

Construction Safety Week 2019 Conference

Safety Measurement on Working at Height

20 May, 2019

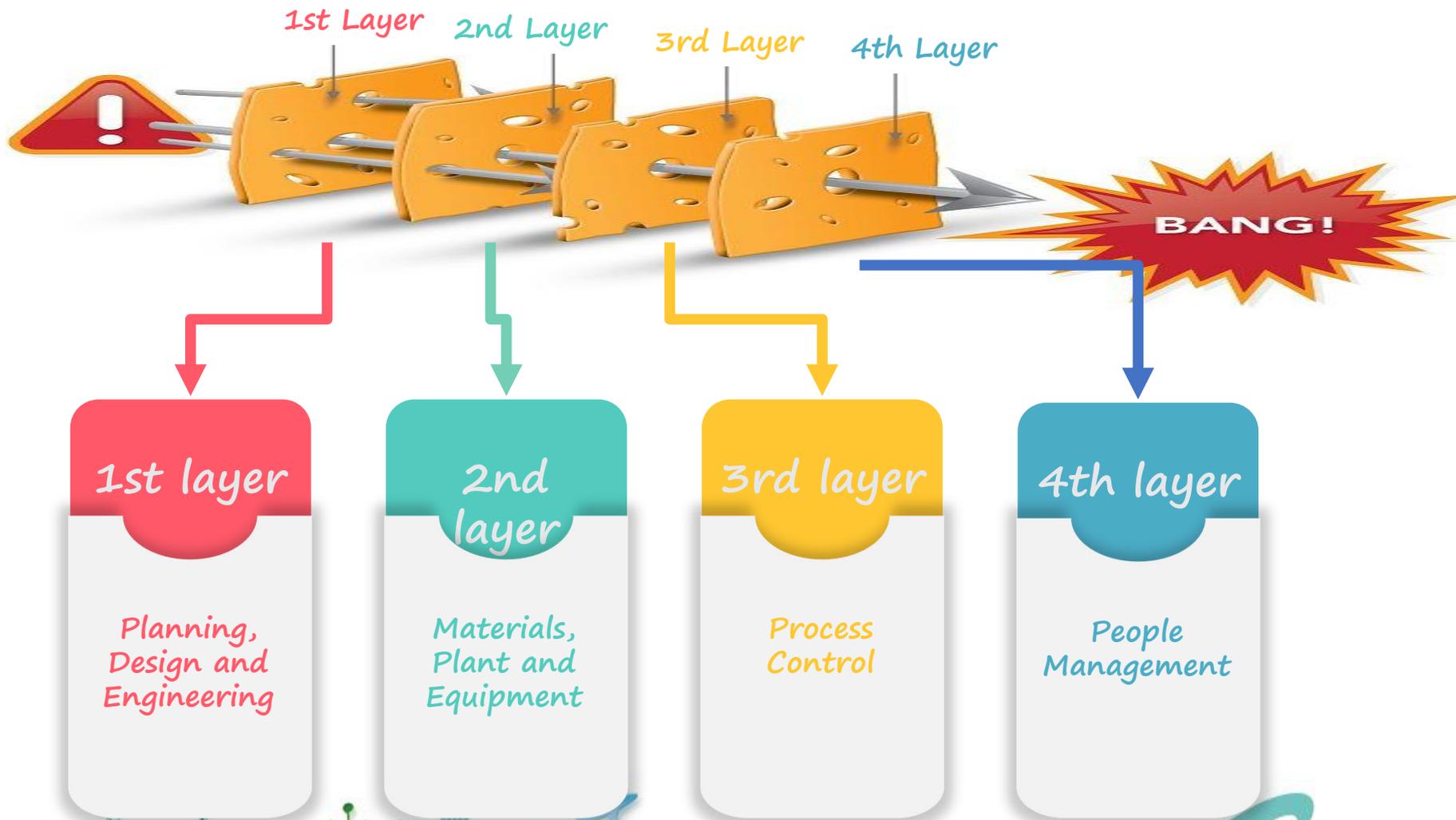
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Hierarchy of Control – Swiss Cheese Model

