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# Webinar

## Work Safety of Temporary Works and Tower Cranes

### Safety ITP Managing Temporary Works

**Mr. Bread LIN**  
**Senior Manager, Safety**  
**Airport Authority Hong Kong**



Date: 16 Sep 2022

THREE-RUNWAY SYSTEM 三跑道系統



# Timeline of Temporary Works

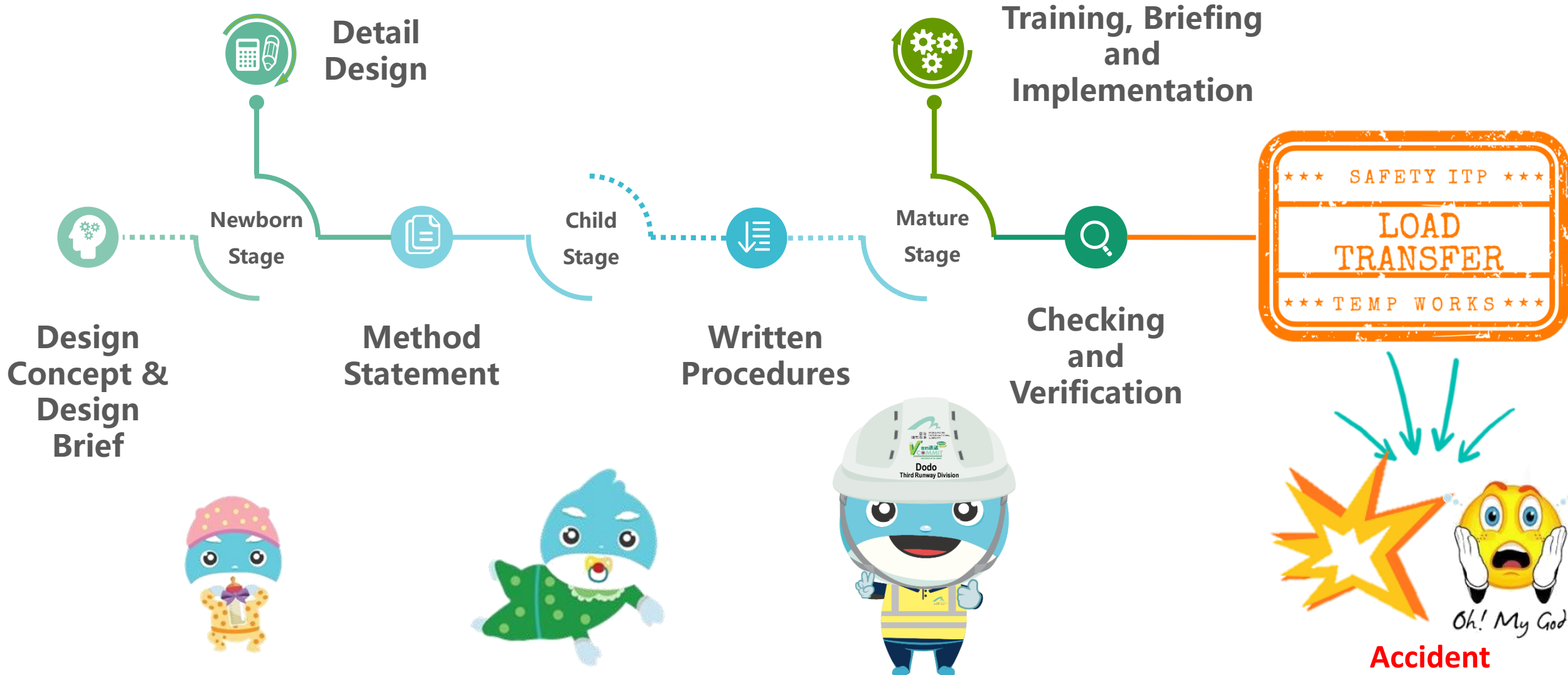


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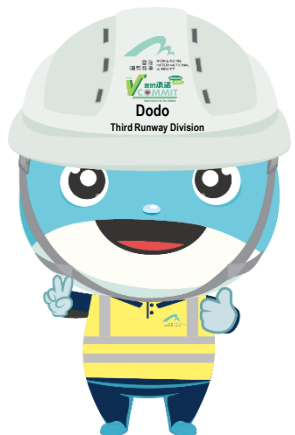




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# Inspection and Test Plan (ITP) ✈️





# What is ITP ?



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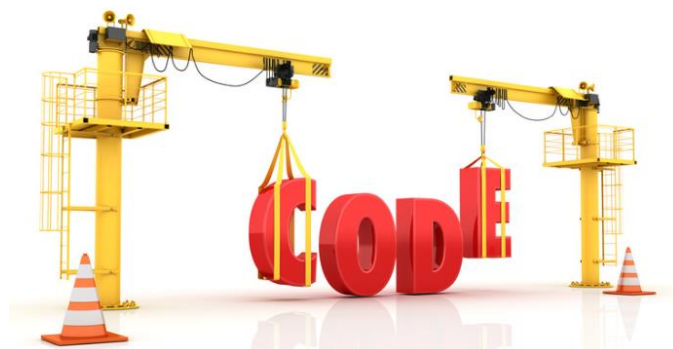
Google

Inspection and Test Plan

全部 圖片 影片 新聞 購物 更多

約 228,000,000 項搜尋結果 (0.41 秒)

An inspection and test plan, or inspection test plan, is a document or series of documents used for quality assurance purposes. An inspection and test plan outlines how the quality of a particular object will be ensured both at its beginning and throughout its service life.





# Safety Management Tool



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International  
Organization for  
Standardization

ISO 45001:2018



R  
I  
S  
K



Risk-based Thinking

ISRS™

for the health of your business

ILCI  
International Loss Control Institute

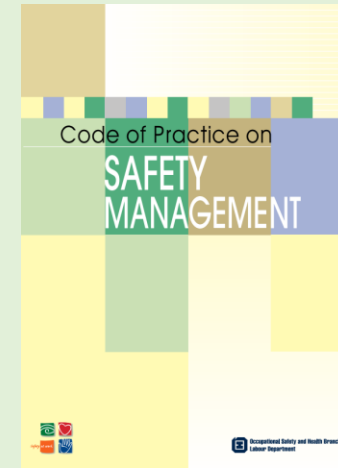


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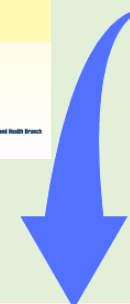


CRITICAL TASK ANALYSIS



Code of Practice on  
SAFETY  
MANAGEMENT

14  
Elements



Job Hazard Analysis (JHA)





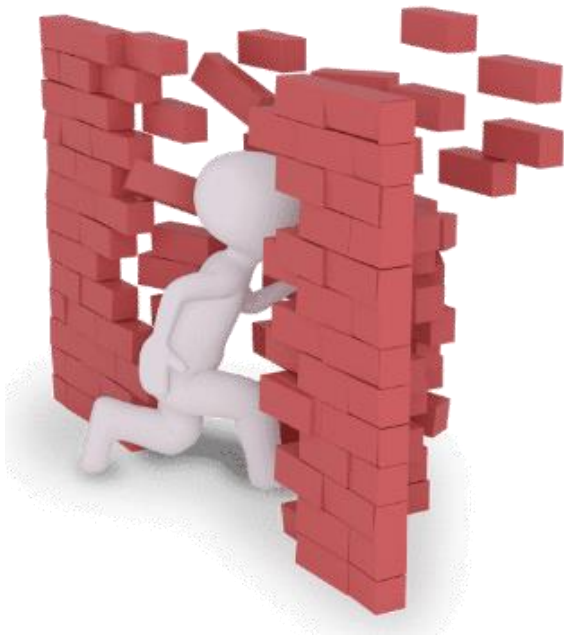
# Breakthrough – Safety ITP



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- ✓ Minor overhaul existing system
- ✓ Adopt common practice
- ✓ Embed Safety into Engineering control
- ✓ Provide platform to different stakeholders to involve safety inspection
- ✓ Foster culture instead of Create culture
- ✓ Provide guidance and training to staff, consultant and contractor



