



Safety Seminar of Society of Registered Safety Officers

What is the Role of a Safety Practitioner on Accident Prevention

**Safety Practitioners and Accident Prevention -
the Hong Kong Housing Authority's Experience**

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1. Introduction
2. Accident Prevention through Three-pronged Approach of HA Site Safety Strategy
3. Accident Prevention by Contractors' Safety Practitioners
4. Conclusion



1

Introduction

o incident

- Caring
- Customer-focused
- Committed
- Creative



HA's Vision, Mission & Core Values

Vision

理想

People-centric approach

To help low-income families with housing need to gain access to affordable housing

Mission

工作目標

To provide affordable quality housing, management, maintenance and other housing related services in a proactive and caring manner

Cost-effective and rational use of public resources

Competent, dedicated and performance-oriented **team**

We work in **partnership with Contractors** towards a Common Project Goal

Core Values : 4C

• Caring • Customer-focused • Committed • Creative



1.1 Vision & Policy



We take measures to strengthen **risk management** in procurement, tenders and contracts

We have **5 values** to promote safety culture :

Safety First

2 mottos

Do it right the first time

What gets measured get done

Three EARLIES

Early Planning

Early Design

Early Management

5 Zero Contractors

- Zero accident
- Zero incident
- Zero conviction
- Zero complaint
- Zero dispute

4C & 4D

"4C" Core Values	"4D" Industry
Caring	Dirty
Customer-focused	Dangerous
Committed	Disruptive
Creative	Demanding

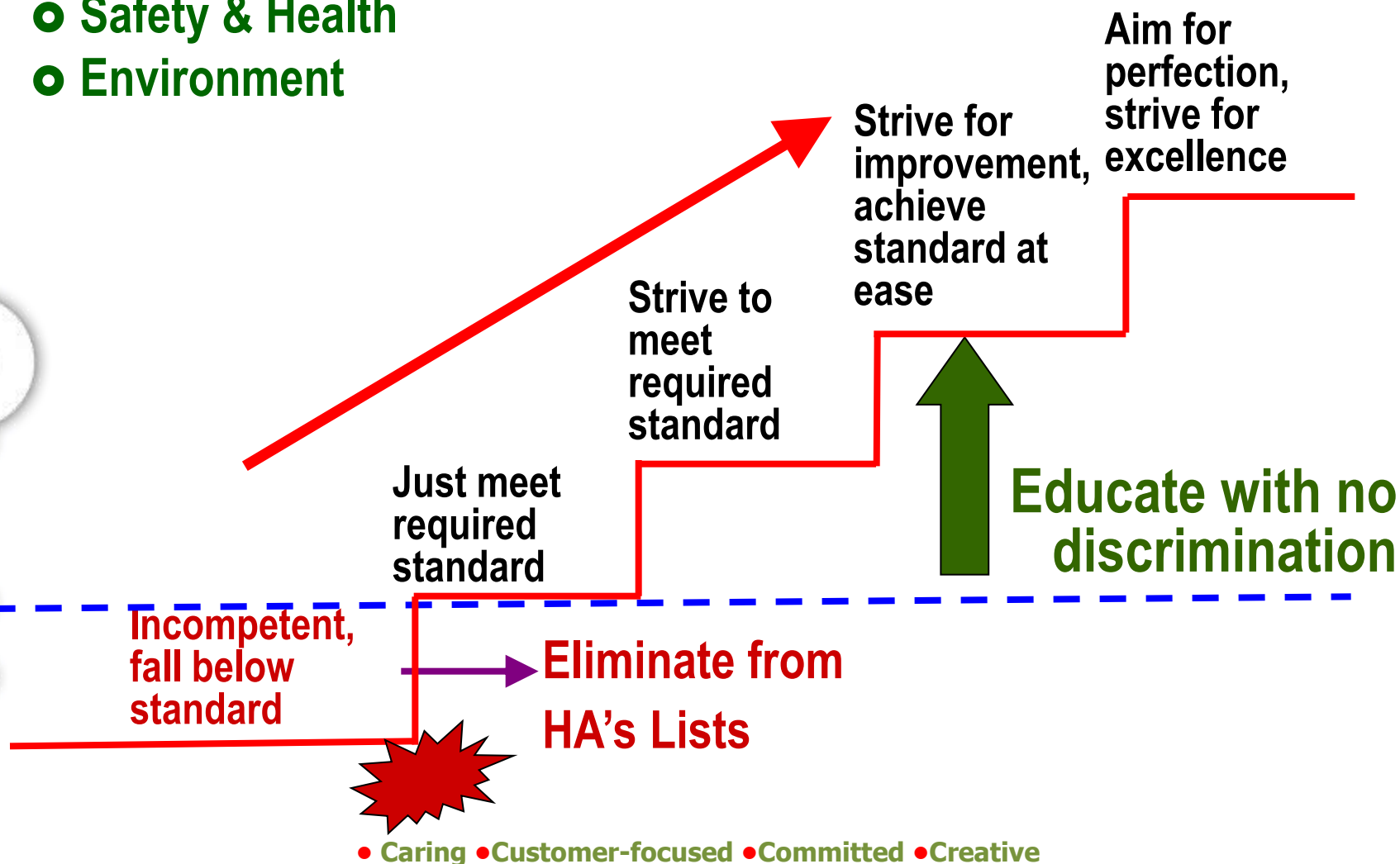
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1.1 Vision & Policy



Uplifting Performance

- Quality
- Safety & Health
- Environment



incident



“We do **NOT** want public housing built **on workers’ lives and injuries**”

Ongoing Safety Targets and Performance Goals

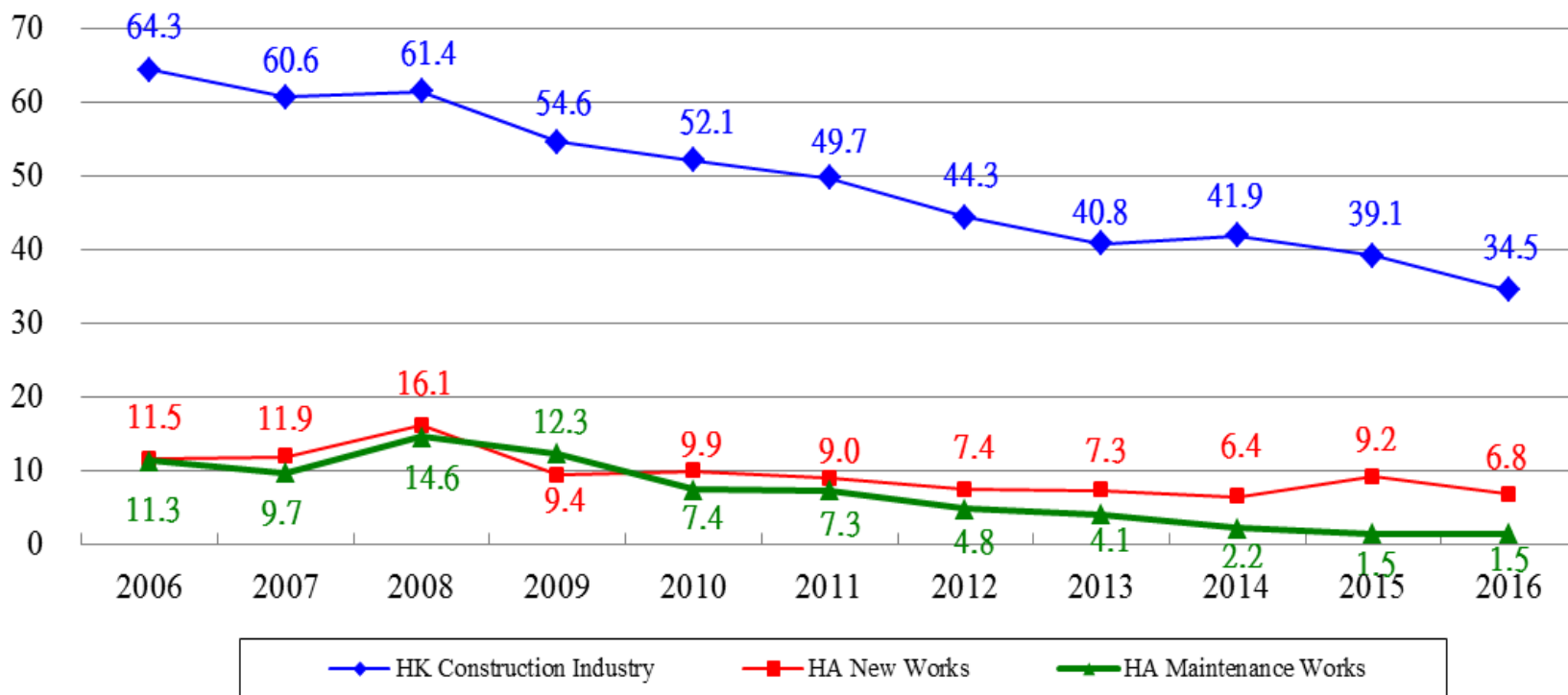
- **zero fatal accident**
- no more than **9 accidents per 1,000 workers**

1.2 Safety Performance



Unsatisfactory safety performance with accident rate higher than our target accident rate will trigger alert system leading to **interview and issue of reminder letter / warning letter** by the Client.

