



Hong Kong Housing Authority



**Site Safety
Handbook
for
Maintenance and
Improvement Works**



This handbook can be downloaded from the Hong Kong Housing Authority Web Site:

www.housingauthority.gov.hk/sitesafety

This handbook is an updated version to the last edition in 2008 to include new safety management measures, new or revised codes, enhancement to foster safety culture, etc. for site operations in the Hong Kong Housing Authority maintenance and improvement works.

Readers should note that the compliance with this handbook does not confer immunity from legal obligations. The site management should develop their work instructions, safe working procedures as well as a safety management system according to the actual construction site environment and operations on their workplaces, formulate precautionary measures, and provide training and supervision to workers to ensure full understanding and compliance with works procedures to avoid accidents.

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First Edition December 2008

Second Edition December 2018

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Foreword

“Work safety is no small matter, all start small”. Building on the initiatives of its Site Safety Strategy, the Hong Kong Housing Authority (HA) strives to promote site safety through partnership. Also the contractors and service providers of HA are required to ensure health and safety at workplace and pursue sustained improvement in safety performance.

The Site Safety Handbook for maintenance and improvement works was first published in 2008. This new edition updates reference to safety standards, with photos of good practices as well as new lift safety recommendations. We hope to, in plain language and by illustrative pictures, highlight the key points of industrial safety in building maintenance and repair works so as to fortify frontline supervisory staff to regulate on the safety of building maintenance and repair works as well as increase maintenance workers’ awareness on industrial safety when carrying out such works. The new topics and information added in this edition mainly include the following:

- Chapter 2 - Common portable tools and maintenance of portable tools including wires, plugs and switches, rotors, electric motor and cable heads, drills and chisels.
- Chapter 3 - Working at height, working platforms/power-operated elevating work platforms, gondolas/suspended working platforms, safety measures of using parapet wall clamps for temporary suspended working platforms, keeping suspension ropes and safety ropes vertical, gondola accessories, ladders, platform ladders, hop-up platforms, requirements on anchorages inspection including eye bolts and temporary anchor devices.
- Chapter 5 - Safe use of electricity on site including issues relating to cable joints, wiring termination, cable fixing, distribution board, temporary lighting, transformer room, switch-room and generator room, etc.
- Chapter 6 - Lift safety including safety hints on lift maintenance as well as working inside lift pit, lift shaft and lift machine room.
- Chapter 7 - Hot work operation and other high-risk works; works in areas embedded with gas pipelines, water pipes and power facilities; excavation works; piling works; hot-work operation; backfilling operation; contacts of utility companies and sources of safety information.

Contractors are encouraged to promote safety culture in the industry, raise safety awareness among supervisory staff, provide safety training and information to increase workers’ alertness when carrying out high-risk activities in workplace, develop comprehensive and clear work instructions/procedures to prevent human mistakes, and formulate safe method

statement with precautionary measures to avoid accidents. More importantly, all contractors have to pursue good site management, strictly adhere to safety standards, strengthen site supervision and reinforce teamwork throughout the production and supply chains in order to ensure safety in construction.

Safety is not merely an act, but also a habit and culture that takes efforts to nurture. It is a shared responsibility of all including the contractors and on-site workers. Team participation and commitment are the keys to the progression of a safety culture. Always bear site safety in mind, we can surely build a safe working environment for our workers without difficulties. The Department spares no efforts in inculcating a safety culture and is committed to increase safety awareness in the industry by requiring contractors' site management and supervisory staff to receive necessary trainings, organising regular safety workshops and annual site safety forums, conducting independent safety audits, surprise safety inspections and promoting best practices. Through this latest edition, we hope to reinforce the commitment of our readers on industrial safety, and encourage them to join us in developing safety culture at workplace in Hong Kong.

Estate Management Division
Housing Department
December, 2018

Safety Messages

Introduction

Construction works are accident-prone owing to its inherent characteristics: multilayer subcontracting, tight working schedule, mobility of workers, limited working environment, transient working environment, strenuous work involved, use of heavy plant and machineries, work often affected by weather, constraint of labour supply, ageing of work force and plant, mismatch of skills, inadequacy of safety awareness and risk taking attitude of certain supervisory staff and frontline workers, work involving working at height, lifting operation, various kinds of high risk activities, etc.

According to a research undertaken by the Occupational Safety and Health Council (OSHC), the most common causes of industrial accidents in the construction industry are:

- Unsafe working environment
- Unsafe behaviour
- Inadequate safety and health management
- Inadequate site experience

The Occupational Safety and Health Ordinance (Cap. 509) and its subsidiary legislation govern the safety and health of workplaces, whereas the Factories and Industrial Undertakings Ordinance (Cap. 59) and its subsidiary legislation, in particular, the Construction Sites (Safety) Regulations govern the safety and health of industrial undertakings including construction sites. There are also other relevant ordinances governing construction safety.