4 Layers of Protection



Safety Measurement on Working at Height

4 Layers of Protection



Planning Design and Engineering

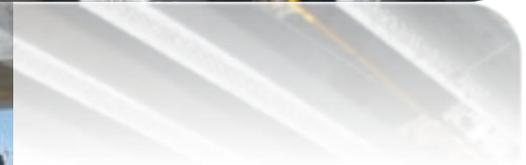
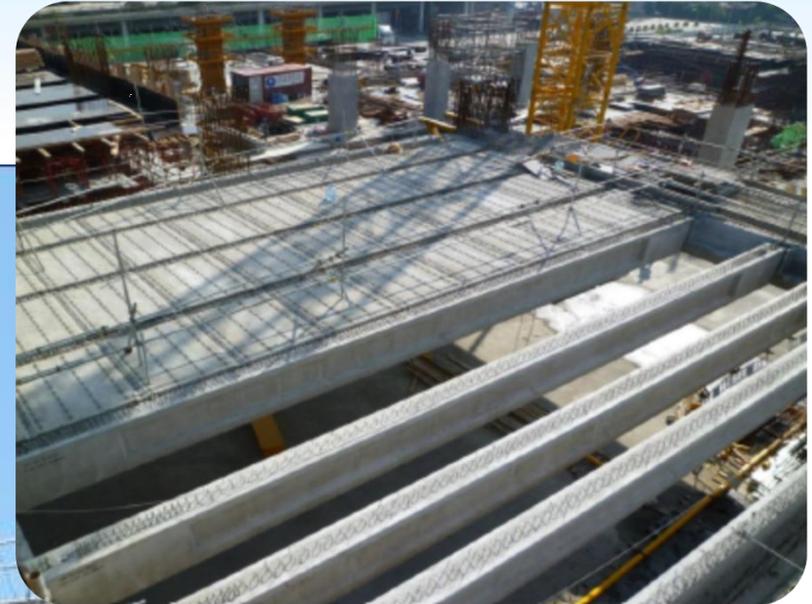
Design for Safety (Work at Height)
Utilization of Building Information Model (BIM),
Design for Manufacture and Assembly (DfMA)
and Modular Integrated Construction (MiC)

Safety Management Plan
(Work at Height Plan)

Floor Opening Protection Design



DfMA - Precast Beam and Slab Assembly



Minimize the amount of work at height by Design for Manufacture and Assembly (DfMA)

MiC TOILET CONSTRUCTION



1. Delivery by Truck



2. Lifting by Crane



3. Landing



4. Moving by Trolley



5. Self-levelling



6. Service Connection

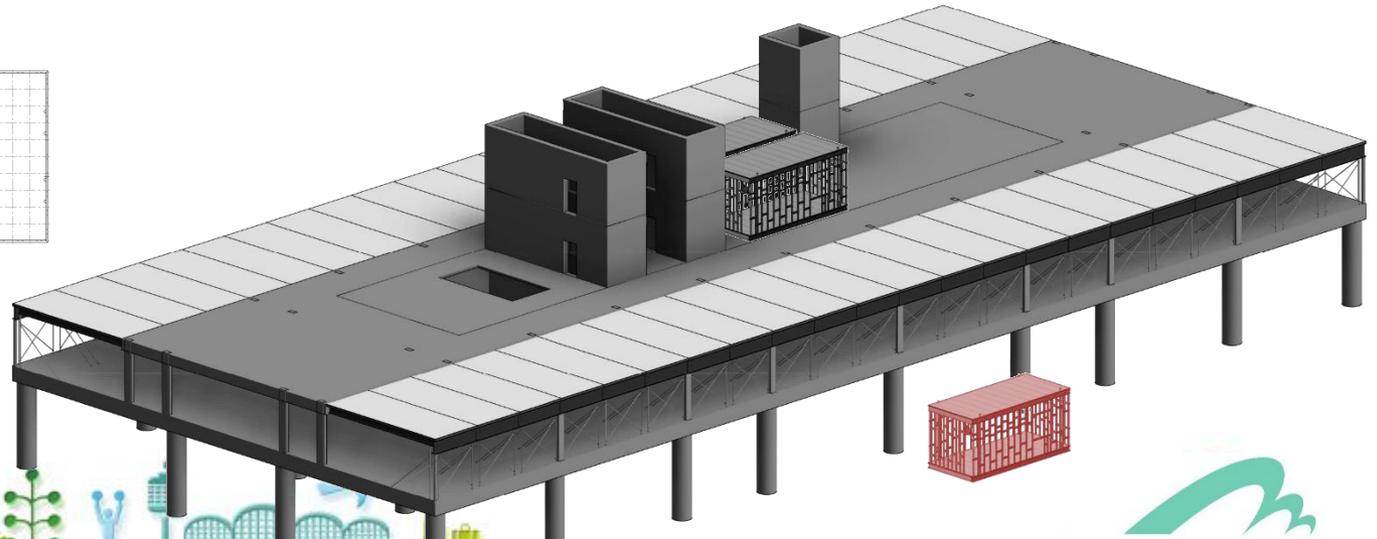
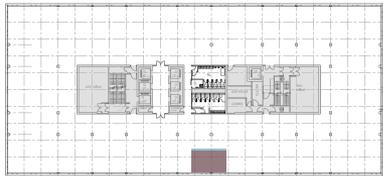