Accident Rate Per 1000 Workers



Source of information: Labour Department, Census & Statistics Department and Housing Authority Site Returns

1.3 Safety Practitioner



“Safety is everybody’s business”

Everyone owns a responsibility of preventing accidents

- **Client / Developer**
 - project managers, safety management team
- **Project team**
 - contract managers, works professionals, site staff
- **Contractor**
 - line managers, safety managers, safety officers, safety supervisors, site agents, foremen, gangers, other site management team members and workers
- **Government department** – Labour Department
 - occupational safety officers
- **Public authorities** – OSHC, CIC
 - safety consultants, inspectors, safety programme trainers
- **Consultants** - safety auditors, safety officers, safety inspectors

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2

Accident Prevention through Three-pronged Approach of HA Site Safety Strategy

HA adopt a **three-pronged approach** to drive the contractors and service providers to work safely

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2.0 Three-pronged Approach of HA



We apply a **three-pronged approach**, promoting safety & health in the workplace and **nurturing a safety culture**

1. **Procurement** strategy and performance monitoring mechanisms with incentives and sanctions
2. Strengthening **contract requirements** and administration
3. Research, training and **promotion**

Through various channels
In day-to-day practice:
Impact on commitment
and resource input
from our business partners



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2.1 Procurement strategy and performance monitoring mechanisms with incentives and sanctions



We manage safety risks in tenders and contracts

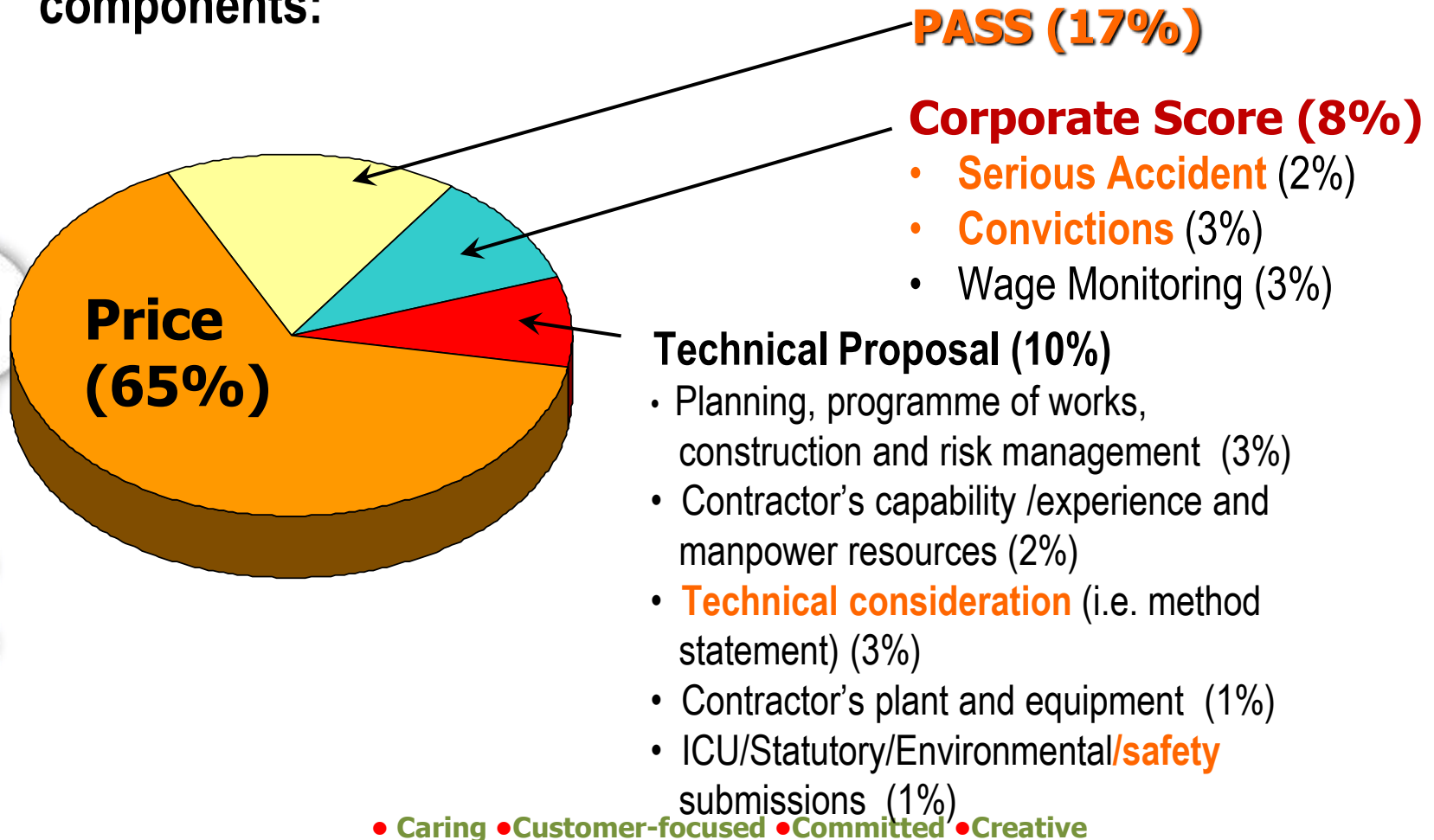
- **Listing management** to assess the qualifications and standard of performance of contractors in works contracts and property management contracts
 - compliance with **OHSAS 18001**
 - adopting **safety and health policies**
 - keep in view of the development of **ISO 45001** on safety and health
- HA selects **competent contractors** through list management

2.1 Procurement strategy and performance monitoring mechanisms with incentives and sanctions



Preferential Tender Award System (PTAS) for assessment of tender, with technical and corporate scores components:

2-envelope system in complex contract



2.1 Procurement strategy and performance monitoring mechanisms with incentives and sanctions



- **Unsatisfactory safety** performance, occurrence of **serious accident or near miss** incident with potentially serious consequence



For tender evaluation:

- **Quarantine** the concerned tenderer(s) or may **adjust** their **Corporate Scores**

For tenderers with ongoing projects:

- **express concerns** and require contractors to take measures to prevent recurrence of similar incidents on HA's sites
- **conducting interview / reminder / warning letters (CM, CRC, PRLMB)**
- **independent safety audit**
- **performance report rated adverse**
- **suspension from tendering** or **removal from list**



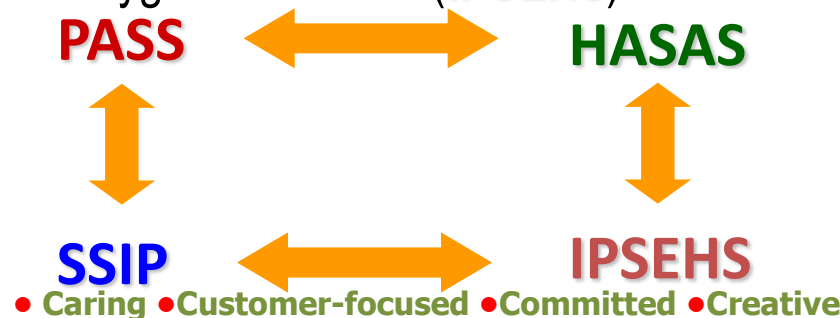
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2.1 Procurement strategy and performance monitoring mechanisms with incentives and sanctions