Employers

Contractors and sub-contractors as employers have the general duties under Section 6A of the Factories and Industrial Undertakings Ordinance with regard to the health and safety at work in construction sites and are responsible for providing a safe and healthy working environment to the employees, which includes:

- Providing and maintaining safe plant and safe systems of work in the workplaces;
- Making arrangement to ensure safety and health in connection with the use, handling, storage or transport of articles or substances;
- Providing adequate and appropriate information, instruction, training and supervision to employees;
- Providing and maintaining safe access to and egress from the workplaces;
- Providing and maintaining a safe and healthy working environment;
- Basic actions that employers are required to take to safeguard a safe and healthy working environment include the following:
 - ◆ Set safety and health standards and procedures;
 - ◆ Appoint safety officers to monitor the safety and health aspects of the working environment and implement safety plan and policy; and
 - ◆ Provide workers with personal protective equipment.

Employees

Employees should cooperate with their employers and other persons in complying with safety regulations and instructions. In particular, employees should:

- Work safely;
- Not do anything to endanger themselves and other persons;
- Use personal protective equipment as required and store and take care of them properly when they are not in use;
- Report unsafe activities immediately to supervisors or the responsible persons in control of the workplace; and
- Report all accidents and dangerous occurrences to supervisors immediately upon occurrence.

Basic Safety Tips for Frontline EMD Staff and Workers

1. Be familiar with and follow all safety signs and directions.
2. Comply fully with safety codes/safe working procedures.
3. Be familiar with the methods to contact qualified first aiders and the locations of first aid boxes.
4. Keep the workplace clean and tidy and remove any refuse as soon as possible.
5. Beware of floor openings and edges with warning signs prominently displayed, and ensure that they are protected by proper guard-rails or securely covered.
6. Provide sufficient lighting.
7. Be familiar with the locations of emergency exits.
8. Adopt safety measures and practices.
9. Report and act immediately upon discovery of any unsafe conditions.
10. Alert and correct anyone who works in an unsafe manner.
11. All accidents, irrespective of whether they have caused any injury, must be reported.
12. Do not operate any machine you are not familiar with or without authorisation.
13. Do not operate any machine without the provision of protective guards or protection systems.
14. Use suitable tools in a correct way.
15. Store the tools properly after use.
16. Stay vigilant at all times and watch out for moving cranes, hooks, falling objects or other lifting equipment.
17. Be familiar with the locations and the operation of fire-fighting equipment.
18. Do not allow electric cables lying on the ground or making contact with water.
19. Use electrical tools installed with residual current device or double-insulation protection as earth leakage protection.
20. Use, handle and store chemicals in a correct manner.
21. Stay out of danger zones.
22. If a permit-to-work system is implemented, do not start working unless a valid permit is obtained.
23. Check the personal safety equipment before commencement of work.
24. Properly fence off the work area and use portable tools equipped with tool straps when working at height.
25. Use suitable personal protective equipment such as helmet, goggles, ear plugs and breathing apparatus, etc.
26. Pay attention to personal hygiene.
27. Do not play in the works site.
28. Do not drink alcohol or take medicine when working.
29. Care for your colleagues and work-mates' safety.

Emergency

In case of emergency, find out if there is a genuine need to activate the alarm to effect escape or evacuation. If escape or evacuation is necessary, make your way to the safe assembly points according to the proper escape or evacuation route.

In the event of injuries:

1. Keep calm and seek assistance.
2. Assist in the rescue as appropriate.
3. Comfort and stay with the injured person.
4. Inform management team and safety officer.
5. Call the ambulance, police, Labour Department and site staff of the Housing Department.

Enhancing a Caring Culture

Mutual support and encouragement between employers (both the contractors and sub-contractors) and employees (including workers) can help achieve job satisfaction and instil a sense of mission in both parties. It can bring harmony at work, strengthen team spirit, encourage continuous improvement and develop a positive attitude to face challenges and to work out solutions to problems. Such a working atmosphere is conducive to relieve stress, implement a Safe Working Cycle throughout and raise the morale of working teams.

Below are some suggestions for employers and senior management:

- Formulate personal development plans for employees or encourage them to achieve one for themselves.
- Provide employees with a safe and healthy working environment and facilities. Formulate safe work practices and give guidance on such to the employees.
- Formulate and implement fair rules and a reasonable merit and demerit system.
- Distribute appropriate work and workload according to employees' capabilities and experience.
- Provide sufficient resources, including manpower, equipment and skills-training, so that employees are capable of carrying out the work assigned to them.
- Give employees clearly defined roles and responsibilities and make sure that these roles and responsibilities are fully understood.
- Arrange sufficient rest periods and provide welfare facilities such as rest rooms, canteens and toilets, etc.
- Provide sufficient and appropriate training to equip staff with the ability to deal with emergencies and solve problems.



- Be considerate.
- Promote health messages and arrange physical checkups.
- Observe the performance of staff and organisation with regard to:
 - ◆ Employees' health and behaviour
 - ◆ Safety culture and climate within the organisation
- Analyse the following indicators and statistics:
 - ◆ Rates of accidents and absenteeism
 - ◆ Productivity and works/service quality
 - ◆ Complaint cases
 - ◆ Medical insurance claim figures, etc.

