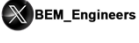






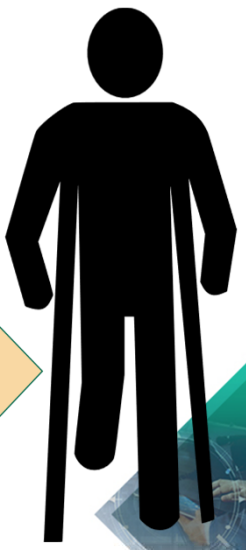
CONSTRUCTION INDUSTRY STANDARD (CIS) RELATED TO OSH PRACTICES

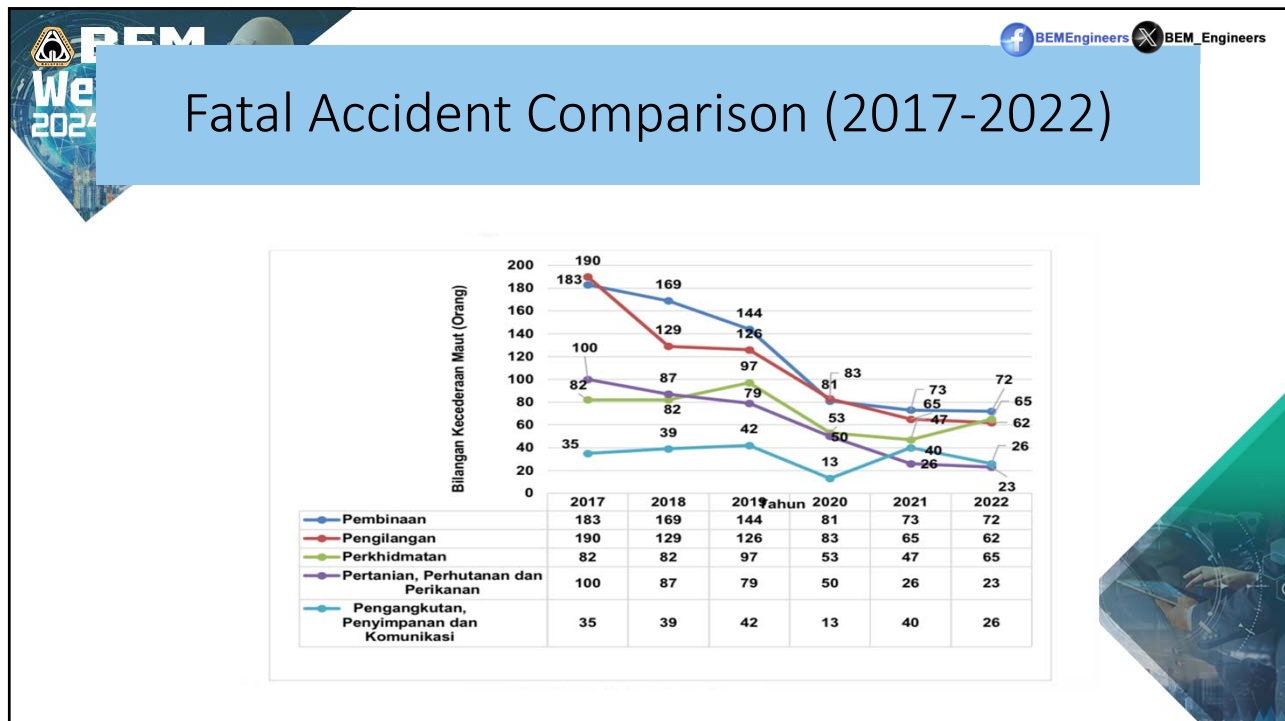
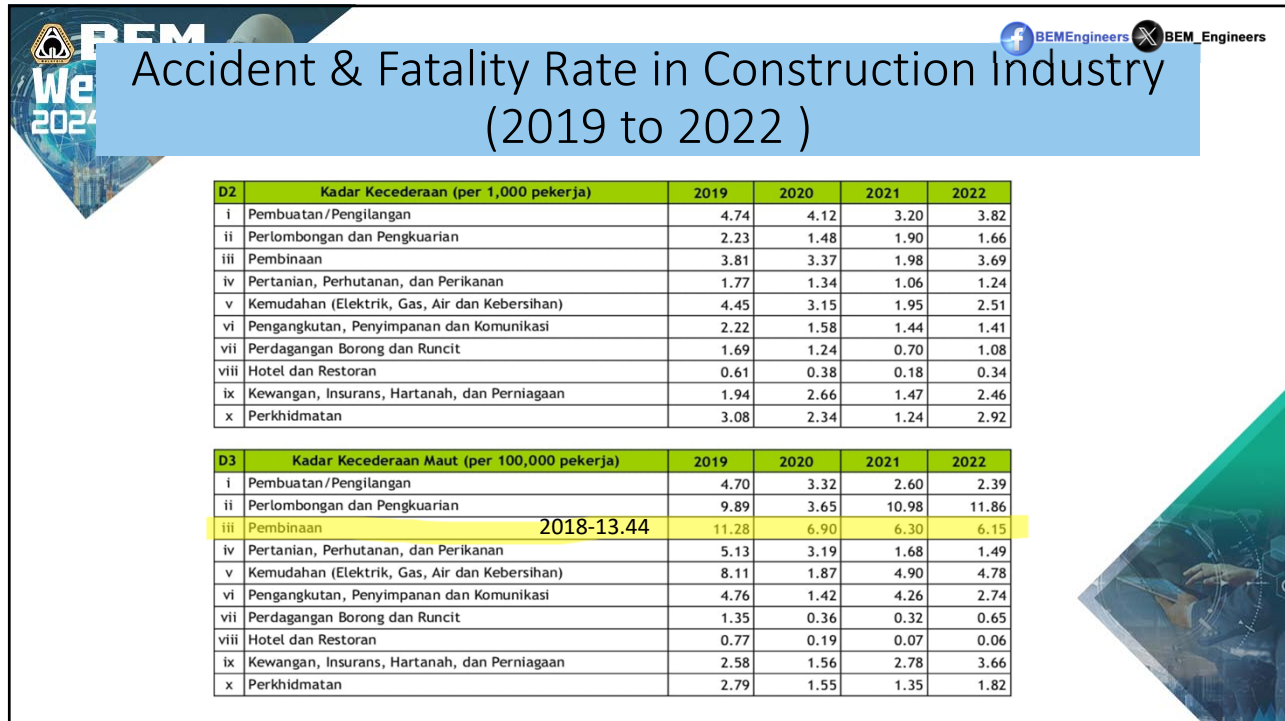
Presented by:
Ir M Ramuseren
Member, Sub WG on BEM Strategic Plan 2021-2025 Theme 2

Date : 4th June 2024
Venue : Zoom Webinar Application



Accident Statistics in Construction Industry





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Fatal Accident from 2019 -2022