We have tools to monitor performance of contractors in HA's List Management Framework

- Performance Assessment Scoring System (**PASS**) [PROJECT TEAM]
- Maintenance Assessment Scoring System (MASS) [PROJECT TEAM]
- Housing Authority Safety Auditing System (**HASAS**) [OSHC]
- Housing Authority Safety Auditing System (M&I) [**HASAS(M&I)**] [OSHC]
- Housing Authority Lift and Escalator Nominated Sub-contracts Safety Auditing System (**HALENSAS**) [OSHC]
- Housing Authority Lift and Escalator Installation Safety Auditing System (**HALEISAS**) [OSHC]
- Surprise Safety Inspection Programme (**SSIP**) [OSHC]
- Surprise Safety Inspection System (**SSIS**) [PROJECT TEAM]
- **HASAS** & **SSIP** scores merged into **PASS** & linked to Integrated Pay for Safety, Environment and Hygiene Scheme (**IPSEHS**)



2.1 Procurement strategy and performance monitoring mechanisms with incentives and sanctions



(a) Housing Authority Safety Auditing System (HASAS)

- Since Dec 1996, HA has commissioned OSHC to develop and manage **HASAS for new works contracts**
- In 2012, HA introduced **HASAS (M&I) to maintenance and improvement works contracts** to further enhance the safety performance of contractors
- It serves to evaluate the occupational safety and health performance of HA contractors through independent audits conducted by safety auditors accredited by OSHC.
- It **promotes the concept of safety management** and aligns the safety standards of construction industry
- HASAS consists of two parts, namely **Part A: Safety and Health Management System and Part B: Implementation of Safety and Health Management System (Process Control)**
- **HASAS promotes safety innovations by contractors.** Auditors vet and recommend safety innovations of contractors to OSHC for OSHC for consideration and submission to project team for approval for payment under pay for safety

2.1 Procurement strategy and performance monitoring mechanisms with incentives and sanctions



(b) Surprise Safety Inspection Programme (SSIP)

- In **2013**, SSIP was introduced on a quarterly basis in Housing Authority Capital Works **New Works contracts**
- SSIP will focus on **high risk activities** of sites to match the physical “Critical Pass” items in Part B of HASAS version 1.5.1 or pertinent version , namely –
 - ▣ Working at Height
 - ▣ Prevention against Falling Objects
 - ▣ Housekeeping
 - ▣ Lifting Operations
 - ▣ Electrical Supply System

(c) Surprise Safety Inspection Scheme (SSIS)

- In **2014**, SSIS will be carried out on a quarterly basis in Housing Authority Capital Works **Building Maintenance Works contracts**
- SSIP will focus on **truss out bamboo scaffolding works**



- Promoting best practices, **over and above** legal requirements

Enhance safety awareness
提升行業的安全意識

Improve physical conditions on site
優化工地的工作環境

Strengthen site and safety management
鞏固工地和安全管理



2.2 Strengthening contract requirements and administration



We reduce work processes on site :



Also, measures are provided for

- **safe access to high or lower levels**
- **safe working at height**
- **preventing fall from height**, and
- **reducing injury resulting from fall from height**

Improve Physical Conditions on Site

Mechanization and prefabrication

Full height 4-leaf metal gate for lift shaft opening

Metal scaffold for lift shaft

Enhancing railing of metal formwork and working platform

Overhaul requirement of major construction plant

Safety measures against heat stress giving workers enough rest

Tower crane lifting operation :
CCTV video surveillance, alarm system, log book, computerized monitoring, work permit

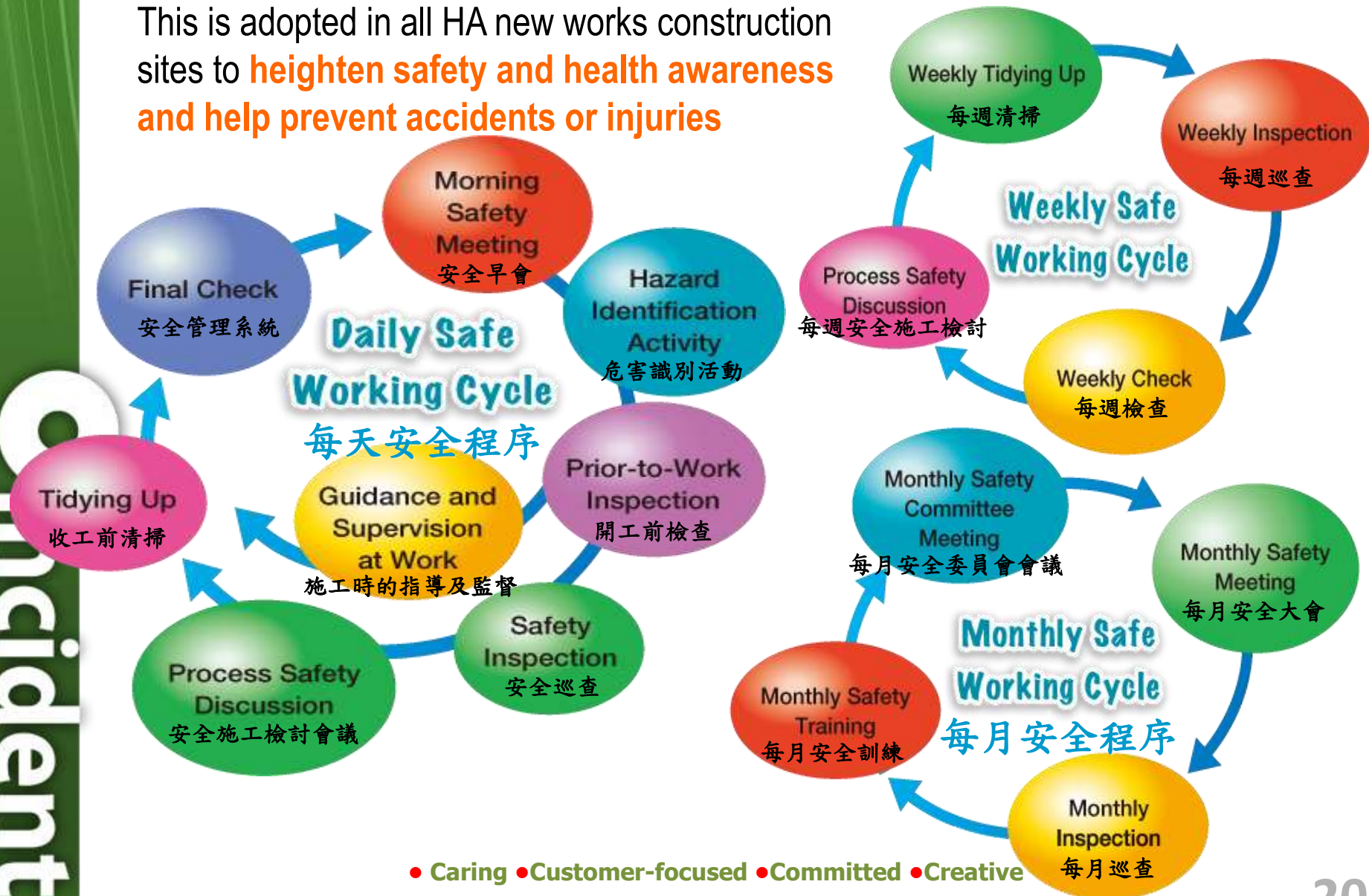
2.2 Strengthening contract requirements and administration



Safe Working Cycle

This is adopted in all HA new works construction sites to **heighten safety and health awareness** and **help prevent accidents or injuries**

Accident



2.2 Strengthening contract requirements and administration



Safe Working Cycle (SWC) (cont'd)

Advocating Site Safety Culture: “**Safety is Everybody's Business**”

Project architect joined the morning exercise with contractor's line managers, site staff and workers. All own the **responsibility of preventing accidents**.