同航  
Same Boat Same Goal



THIRD RUNWAY DIVISION

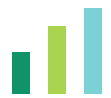
Practice Note - Document Number: TRD/PN/CON/003  
Inspection and Test Plan Guideline

DOCUMENT APPROVAL RECORD

	Name	Signature	Date	Role
Reviewed by	Wiselem A. Bull		04/10/2020	Issue No. 01
	Broad Lin		01/10/2020	Effective Date: 08 October 2020
Approved by	Colin Batzfelder		12/10/20	

DOCUMENT CHANGE RECORD

Sequence No.	Issue Date	Description of Change	Reason for Change
1	28 April 2020	First Issue	N/A
2	08 October 2020	Second Issue	To integrate safety into engineering process, safety hold points, safety control points and document review points shall be included into the ITP i.e. with quality hold points and quality control points.



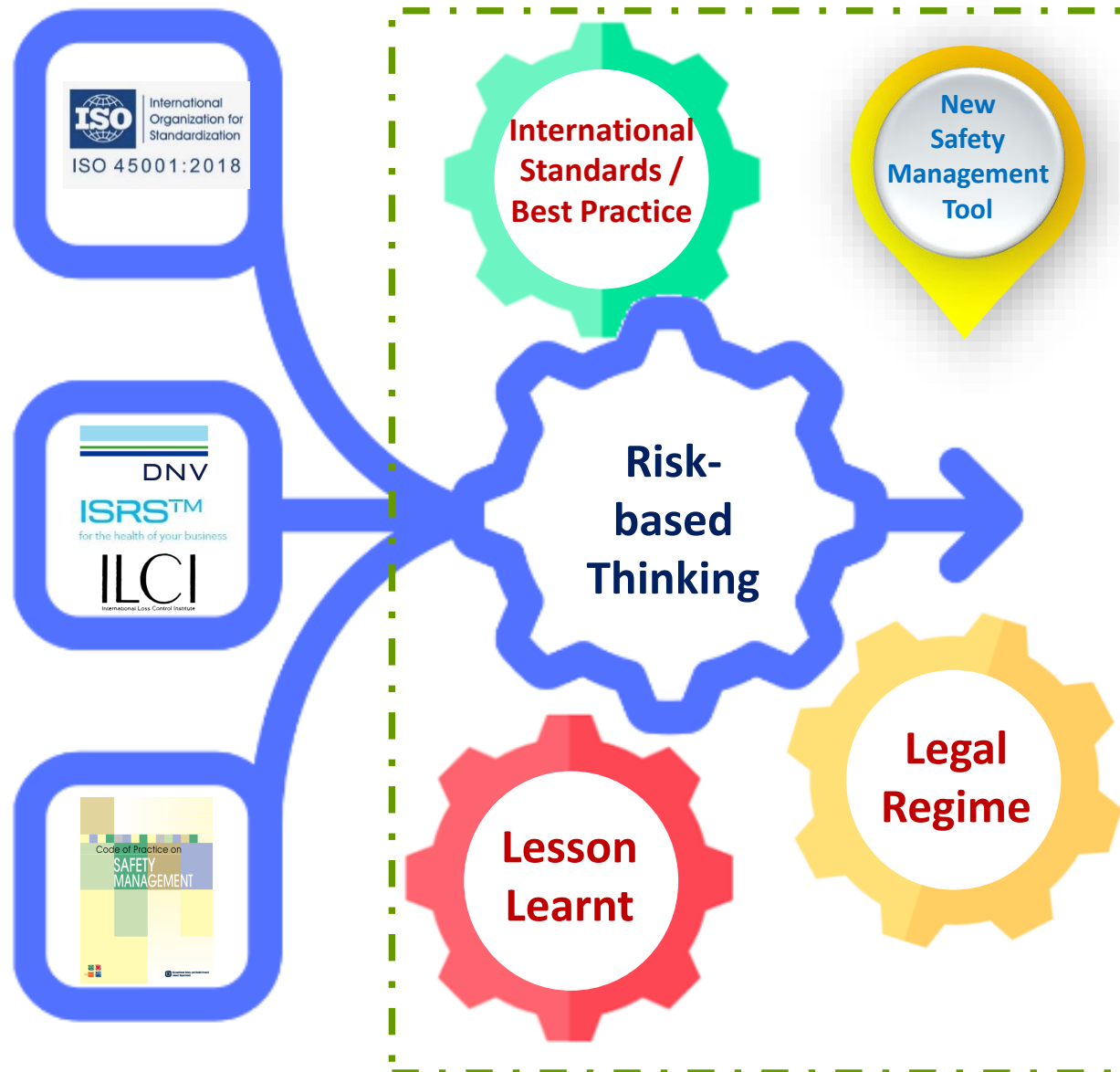
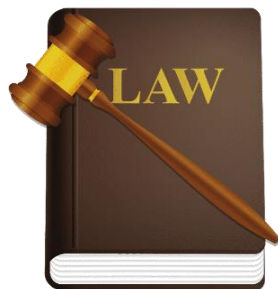
# Think Outside the Box



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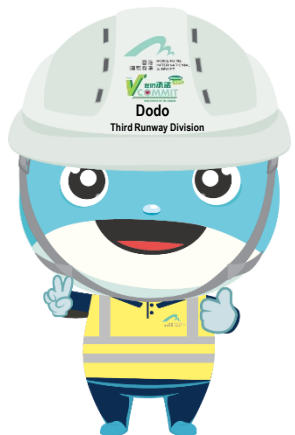


Can we do more on top of **legal** and **contractual** requirements?



- Temporary Works
- ESW
- Special Lifting
- Underground Utilities
- Anchor Bolt

# What's Safety ITP



THIRD RUNWAY DIVISION  
Practice Note - Document Number: TRD/PN/CON/003  
Inspection and Test Plan Guideline

DOCUMENT APPROVAL RECORD

Name	Signature	Date	Status
Reviewed by: Waiwan A. Butt		06/10/2020	Issue No. B
Bread Lin		08/10/2020	Effective Date: 08 October 2020
Approved by: Colin Batchelor		12/10/20	

DOCUMENT CHANGE RECORD

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**ISSUED**  
On 12 Oct 2020

## Practice Note

Document No. TRD/PN/CON/003

Appendix H2 Particular Specification - Health and Safety  
Contract xxxx

APPENDIX H2  
PARTICULAR SPECIFICATION - HEALTH and SAFETY

CONTRACT xxxx

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## Particular Specification

Appendix H2 - Health and Safety



## Standardisation of the Terminology

<b>ITP TEMPLATE</b>			Inspection and Test Plan for					MS Ref Number: xxx			
			[ Work Activities ]					Method Statement : [Name of MS]			
Legend: AAHK PMR – AAHK Project Manager Representative, CR – Contractor Representative, ASP – Approved Safety Personnel, SUR – Survey Team, CON – Construction Team, S/C – Subcontractor, H – Hold Point, C – Control Point, DR – Document Review, MS – Method Statement											
Ref	Activity	Method	Control Document / Specification	Acceptance Criteria	Frequency	Verifying Document	Contractor Responsible Parties	Inspection Point			
								S/C	Contractor		AAHK PMR
								ASP	SUR	CON	



