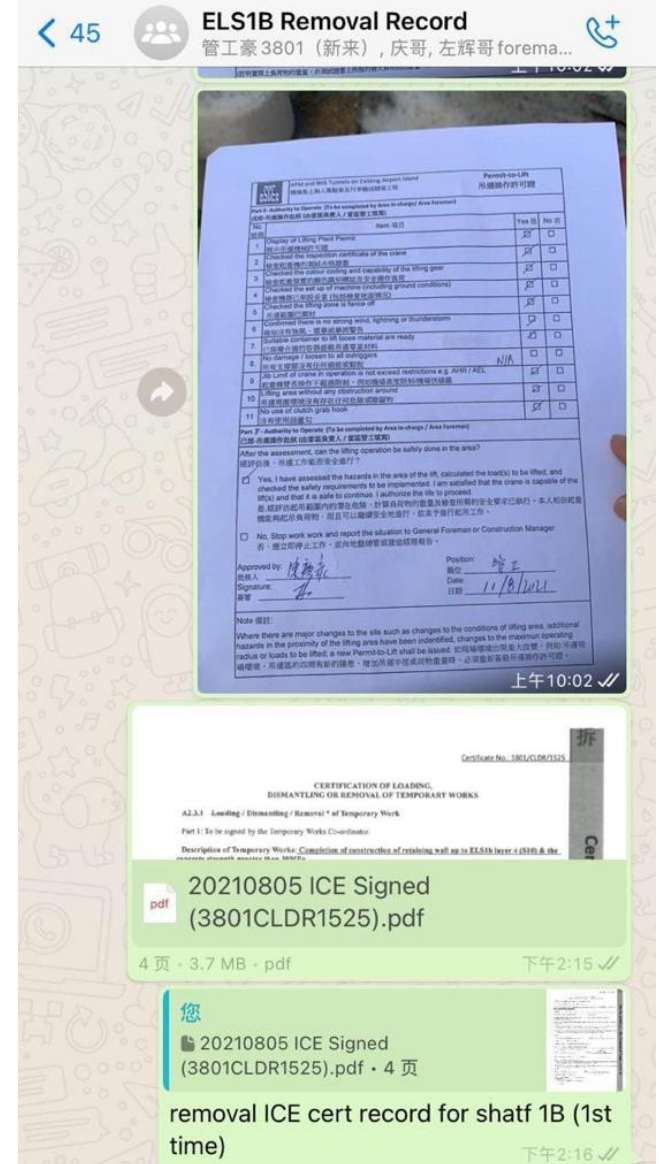


## 1.2 Before Removal Works

- Record and display the information of each struct to be cut
- Form an effective communication “Whatsapp” group for relevant parties to provide necessary information



Display of Removal Record Sheet



Form an effective communication group





## 1.2 Before Removal Works

- Task Launching Meeting
- Pre-work Briefing



Task Launching Meeting



Pre-work Briefing

## 1.2 Before Removal Works

- the Certificate of Dismantling / Removal of Temporary Works shall be issued by TWC / ICE

**Works:** The concrete packer grading greater than 25MPa

APM and BHS Tunnel

**References:** 3801/ICE/0314

YWL/3801/ATT2/BDW/DR/350034(E), 350041(F), 350042(E), 350051(E),

**ertificate Gained:** Remove Strut 8S, 9S, 10S, 17LB to 23LB at S4

~~Temporary Works described above have been constructed in accordance with the Contractor's Drawings and that they have been checked and found satisfactory for loading by the undersigned.~~

~~Structure supported by the falsework described above has been checked by the undersigned and that it has become self-supporting and that the Temporary Works may be dismantled or removed.~~

**No Certificate, No Removal Works**

**Certificate of Removal of Temporary Works**

Certificate No.: 3801/CLDR/1434

**CERTIFICATION OF LOADING, DISMANTLING OR REMOVAL OF TEMPORARY WORKS**

**A2.3.1 Loading / Dismantling / Removal \* of Temporary Work**

Part 1: To be signed by the Temporary Works Co-ordinator.