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incident



- **Carling**
- **Customer focused**
- **Committed**
- **Creative**



2.3 Research, training and promotion



1. Convening **Site Safety Forum / Workshop / Seminars** to foster safety awareness.

- Site Safety Forum 2016 in Jul 2016
- Workshop on Innovative Technologies, Best Practices and System in Dec 2016
- Seminars in April and November 2016



2. **Promoting HA's Work on Site Safety** for enhancing safety culture

Sharing on HA's experience in implementation of safety initiatives at public seminars / workshops

- Talk on "Safety Measures for Working at Height" at the Safety Campaign 2016 of Chun Wo Development Holdings Ltd in Aug 2016
- Talk on HA PASS and safety measures for Visiting Tour by Singapore Building and Construction Authority in Oct 2016
- Talk on Independent Safety Audit Scheme at the 20th Conference of Society of Accredited Safety Auditors in Nov 2016



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2.3 Research, training and promotion



3. Organising **Site Safety PASSPORT Training Programme** to enhance safety competency of HA works staff as safety practitioners
- **Mandatory** for all new works professional and technical staff
 - **Over 3,000 personnel** have been trained including directorates
 - Over \$4.5M are spent on the training courses
 - To align with **CLC's safety training standard**

a) **Newly recruited Professional Grade and Resident Site Staff of site management level** (i.e. at or above **COW/IOW/BSI, Resident Engineer**)

To equip staff with knowledge to underpin their core competencies

Module A : 2-day Safety Management System and Safety Audit;

Module B : 1-day Safe Design; and

Module C : 1-day Safety Management Tools.





3. Organising **Site Safety PASSPORT Training Programme** to enhance safety competency of HA works staff as safety practitioners (cont'd)

b) **Newly recruited Technical Grade Personnel**

- To equip staff with knowledge to underpin their core competencies
Module A: 1/2-day Risk Assessment; and
Module B: 1-day Safe Design.



c) **Resident Site Staff of site management level** (i.e. at or above COW/IOW/BSI, Resident Engineer) having completed previous 32-hour Safety Training Programme

- To complete bridging course to underpin their core competencies
Day 1 : 1/2-day Risk Assessment Concept and Crisis Management; and
Day 2 : 1-day Safe Design

2.3 Research, training and promotion



3. Organising **Site Safety PASSPORT Training Programme** to enhance safety competency of HA works staff as safety practitioners (cont'd)

d) **Resident Site Staff of site supervisory level having completed previous 32-hour Safety Training Programme**

- To enhance occupational health knowledge
 - 1.5 day bridging course

e) **Resident Site Staff of site supervisory level**

- To equip staff with knowledge to underpin core competencies
 - Module A : 2-day Basic Safety Management;
 - Module B : 2-day Basic Accident Prevention;
 - Module C : 1/2-day Construction Safety;
 - Module D : 1.5-day Occupational Health

f) **Professionals, Site Staff and Technical Grade Staff having completed Site Safety PASSPORT Training Programme for more than 3 years**

- To complete 3-hour online Refresher Site Safety PASSPORT Training Course

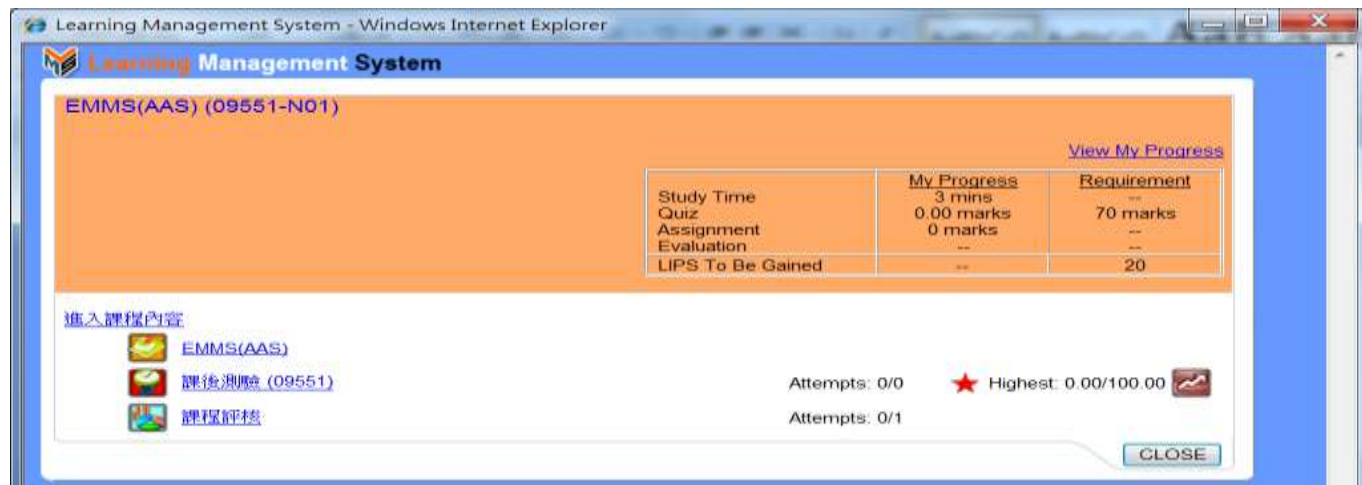
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2.3 Research, training and promotion



3. Organising **Site Safety PASSPORT Training Programme** to enhance safety competency of HA works staff as safety practitioners (cont'd)
 - **Online safety refresher course** since 2015 for colleagues having finished Safety PASSPORT Training Programme for 3 years



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4. Organising **Development and Construction Division Academy** to enhance safety competency of HA works staff as safety practitioners

Vision

- To nurture a quality workforce for sustainable public housing delivery

Mission

- To provide training for new staff of Housing Department, professional service providers and contractors
- To equip the workforce with best practice skills
- To transfer knowledge between generation and across the industry
- To instill a spirit of multi-disciplinary collaboration and quality culture
- To develop a pride and recognition in the public housing community

Safety & Health is one of the core elements in the training



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2.3 Research, training and promotion



5. Safety Awards to HA Contractors

A. 22nd Considerate Contractors Site Award Scheme in 2016

Organizer: **DEVB and CIC** (27 May 2016)

1 bronze, 3 merits



B. Construction Safety Forum and Award Presentation 2016

Organizer: **OSHC** (5 July 2016)

3 gold, 1 silver, 3 bronze, 7 merit



C. 15th Hong Kong Occupational Safety & Health Award in 2016

Organizer: **OSHC** (5 September 2016)

1 gold, 1 bronze



D. Good Housekeeping Forum and Award Presentation 2016-2017

Organizer: **OSHC and CIC** (9 December 2016)

1 silver



E. Construction Industry Safety Award Scheme 2016/2017

Organizer: **LD** (19 March 2017)

4 gold, 3 work-at-height safety prizes, 3 silver, 8 merits, 10 good performance certificates / certificate of appreciation



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2.3 Research, training and promotion



6. Organising Workshop in 2016 for promoting Innovative Technologies, Best Practices and Systems



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7. Fostering Partnership

- **Commend outstanding performance** of contractors, sub-contractors, supervisors and workers through annual awards – Quality Public Housing Construction and Maintenance Award
- **Promote safety information** through **Housing Authority Site Safety Website** for easy access of by staff, stakeholders and the public, allow users to browse the website using desk top computer, tablet and mobile phone device



<http://www.housingauthority.gov.hk/sitesafety>


2.3 Research, training and promotion





○ Safety and Health Alert

- Issued to HA Listed and other non-listed works contractors and property management service providers
- Promulgate / reinforce safety measures after serious accidents / incidents, safety publications from CIC, Labour Department and OSHC

e.g Enhanced safety measures while working at height for dismantling metal structures

 Hong Kong Housing Authority

 incident

 Safety & Health Circular No. 62 / 2015
Enhanced Safety Measures While Working at Height for Dismantling Metal Structures

Date: 11 November 2015
Our Ref: HD(C)TS 4/49/26

In a recent industrial fatal accident happened on a non-Housing Authority (HA) site, part of a metal working platform suddenly collapsed while two workers were working on it to dismantle a huge I-beam structure. The two workers fell together with the platform onto the ground for more than 10m and sustained serious bodily injuries. One of them passed away subsequently. To prevent similar accidents on HA sites, contractors are strongly advised to take the following enhanced safety measures while working at height for carrying out metal structure dismantling work:-

- Specific risk assessment shall be formulated. The design, method statement & risk assessment for the dismantling work shall be submitted. After submission, they shall be reviewed and revised regularly and when necessary. For dismantling of huge metal structures, the registered structural engineer of the main contractor shall check and endorse the method statement, and approval and consent by relevant authority have been granted before execution.
- Mobile elevating working platforms shall be deployed for the dismantling works as far as practicable.
- Personnel using aerial working platforms shall wear full body harness with anchorage to the platforms.
- A Permit-to-Work system with the appointment of an experienced foreman on-site in charge throughout the entire dismantling process especially for checking all critical stages shall be implemented. Communication shall be made directly through walkie-talkie.