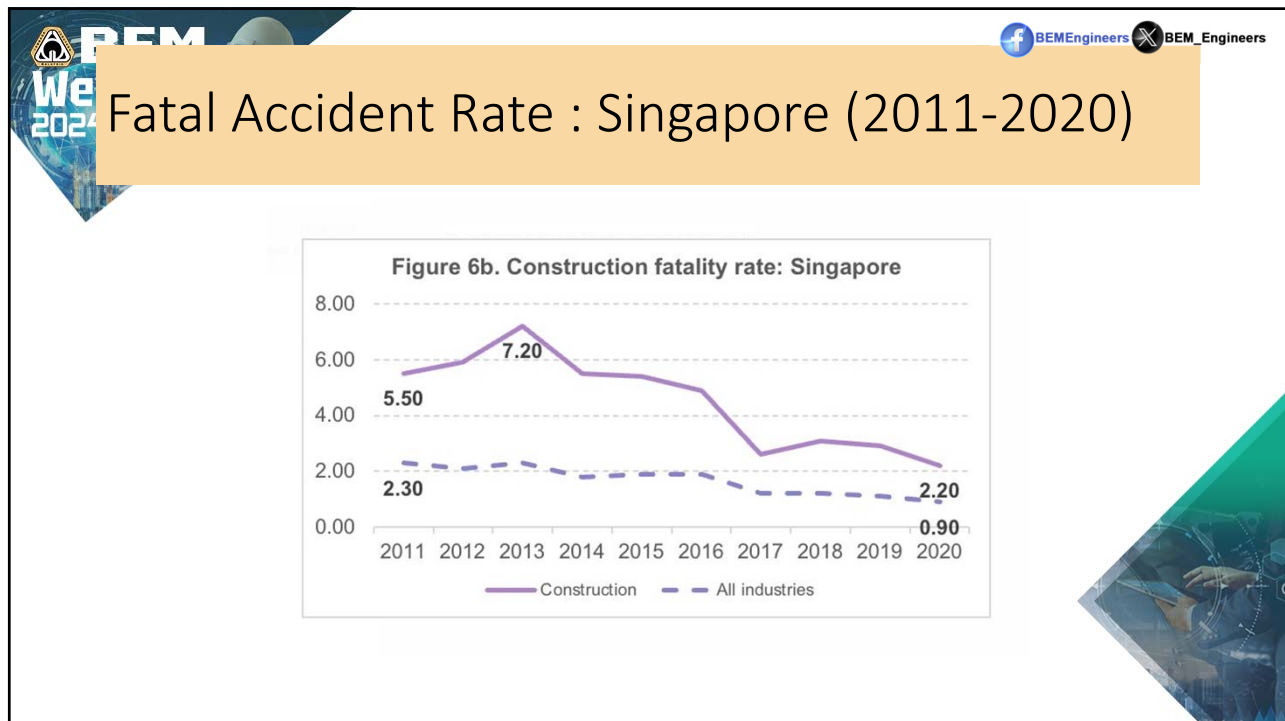
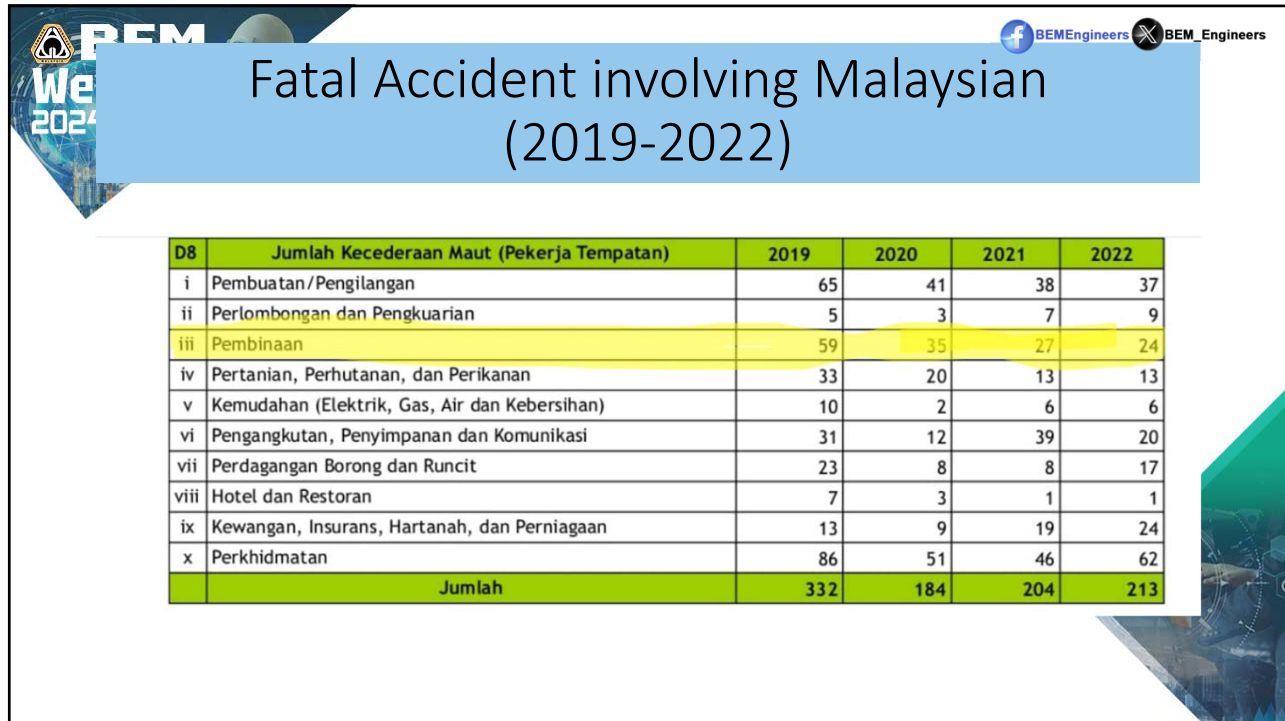
D7	Jumlah Kecelakaan Maut	2019	2020	2021	2022
i	Pembuatan/Pengilangan	126	83	65	62
ii	Perlombongan dan Pengkuarian	9	3	9	10
iii	Pembinaan	144	81	73	72
iv	Pertanian, Perhutanan, dan Perikanan	79	50	26	23
v	Kemudahan (Elektrik, Gas, Air dan Kebersihan)	13	3	8	8
vi	Pengangkutan, Penyimpanan dan Komunikasi	42	13	40	26
vii	Perdagangan Borong dan Runcit	35	10	9	19
viii	Hotel dan Restoran	12	3	1	1
ix	Kewangan, Insurans, Hartanah, dan Perniagaan	21	13	23	31
x	Perkhidmatan	97	53	47	65
	Jumlah	578	312	301	317