- AAHK PMR – AAHK Project Manager Representative
- CR – Contractor’s Representative
- ASP – Approved Safety Personnel
- SUR – Survey Team
- CON – Contractor Construction Team
- S/C – Subcontractor
- 3 Type Checking Points : (H, C, DR)
  - **H - Hold Point, C – Control Point, DR – Document Review**
- MS – Method Statement

## Standardized Header

<b>ITP TEMPLATE</b>			Inspection and Test Plan for  [ Work Activities ]				MS Ref Number: xxx				
							Method Statement : [Name of MS]				
Legend: AAHK PMR – AAHK Project Manager Representative, CR – Contractor Representative, ASP – Approved Safety Personnel, SUR – Survey Team, CON – Construction Team, S/C – Subcontractor, H – Hold Point, C – Control Point, DR – Document Review, MS – Method Statement								ITP Revision Number:			
Ref	Activity	Method	Control Document / Specification	Acceptance Criteria	Frequency	Verifying Document	Contractor Responsible Parties	Inspection Point			
								S/C	Contractor		AAHK PMR
								ASP	SUR	CON	



- Activity
- Method
- Control Document / Specification
- Acceptance Criteria
- Frequency
- Verifying Document
- Contractor Responsible parties
- Inspection Point – S/C, Contractor, AAHK PMR
- Contractor – ASP / SUR/ CON

## Compulsory 3 Sections

1	Document Submission (Prior to Commencement)
2	Material Sampling and Testing
3	Site Works

- Document Submission
- Material Sampling and Testing
- Site Work



## Accountability

- Prepared By
- Reviewed By



Prepared By:		
Name: XXX	Position: Project Engineer	Signature:
Reviewed By: (Delete where appropriate)		
Name: xxx	Position: Sr. Project Engineer	Signature:
Name: xxx	Position: Temporary Work Coordinator	Signature:
Name: xxx	Position: Engineering Manager	Signature:
Name: xxx	Position: ESSW Manager	Signature:
Name: xxx	Position: Lifting Supervisor	Signature:
Name: xxx	Position: ASP	Signature:

Form part of Method Statement  
Contractor to submit to  
TRD Project Manager for review

# Risk Analysis and Rating



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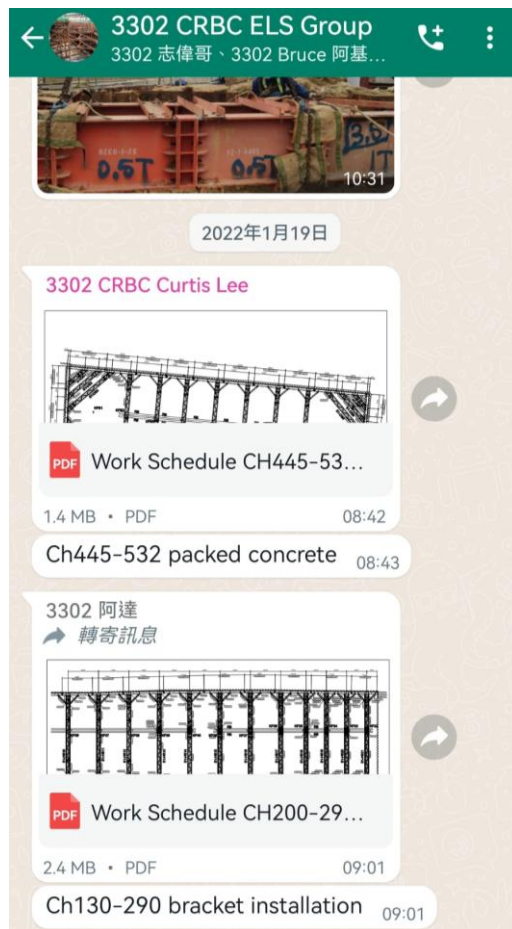


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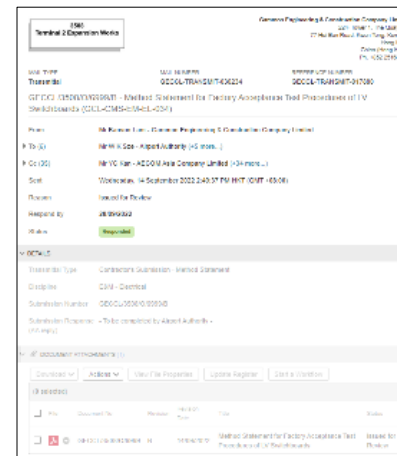
Critical Risk → Hold Point

High Risk → Control Point / Witness Point

Medium → Document Review Point



Mark the number on the strut  
in order according with the  
agreed cutting sequence



Submission for  
PM/PMR Review &  
Consent



NQAA





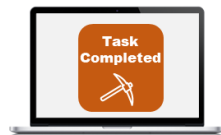
# Hold Point (H) and Control Point (C)



## Hold Point Compulsory TRD Check

**NQAA  
REQUIRED**

Step 1 **CR**



- Task Completed
- Submit NQAA Form
- SnagR or Hard Copy
- Request for Inspection before next operation



Step 2 **PM / PMR**



- Received NQAA Form
- TRD and Contractor on Site check
- Satisfactory and give consent



Step 3 **CR**

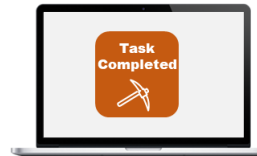


Continue to  
Next Step

## Control Point / Witness Point Selectively TRD Check

**NQAA  
REQUIRED**

Step 1 **CR**



- Task Completed
- Submit NQAA Form
- Request for Inspection



Step 2 **PM / PMR**



- Received NQAA Form
- TRD Staff Selectively Checking /Inspection
- Consent is not necessary



Step 3 **CR**



Continue  
Next Step



## Document Review Point For Record Only

**NQAA  
NOT  
REQUIRED**

**Step 1 CR**

**Task Completed**



- Task Completed
- Send Record (Photo/ Video/ Document etc)

WhatsApp to designated group



Direct Communication  
e.g. Phone Call

**Step 2 PM / PMR**



Feedback when needed



**Step 3 CR**

**Next Step**

No need to wait for PMR consent.  
Proceed to Next Step.