Relevant Legislation and References

Relevant Ordinances and Regulations

- ◆ Occupational Safety and Health Ordinance
- ◆ Factories and Industrial Undertakings Ordinance
- ◆ Construction Sites (Safety) Regulations
- ◆ Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations
- ◆ Factories and Industrial Undertakings (Safety Management) Regulations

Relevant Safety Standards, Codes of Practice, Guidance Notes and Guidelines

- ◆ Code of Practice on Safety Management (LD)
- ◆ A Guide to Factories and Industrial Undertakings (Safety Management) Regulations (LD)

Common Personal Protective Equipment

Personal protective equipment refers to any equipment that is used for protecting a person from one or more health or safety hazards during work. It mainly includes safety helmets, safety shoes, gloves, eye-protecting devices, respiratory and hearing protectors, full-body harnesses, etc.

When there is a potential hazard to personal safety or health at work, the first step to consider is to remove or substitute the hazard by adopting hazard elimination measures including engineering controls, improvement of work procedures and administrative controls. The use of personal protective equipment should be the last resort when these measures are not feasible or fail to control the hazards effectively.

Workers should bear in mind the followings:

1. No person is allowed to enter a construction site without wearing a suitable safety helmet with Y-type chin strap;
2. Select the right personal protective equipment which meets safety standards;
3. Use personal protective equipment properly;
4. Check, maintain and store personal protective equipment properly;
5. Inform supervisors immediately for any problems or defects; and
6. Deliver expired and damaged personal protective equipment to recyclers for proper disposal.



Use of Personal Protective Equipment

1. Eyes Protection

- a. Hazards include: splashing of chemicals or molten metals, dust, projectiles, gases and fumes, radiation.
- b. Types of protection
 - ◆ Safety goggles, safety glasses and face shields



Goggles for protection against glare, gas welding and smelting furnaces (used together with a face shield) are suitable for smelting furnace work and work involving glare, molten metal, strong light and gas welding.

- ◆ Electric arc welding helmets and face shields
They are suitable for work involving electric arc welding, electric sparks and strong UV-radiation (safety goggles can be used at the same time), etc.

2. Head Protection

- a. Hazards include: impact from falling or ejected objects, risks of head bumping in a cramped working environment.

b. Types of protection



- ◆ Safety helmets should be casted with ventilation vents, equipped with Y-type chin straps, and used preferably in conjunction with sunshade accessories, ear plugs, vibration absorber and whistle.

3. Respiratory System Protection

- a. Hazards include: dust, fibers, hazardous gases and fumes, oxygen deficiency.
- b. Types of protection

◆ Disposable respirator

- Wear respirator when sanding and polishing woodware, spraying paint and steam cleaning, or when the air contains harmful or toxic dust or gas, or when working in a confined space or carrying out demolition work which produces a large amount of dust.
- Take adequate steps to ensure that the respirator fits tightly to the face.
- The respirator should only be used when oxygen supply is sufficient.



- ◆ Dust respirators (should not be used in oxygen deficient environment)
- ◆ Gas mask with cartridge or canister (should not be used in oxygen deficient environment)

- ◆ Breathing apparatus with oxygen supply
 - Self-contained breathing apparatus - with air supply last for a certain time limit (i.e. 15 minutes).
Air-supplied breathing apparatus - supply of unlimited air from an external source/atmosphere.
- ◆ Breathing Apparatus
 - Provide the most effective protection against toxic gases, especially in oxygen deficient environments such as manholes.



4. Torso Protection

- a. Hazards include: extreme temperatures, inclement weather, splashing of chemicals or molten metals, radiation, injuries caused by sharp objects, hazardous dust/fibers or entangling of personal clothing.



- b. Types of protection
 - ◆ Protective clothing of general purposes, disposable overalls and specialised protective clothing such as cold-resistant clothing, chemical or radiation protective clothing, high visibility clothing and puncture-resistant aprons.

5. Hands and Arms Protection

a. Hazards include: abrasion, extreme temperatures, cuts and punctures, exposure to chemicals, electric shock and skin infection.

b. Types of protection

◆ Gloves (cotton/leather) for common tasks - wear cotton gloves for sweat absorption and better gripping of objects



◆ Gloves for handling chemicals - Wear chemical-proof gloves when handling chemicals

◆ Heat-resistant gloves - wear heat-insulating gloves when handling hot objects or during welding



◆ Cut-resistant gloves - wear suitable gloves when handling sheet metal and other objects with sharp edges and corners or during welding and cutting



◆ Leather gloves for bar bending - wear leather gloves when handling reinforcement bars or sharp objects



◆ Gloves for electrical work - wear electric insulating gloves when handling electric appliances and during electric welding



◆ Anti-shock gloves - wear anti-shock gloves when operating vibrating machines

◆ Cold-resistant gloves



◆ Disposable gloves



6. Foot Protection

- a. Hazards include: wet and slippery floors, uneven ground, sharp objects and falling objects.
- b. Types of protection
 - ◆ For protection to sole and toes, safety shoes should be equipped with steel head, vibration absorber, penetration and skid resistant sole.



7. Hearing Protection

- a. Hazards include: tinnitus, temporary deafness, permanent deafness, dizziness and headache caused by exposure to high noise level.
- b. Types of protection

◆ Ear Plugs

- ◆ Wear ear plugs when only mild attenuation is required. The attenuation of re-usable soft plastic ear plugs generally ranges from 18 to 25 dB(A).