7. Exterior Finishing



8. Completion

Reference: Sync & Hickory Building Systems



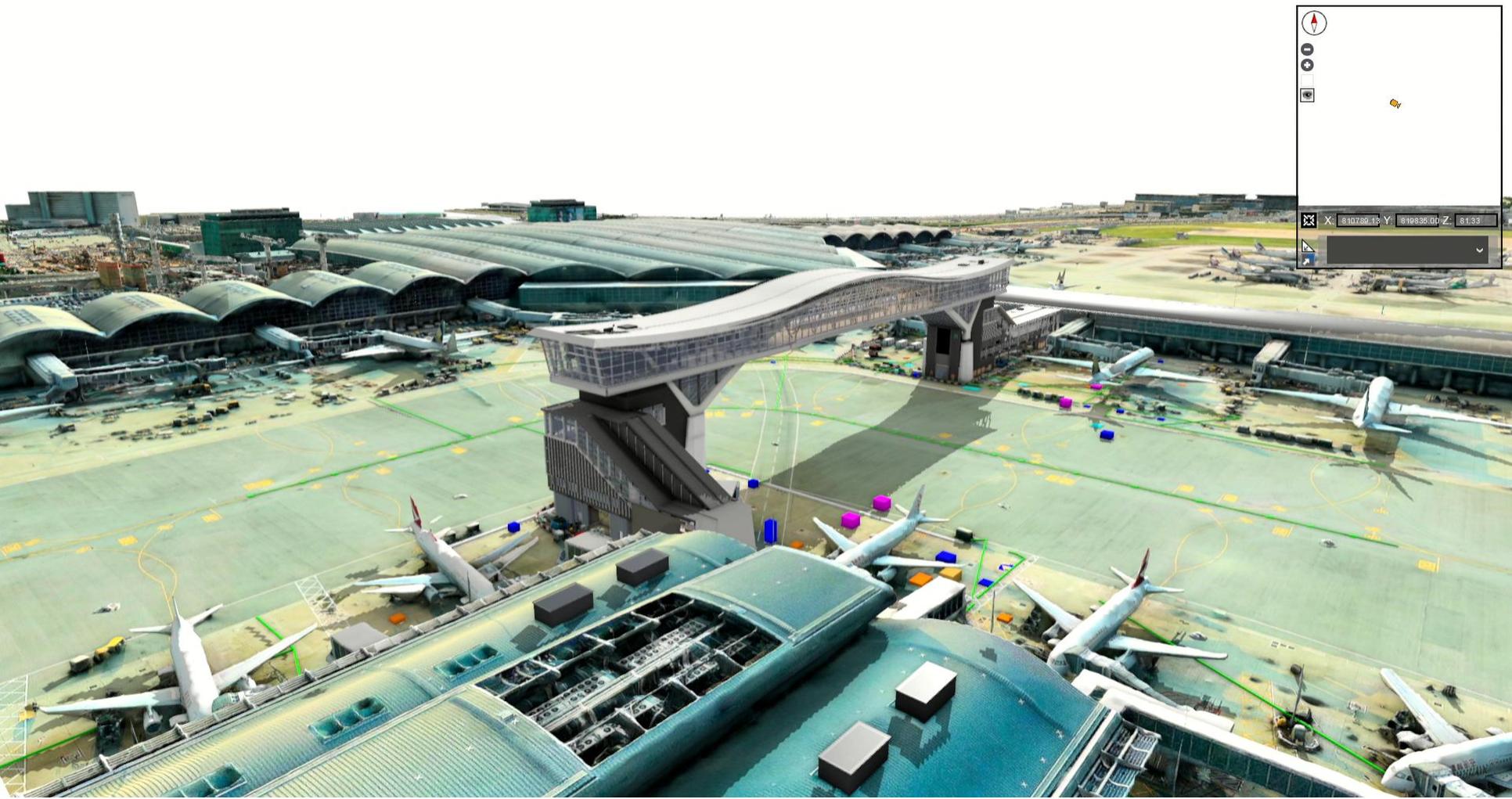
Minimize Work at Height by Modular Integrated Construction (MiC)

AA's application of BIM on construction works



Early Identification of Potential Work at Height Hazard in Virtual Reality (VR) Environment

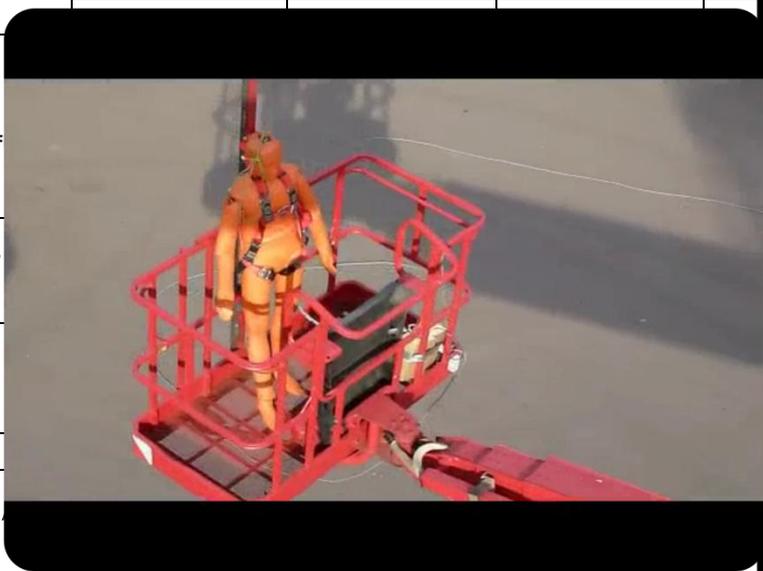
AA's application of BIM on construction works