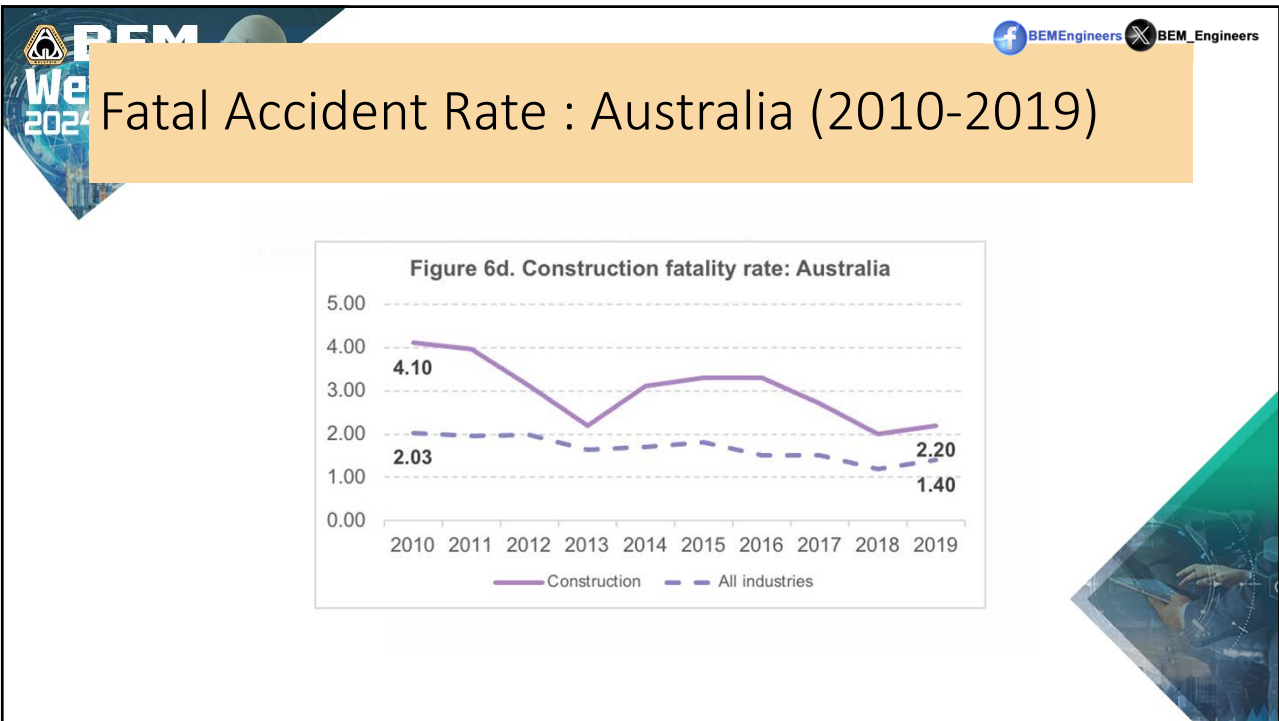
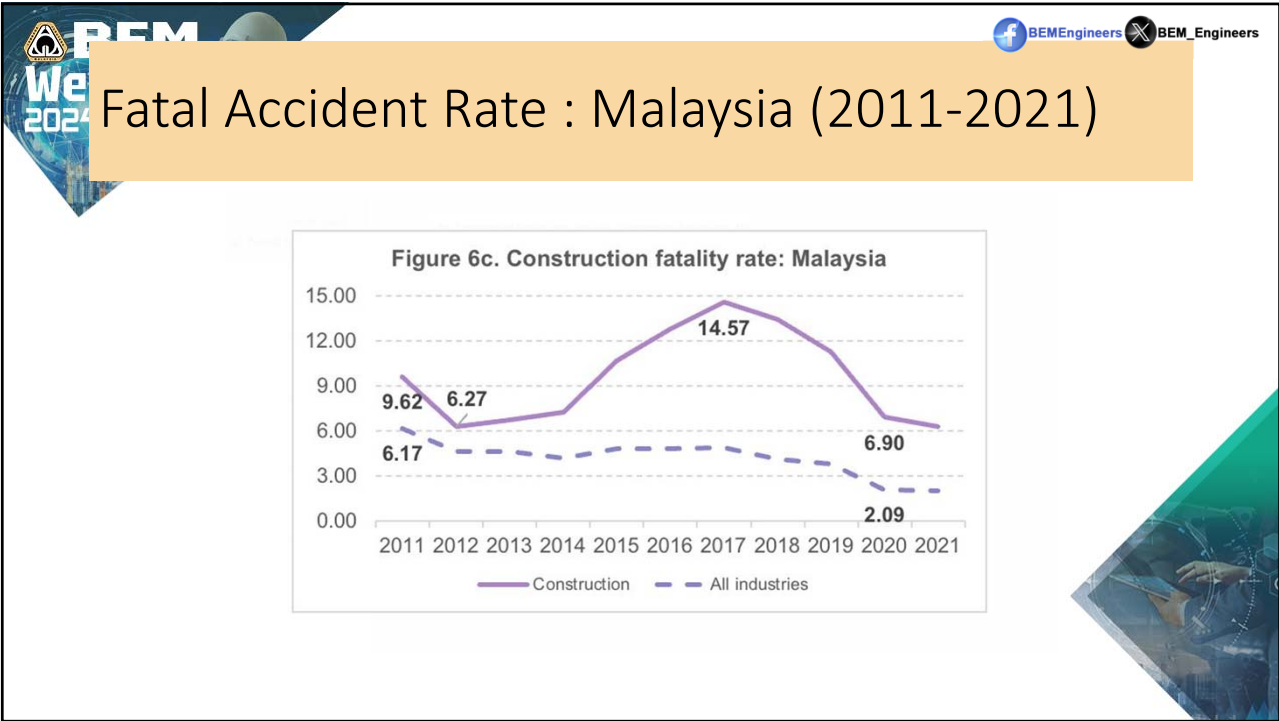
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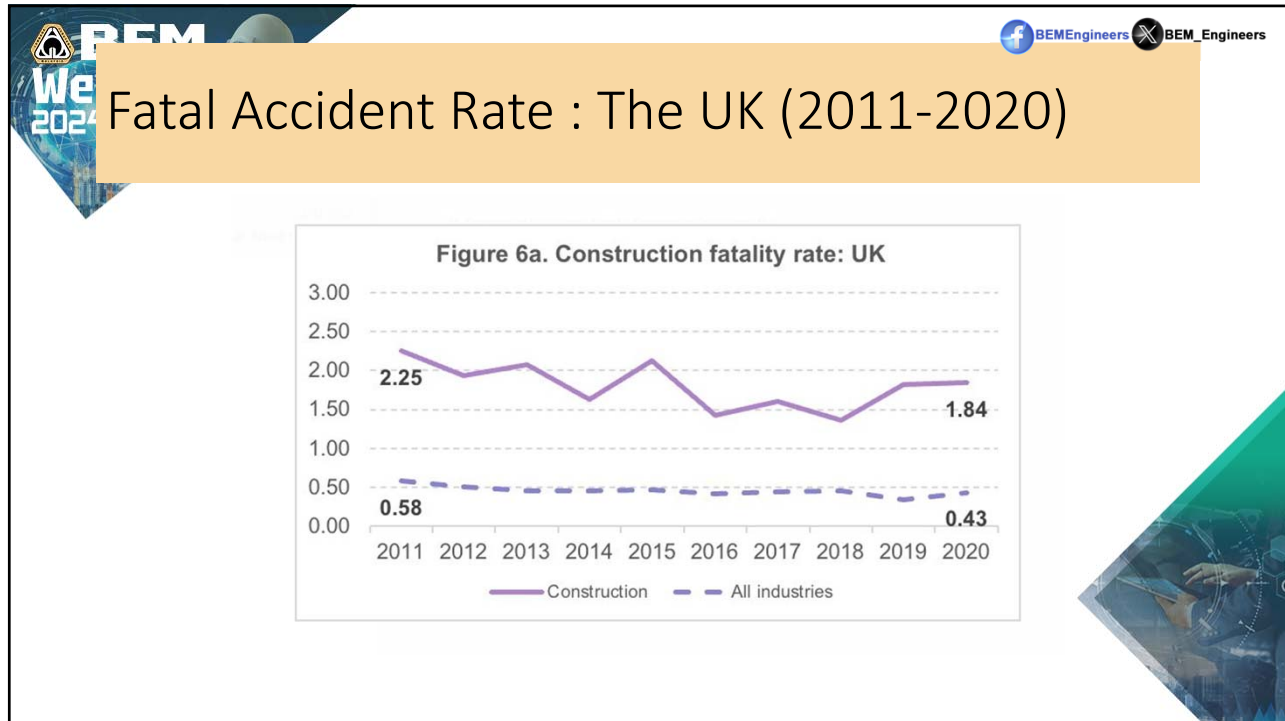
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Fatal Accident Involving Foreign Workers (2029-2022)