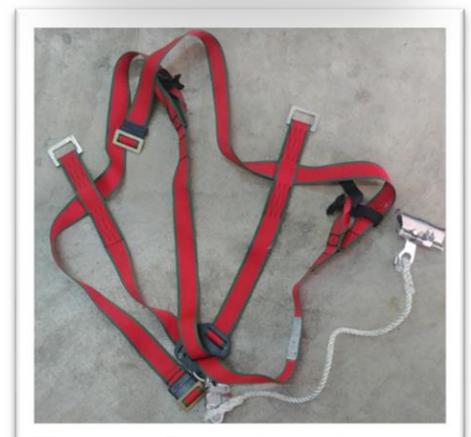
◆ Ear Muff

- ◆ Wear ear muff when a large attenuation of up to 40 dB(A) is required. Make sure that the cushion fully covers the ears and provides a good seal. Wear ear muff when working in a hearing protection zone or in the vicinity of noisy equipment, or when using cartridge operated fixing tools. Use ear protectors which are approved by the Labour Department.



8. Prevention of Falling from Height

- a. Hazards include: injury or death caused by falling from height.
- b. Types of protection
 - ◆ Full-body harness should be used with an independent lifeline or an appropriate anchorage.



Recommendations on Safety Helmets

1. Among a myriad of standards of safety helmets applicable to the construction industry in the market, the most common standards adopted are ISO 3873-1977 and the corresponding British Standard.
2. OSHC had conducted a survey on safety helmets and put forth the following observations/recommendations in its conclusion:

- Although the ISO 3873 standard is widely adopted in the industry, some standards are more stringent in terms of replacement cycle and safety inspection requirements. Users should consider these specifications when choosing safety helmets.



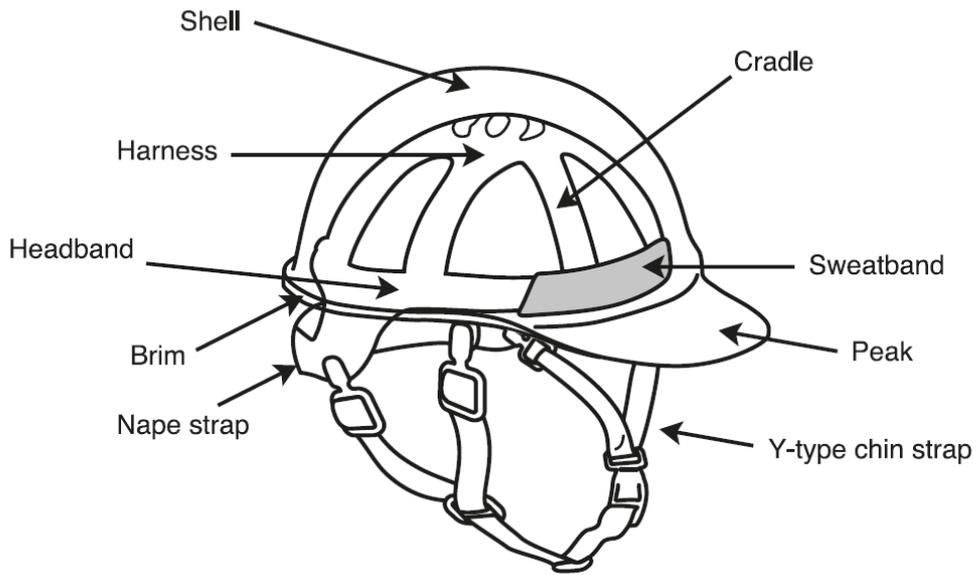
- When selecting safety helmets, users should consider a helmet with a safety factor of not less than 2 in addition to its ability to guard against an impact force of 50J.

- Weather conditions affect helmet shells made of hard plastic significantly. Strong UV light, high temperature and high humidity make plastic shells brittle and hence reduce the impact resistant strength of helmets. Site foremen and workers should replace their helmets regularly in light of the materials used.

- Under no damage condition, helmets used in construction sites should be replaced every 2 to 3 years. The impact strength of the hard hats generally declines significantly after 2 - 3 years of service, and will not be able to provide the level of protection as expected.

- Unless specified otherwise in the safety certificate of the safety helmet, the maximum service time of a plastic hard helmet should not exceed two years. This recommendation is more stringent than the requirement of three years or two and a half years as stipulated in the Labour Department's guidance notes or the GB standards.

- The hard shell and suspension harness should be checked carefully before each use.



General Design

Recommendations on Chin Straps

1. The chin strap is an integral part rather than an accessory of a safety helmet for better head protection to workers. A chin strap keeps the helmet in place to prevent it from dropping off and thus enhances the protection against impact on workers' heads.
2. The chin strap is part of the retention system. It is a strap commonly in the form of Y-type or I-type which fits under the chin to help secure the helmet on the head of the user. Anyone who works at Hong Kong Housing Authority construction sites must wear a suitable safety helmet with a Y-type chin strap.
3. A safety helmet without a chin strap will not be regarded as a suitable safety helmet. A contractor responsible for a construction site should ensure that no workmen or workmen employed to carry out the construction works remains on the site unless he is wearing a suitable safety helmet.