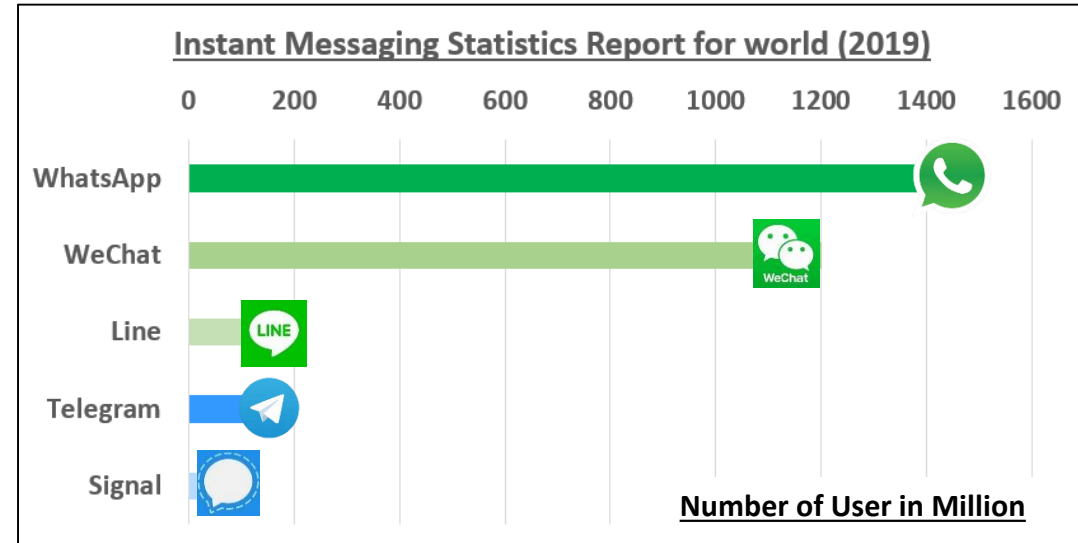




## Telephone Game 以訛傳訛



## Which Communication App is the most commonly used?

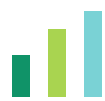


Instant Messaging Statistics Report, from The Radicati Group, Inc.



## WhatsApp For Document Review (DR) Point in ITP (Video / Photo / Document)





DR

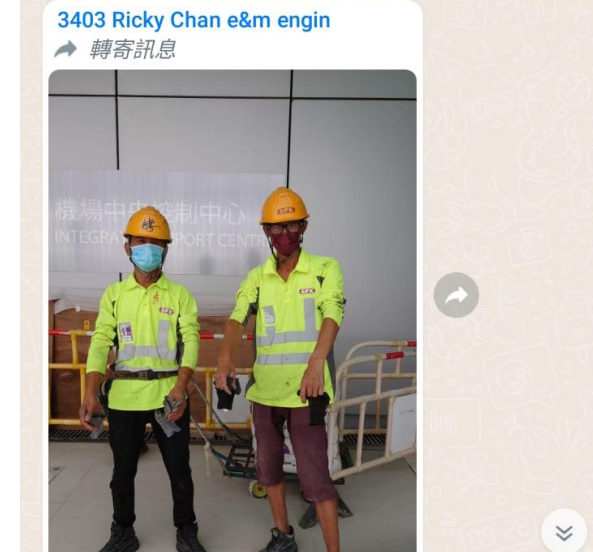
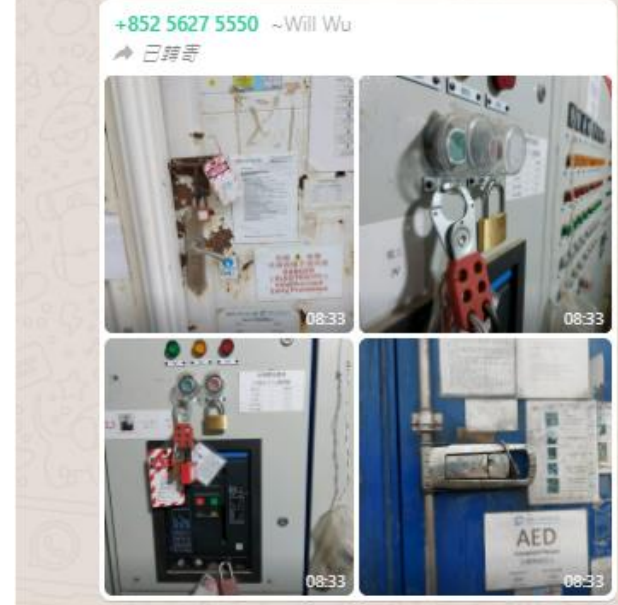
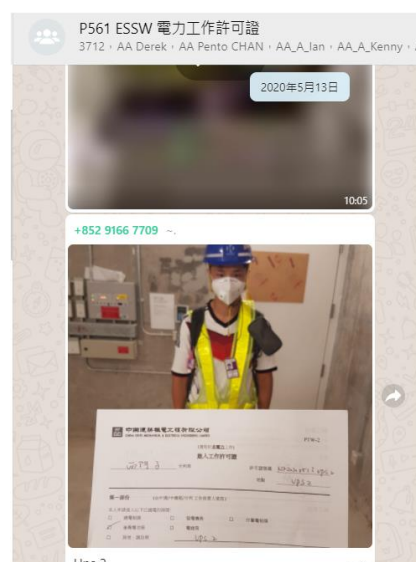
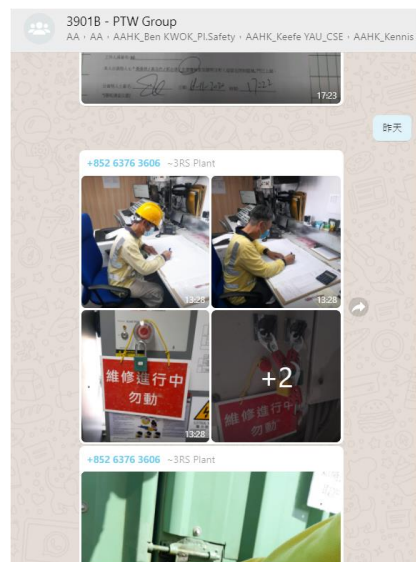
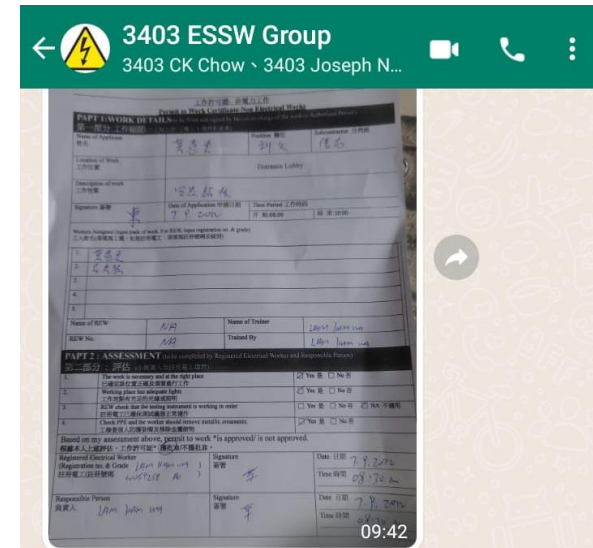
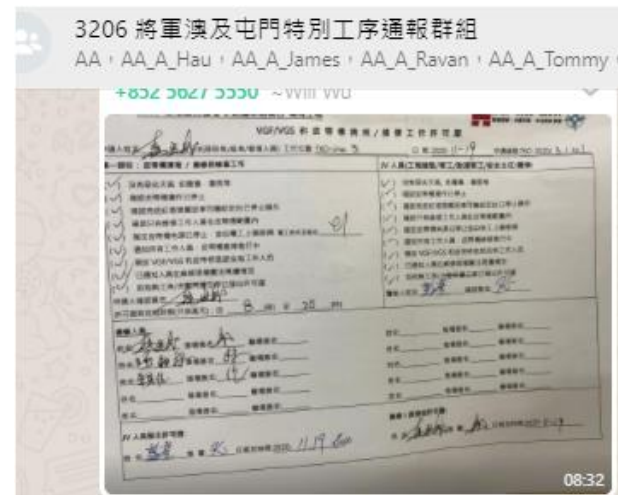
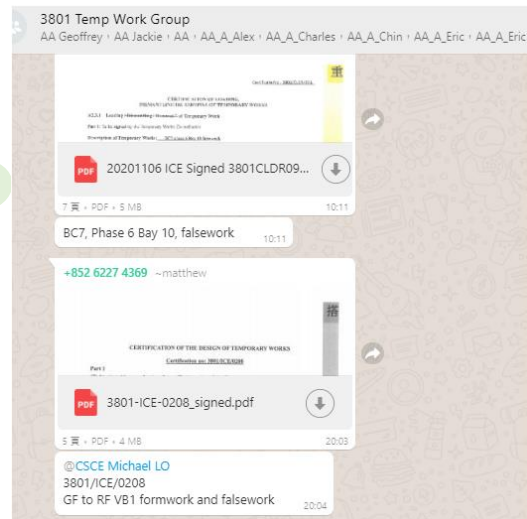
# Document Review Point (DR)