Page 1

SH Circular : 62 / 2015



8. Design for Safety

“Prevention is better than cure. TOTAL SAFETY MANAGEMENT relies on **teamwork** and the establishment of a **safety culture**. It calls for all designers to consider early the safety aspects of facilities throughout their **life cycle**, and to **design out potential hazards from the source**.



31 March 2010 forum entitled **“From Cradle to Cradle – Workshop on Planning and Design for Safety in Project Life Cycle for Public Housing Developments”**.

Charter signed by stakeholders pledging commitment to observe and drive planning and design for safety.



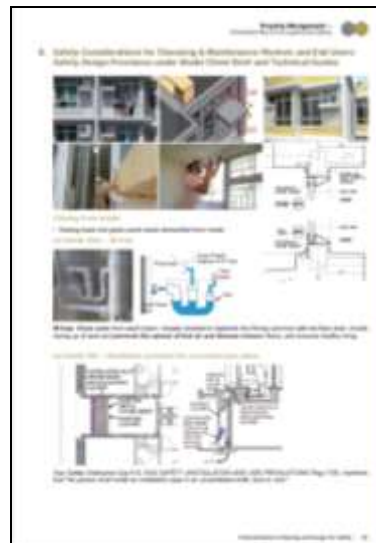
Subsequently published our **Pictorial Guide to Planning and Design for Safety**. Can be downloaded from <http://www.housingauthority.gov.hk/sitesafety>



2.3 Research, training and promotion



- Revised edition of **Pictorial Guide to Planning and Design for Safety** in 2017 for promotion of design considerations to eliminate hazards in development life cycle. It incorporates latest practice of barrier provision for working at height, air conditioner platform, etc.

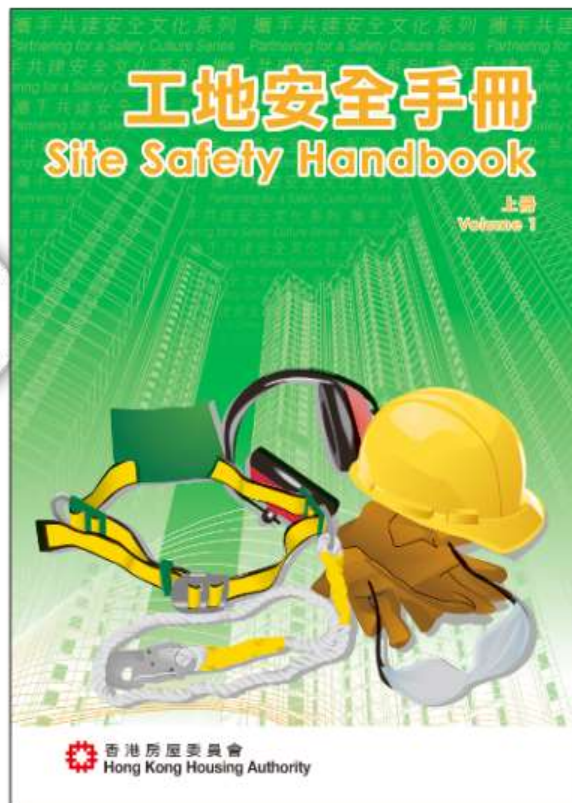


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2.3 Research, training and promotion



- Revised Edition of **Site Safety Handbook** in 2017 with engagement of industry stakeholders for promotion of latest site safety measures of site operations





3

Accident Prevention by Contractors' Safety Practitioners

Accident prevention is pursued through 6 aspects

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- Customer-focused
- Committed
- Creative



Accident

- Heinrich (1959) defines an accident as an unplanned and uncontrolled event in which an action or reaction of an object, substance, person or radiation results in personal injury or property damage.

Safety Practitioners of Contractors and Service Providers

- **Full time RSO** is a mandatory requirement under works and property management contract
- **1 RSO for not more than 200 workers, 2 RSO for 201 to 700 workers in new works contracts**
- Provision of **safety supervisor** to follow legal requirement



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To drive the construction team to prevent accidents through the following aspects -

- | | |
|-----------------------------------|------------------|
| (1) Contract requirements | [slides 39 – 43] |
| (2) Safety audit | [slide 44] |
| (3) Routine inspection | [slides 45 – 62] |
| (4) Accident investigation | [slide 63] |
| (5) Surprise inspection | [slide 64] |
| (6) Safety training and promotion | [slides 65 – 67] |



Contract Requirement

- It **induces safety management system** in very beginning of the works projects. It lists out safety requirements for implementation
- Safety manager, RSO and safety supervisors to **plan, organise, develop and measure the safety management system** with regular review and feedback

3.1.1 Safety Plan

- To **compile a Safety Plan** : a statement of the contractor's safety and health policies, procedures and requirements to achieve the safety and health obligations and responsibilities under the contract
- To revise or update the Safety Plan, **incorporate the Nominated Sub-contractor's safety plan**
 - (1) Company safety and health policy; (2) Safety organisation; (3) Safety and health training; (4) In-house safety rules and regulations; (5) Safety Committee; (6) Programme for inspection, examination and testing of hazardous conditions; (7) Job hazard analysis; (8) Personal protection programme; (9) Accident / Incident report, investigation and follow up actions; (10) Emergency preparedness; (11) Safety promotion; (12) Health assurance programme; (13) Health care plan; (14) Evaluation, selection and control of sub-contractors; (15) Process control programme; (16) Safety plans in respect of Nominated Sub-contract Works; (17) Non-smoking policy



3.1.2 Site Safety Committee

- To assist **Site Safety Committee** [comprising project manager, RSO, safety supervisors, safety representatives of contractor and subcontractors] in review and discussion of the following aspects -
 - i. Review of the **Safety Plan**, update risk assessment for the work in next 2 months, review and establish safety and health provisions, safe working procedures and method statements, update the emergency and rescue procedure
 - ii. Updating the **safety organisation chart** and review of the **adequacy of safety personnel**;
 - iii. Review of the **safety performance of sub-contractors**
 - iv. Any **unsafe practices and conditions** identified during safety inspections / audits and any follow up action
 - v. **Advisory / warning or contravention notices** and any **Improvement / Suspension Notices** received from LD
 - vi. Reviewing **accident statistics** of contractor and sub-contractors and identification of trends
 - vii. Details of the contractor's **accident and dangerous occurrence** experience
 - viii. **Safety and health training** in last month and proposed training for the next month
 - ix. Details of **safety promotional activities**
 - x. **Coordination among sub-contractors** working in close proximity to each other
 - xii. Submission to LD the **Supplementary Information on Accidents** on sites
 - xiii. **Updated Safety Plan**

3.1.3 Safety Officer's report

- RSO to report his / her duties to the Contract Manager at monthly site meetings
 - **Caring** ● **Customer-focused** ● **Committed** ● **Creative**



3.1.4 Risk Assessment Report

- To **prepare risk assessment reports** for the following month and recommend measures to eliminate or minimize hazards. RSO to adopt the methodology in the Five Steps to Risk Assessment issued by LD

3.1.5 Action on LD's contravention notices

- To take actions to **ensure compliance with statutory** requirements
- To **report monthly to the CM the following LD's notices received:**
Construction Site Inspection Report with category Part I or Part II contravention, Improvement Notice, Suspension Notice
- To **inform the Nominated Sub-contractor's** Safety Supervisor(s) of LD's notices related to contravention by NSC

3.1.6 Safety diary

- RSO to record matters of safety and health, including Safety Supervisors' reports, **details of safety inspections and audits, accidents, dangerous occurrences, safety related incidents**, etc
- RSO to check to ensure that **all unsafe situations are promptly rectified** and the dates of their completion duly recorded
- RSO to make the safety diary available for inspection by the CM



3.1.7 Register of Key Personnel & Record of Reports / Certificates

- RSO to keep a register of contact **details and qualifications of competent persons and competent examiners** as defined in the Construction Sites (Safety) Regulation, and a register of Safety Supervisors and their duties
- RSO to keep **examination reports & certificates required by law or contract**