Checking the Expiry Date of Safety Helmet

Common examples of impressed markings on safety helmets with manufacturing dates for easy inspection:



CE : 代表已通過有關的歐盟標準
 08 : 代表於2008年製造
 圓點 : 一個圓點表示一季，兩個圓點即表示於第二季製造。
 解讀 : 此安全頭盔符合歐盟標準，於2008年第二季製造。

CE: denotes it has passed the relevant EN standard
 08: manufactured in year 2008
 Dot: a dot denotes a quarter, 2 dots denotes manufactured in 2nd quarter
 Decoding: this helmet has passed the EN standard and was manufactured in 2nd quarter of 2008



08 : 代表於2008年製造
 箭咀 : 箭咀指向12代表於12月製造
 解讀 : 此安全頭盔於2008年12月製造
 08: manufactured in year 2008
 Arrow: the arrow pointing at 12 denotes manufactured in December
 Decoding: this helmet was manufactured in 2nd quarter of 2008

Recommendations on Safety Harness (Full-body Harness)

1. Safety harness is only the last resort when it is impracticable to provide working platform, guard-rails and scaffolds. For works using gondola and suspended working platform, every worker must wear a safety harness with lanyard attached securely to an independent lifeline.
2. Tie the safety harness to an independent lifeline/fixed anchorage/fall arrestor securely before working (including access to and egress from the workplace).
3. Use safety harness that provides support to the whole body of the user.
4. Assemble, adjust, use, store and maintain safety harness in accordance with manufacturer's instruction.
5. Check the components of safety harness before use. Do not use the safety harness in case of damage.
6. Provide training to users on the use of safety harness and keep proper record of training. Review training contents for updates and provide regular refresher training.
7. Use safety harness as a fall arrest measure only when other safety measures are impracticable. Occupational safety regulations require employers to take safety measures for working at height, including the provision of suitable working platforms, safe means of access and egress and appropriate guard-rails.
8. Full-body harness should be used with connectors, lanyards, energy absorbers and fall arrest device.



9. The condition of safety harness should be checked and examined by a competent person regularly.
10. Select appropriate safety harness for different types of work.
11. Appropriate safety harness should be used when setting up fall arrest system for working at height. Also the surroundings of a site should be considered so as to prevent striking against nearby structures in the event of a fall. Environmental factors should be taken into account to avoid the effect of high temperatures, smoke or strong wind on the performance of individual components.

Relevant Legislation and References

Relevant Ordinances and Regulations

- ◆ Factories and Industrial Undertakings Regulations
- ◆ Construction Sites (Safety) Regulations
- ◆ Factories and Industrial Undertakings (Confined Spaces) Regulations
- ◆ Factories and Industrial Undertakings (Blasting by Abrasives) Special Regulations
- ◆ Factories and Industrial Undertakings (Woodworking Machinery) Regulations
- ◆ Factories and Industrial Undertakings (Abrasive Wheels) Regulations
- ◆ Factories and Industrial Undertakings (Work in Compressed Air) Regulations
- ◆ Factories and Industrial Undertakings (Spraying of Flammable Liquids) Regulations
- ◆ Factories and Industrial Undertakings (Cartridge-Operated Fixing Tools) Regulations
- ◆ Factories and Industrial Undertakings (Protection of Eyes) Regulations
- ◆ Factories and Industrial Undertakings (Noise at Work) Regulation
- ◆ Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations
- ◆ Factories and Industrial Undertakings (Carcinogenic Substances) Regulations
- ◆ Factories and Industrial Undertakings (Dangerous Substances) Regulations
- ◆ Factories and Industrial Undertakings (Safety Management) Regulation
- ◆ Occupational Safety and Health Ordinance

Relevant Safety Standards, Codes of Practice, Guidance Notes and Guidelines

- ◆ Guidance Notes for the Electrical Products (Safety) Regulation (EMSD)
- ◆ Guidance Notes on the Selection, Use and Maintenance of Safety Helmets (LD)
- ◆ Guidance Notes on Classification and Use of Safety Belts and their Anchorage Systems (LD)
- ◆ A Survey on the Usage of Hard Hats in Hong Kong Construction Sites, and a Study on the Protective Functions of Safety Helmets (OSHC)
- ◆ Guidelines for the use of Personal Protective Equipment (OSHC)

Common Portable Tools

Selecting the right working tools can ensure smooth completion of work and enhance productivity and efficiency. However, if portable tools and electric-powered hand tools are not used in the proper way, it may directly or indirectly cause injury to workers, affect construction quality and lead to works delay.



Analysis of the data on industrial accidents in recent years shows that the number of accidents caused by improper use of portable tools has been increasing and the situation is getting serious. The findings also reveal that insufficient attention to the safe use of portable tools in the construction industry is the cause of most accidents. In other words, the number of accidents will drop significantly if hand tool-related accidents can be avoided. Therefore, it is important to select suitable tools and use them properly.

Generally, portable tools are divided into two groups: manual and electric-powered. The general safety measures for the use of portable tools are provided below for reference:

Maintenance of Portable Tools

1. Before each use, portable tools must be checked to ensure that all the parts are well composed and without any damages.
2. When using portable electric-powered tools, it is important to check the connection of wires to avoid electric shock.