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Since May 2020,  
Some TRD projects  
are practicing in  
ESSW and Temp  
Work Control





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香港國際機場

# Tower Crane Foundation (DRAFT) Safety ITP



# Tower Crane Foundation (DRAFT) Safety ITP



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Ref	Activity	Method	Control Document / Specification	Acceptance Criteria	Frequency	Verifying Document	Contractor Responsible Parties	Inspection Point				
								S/C	Contractor			PMR
									ASP	SUR	CON	
<b>Tower Crane Foundation</b>												
<b>1</b>	<b>Document Submission (Prior to Commencement)</b>											
1.1	Method Statement and Risk Assessment	Document Review	GS Section 16	Notice of No Objection from AAHK (Status A, B, R)	28 days Prior to commencement	Contractor Submittals	CR	H	H	H	H	<b>H</b>
1.2	<b>Competence and Nomination of Key Person</b> <ul style="list-style-type: none"> <li>Project Engineer</li> <li>Safety Supervision Personnel</li> <li>Welder</li> </ul>	Document Review	CIC Guideline LD COP Welder's certificate	Notice of No Objection from AAHK	Prior to commencement	Contractor Submittals	CR	H	H	-	H	<b>H</b>
1.3	Foundation Design Drawing and Calculations	Document Review	CIC Guideline LD COP BD COP Structural Steel Crane Manual	ICE Certificate Notice of No Objection from AAHK	Prior to commencement	Contractor Submittals ICE Certificate	CR	H	-	-	H	<b>H</b>
1.4	Maintenance Plan and TC Logbook Template	Document Review	CIC Guideline LD COP Crane Manual PS Safety Section 1.14.2.4, 1.14.4.8	Notice of No Objection from AAHK	Prior to commencement	Contractor Submittals	CR	-	H	-	H	<b>H</b>

# Tower Crane Foundation (DRAFT) Safety ITP



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Ref	Activity	Method	Control Document / Specification	Acceptance Criteria	Frequency	Verifying Document	Contractor Responsible Parties	Inspection Point				
								S/C	Contractor			PMR
									ASP	SUR	CON	
<b>2</b>	<b>Material Sampling and Testing</b>											
2.1	<ul style="list-style-type: none"> <li>Concrete Cube Strength (for Cast-In TC)</li> <li>I-beam</li> <li>Rebar</li> <li>TC footing</li> <li>Counterweight (For Ballast TC)</li> </ul>	Inspection	Approved Design Crane Manual HOKLAS Report for Concrete Cube Mill Cert for Rebar and I-beam	As per Approval Drawing : <ul style="list-style-type: none"> <li>MPa of Concrete</li> <li>Rebar Type</li> <li>Footing dimension</li> <li>Footing Foundation Strength</li> </ul>	Material on site	Test Report / Dimensional Check	Engineer Team	-	-	-	H	<b>DR</b>
2.2	Anchor Bolts Hold Down and Nuts	Inspection / Document Review	Approved Design	Approved Design	Material on site	Supplier Certificate or Packing	Engineer Team	-	C	-	H	<b>DR</b>

# Tower Crane Foundation (DRAFT) Safety ITP



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Ref	Activity	Method	Control Document / Specification	Acceptance Criteria	Frequency	Verifying Document	Contractor Responsible Parties	Inspection Point				
								S/C	Contractor			PMR
									ASP	SUR	CON	
3	Site Works											
3.1	Pre-Work Briefing	Inspection	Method Statement / Design document	Conducted by ASP & Engineer Team	Before Installation	Training Record Via WhatsApp	Engineer Team / ASP	-	H	-	H	DR
3.2	Probe test for stability of tower crane foundation	Testing	Approved Design	Approved Design	Before installation of foundation	NQAA / Report and/or Photos	Engineer Team and Laboratory	-	DR	-	H	C
3.3	Anchor bolt testing equipment verification and competence of checker	Inspection	Supplier Specification	Conducted by ASP & Engineer Team	Before Installation	Checker Training Certificate and Equipment Certificate	Engineer Team / ASP	-	H	-	H	DR
3.4	Visual Checking on Installed Anchor Bolts	Inspection	Approved Design	Approved Design	100%	Photos via WhatsApp	Engineer Team / ASP	-	DR	-	H	DR
3.5	Anchor Bolt and Hold Down Bolt Torque test and/or Pull Out test	Testing	Approved Design BS 5080 / BS 8539	Approved Design	Agreed % in the Method Statement	NQAA / Report and/or Photos	Engineer Team / ASP	-	DR	-	H	C
3.6	Verification of competence of Welder	Check Welder on site	Welder Certificate	Valid and specific to type of weld in the design	All welders	Welder Certificate	Engineer Team / ASP		H		H	DR

# Tower Crane Foundation (DRAFT) Safety ITP



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								S/C	Contractor			PMR
									ASP	SUR	CON	
3.7	Welding Test	Testing	Approved Design	NDT 100%	Prior to commencement	NQAA / HOKLAS Test	Engineer Team / ASP	-	-	-	H	C
3.8	T5 Certificate for TC Foundation	Document Review and on site check	CIC Guideline Requirement Section 15	Notice of No Objection from AAHK (Status A, B, R)	Prior to commencement	NQAA / T5 Cert / TWC Cert	T5 or eq. Or TWC as per contractor's system	-	DR	-	H	C
3.9	RPE testing and examination	RPE on site testing	Cap 59J F&IU (LALG) Regn – Form 2	RPE Acceptance	After erection and before operation	Form 2	Engineer Team	-	DR	-	H	DR
3.10	Maintenance of Tower Crane (Foundation and Crane)	Crane Manual	Maintenance Record as approved Maintenance Plan	As per Maintenance plan checklist	As per maintenance plan schedule	As per maintenance plan / File into TC Logo Book	Engineer Team / ASP	-	DR	-	H	DR

## Prepared By Contractor :

Name: XXX	Position: Project Engineer	Signature:
-----------	----------------------------	------------

## Reviewed By Contractor :

Name: xxx	Position: Sr. Project Engineer	Signature:
Name: xxx	Position: Approved Safety Personnel	Signature:

# Key Document for Safety ITP Implementation



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Practice Note - Document Number: TRD/PN/CON/003  
Inspection and Test Plan Guideline

**DOCUMENT APPROVAL RECORD**

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On 12 Oct 2020

Appendix H2 Particular Specification – Health and Safety  
Contract xxxx

**APPENDIX H2  
PARTICULAR SPECIFICATION – HEALTH and SAFETY**

**CONTRACT xxxx**

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Appendix H2 (20200722)