3.1.8 Safety Plan of Plumbing Subcontractor's Management Plan

- If XRF analyzer is used for on-site metallic composition test for plumbing materials, the licenced operator(s) of the analyser shall prepare the safety plan on the precautionary measures and the operating procedures
- RSO to **vet and endorse the safety plan**

3.1.9 Site Security Plan

- To **assist in preparing Site Security Plan** on control for the care of personal security and safety of all people on site

3.1.10 Measures for Site Area Open to Access by Public

- When designated area(s) of the site are open to access by the public, RSO to assist in **formulating safety measures** to ensure a safe walkway for pedestrians to pass through during the period including **planning and sequencing of works, temporary hoarding, fencing and lighting**

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3.1.11 Safety Working Cycle

- It serves to **reinforce the implementation of site safety management system** on site with **emphasis on leadership and promoting participation**



3.1.12 Integrated Pay for Safety, Environment and Hygiene Scheme

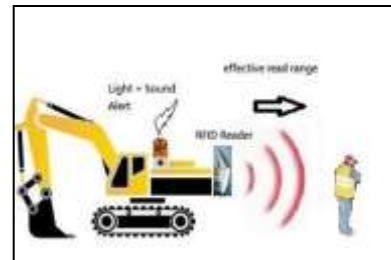
Key Performance Indicator (KPI) for IPSEHS

- **Regulatory compliance indicator:** Suspension notice, LD's inspection record (Part I & Part II contravention), safety conviction
- **Safety Audit performance:** Overall and Critical items scores
- **Accident indicators:** Fatality, accident rate
- **Surprise Safety Inspection Score:** Total and individual activity scores
- Encourage going extra mile, **pay for functional safety innovations**. The application has been verified/supported by the Occupational Safety and Health Council as explicitly stated in the Safety Audit reports; CM has verified the implementation merits to his satisfaction.



Safety Audit under Legal Requirement and HASAS

- It serves to **assess safety performance of contractors** in new works and maintenance works
- It **measures the effectiveness of safety management system** to ensure timely rectification of the safety irregularities and continuous improvement. RSO to implement the recommendations of the external Safety Audit Report.
- It **provides incentive to devise safety innovation and safe method** in work execution
- Safety auditor** points out the **areas of deficiencies** in safety management system for contractors to reveal and rectify for accident prevention.
- Safety manager, RSO, safety supervisor to participate in safety audit**, work out solutions with auditors and provide safer working method for frontline personnel. **RSO to report on the implementation of safety auditor's recommendations** in the monthly site meeting
- To report to the safety auditor the following **safety innovations implemented, application of BIM and RFID for safety for claim for pay for safety**



3.3 Site Inspection



Routine Inspection

- It serves to **check site condition against safety policy and planned requirements**
- Safety manager, RSO, safety supervisor and site agent to conduct inspections on activities on the site including temporary works and scaffolding **at weekly intervals to identify any unsafe operation or potential hazards**
- RSO to give prior **notice to the CM of the date and time of the weekly inspection** and allow the CM or his representatives to attend the inspection
- RSO to be **empowered to order any person working on the site to suspend any unsafe operation** or to **take urgent action to make safe the site or the works** or to **disallow any practice** which may infringe the Safety Plan or any statutory safety requirement
- RSO to liaise with the Nominated Sub-contractors' Safety Supervisors
- RSO to **prepare safety inspection reports**



3.3.1 Site Inspection - Lifting



Check compliance with following precautionary measures / requirements-

(a) Tower Crane

- **CoP for Safe Use of Tower Cranes** of LD and **Guidelines on Safety of Tower Cranes** of CIC; **Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations** for the inspections, thorough examination and testing of tower cranes; and **Guidance Notes on Inspection, Thorough Examination and Testing of Lifting Appliances and Lifting Gear** of LD
- Engaging the following personnel **full time** on site -
Tower Crane Operator, Slinger, Signaller, Responsible Person
- Provision of a **CCTV system with a video recording system**; and a **computerized system with monitor for full time surveillance** of tower cranes in Contractor's site office
- Applying **permit-to-work system to special lifting operations** -
 - (a) Lifting in overlapping area where anti-collision system of tower crane is by-passed;
 - (b) Lifting in restricted area in which lifting operations are not normally allowed unless in exceptional circumstances;
 - (c) use of multiple lifting appliances





3.3.1 Site Inspection - Lifting

Check compliance with following precautionary measures / requirements

(b) Mobile Crane

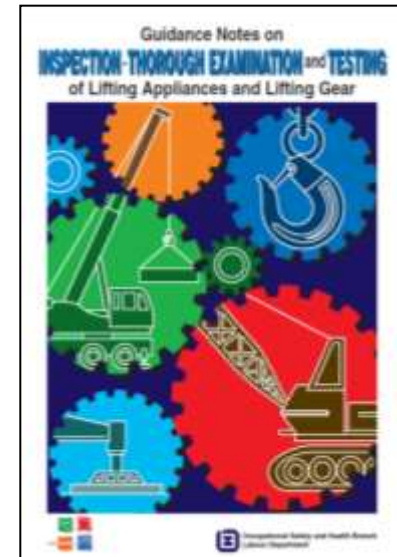
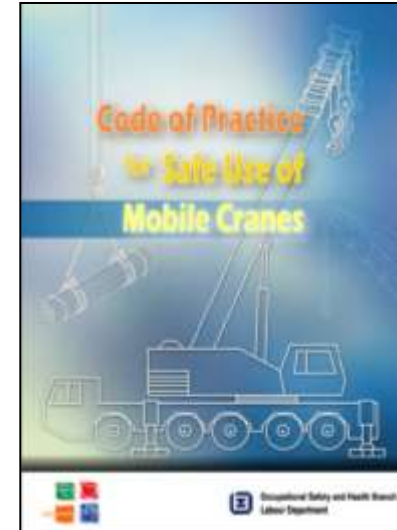
- **CoP for Safe Use of Mobile Cranes** of LD; **Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations** for inspections, thorough examination and testing of mobile cranes and **Guidance Notes on Inspection, Thorough Examination and Testing of Lifting Appliances and Lifting Gear** of LD
- **Develop a checklist** for checking Form 1, 3, 5, 6 & 7 and critical parts of the mobile crane, anchorage and supporting structure before operation of mobile cranes
- engagement of the **full time lifting personnel** on Site during the operation of mobile cranes

Mobile Crane Operator

Slinger (Construction Materials Rigger)

Signaller

Responsible Persons





3.3.1 Site Inspection - Lifting

Check compliance with following precautionary measures / requirements

(c) Gondola Safety

Comply with Code of Practice for Safe Use and Operation of Suspended Working Platform published by Labour

Department

- **Form 3**: within 12 months before use
- **Form 2**: within 6 months before use
- **Form 1**: Weekly inspection
- Devising **daily checklist**



(d) Material Hoist

1. Enclose **hoist shafts with nylon mesh**
2. **Display test and examination certificates** signed by a RPE
3. **Material hoists**: **Forms 1, 2 and 3** of Construction Sites (Safety) Regulations (CSSR)
4. **Hoist openings** with nylon mesh and timber boarding to prevent falling objects, **lockable metal gates** at hoist openings
5. Keep **hoist gates closed at all times** except for loading / unloading



3.3.2 Site Inspection – Working at Height & Preventing Falling Object

Check compliance with following precautionary measures / requirements

(a) Barrier to Building Edge and Floor Opening

- Provision of secure **metal railing** at 900mm to 1100mm, middle railing of 450mm to 600mm and toeboard of 200mm high to building edge
- Provision of secure close boarding with warning sign for all floor openings



(b) Barrier to Edge of Staircase

- Provision of secure top railing at 900mm to 1100mm and middle railing of 450mm to 500mm when permanent staircase is not available

(c) Platform for Working at Height

- Provision of working platform e.g. hop-up platform, step platform, mobile working platform, elevating work platform, scaffold, gondola, etc




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3.3.2 Site Inspection – Working at Height & Preventing Falling Object

Check compliance with following precautionary measures / requirements

(d) Scaffolding (Bamboo and Metal)