Selection and Use of Portable Tools

There are different kinds of tools and each of them is specially designed for different purposes and usages. Workers should use suitable portable tools according to the nature of work and should not use them for purposes they are not designed for. Also, workers should be mindful of the correct methods and posture of use, and do not apply excessive force. For example, using angle grinder for timber cutting is not the proper way to use the tool.



Management of Portable Tools

1. Tools should be kept properly in appropriate places such as tool holders or tool boxes for easy access. Untidy storage of tools poses safety hazards to workers.
2. Workers should carry tools in tool boxes, tool bags or tool belts on their way to work. After use, all tools should be put back in place and should not be left around. Do not put tools in high places or locations that are easily struck by people or objects.





3. The sharp edges of hand tools should be fully protected to prevent workers from cutting themselves by accident.



4. Tools that are damaged or in need of repair should be stored separately with warning labels such as “Danger! Do not use!” posted on them to prevent other workers from using by mistake.

General Operational Safety Guidelines

1. If necessary, fence off the work areas to prohibit any unauthorised entry.



2. When working at height, appropriate safety measures should be taken, such as using tool straps to prevent hand tools from slipping out of worker's hand and falling from height.
3. The length of tool straps should be adjustable to prevent the tool from slipping out of workers' hands.
4. For heavy duty portable electric tools (such as impact drills, reciprocal saws, abrasive wheels and demolition hammers) which need to be attached to worker's body by means of a tool strap during operation, consideration should be given to the risk associated with the loss of control of such tools when selecting suitable tool straps.
5. When using tools with sharp corners or edges, or tools that are expected to produce fragments, particles or noise, workers should wear personal protective equipment that meets the required safety standard as necessary.
6. When using hand saws for cutting, secure the workpiece with a clamp first to prevent the



2. Common Portable Tools

workpiece from moving.

7. Except for double-insulated tools, all electric-powered portable tools should be earthed properly before use. The tools should be used with approved industrial cables and waterproof electrical plugs. When replacing parts such as blade or driller head, make sure that the tool is powered off and unplugged.

8. Adequate safety precautions (such as lockout and tagout system and permit-to-work system) should be taken when working with hand tools on or near live conductors.



工作許可證 Permit to Work	
Permit No. 許可證號碼：	
Project 地盤名稱：	
Location 工作地點：	(Floor 樓層)
Description of work 工作性質：	
Company 公司：	
Date 日期：	
Permit valid from 許可工作由：	hrs. to 至： hrs.
Foreseeable hazards associated with the work 可預見危害：	
<input type="checkbox"/> Falling Objects 物料從高處下墮 <input type="checkbox"/> Fall of person 人體從高處下墮 <input type="checkbox"/> Insufficient Lighting 燈光不足	

Relevant Legislation and References

- ◆ Factories and Industrial Undertakings (Cartridge-Operated Fixing Tools) Regulations
- ◆ Factories and Industrial Undertakings (Woodworking Machinery) Regulations
- ◆ Factories and Industrial Undertakings (Electricity) Regulations

Working at Height

Common works at height in building maintenance and repair include:

1. Concrete and plastering repair on external walls;
2. Façade renovation;
3. Repair, replacement and installation of glass curtain walls;
4. Repair, replacement and installation of windows;
5. Repair, replacement and installation of building services, plumbing and drainage;
6. Cleaning of external walls; and
7. Replacement of laundry racks.

When undertaking the above works, different types of auxiliary equipment should be used according to the actual circumstances. Common auxiliary equipment includes:

1. Scaffoldings;
2. Truss-out bamboo scaffoldings;
3. Mobile metal scaffoldings; power-operated elevating work platforms;
4. Gondolas/Suspended working platforms; and
5. Step platforms, etc.



All these measures provide a safer working environment for workers. At the same time, efforts should also be made to ensure public safety. General safety measures are provided below for reference.

General operational safety guidelines –

The work areas should be properly enclosed with appropriate warning signs or notices to prohibit unauthorised entry. Also proper protection should be made to ensure safety.



Scaffolding (Bamboo and Metal Scaffolding)

1. Design of scaffolds –
Metal scaffolds should be erected according to the design and drawings of registered professional engineers. Similarly, bamboo scaffolds of a height more than 15m should be designed and approved by registered professional engineers.
2. Erection, alteration or dismantling of scaffolds –
Scaffolds should be designed by a competent person or a registered professional engineer and erected, altered or dismantled by trained workmen under the immediate supervision of a competent person.
3. After erection, the scaffold should be inspected by a competent person with a duly signed Form 5 (under



Construction Sites (Safety) Regulations) before being taken into use for the first time.

4. Inspection and maintenance of scaffolds –

Scaffolds should be inspected by a competent person with a duly signed report in an approved form before being taken into use for the first time, at regular intervals not exceeding 14 days immediately preceding each use and after exposure to adverse weather conditions.



5. The competent person should check the strength and stability of scaffolds to ascertain whether they are in safe working order or in need of repair.



Truss-out Scaffolds

1. Erection, alteration or dismantling of truss-out scaffolds - Truss-out scaffolds should be designed by a registered professional engineer and erected, altered or dismantled by trained workmen under the immediate supervision of a competent person.
2. Investigation of façade material and structure should be carried out to ensure the strength of façade structure before erection. A truss-out scaffold should be inspected by a competent person with a duly signed Form 5 before being taken into use for the first time.