D9	Jumlah Kecelakaan Maut (Pekerja Asing)	2019	2020	2021	2022	
i	Pembuatan/Pengilangan	129	61	42	27	25
ii	Perlombongan dan Pengkuarian	4	0	2	1	
iii	Pembinaan	169	85	46	46	48
iv	Pertanian, Perhutanan, dan Perikanan	87	46	30	13	10
v	Kemudahan (Elektrik, Gas, Air dan Kebersihan)	3	1	2	2	
vi	Pengangkutan, Penyimpanan dan Komunikasi	39	11	1	1	6
vii	Perdagangan Borong dan Runcit	12	2	1	2	
viii	Hotel dan Restoran	5	0	0	0	
ix	Kewangan, Insurans, Hartanah, dan Perniagaan	8	4	4	7	
x	Perkhidmatan	82	11	2	1	3
	Jumlah	246	128	97	104	







Fatal Accident based on DOSH Record (2020- 2023)

E3	Siasatan Kecederaan Maut mengikut Sektor	2020	2021	2022	2023 (Sehingga Dis)
i	Pengilangan	73	48	52	55
ii	Pertombongan dan Penguarian	3	8	9	3
iii	Pembinaan	66	65	63	66
iv	Pertanian, Perhutanan dan Perikanan	43	16	21	27
v	Kemudahan Elektrik, Gas, Air dan Perkhidmatan Kebersihan	3	8	8	7
vi	Pengangkutan, Penyimpanan dan Komunikasi	11	6	14	11
vii	Perdagangan Borong dan Runcit	1	2	4	0
viii	Hotel dan Restoran	2	0	0	0
ix	Kewangan, Insurans, Harta Tanah dan Perkhidmatan Perniagaan	8	17	26	21
x	Perkhidmatan Awam dan Pihak Berkuasa Berkanun	3	4	2	0
xi	Tiada Maklumat				0
	Jumlah	213	174	199	190

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INJURY PREVENTION

~~Fatal accident~~

CONSTRUCTION SAFETY RELATED STANDARDS


BEM Webinar 2024 Series

CONSTRUCTION SAFETY RELATED STANDARDS PUBLISHED BY CIDB

CIS 10: 2020	Safety Health Assessment in Construction (SHASSIC)	CIS 23: 2023	Product Conformity For Falsework
CIS 14: 2019	Guidelines on Construction Work at Night	CIS 25: 2018	CARA- HIRARC
CIS 15: 2019	Guidelines on Prevention of Fall	CIS 27: 2019	OSH Specifications and BQ for Construction Works
CIS 16: 2019	Guidelines for Works at Confined Space	CIS 28: 2021	Public & Road User Safety- Construction Works Adjacent to & above Roadways
CIS 22: 2023	Product Conformity For Used Scaffolding		

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SHASSIC ASSESSMENT

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WHAT IS SHASSIC?



SAFETY AND HEALTH ASSESSMENT SYSTEM IN CONSTRUCTION

Assessment based on
CIS 10 : 2020

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SHASSIC - continue

SHASSIC Application - WHEN?

Physical Work progress

25% to 75%


3 Assessment Approach

- ✓ Document Check
- ✓ Workplace Inspection
- ✓ Interview

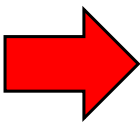
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SHASSIC STAR RANKING

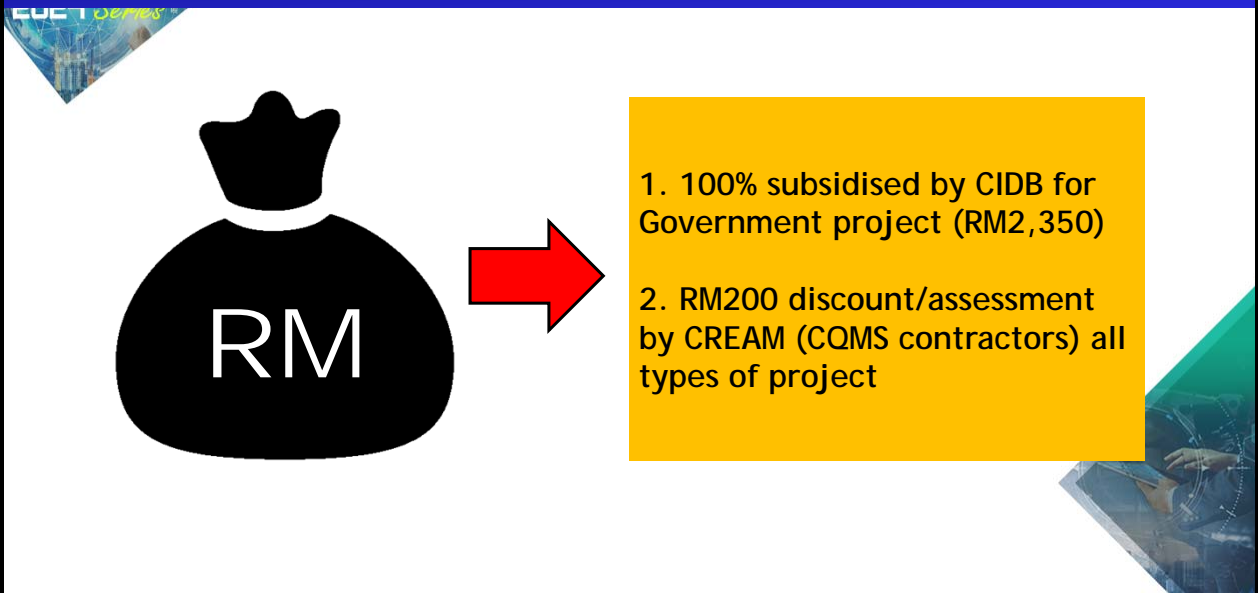

%	STAR RANKING
90 to 100	★★★★★
80 to 89.9	★★★★☆
70 to 79.9	★★★☆☆
60 to 69.9	★★☆☆☆
50 to 59.9	★☆☆☆☆
49 and below	Certificate of Participation