1. CoP for Bamboo Scaffolding Safety of LD; Guidelines on the Design and Construction of Bamboo Scaffolds of BD; Guidelines on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds of CIC; CoP for Metal Scaffolding Safety of LD
2. Small and medium size bamboo scaffolding companies shall be certified under **OSH Star Enterprise – RMAA Safety Accreditation Scheme** 
3. Execution of scaffolding works by **trained workmen** under **supervision of a competent person**
4. **Vertical spacing of brackets** not exceeding 6 floors; **horizontal spacing** of brackets not larger than 1.3m; fixing brackets with **anchor bolts**; and **safe access to / egress from scaffolding**
5. Provision of **sloping catch fan** of at least 1.5m wide and at not more than 15m vertical intervals for buildings under construction; provision of **protective canopy** at 1/F around the building edges, provision of **fire retardant safety net**
6. Before dismantling, conduct **a risk assessment**; checking **safe working procedures**, **provision of fall arresting equipment**; **check scaffolding stability**, carrying out dismantling work **by trained workers**



3.3.2 Site Inspection – Working at Height & Preventing Falling Object

Check compliance with following precautionary measures / requirements

(e) Metal Formwork

- Provision and proper use of steel chain with **locking device to secure the rods** and **steel box for storage of small parts** to avoid falling objects from height during lifting of formwork
- Provision of **steel bars welded to formwork to secure tie rods** to avoid falling objects from height during lifting of formwork





3.3.3 Site Inspection – Lift Shaft

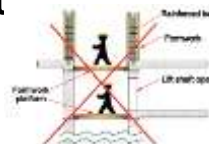
Check compliance with following precautionary measures / requirements

Lift Shaft Works

- RSO to **conduct risk assessment, prepare method statements** and **sign the risk assessment** report for endorsement by site agent
- RSO to **develop and implement permit-to-work** system
- **CIC's Guidelines on Safety of Lift Shaft Works**



- Provision of **anchorage near lift door opening** to anchor fall arrestor and safety harness for access to or working near lift shaft
- Provision of 4-leaf **steel barrier for lift opening and keep it closed and be lockable** from outside, and be readily openable from the inside of lift shaft at any time without the need of key
- Ascertaining **no lift worker and other trade worker work simultaneously** inside a lift shaft or **work simultaneously at different levels** inside a lift shaft
- Installation of at least **3 sets of independent lifelines** inside lift well with at least **one close to lift opening**



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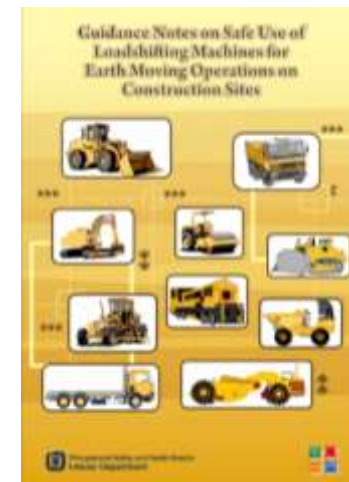
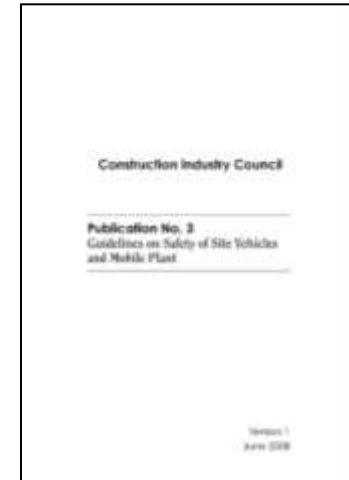


3.3.4 Site Inspection – Vehicles and Mobile Plant

Check compliance with following precautionary measures / requirements

Safety of Site Vehicles and Mobile Plant –

- Check compliance with **Guidelines on Safety of Site Vehicles and Mobile Plant issued by CIC** and the **Guidance Notes on Safe Use of Loadshifting Machines for Earth Moving Operations on Construction Sites** issued by LD;
- Help establish **a safe system of work** with risk assessment to identify risks and formulate safe working procedures for the operation of site vehicles and mobile plant;
- Check if **workers are provided with information, training and instruction**
- **Check valid certificates of operator** of vehicle or plant
- Check proper **design of traffic circulation routes**



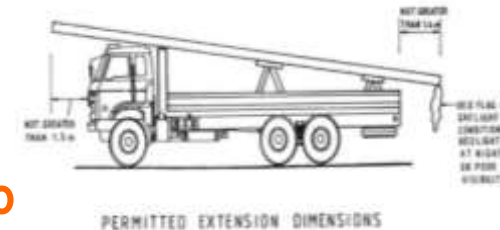
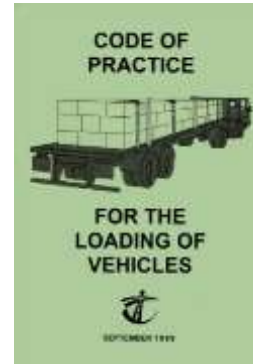


3.3.5 Site Inspection – Material Delivery by Vehicles

Check compliance with following precautionary measures / requirements

Delivery of Materials by Vehicles to Site

- Check vehicles for compliance with the **Code of Practice for the Loading of Vehicles** where the load is securely fixed onto the vehicle before they are allowed to enter the Site
- Safety measures for loading / unloading of vehicles
 - a. **Planning**
 - i. RSO to **conduct risk assessment** of lifting operations
 - ii. Demarcation of **danger zone to be fenced off**
 - iii. Provision of **warning signs, barriers around danger zone**
 - b. **Crane Operators and Personnel**
 - i. Checking **list of lorry-mounted crane / operators** for handling loading and unloading operations on the Site.
 - ii. Provision of **a lifting supervisor** to monitor and supervise the whole lifting process.
 - c. **Operation**
 - i. Parking **the vehicle is parked on a level ground or** the vehicle is adjusted to be level with **outriggers**
 - ii. Stretching **the outriggers of lorry-mounted crane fully** to rest on pads laid on solid ground



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3.3.5 Site Inspection – Material Delivery by Vehicles

Check compliance with following precautionary measures / requirements

Delivery of Materials by Vehicles to Site (cont'd)

d. Handling Load

- i. The load is secured before unfastening the strap
- ii. Provision of lateral barriers to restrain the load
- iii. Provision of devices between layers to secure them avoid risk of sliding;
- iv. Loads are tied onto the vehicle securely
e.g. check anchoring rebar clusters to rigid points of lorry and to trestles securely fixed to lorry



trestle

- v. Check securing method before allowing the lorry to enter the site

- vi. Check the width ($\leq 2.5\text{m}$) and height ($\leq 4.6\text{m}$ from road surface) of the load

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Check compliance with following precautionary measures / requirements

Inspection and Certification of Overhaul of Plant

- Check **compliance of the following major construction plant with requirement of overhaul and certification by a competent examiner**
 - a. Tower cranes (rented and self-owned)
 - b. Derrick cranes (used for installing and dismantling tower cranes)
 - c. Gondolas
 - d. Material hoists
 - e. Mobile cranes (excluding crawler cranes)
 - f. Truck-mounted cranes
 - g. Crawler cranes (rented and self-owned)
 - h. Pile drivers (rented & self-owned)
 - i. Hydraulic hammers (rented and self-owned)
 - j. Oscillators (rented and self-owned)
 - k. Rotators (rented and self-owned)



Check compliance with following precautionary measures / requirements

Works in vicinity of Existing Services

- Implementation of following measures to **identify the existing services** and **protect them from damage** arising out of the works in the vicinity -
 - a. **Regulations**, codes of practice or guidelines of relevant authorities and utility companies and conditions of excavation permit
 - b. **Ascertaining the location of existing services** before commencing works in the vicinity
 - c. **Obtaining plans or information** about the existing services in the vicinity of the works from the authorities and utility companies.
 - d. Using devices and plans to **determine the alignment and depth** of the existing services
 - e. **Digging trial holes by hand tools** to ascertain the exact position and depths of the existing services before road breaking and excavation.
 - f. Executing **excavation work safely** -
 - RSO to **advise precautionary measures** for the excavation works and protective measures and to support and protect the exposed services





3.3.8 Site Inspection – Housekeeping

Check compliance with following precautionary measures / requirements

(a) Fire Precaution

- Street hydrants are not obstructed by hoardings, vehicles, etc
- Provision of a temporary 36 m³ fire services water tank
- Provision of pumps to supply water to floors at 30m above G/F
- Provision of portable fire fighting appliances for multi-storey buildings, carpentry workshop, paint stores
- Prohibition of smoking on site except in the designated smoking areas -
Provide the designated smoking areas with suitable fire-fighting appliances