Early Identification of Potential Work at Height Hazard during operational stage in Walk-through BIM

Requirement of Working at Height Plan

Project Health and Safety Management Manual



Length of Lanyard < 1m length shall be used when working on MEWP

Working at Height Plan

Emergency Management Plan and Related

Construction Work Over/ Near Water Management Plan

Plan

Working on MEWP Procedures

Tunnel Work Procedures

Procedures

Fall Arresting System Procedures

Confined Space Work Procedures

Marine Works Emergency Procedures

- Housekeeping Program
- Heat Stroke Prevention
- Aging Control Procedures
- Working above Ceiling Procedures



Design of Floor Opening Protection

<u>Size of Floor Openings</u>	<u>Requirement</u>
Floor opening Length of either side > 800mm and the other side > 400mm	<ul style="list-style-type: none"> ● Double rigid fencing with toe-board is required.
Small Floor opening (Less than size limit above)	<ul style="list-style-type: none"> ● Securely fixed cover with bolt, kicker or stopper at the back of plate with warning sign on the top ● Prevent the cover from accidental displacement. ● Thickness <ul style="list-style-type: none"> ➤ Timber > 25mm ➤ Steel > 5mm



Safety Measurement on Working at Height

4 Layers of Protection

Materials, Plant and Equipment

2nd
layer

Materials,
Plant and
Equipment

Materials:

Proposed new requirement in 2019

“In general, use of A-shape ladder, wooden ladder, straight ladder or bamboo scaffold for working at height are prohibited.”

“**Less than 2m but more than 900mm:** Light-duty working platforms such as Kung-fu platform or step platform shall be used with guard rails.

The height of “Kung-fu platform” and step platforms shall not be more than 1.2m and 1.8m respectively.”



Height of
Kung-fu
platform <
1.2m



Height of
Step
platform <
1.8m



Safety Measurement on Working at Height



Adjustable stairs with handrails provided

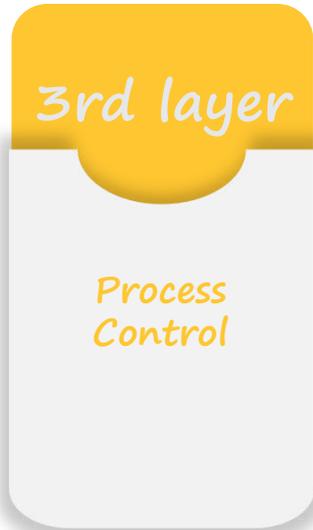


Safety net provided for large floor opening



Safety Measurement on Working at Height

4 Layers of Protection



Process Control

Fall Protection Rating System (FPR):

To promote safe working at height and to ensure the right provisions are made for fall protection

To provide an early warning of potential falls from height due to unsafe working practice

Scoring System:

Maximum : 10 for full compliance

½ mark or more deduct for deficiency in fall of person protection

FPR indicated in the weekly Site Safety Inspection Report

Sharing FPR for all projects during Monthly Safety Management Meeting

Incentive payment will be awarded to the Contractors with good performance



Fall Protection Rating System (FPR)

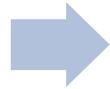
Record of FPR on Site Safety Inspection Report

		SITE SAFETY INSPECTION REPORT				
To :		Contract No.:		Title:		
Attn :						
Notification No.:		Current Site Safety Inspection Score		Last 5 Inspection Scores (%)		
				(Most to least recent / left to right)		
		%				
Date of Inspection:		Current Fall Protection Rating (FPR)		Last 5 FPRs		
		9.5		(Most to least recent / left to right)		
				10.0	9.5	10.0
				9.5	9.0	
Inspection Team		Position		Company		
Location(s) Inspected:						
The following deficiencies have been observed during the Site Safety Inspection. You are required to take Immediate and Appropriate Corrective Action.						
No.	Item	Marks	Priority	Status		



People Management for Working at Height

Safety Award System (Focus on Workers and Team)



Contractor



Awarded Team



AAHK

Trophies,
Certificates &
Incentive Payment
to Contractor

Contractors

Incentive
Coupons to
Workers

**Awarded
Workers**

Get coupons



End