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INCENTIVE FROM CIDB & CREAM

RM 

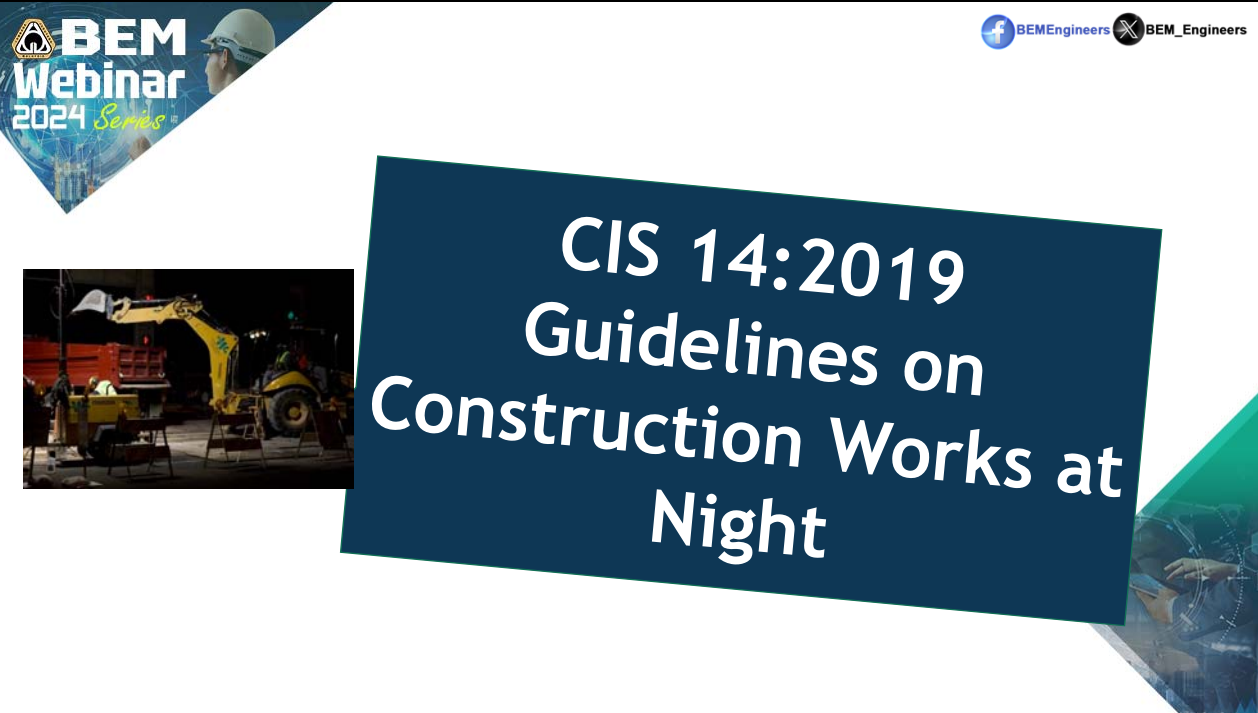
1. 100% subsidised by CIDB for Government project (RM2,350)
2. RM200 discount/assessment by CREAM (COMS contractors) all types of project




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CIS 14:2019 Guidelines on Construction Works at Night



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CIS 14:2019 GUIDELINES ON CONSTRUCTION WORKS AT NIGHT


STANDARD INDUSTRI PEMBINAAN
(CONSTRUCTION INDUSTRY STANDARD)

CIS 14:2019
GUIDELINES ON CONSTRUCTION WORKS AT NIGHT



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CIDB Construction Industry Development Board Malaysia
LAKSANA PENGANTARAN BINAAN DAN PEMBINAAN 2014

- Revision of CIS 14 : **2009**
- Night time - 7pm to 7:00am
- The guideline is for those working at night and dark environment in construction industry.
- Providing useful information and solutions to maintain a safe working environment at night
- Guidance for compliance to legal requirement and good practice
- References were made to Arahan Teknik Jalan 2C/85(2017)
- LLM's publication on Expressway Maintenance System
- FMA (Act 139)
- Guideline on OSH for Lighting at workplace 2018-DOSH
- BOWEC Regulations 1986
- CIS 25 : 2018
- COP published by Hong Kong Highways Department HKSARG 2006


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CIS 15 :2019 Guidelines on Prevention of Fall





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CIS 15 : 2019 GUIDELINES ON PREVENTION OF FALL




- Revision made to CIS 15 : 2009
- This guideline provides guidance on adopting a risk management approach to fall prevention at construction site.
- Applicable to everyone who has the duty to prevent person falling from heights
- Duty holders - Clients, Designers, Contractors and Workers
- HIRARC (Risk Management approach)
- References were made to Best Practice Guidelines for Working at Height from New Zealand
- CIS 25: 2018
- FMA- BOWEC Regulations
- Guidelines for the Prevention of Falls at Workplaces (2007)- DOSH
- Preventing Falls in Housing Construction- COP -Work Safe Australia



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CIS 16 : 2019 Guideline for Works at Confined Space




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CIS 16 : 2019 GUIDELINES FOR WORKS AT CONFINED SPACE

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CIS 16:2019
GUIDELINES FOR WORKS AT CONFINED SPACE
IN CONSTRUCTION SITE

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- Applies to Main Contractor, Sub-Contractor who manage and enter a confine space at construction sites
- Not applicable to underground mining
- Example of Confine Space are
 - Storage Tank, Tankers, Silos, boilers
 - tank like compartment usually having a manhole for entry
 - tunnels, shaft, ducts and similar structures
- Revision of CIS 16:2009
- Code of Practice for Safe Working in a Confined Space -DOSH(2010)
- FMA and its Regulations
- Safe Working in confined Space, Worksafe Australia -AS 2865-1995



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CIS 22 : 2023 Safe Use of Scaffolding in Construction



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**CIS 22 : 2023
PRODUCT CONFORMITY FOR USED SCAFFOLDING IN CONSTRUCTION**

STANDARD
INDUSTRI
PEMBINAAN

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CIS 22 : 2023

SAFE USE OF SCAFFOLDING IN CONSTRUCTION


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Standard Setting Organisation



Lembaga Pembangunan Industri Pembinaan Malaysia
 CONSTRUCTION INDUSTRY DEVELOPMENT BOARD MALAYSIA
100, Jalan Sultan Ismail, 50050 Kuala Lumpur, Malaysia
Tel: +603-2033 1000, 2033 1001
Fax: +603-2033 1002

- CIS 22 covers used frame, tubular and modular scaffolding of metal-based material to comply with PPS requirements.
- The requirement for PPS and applicable penalties
- Manufacturers , traders, supplier or owner of falsework with PPS is responsible to renew the PPS
- 2 types of inspection (initial and surveillance)
- Initial Insp - document check, quality check, quantity check and dimension check
- Surveillance Insp: all above + NCR+ Corrective action(including re-testing) + product marking
- The requirement for type of test and sampling for prefabricated frame, tubular scaffolding, facade modular scaffolding are clearly stated

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**CIS 23 : 2023
Safe Use of
Falsework and
Formwork in
Construction**



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CIS 23 : 2023

PRODUCT CONFORMITY FOR FALSEWORK IN CONSTRUCTION

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CIS 23: 2023



PRODUCT CONFORMITY FOR FALSEWORK IN CONSTRUCTION

Description: Falsework, inspection, sampling, testing

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- CIS 23 covers all falsework systems without product standards
- Pre-fabricated steel frame scaffolding is prohibited to be used as falsework - Reference made to MS 1462-Part 1. Enforced by CIDB → 1.5.2024, now in Schedule 4 , Act 520
- Covers new & used scaffolding as well.
- 2 types of inspection (initial and surveillance)
- Initial Insp - document check, quality check, quantity check and dimension check
- Surveillance Insp: all above + NCR+ Corrective action + product marking
- The requirement for testing and sampling for falsework system, adjustable telescopic props, tubular scaffolding , coupler, clamp and fitting are defined clearly and stated