VCommit Whatsapp: 6377 8310  
VCommit Email: trdvcommit@hkairport.com

**Practice Note**  
Document No. TRD/PN/CON/003

**Particular Specification**  
Appendix H2 – Health and Safety



# The Story of Do Do and Don't Don't



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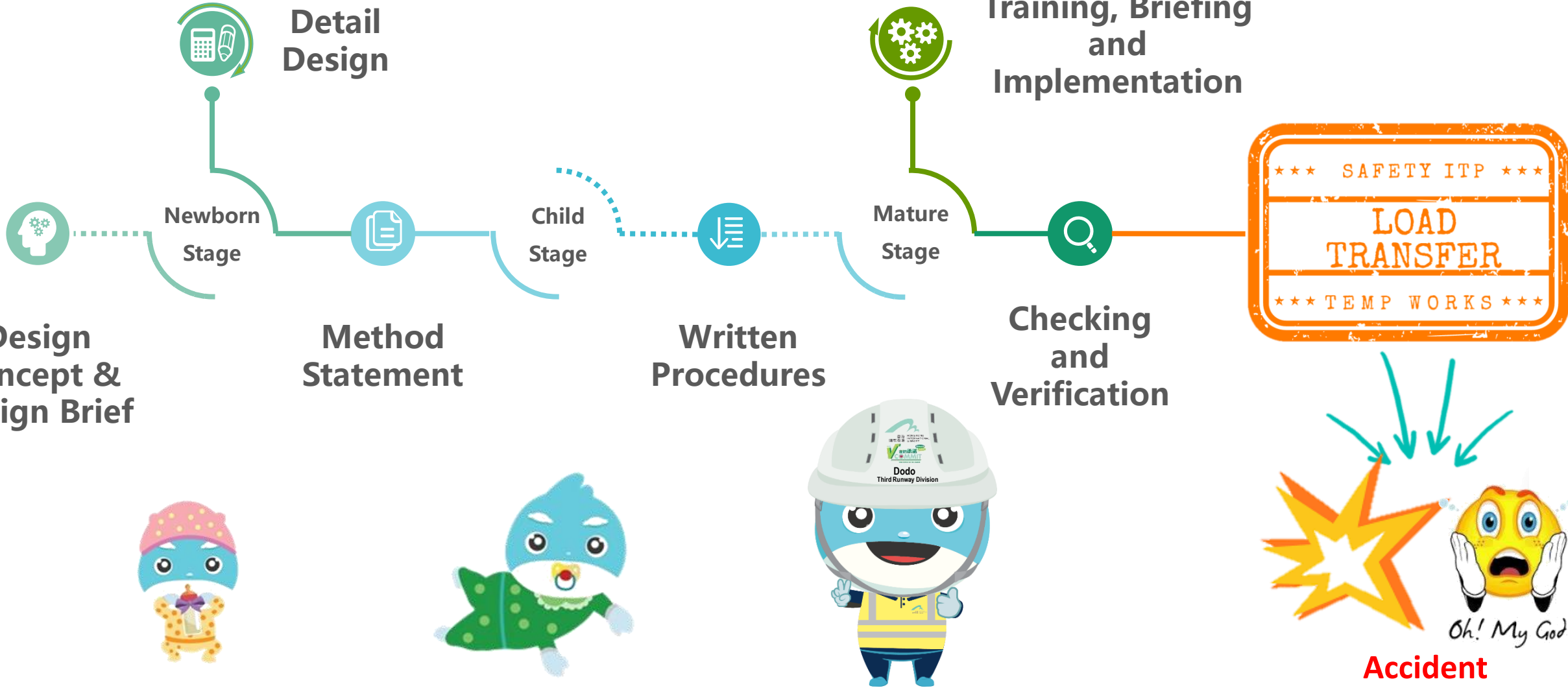
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# The Story of Do Do and Don't Don't



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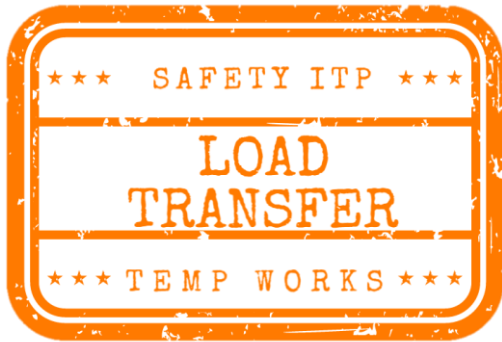
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Safe



開開心心上班去  
平平安安回家來  
家庭安全三跑道  
「我們承諾」  
做得到

家庭安全三跑道「我們承諾」做得到  
VCommit • Happy Family • Happy Safety





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我們承諾  
COMMIT  
THREE-FAMILY SYSTEM



♥ THE END ♥

家庭安全三跑道  
「我們承諾」做得到

VCommit

Happy Family Happy Safety



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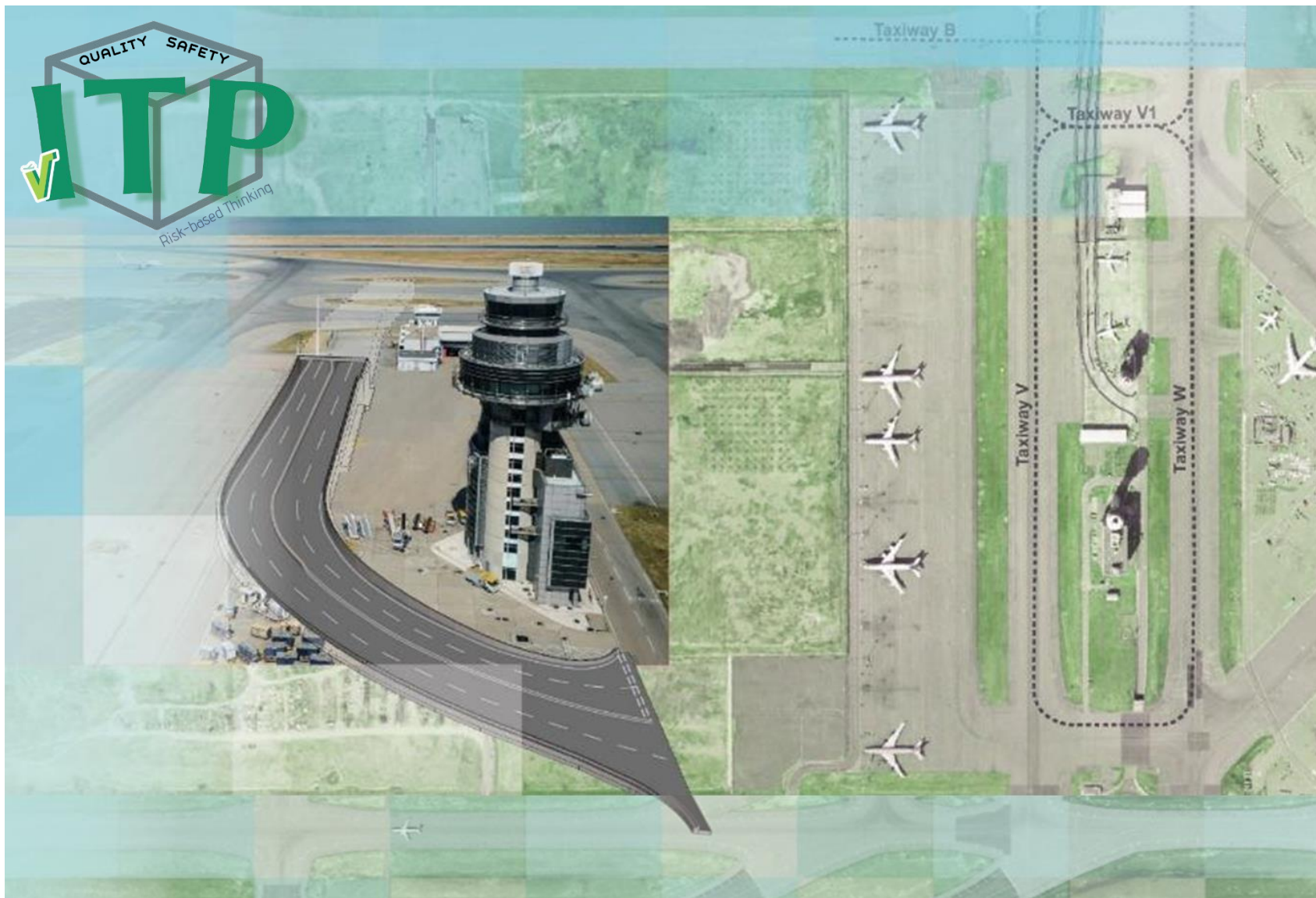
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CHINA ROAD AND BRIDGE CORPORATION