3. Suitable anchor bolts should be used for installing the metal brackets of truss-out scaffold. The boreholes should be of suitable size and depth and should be drilled into solid concrete structure of the façade. Each metal bracket should be fixed with at least three anchor bolts.



表格五
FORM 5

建築地盤(安全)規例
腳架
每十四日一次或在其他場合執行的檢查結果報告
本表格乃由勞工處處長為執行建築地盤(安全)規例第 38F(1)條而認可

Construction Sites (Safety) Regulations
SCAFFOLDS
REPORTS OF RESULTS OF FORTNIGHTLY OR OTHER INSPECTIONS

Form approved by the Commissioner for Labour for the purposes of regulation 38F(1) of the Construction Sites (Safety) Regulations

有關欄位的說明或所在地點 Description or location	檢查日期 Date of inspection	檢查結果 註明該地腳架是否處於安全操作狀態 Result of inspection State whether the scaffold is in safe working order	檢查者簽署及職銜 Signature and designation of person who made the inspection
(1)	(2)	(3)	(4)

任何合資格檢驗員或合資格的人，如向承建商交付檢驗知照任何有關違規的資料或報告，而屬虛假（一經定罪，可處罰款二十萬元及監禁十二個月）。
Any competent examiner or competent person who delivers to a contractor a certificate or makes a report which is to his knowledge false as to a material particular shall be guilty of an offence and shall be liable on conviction to a fine of \$200,000 and to imprisonment for 12 months.
CSSR-F5

4. Inspection and maintenance of truss-out scaffolds - Truss-out scaffolds should be inspected by a competent person with a duly signed report before being taken into use for the first time, at regular intervals not exceeding 14 days immediately preceding each use and after exposure to weather conditions or substantial alteration likely to have affected its strength or stability.

5. A competent person should check the strength and stability of truss-out scaffolds to ascertain whether they are in safe working order or in need of repair.



Working Platforms

1. Erection, alteration and dismantling of working platforms - Working platforms should be erected, altered or dismantled by trained workmen under the immediate supervision of a competent person. Working platforms should be inspected by a competent person before use.
2. Use of working platforms - Workers should take note of the allowable working load and the maximum number of persons allowed on a working platform; and ensure that there is no possible obstruction in the working area and during the process that may affect its operation.
3. Working platforms should not be used outdoors in strong wind and under adverse weather conditions.



Power-operated Elevating Work Platforms

1. Pre-operation inspection - Operators should carry out pre-operation inspection to ensure that the power-operated elevating work platform is in a serviceable state. The work platform should be set up with its outriggers fully extended. Suitable supporting materials should be placed under the outriggers to provide a firm base as necessary.



2. During operation - When operating a power-operated mobile work platform, the operator should never exceed the safe working load, position the machine over persons or allow workers to go under the platform.

3. When the machine is travelling - The operator should ensure that he always has a clear view of the ground and keep a safe distance from overhead cables, obstacles, debris, holes, depressions, ramps and other hazards.
4. Parking - After work, the power-operated elevating work platform should be parked in a designated area and on level ground with its boom lowered or retracted. The engine should be switched off and the parking brake should be applied.



Suspended Working

Platforms/Gondolas

Installation of suspended working platforms/gondolas and related legislation and regulations

1. Inspection of installation of suspended working platforms should be carried out by a competent person on-site. Suspended working platforms should be designed, examined and tested by a registered professional engineer to ensure that they have sufficient loading capacity.
2. Each suspended working platform should be inspected in the immediately preceding seven days by a competent person with Form 1 duly completed before use.



FORM 2
表格二
Section 20(1) (條)
[修訂版 2011]

FACILITIES AND INDUSTRIAL UNDERTAKINGS (SUSPENDED WORKING PLATFORMS) REGULATION
CERTIFICATE OF THOROUGH EXAMINATION OF SUSPENDED WORKING PLATFORM
Form approved by the Commissioner for Labour for the purposes of Section 20(1) of the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation

工廠及工業經營 (吊船) 條例
吊船的徹底檢驗證明書

Form approved by the Commissioner for Labour for the purposes of Section 20(1) of the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation

本表格乃由勞工處處長就工廠及工業經營 (吊船) 條例第20(1)條的需要而認可

Description of suspended working platform, e.g. identification mark, dimensions of working platform, safe working load, maximum number of persons that can be carried safely. 吊船的說明：包括：識別標記、工作平台的尺寸、安全操作負荷、安全操作時可容納的人數等。	Date of thorough examination 徹底檢驗日期	Result of thorough examination 徹底檢驗結果		
		Specify repairs required to enable the suspended working platform to be used safely. If no such repairs are required, enter "None". 列明在吊船使用前安全地用此吊船，必須做的修理。如無任何修理，則填寫“無”。	Specify repairs (other than those listed in column (3)) required before the issue of the next certificate. If no such repairs are required, enter "None". 列明在下一次發給吊船使用證書前所需的修理 (除第(3)欄所列的修理外) 必須做的修理。如無任何修理，則填寫“無”。	State whether the suspended working platform is to be used working under: 吊船應在下列情況下使用：
(1)	(2)	(3)	(4)	(5)