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CIS 25:2018


[CONSTRUCTION ACTIVITIES RISK ASSESSMENT (CARA)
Hazard Identification, Risk Analysis and Risk Control (HIRARC)]


Description: Construction activity risk assessment, hazard identification, risk assessment and risk control

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CIS 25 : 2018

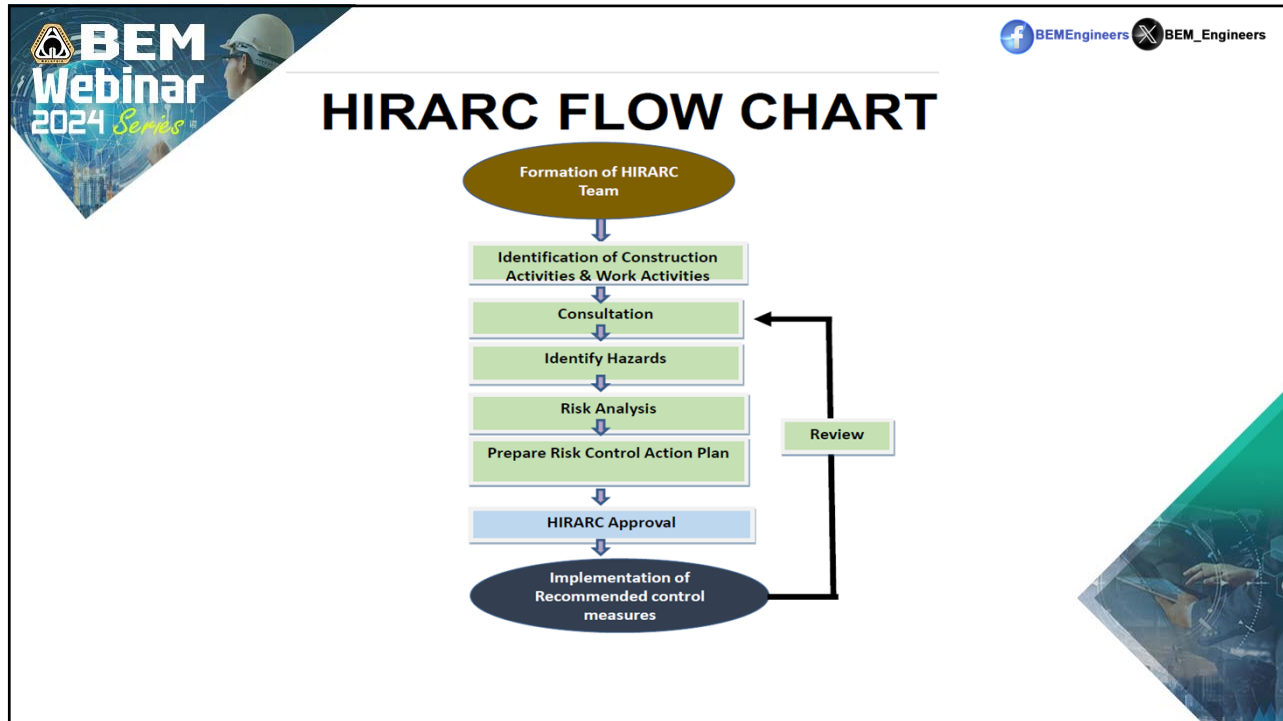
Construction Activities Risk Assessment Hazard Identification, Risk Analysis AND Risk Control (HIRARC)





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100, Persiaran 1/16, Seksyen 16, Kuala Lumpur, Federal Territory of Kuala Lumpur
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http://www.cidb.gov.my




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Common Hazards in Construction

- Exposed to fall while working at height
- Expose to sharp protruding object
- Expose to excessive sun heat (extreme heat)
- Exposed to hit by moving machinery
- Expose to stung by bees or hornet
- Expose to hit by fallen trees
- Exposed to excessive noise
- Failure of hoisting tackles during hoisting
- Hit by moving load
- Poor access and egress
- Expose to inhalation of mineral dust.
- Poor shoring
- Failure of access ramps
- Unsecured load lifted by MOBILE CRANE
- Unsafe forklift access and egress
- Poor housekeeping
- Expose to moving and dangerous part of machinery
- Expose to sharp object
- Exposure to moving load.




HIRARC ANALYSIS




LIKELIHOOD x SEVERITY

Level	Likelihood	Description
1	Rare	Not expected to occur but still possible
2	Remote	Not likely to occur under normal circumstances
3	Occasional	Possible or known to occur
4	Frequent	Common occurrence
5	Almost Certain	Continual or repeating experience


Level	Severity	Description
5	Catastrophic	Death, fatal diseases or multiple major injuries.
4	Major	Serious injuries or life-threatening occupational diseases (includes amputations, major fractures, multiple injuries, occupational cancers, acute poisoning, disabilities and deafness).
3	Moderate	Injury or ill-health requiring medical treatment (includes lacerations, burns, sprains, minor fractures, dermatitis and work-related upper limb disorders).
2	Minor	Injury or ill-health requiring first-aid only (includes minor cuts and bruises, irritation, ill-health with temporary discomfort).
1	Negligible	Negligible injury.




Low, Medium and High Action for Risk Level




Risk Level	Risk Acceptability	Recommended Actions
Low	Acceptable	<ul style="list-style-type: none"> • No additional risk control measures may be needed. • Frequent review and monitoring of hazards are required to ensure that the risk level assigned is accurate and does not increase over time.
Medium	Tolerable	<ul style="list-style-type: none"> • A careful evaluation of the hazards should be carried out to ensure that the risk level is reduced to as low as reasonably practicable (ALARP) within a defined time period. • Interim risk control measures, such as administrative controls or PPE, may be implemented while longer term measures are being established. • Management attention is required.
High	Not acceptable	<ul style="list-style-type: none"> • High Risk level must be reduced to at least Medium Risk before work starts. • There should not be any interim risk control measures. Risk control measures should not be overly dependent on PPE. • If practicable, the hazard should be eliminated before work starts. • Management review is required before work starts.






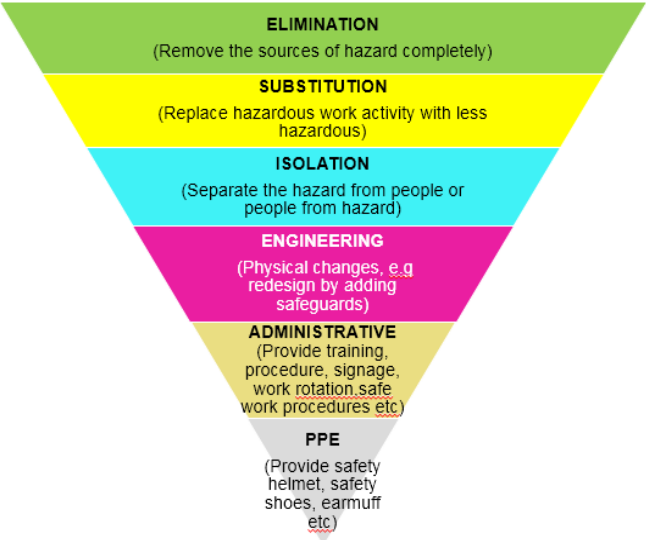
RISK MATRIX

Likelihood Severity	Rare (1)	Remote (2)	Occasional (3)	Frequent (4)	Almost Certain (5)
Catastrophic (5)	5 (Med)	10 (Med)	15 (High)	20 (High)	25 (High)
Major (4)	4 (Med)	8 (Med)	12 (Med)	16 (High)	20 (High)
Moderate (3)	3 (Low)	6 (Med)	9 (Med)	12 (Med)	15 (High)
Minor (2)	2 (Low)	4 (Med)	6 (Med)	8 (Med)	10 (Med)
Negligible (1)	1 (Low)	2 (Low)	3 (Low)	4 (Med)	5 (Med)