**WEBINAR**  
Work Safety of  
Temporary Works and  
Tower Cranes

**Contract 3302**  
Eastern Vehicular Tunnel  
Advance Works

**Inspection and Test Plan  
(ITP) Quality and Safety**

**Mr. Dickey YAU**  
Project Manager  
China Road and Bridge Corporation

*16 September 2022*





# The 3302 Project



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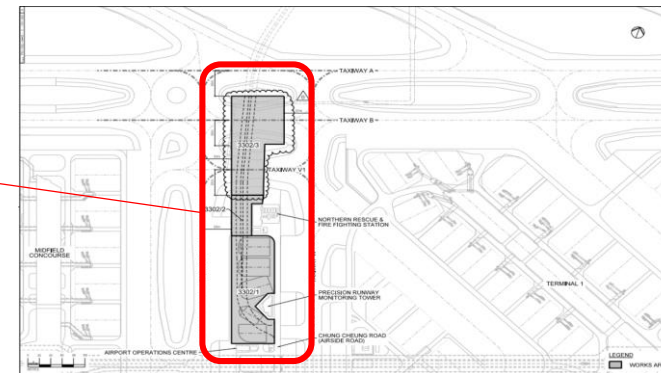
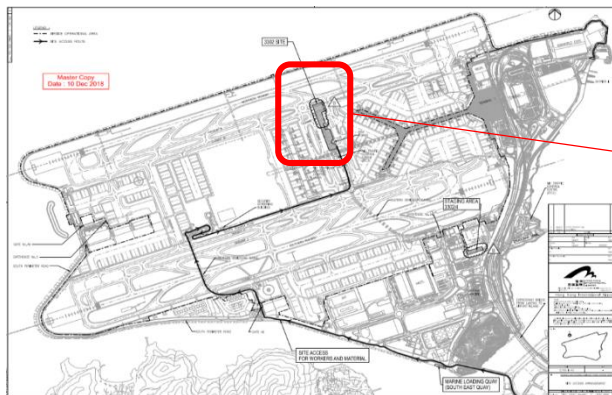
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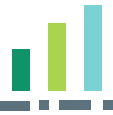


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<b>Client</b>	Airport Authority Hong Kong – Third Runway Division
<b>Main Contractor</b>	China Road and Bridge Corporation
<b>Contract No.</b>	3302-Eastern Vehicular Tunnel Advance Works
<b>Works Area</b>	ARA of Hong Kong International Airport
<b>Project Scope</b>	<ul style="list-style-type: none"><li>• Removal of taxi stand booth, fencing, buried pipes, ducts and cables, flexible and concrete pavement, street furniture, high mast lightings.</li><li>• Foundation and Structure for the first section of the new EVT, pump house No. E1 and Road Tunnel, Plant Building C</li><li>• Cast-in / underground Electrical &amp; Mechanical Works and Utilities Services</li><li>• Electrical and Mechanical Works in Road Tunnel Plant Building C</li></ul>





## 500m RC Tunnel

### Box Culvert under taxiway in flight operation (45m long)

Excavation (140,000m<sup>3</sup>) and ELS work

- Steel Strut : 4000T
- Sheetpile : 15000m<sup>2</sup>
- Interlock pipepile : 7000 linear metre

Temporary Decking (660m<sup>2</sup>)

Wall and Slab Formwork Erection (30000m<sup>2</sup>)

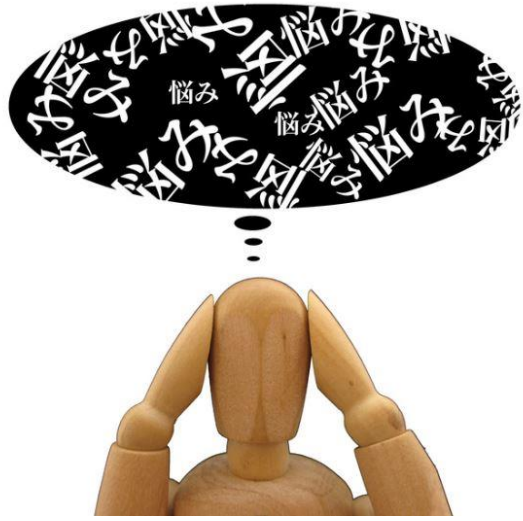
Falsework Erection (50820m<sup>3</sup>)

External Work Scaffold





# When first come across with Safety ITP





# Difficulties of Implementation



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- Trade Practice , Ritual , Habit (Different trades have different ways to be followed)
- Culture and Perception (Some industry practitioners may not think the same way)
- Human Errors (The rules may be violated or not entirely be followed)
- Take times to nourish a fruitful result and inherit



SAMPLE		Inspection and Test Plan for Special Lifting Operation							MS Ref Number: 0004 Method Statement: Special Lifting Operation ITP Revision Number: C			
Legend: AAHK PMR – AAHK Project Manager Representative, CR – Contractor Representative, ASP – Approved Safety Personnel, SUR – Survey Team, CON – Construction Team, S/C – Subcontractor, H – Hold Point, C – Control Point, DR – Document Review Point, MS – Method Statement												
Ref	Activity	Method	Control Document / Specification	Acceptance Criteria	Frequency	Verifying Document	Contractor Responsible Parties	Inspection Point				
								S/C	ASP	SUR	CON	AAHK PMR
3.6	Marking of Weight and Rigging Point	Inspection	--	Checked by ASP	Prior to commencement	Photos Via WhatsApp or other agreed communication method	Lifting Crew/ ASP	H	H	-	C	DR
3.7	Select appropriate lifting gears with sufficient SWL	Inspection	--	Checked by ASP	Prior to commencement	Photos Via WhatsApp or other agreed communication method	Lifting Crew/ ASP	H	H	-	C	DR
3.8	Fatal Zone fenced off	Inspection	--	Checked by ASP	Prior to commencement	Photos Via WhatsApp or other agreed communication method	Operator / ASP	H	H	-	C	DR
3.9	Communication Equipment e.g. Walkie-Talkie	Inspection	--	Checked by Lifting Supervisor / Operator / Rigger / ASP	Prior to commencement	Photos Via WhatsApp or other agreed communication method	Lifting Supervisor / Operator / ASP	H	H	-	C	DR
3.10	Lifting Permit	Inspection	--	Checked by Lifting Supervisor & ASP	Prior to commencement	NOAA/ Lifting Permit	Lifting Supervisor	H	H	-	C	C