**Description of Temporary Works:** The concrete packer grading greater than 25MPa

**Location:** 3801 - APM and BHS Tunnel

**Design Certificate No. References:** 3801/ICE/0314

**Drawing References:** YWL/3801/ATT2/BDW/DR/350034(E), 350041(F), 350042(E), 350051(E), 350052(F), 350068(A)

**Subsequent Works after Certificate Gained:** Remove Strut 8S, 9S, 10S, 17LB to 23LB at S4

a) I certify that the Temporary Works described above have been constructed in accordance with the Contractor's Drawings and that they have been checked and found satisfactory for loading by the undersigned.

b) I certify that any structure supported by the falsework described above has been checked by the undersigned and that it has become self-supporting and that the Temporary Works may be dismantled or removed.

[a/\*b)]

**Date:** 18/06/2021 **Signed:** S

**Name:** S K Wong

For and on behalf of China State Construction (Hong Kong) Ltd

entative  
ed above have been checked and the checking result has been

**Signed:** [Signature]

Part 3: To be signed by the Checking Engineer.

a) I certify that the Temporary Works described above have been constructed in accordance with the Contractor's Drawings and that they have been checked and found satisfactory for loading.

b) I certify that any structure supported by the Temporary Works described above has become self-supporting and that the Temporary Works may be dismantled or removed.

[a/\*b)]

**Date:** 18/06/2021 **Signed:** [Signature]

**Checking Engineer:** KELVIN KUO

**Name of firm or company:** TMK & ASSOCIATES LTD

**Qualifications:** RPE

\* Use only one of the alternatives, as appropriate.

Rev 1. May 2020

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Certificate of Dismantle / Removal of Temporary Works

## ➤ 1.3 How to manage the risks?

### Other Risks

- Lifting and Fatal Zone
- Work above Ground
- Horizontal Transportation





## ➤ 1.3 How to manage the risks?

### Lifting and Fatal Zone

- Set Up **Fatal Zone** with eye-catching notice → **No authorized enter**
- Check the condition of LALGs with valid certificates
- Double confirm the capacity of LALGs to ensure no overload occurs
- Issue the Permit to Lift by Area-in-Charge to make sure every criteria related to lifting operation are checked and in place.
- **ONE** Person In-charge of the operation, walkie-talkie communication with key persons such as crane operator and banksman
- I-beam / Struct shall be tensioned before Cutting → **No Lifting No Cutting**
- **Agreed / Approved rigging & lifting method** can only be Adopted

## ➤ 1.3 How to manage the risks?

### Lifting and Fatal Zone

#### Before & During Removal Works:

- The works zone & fatal zone are barricaded with eye-catching notice





## 1.3 How to manage the risks?

### Lifting and Fatal Zone

#### Good Practice

Different types of Heavy Duty Pad protecting of Lifting Gear





## 1.3 How to manage the risks?

### Work above Ground

- The best practice is working on ground (where to be backfilled to accept level)
- Proper MEWP or step platform shall be considered
- Safe access shall be always maintained

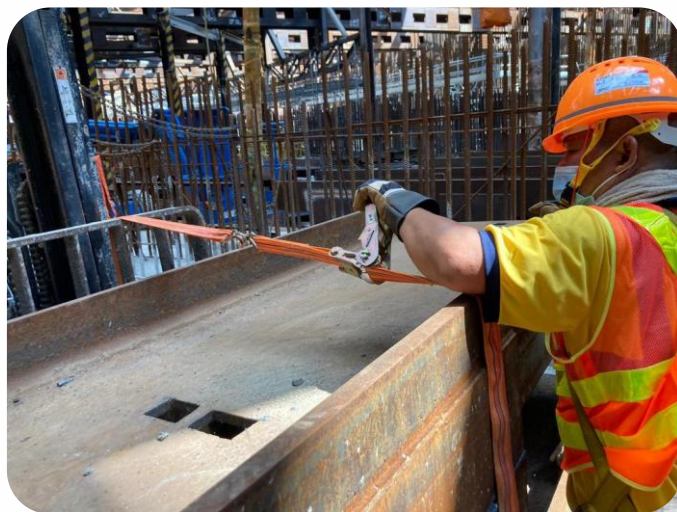




## 1.3 How to manage the risks?

### Horizontal Transportation

- Well-planning for what mechanism will be deployed for horizontal transportation
- Fix the cut strut by using ratchet strap
- The cut strut shall be as low as possible from ground level during horizontal transportation to designated position