Hierarchy of Control



ELIMINATION
(Remove the sources of hazard completely)

SUBSTITUTION
(Replace hazardous work activity with less hazardous)

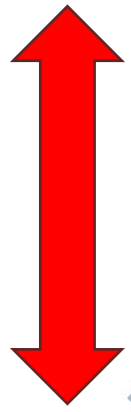
ISOLATION
(Separate the hazard from people or people from hazard)

ENGINEERING
(Physical changes, e.g redesign by adding safeguards)


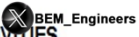
ADMINISTRATIVE
(Provide training, procedure, signage, work rotation, safe work procedures etc)

PPE
(Provide safety helmet, safety shoes, earmuff etc)

More Effective



Less Effective

CIS ON CONSTRUCTION ACTIVITIES RISK ASSESSMENT (CARA – HIRARC) TABLE OF COMMON CONSTRUCTION WORK ACTIVITIES

1. Hazard Identification									
1. Hazard Identification				2. Risk Analysis				3. Risk Control	
Item	Work Activity	Hazard	Consequences/ Effect may cause	Existing Risk Control <small>*Resuming there is no control/measure</small>	Likelihood	Severity	Risk Rating	Risk Classification	Recommended Control Measures
A. SITE PREPARATION WORK									
1	a. Survey Work	Expose to high speed moving vehicle.	Struck by high speed vehicle and fatal.	No existing risk control measure	2	5	10	Yellow - Medium	a. ENGINEERING CONTROL (EC) i. To install traffic cone and safety warning signage to indicate man at work. b. ADMINISTRATIVE CONTROL (AC) i. To provide flagman to control traffic flow. ii. Conduct Tool Box Talk on life traffic hazard prior to survey work. c. PPE CONTROL (PC) i. Wearing of safety helmet, safety shoes/boots and high visibility safety vest should be made mandatory.
		Expose to sharp protruding object	Potential to sustain legs injury.	No existing risk control measure	4	3	12	YELLOW - Medium	a. ENGINEERING CONTROL (EC) i. There is no EC possible. b. ADMINISTRATIVE CONTROL (AC) i. To conduct visual site inspection prior to survey work. ii. Conduct Tool Box Talk on potential hazards during survey work. c. PPE CONTROL (PC) i. Wearing of safety helmet, safety vest and safety shoes/boots should be made mandatory.








CIS 27 : 2019

OSH Specifications and BQ for Construction Works



CIS 27 : 2019
OSH SPECIFICATIONS AND BQ FOR CONSTRUCTION WORKS

STANDARD INDUSTRI PEMBINAAN
(CONSTRUCTION INDUSTRY STANDARD)

CIS 27 : 2019
OCCUPATIONAL SAFETY AND HEALTH –
SPECIFICATION AND BILL OF QUANTITIES (BQ) FOR
CONSTRUCTION WORKS

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Construction Industry Development Board of Malaysia

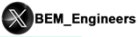


ANEX A
OCCUPATIONAL SAFETY AND HEALTH BILL OF QUANTITY

ITEM	DESCRIPTION	UNIT	QTY	RATE (RM)	AMOUNT (RM)
OCCUPATIONAL SAFETY & HEALTH					
A	Preparation of 5 copies site safety and health plan (S & H Plan) as per item 2.2 of the specification for OSH Construction Works in CIS 27 : 2019	Nos	5		
B	Employment of safety personnel as per item 2.3 of the specification for OSH Construction Works in CIS 27 : 2019 (i) Safety and Health Officer (ii) Site Safety Supervisor (iii) Contractor Safety Supervisor (iv) Designated Person	Man/month Man/month Man/month Man/month			
C	Establishment of a Safety and Health Committee at place work as per item 2.4 of the specification for OSH Construction Works in CIS 27 : 2019	Month			
D	Provision of safety and health training as per item 2.5 of the specification for OSH Construction Works in CIS 27 : 2019	Nos			
E	Preparation of Hazard Identification Risk Assessment and Risk Control (HIRARC) for the activities carried out at site as per item 2.6 of the specification for OSH Construction Works in CIS 27 : 2019	Item			
F	Preparation of 5 copies Safety & Health Performance Report as per item 2.7 of the specification for OSH Construction Works in CIS 27 : 2019	Monthly	5		
G	Provision for safety and protective equipment as per item 2.8 of the specification for OSH Construction Works in CIS 27 : 2019 and as approved by S.O • Safety footwear • Safety helmets • Full Body Harness one Hook and Lanyard for workmen who work at heights more than 2m above ground level • Safety life lines for workmen who work at heights more than 2m above ground level • Protective gloves • Safety goggles	Pairs Nos Nos Meter Pairs Pairs			
					TO COLLECTION (RM)

ITEM	DESCRIPTION	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	• Safety jackets of reflective type	Pcs			
	• Ear plugs and muffs	Pairs			
	• Gas masks	Set			
	• Dust masks	Pcs			
	• Head lamp	Pcs			
	• Life jacket	Pcs			
	• Laser protection	Pcs			
	• Protection against radiant energy (vary additional and delete where not applicable... etc.))	Pcs			
H	Provision for health and welfare as per item 2.9 of the specification for OSH Construction Works in CIS 27 : 2019 • Workers Accommodation • First Aid Facilities • Rest Area • Toilet • other health and welfare facilities to be specified	Item Item Item Item Item			
I	Allow for compliance to safe working area as per item 2.10 of the specification for OSH Construction Works in CIS 27 : 2019 (i) Supply, erection, maintenance and removal on completion of the works, protective and security hoarding as stipulated in Specification For Occupational Safety And Health For Building Construction Works. (ii) Supply, erection and dismantling of scaffolding, working platforms with safety nettings by competent person(s) under the direct supervision of a designated person as stipulated in Specification For Occupational Safety And Health For Building Construction Works. (iii) Submission of scaffolding design and working platform for works above 15m height certified by a Professional Engineer for the approval of the S.O / P.O, as stipulated in Specification For Occupational Safety And Health For Building Construction Works. (iv) Supply, erection, maintain and dismantling of cash platforms during demolition of structure or other related exterior works at more than 12m height. Such platform shall be designed by a Professional Engineer and certified for safety prior to erection as stipulated in Specification For Occupational Safety And Health For Building Construction Works.	Item Item Item			
					TO COLLECTION (RM)

Documents Used in Reference –Development of OSH Specification & BQ

- Schedule of Price for OSH Bill of Quantities –2008
- JKR BQ on OSH for Building Works and Engineering
- Report on Construction OSH Bills , prepared by University Researchers
- FMA and the Regulations
- OSH Act 1994 and the Regulations
- Guidelines for HIRARC 2008-DOSH & CIS 25:2018
- CIS 15 : 2019 –Guidelines of Prevention of Fall at Construction Sites
- ICP for Safe Working in Confined Space 2010-DOSH



OSH Specification & Bill of Quantities

→ **Section 1** – Scope , Normative references and terms used in the Standard

→ **Section 2** – Specifications (15 requirements)

- General Duties of Contractor
- Safety & Health Plan
- OSH Personnel (SHO, SSS, CSS and DP)
- Safety & Health Committee
- Safety & Health Training
- HIRARC



Continue....