(b) Dangerous Goods Store

- Regulations to prevent the occurrence of fire

(c) Use of Dangerous Substances

- A Guide to the Factories and Industrial Undertakings (Dangerous Substances) Regulations



(d) Cover to Protruded Bars



(e) Mechanical Gates at Vehicular Ingress / Egress

(f) Emergency Standby Plan

- Help to establish an emergency standby team for the execution of any emergency work



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3.3.9 Site Inspection – Electrical Supply System



Check compliance with following precautionary measures / requirements

Safe Use of Electricity on Site

- **Earthing** of electrical circuit
- **Locking the distribution board**
- **Protection of cable**, e.g. hanging at high level
- **Circuit protection device** by (a) main switch with **residual current device**, (b) socket outlets with **residual current device operating at 30mA**
- **110V power supply** for all portable tools
- **Insulation** against direct contact with live parts
- **lockout tagout procedure** for isolation of electricity source
- **Work on live circuit only under extreme situations** and require (a) risk assessment (b) permit-to-work system (c) work to be done by experienced and competent person (d) adequate precautionary measures e.g. insulating gloves (e) work duration and extent kept to minimum



3.3.10 Site Inspection – Public Relation and Weather



Check compliance with following precautionary measures / requirements

(a) Public Relations Plan

- Attend meetings with the nearby occupants and concerned groups etc. when required by the CM for handling of enquiries and / or complaints if the complaints is related to site safety

(b) Protection from Weather

- Check compliance with the CoP in Times of Typhoons Rainstorms issued by LD and the Guide on Safety at Work in Times of Inclement Weather of LD and OSHC

(c) Protection of Workers from Heat Stroke

- Check compliance with the Guidelines on Site Safety Measures for Working in Hot Weather of CIC and the leaflet on Prevention of Heat Stroke at Work in a Hot Environment of LD
- Encourage workers to drink more water to replenish the fluid / electrolytes lost through sweating. Prohibit alcoholic drinks

(d) Protection of Workers Working in Cold Weather

- Check compliance with the measures in the Health Guide for Working during the Cold Weather of LD

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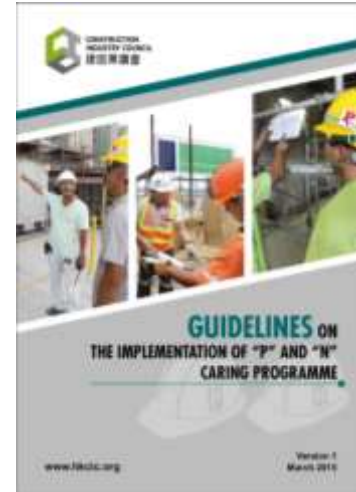
3.3.11 Site Inspection – Caring to New Work



Check compliance with following precautionary measures / requirements

P and N Caring Programme for New Workers

- To check compliance with practices recommended by the Guidelines on The Implementation of "P" and "N" Caring Programme of CIC for new workers



Probationers (workers who newly join the construction industry or with relevant job experience of less than 6 months)

New Comers (workers with relevant job experience of more than 6 months but newly arrive at the Site)



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3.3.12 Site Inspection – Personal Protective Equipment



Check compliance with following precautionary measures / requirements

Personal protective equipment

Workers for using / wearing -

- **Safety helmet with y-type chin strap**
- **Anti-heat stress uniform**
- **Reflective vest** (for all workers and site supervisory staff involved in lifting operation, roadworks outside Site and controlling vehicular traffic except the tower crane operator); Wind breaker
- **Safety boots** (except for bamboo scaffolders, plasterers and tilers)
- **Eye and ear protective device**
- **Machine guards to dangerous parts** of machines;
- **Respirators** for applying paint or similar materials
- **Protective clothing and equipment properly**
- Safety equipment in **good and hygienic conditions**
- **waist tool belts and tool straps** for fastening hand tools during work at height

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Accident Investigation Report

- Safety manager, RSO and safety supervisor to **provide information of the accident / incident** in order to identify appropriate improvement measures to prevent recurrence.
- Accident investigation serves to **prevent accident recurrence**
- Provide analysis of accidents / incidents, **investigate and ascertain the contributory factors and root causes**, identify the trends and recommend means of prevention and improvement;
- Include the following major items in the accident / incident investigation :
 - **Causes of the sub-standard safety performance**;
 - **Potential deficiencies of the safety control system**;
 - Areas of review and **lessons learnt**;
 - **Recommendations to prevent recurrences**;
 - **Improvements to the safety control system** to meet the Legislations and recommendations of the investigation report



Surprise Inspection by Labour Department / HA / OSHC

- Check the effectiveness of safety operation against the legal requirements, contractual provision, PASS, safety plan, safety audit criteria, assessment criteria of Surprise Safety Inspection (SSIP), etc.
- Safety manager, RSO and safety supervisor to **review the inspection results with frontline and the site management**
- Advise in rectifying the deficiencies revealed from the inspection findings and **share the findings through safety meeting, briefing and training** so as to make sure the operation level understand the rationale of the safety measures and its importance **to reduce of risk of accidents**
- **Identify improvement areas in routine inspection** based on inspection findings





3.6.1 Information in Access Control Recording System

- Record details of Safety Card including the card no. and expiry date

3.6.2 Safety Training of Contractors' Superintendents

- Site management grade**, e.g. manager, site agent, engineers, etc to have completed **27-hour Safety Training Course for Site Management Staff** provided by CIC or OSHC or equivalent training
- Site supervisory grade**, e.g. general foremen, block foremen, subcontractors' supervisor and supervising engineer, etc to have completed **43-hour safety training** for construction safety supervisor
- These superintendents to participate and give advice in Induction Training and Tool Box Talks** to enrich the knowledge of personnel of particular trades

3.6.3 Green Card and Silver Card

- Workers on site should hold either a **Green Card** or a Construction Workers Registration Card
- The following **11 trades** are to be carried out by workers holding **Silver Cards issued by CIC**
 - (a) Painter and Decorator; (b) carpenter; (c) Demolition Worker (Building); (d) Plumber;
 - (e) Bar Bender and Fixer; (f) Plasterer and Tiler; (g) Bamboo Scaffolder and Metal Scaffolder;
 - (h) Construction Materials Rigger; (i) Curtain Wall Installer;
 - (j) Tower Crane Worker (Erecting, Dismantling, Telescoping & Climbing); (k) Lift Mechanic





3.6.4 Training Programme

- Prepare the programme and the number of workers to receive training
- Conduct general induction training
- Coordinate those workers in specified trades for Silver Card training
- Report to CM the actual number of workers trained

3.6.5 Induction training, tool box talks, lunchtime's safety talks

- Site specific induction training
 - Conduct induction training within 2 days of workers commencing work on site and refresher training at intervals of 6 months
 - Contents cover specific hazards related to the site works and precautionary measure
- Tool box talks
 - Safety supervisors, foremen or gangers who have received training organised by HKCA or other approved training organisation to conduct tool box talks once a week
 - Topic cover site activities and prevailing safety concern





3.6.5 Induction training, tool box talks, lunchtime's safety talks (cont'd)

- **Lunchtime's safety talks**
 - RSO to arrange lunchtime's safety talks to workers **monthly**
 - **conducted by safety supervisors, foremen or gangers**
 - RSO to propose the topics and contents containing but not limited to **accident / incident review, findings of Safety PASS, findings of safety audit and surprise inspection by OSHC and findings of inspection by LD**
- RSO to **certify the accuracy of attendance records** on site specific induction training, tool box talks and lunchtime's safety talks before they are submitted monthly to the CM
- RSO to **arrange submission of the Nominated Sub-contractors' trade specific safety training proposal** to CM for approval
- Display **safety posters, in both English and Chinese**, on Site





“Safety is everybody’s business” An accident is not only the harm to the frontline worker but also to the management level, their families and the society.

Contractors’ safety practitioners work as a close partner with HA in underpinning site safety and play a crucial role in preventing accidents from happening

“Stay foolish, stay hungry”, in quest for safety :
It is never safe enough!

Safety is not an act; it is a habit and, it is a culture....
it takes time to nurture.

Thank You!

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