## 2.1 The number of workers continues to rise

年份	季度	總數	按公、私營劃分		按工程類別劃分	
			公營	私營	建築	土木
2022	2	103411	40407	63004	79957	23454
	1	98264	41389	56875	74334	23930
2021	4	106630	44252	62378	80484	26146
	3	106320	44743	61577	80311	26009
	2	106069	43678	62391	84230	21839
	1	102702	43129	59573	82999	19703
2020	4	96117	41199	54918	76772	19345
	3	93910	39835	54075	75225	18685
	2	97642	40135	57507	78484	19158
	1	101060	39012	62048	81273	19787
2019	4	99938	37662	62276	81347	18591
	3	96891	34331	62560	78298	18593

- The Number of Manual Workers engaged at Construction Sites is **103,411**.

The figures for the number of manual workers engaged at building and civil engineering construction sites, analysed by sector (Public and Private) or by type of project (Building and Civil Engineering) are based on results of the Quarterly Employment Survey of Construction Sites conducted by the Census and Statistics Department.



## ➤ 2.2 Introduction of Caring Programme

- At 2012, the construction industry has launched the construction industry caring programme. The main reason is that the Ten Major Infrastructure Projects (十大基建) were launched one after another in that year, and a large number of new workers joined the construction industry. According to the statistics of the year, the accident rate of new workers was relatively high. Nearly half of the accidents were caused by lack of construction site experience and unfamiliarity with the construction site.
- In order to improve this safety problem, the construction industry has begun to implement N and P Caring Programme, with the aim of reducing the chance of accidents for newcomers and new site workers





## 2.2 Introduction of Caring Programme

- **P Label (Probationer)** – Use the P Label to identify new workers or workers with less than half a year of construction work experience, and arrange mentor to conduct the caring programme. One mentor is responsible for taking care of up to four new recruits for a period of not less than three months, during which they receive safety training
- **N Label (Newcomer)** – For experienced workers who are new to the construction site, they will be identified with the N Label for a period of no less than two weeks. The N Label can only be removed after the workers are familiar with the construction site environment





## 2.3 Implementation of Caring Programme



"P" Label (Probationer): Newcomers and workers with less than half a year of experience are identified by the P label

"N" Label (Newcomer): For workers who have experience but are new to the construction site, they will be identified by the N Label



"C" Label (Caring Group): Specially designed for older workers (60 years and above) and female workers, identified by the C Label.



## 2.3 Implementation of Caring Programme

**"P" Label (Probationer):** 6 special safety

### Training Program

Safety measures for high-risk processes

Case Studies

Electricity safety

Working at Height

Lifting safety

Emergency procedures



## 2.3 Implementation of Caring Programme

### "C" Label :

Implement the C Label for female workers or older workers aged 60 or above

All elderly workers or female workers are required to affix corresponding C Label on their helmets, and are not allowed to work alone or perform high-risk work. Front-line managers should pay more attention to C Label worker in daily supervision, and at the same time, take good care of their health situation





## 2.3 Implementation of Caring Programme

**"C" Label** : Physical Examination and Experience





## 2.3 Implementation of Caring Programme

### "N Label" (Newcomer):

Remind workers of dangerous areas and safety requirements in the site, regularly arrange training and care for not less than two weeks







## ➤ 2.3 Advantages of Caring Programme

- Help newcomers reduce job risk
- This program is similar to the mentoring system, which makes newcomers feel cared for and easier to integrate into the working environment
- More communication between workers, making the relationship between workers and colleagues more harmonious
- Help managers understand the personality and expertise of newcomers more comprehensively, and facilitate the assignment of work
- Without spending a lot of extra resources
- Reduce chances of accidents and work-related injuries for newcomers





## 2.3 Advantages of Caring Programme





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Thank you

&



Merry Christmas