- PPE
- Health and Welfare Provision
- Safe Working Area
- Traffic Management
- Special Working Conditions
- Access and Egress
- Plant & Machinery
- Temporary Works by Designer

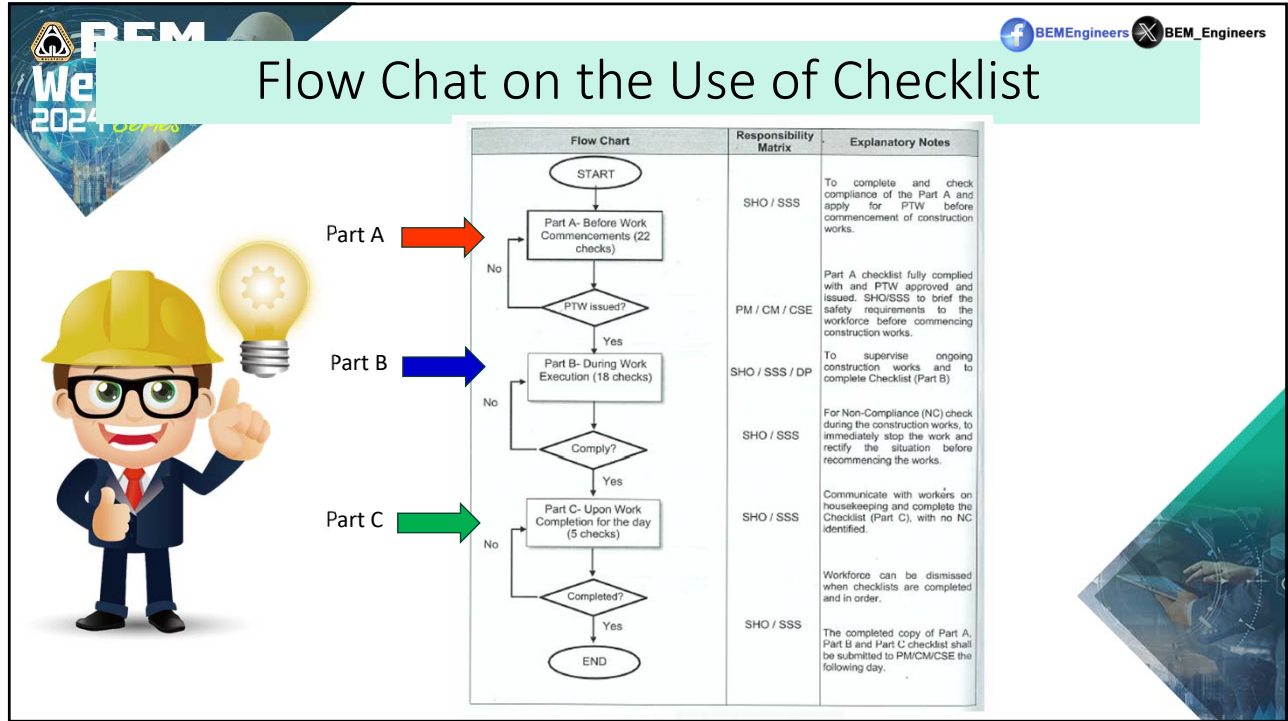
Recommendations

- → CIS 27: 2019 to be **used by Client or QS**
- → Prices for each item, **shall be fixed by QS/Client**
- → The CIS 27:2019 maybe adopted in **total or in part** and addition or omission maybe effected to suit the project needs
- → CIS 27:2019 –use as **stand alone Billin** project BQ
- → Can be used for both **building and Engineering** projects

CIS 28:2021 : Public & Road User Safety
-construction works adjacent to & above roadways


- Promote the use of check list on 3 construction situations
 - (i) Pre-Construction (Part A)
 - (ii) During Construction (Part B)
 - (iii) Post Construction (Part C)








CHECKLIST FOR PUBLIC & ROAD USER SAFETY - CONSTRUCTION WORKS ADJACENT TO AND ABOVE ROADWAYS (PART A)

PART A - BEFORE WORK COMMENCEMENT						
Item	Checklist	C	NC	Date	Time	Remarks
1	Safe Work Procedure / Work Method Statement is developed and approved by Project Consultant?					Approval from Project Consultant
2	Safe Work Procedure / Work Method Statement communicated to work team members?					Proof of communication to be established
3	HIRARC related to falling object from height and working adjacent to existing road and public amenities are developed and approved.					HIRARC document related to falling object and construction work adjacent to existing road approved by PM
4	Traffic Management Plan is approved by Project Consultant					Approval obtained before commencing work
5	Traffic Management Plan is developed and approved by authorities					Approved TMP to be submitted to Project Consultant
6	Traffic Management Officer (TMO) is appointed					Proof of appointment of TMO
7	Designated person appointed to carry out standing supervision for working at height and adjacent to construction zone					Proof of appointment of designated person
8	Working at height training and Emergency Response Procedure (ERP) is briefed to all workforces during tool box meeting					To retain evidence of training records and briefing during tool box meeting
9	Briefing on prevention of falling objects and road user's safety conducted during ToolBox meeting					Briefing conducted and recorded / dated
10	Copy of approved PTW submitted to Project Consultant for comment and record					PTW submitted to Project Consultant
11	PTW is obtained prior to work commencement					PTW obtained and approved
12	All construction personnel registered with CIDB and holding a valid CIDB's Personnel Registration Card					Proof of registration with CIDB checked and recorded
13	Request for inspection to Project Consultant's representative prior to work commencement adjacent to or above existing road submitted and approved					Request for inspection submitted and approved by Project Consultant / Representative
14	Work location is inspected by the SHO or SSS prior to work commencement					Inspection record to be produced when applying for PTW
15	SHO / SSS / DP is authorized to issue stop work order should the workplace's condition unsafe and / or unsafe act by workers at height or adjacent to road / public amenities					Authorized Letter given to SHO / SSS / DP. A copy retained at site office for record.
16	Temporary structures and falsework are fixed and installed according to the drawings and safe clearance (height and horizontal) provided to ensure safe					SHO or SSS to check and verify temporary structures are installed according to approved drawings and safe clearance



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	movements of traffic underneath and adjacent to construction area			
17	All hoisting tackles are inspected by trained rigger prior usage?			Inspection record retained
18	Fall arresters safety net / catch net / catch platform is installed beneath the elevated working vicinity or Safe Work System (SWS) adopted?			Fall arresters and SWS are maintained
19	Potential falling object's location identified and cordoned			To show on traffic management plan the said location and how it is cordoned
20	Adequate safety warning signage and notices are installed at strategic location?			Adequate safety warning signage installed
21	Safe rigging procedure is developed and approved by Project Manager			PTW or rigging procedure approved by PM
22	Permit to Work is obtained and approved by the Contractor's Project Manager / CM / CSE?			PM / CM / CSE to issue PTW
Prepared By (SHO / SSS)		Approved for Work Commencement & Permit to Work Granted/Issued by (PM / CM / CSE)		
Date:		Date:		



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THANK YOU

"Committed To Engineering Excellence"

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