**Example of Special Lifting Operation:**

1. Weight e.g. >10T
2. Orientation of the loads / CG e.g. irregular sharp
3. Pick and carry
4. Tandem lifting
5. Lifting Appliance sit close to the edge <2m
6. Loading / Unloading objects below ground level

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Sample of Safety ITP



# Step by Step Implementation : ELS



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CHINA ROAD AND BRIDGE CORPORATION

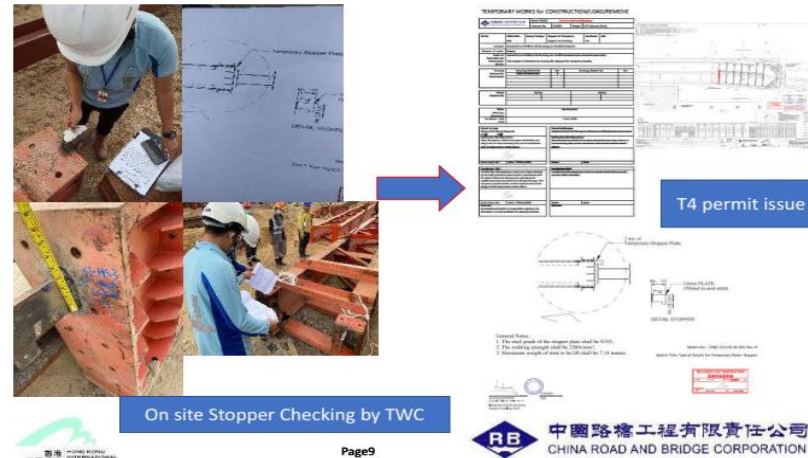
## Pictorial Sequence for Strut Installation



**Hold Point (PM)**  
Safe Work Procedure

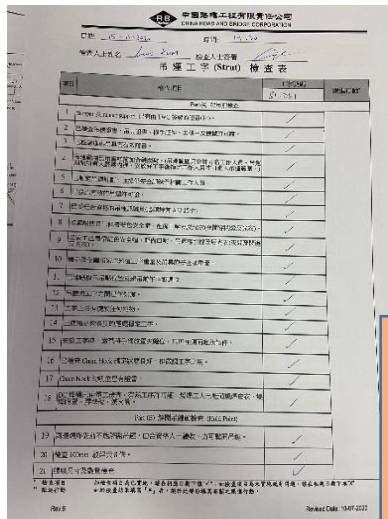
**Hold Point (3302)**  
Safe Work Procedure

## T4 issue for Stopper (Hold Point)



**Hold Point (3302)**  
Stopper

**DR Point (PM)**  
Stopper



**DR Point**  
Pre-lift checklist  
via WhatsApp

## Rigging before Lifting (Hold Point)

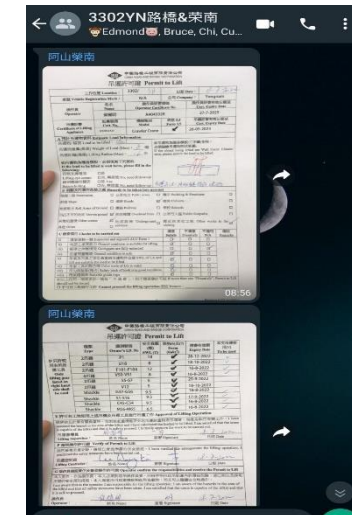


Lifting point verify and clearly marked

4 legs sling must be used

Raise up 200mm high for CG balance check

Sling protection



WhatsApp Group  
Communication





# Step by Step Implementation : ELS



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R.B.

**DR Point (PM)**  
Fatal Zone / Lifting Permit

**Hold Point (3302)**  
Fatal Zone / Lifting Permit

Fatal Zone Arrangement (Hold Point)



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No release of Strut Rigging until Visual Butt Test Passed (Hold Point)



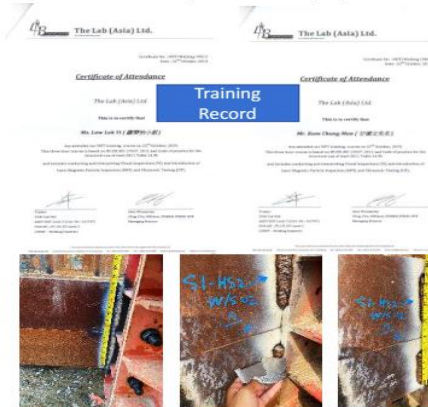
Secondary Protection for Strut Sitting



**DR Point (PM)**  
Strut Release from Crane

**Hold Point (3302)**  
Strut Release from Crane

Visual butt inspection by qualified trained person (Hold Point)



On site Checking

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# Effectiveness of Safety ITP



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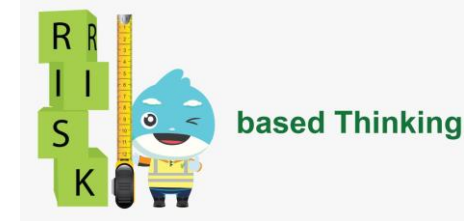
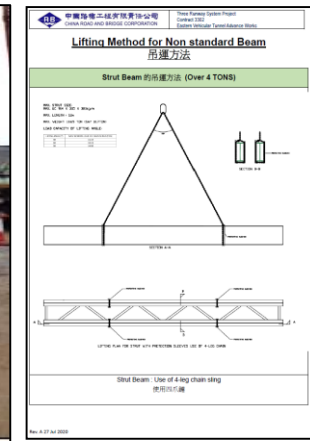
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- Structural, Systematic, Reliable, Effective, Efficient System
- Integrate Safety into Engineering Process
- Adopt and match with Existing Industrial Practice (ITP / RfI / RISC / NQAA)
- Dictate inspection / test required before proceed to next step (**Risk-based Thinking**)
- Production and Engineering staff have more involvement in safety inspection via RfI / RISC / NQAA
- Clearly define what, when, who, where and how to check
- Upscale Safety Assurance for Critical Task regarding Document, Material and Workmanship
- Improve both Quality and Safety Control
- WhatsApp Communication reduces paper work
- Immediate feedback from TRD and others for slippage found



- Escalate to Corporate Level for Management Support
- Recommend the Implementation of Safety ITP for On-going Project
- Present to Client and Consultant the benefit of Safety ITP
- Same Boat Same Goal – Foster Safety Culture via Safety ITP
- Implant Safety ITP as CRBC DNA



**THIRD RUNWAY DIVISION**

Practice Note - Document Number: TRD/PN/CON/003  
Inspection and Test Plan Guideline

**DOCUMENT APPROVAL RECORD**

	Name:	Signature:	Date:	Status:
Reviewed by	Waseem A Butt		06/10/2020	Issue No. B
	Bread Lin		08/10/2020	Effective Date: 06 October 2020
Approved by	Colin Batchelor		12/10/20	


**DOCUMENT CHANGE RECORD**

Sequence No:	Issue Date	Description of Change	Reason for Change
1	28 April 2020	First Issue	N/A
2	06 October 2020	Second Issue	To integrate safety into engineering process, safety hold points, safety control points and document review points shall be included into one ITP i.e. with quality hold points and quality control points.

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- 1 -

Remember ...



Every Accident is Preventable  
Our Goal is

**ZERO**

"Safety is **Everybody's**  
Responsibility ... All the Time"

THREE-RUNWAY SYSTEM 三跑道系統

Updated on 12- 2021