I hereby certify that the suspended working platform described in this certificate was thoroughly examined by me on _____
茲證明本人於 _____ 年 _____ 月 _____ 日徹底檢驗本證明書所述的吊船。

Name and signature of Registered Professional Engineer _____ Qualification _____
註冊專業工程師姓名及簽署 _____ 資格 _____

Date of issue _____
簽發日期 _____

Any competent person who delivers to an owner a certificate or report which is to his knowledge false as to a material particular commits an offence and is liable on conviction to a fine of \$200,000 and imprisonment for 12 months.
任何合資格檢驗人員，如向僱主提交他自知有虛假資料的證明書或報告，即屬犯罪；一經定罪，可處罰款二百萬元及監禁十二個月。

FORM 1
表格一
Section 19(1) (條)
[修訂版 1911]

FACILITIES AND INDUSTRIAL UNDERTAKINGS (SUSPENDED WORKING PLATFORMS) REGULATION
CERTIFICATE OF WEEKLY INSPECTIONS OF SUSPENDED WORKING PLATFORM
Form approved by the Commissioner for Labour for the purposes of Section 19(1) of the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation

工廠及工業經營 (吊船) 條例
吊船的每週檢查證明書

Form approved by the Commissioner for Labour for the purposes of Section 19(1) of the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation

本表格乃由勞工處處長就工廠及工業經營 (吊船) 條例第19(1)條的需要而認可

Description of suspended working platform and identification mark 吊船的說明及識別標記	Date of inspection 檢驗日期	Result of inspection (covering all lifting appliances and gear on the working platform, counter-balance, ballast, outriggers, anchoring, supporting or fixing arrangements, all mechanical and electrical apparatus and safety devices) 檢驗結果 (包括所有起重機及裝置、工作平台、平衡系統、繫索物、支撐物、錨柱、索柱、索柱固定器、所有機械裝置及安全裝置) 並列出吊船的安全操作狀態。		Name, signature and designation of the competent person who made the inspection 進行檢查的合資格人員的姓名、簽署及職銜
		(3)	(4)	
(1)	(2)	(3)	(4)	(5)

An owner shall ensure that a suspended working platform is not used for carrying persons unless he has obtained a certificate of weekly inspections signed by a competent person stating that the suspended working platform is in safe working order. Otherwise, he commits an offence and is liable on conviction to a fine of \$200,000 and to imprisonment for 12 months.
在未經合資格的人簽署的每週檢查證明書，吊船不得用於運送人員，除非吊船處於安全操作狀態。僱主如犯此罪，一經定罪，可處罰款二百萬元及監禁十二個月。

- Each suspended working platform should be thoroughly examined in the immediately preceding six months with a duly signed Form 2 before use.
- Each suspended working platform should be tested and thoroughly examined during the immediately preceding 12 months with a duly signed Form 3 before use.
- Suspended working platforms should be inspected at least once a week with a duly completed Form 1.

FORM 3
表格三
Section 20(2) & (3) (條)
[修訂版 2011]

FACILITIES AND INDUSTRIAL UNDERTAKINGS (SUSPENDED WORKING PLATFORMS) REGULATION
CERTIFICATE OF LOAD TEST AND THOROUGH EXAMINATION OF SUSPENDED WORKING PLATFORM
Form approved by the Commissioner for Labour for the purposes of Section 20(2) & (3) of the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation

工廠及工業經營 (吊船) 條例
吊船的負荷測試及徹底檢驗證明書

Form approved by the Commissioner for Labour for the purposes of Section 20(2) & (3) of the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation

本表格乃由勞工處處長就工廠及工業經營 (吊船) 條例第20(2)及(3)條的需要而認可

1. Name of owner of the suspended working platform. 吊船僱主姓名。	
2. Address of installation of the suspended working platform. 吊船的安装地址。	
3. (a) Description of suspended working platform, e.g. identification mark, mode of suspension, dimensions of platform. 吊船的說明：包括識別標記、懸吊形式、工作平台的尺寸等。 (b) Date of manufacture of accessories. 裝配日期 (如屬新裝)。	

Use of Suspended Working Platforms

- Workers operating suspended working platforms should be at least 18 years old with a recognised training certificate in the safe operation of suspended working platforms.
- All suspension ropes and safety ropes of a suspended working platform should be inspected by a competent person to confirm that they are safe for use before work starts every day.
- All persons riding on a suspended working platform should wear a safety harness fastened to an independent lifeline or an appropriate anchorage.



4. Notices should be displayed prominently on each suspended working platform stating clearly the safe working load, the number of persons allowed and the details of rope inspection, and reminding workers to wear suitable personal protective equipment.
5. The use of suspended working platforms should be stopped immediately under adverse



weather conditions such as strong winds and heavy rain or when thunderstorm warning is issued.

6. Safety measures on the use of parapet wall clamps by temporary suspended working platforms - Make sure that the parapet wall clamps used as anchorages on the roof are installed at suitable locations, anchored securely and in good condition. Before installation, inspection of the parapet wall should be carried out to check for any obvious cracks, deformation, corrosion or displacement.



Keep the suspension ropes and safety ropes vertical

7. All suspension ropes and safety ropes should be inspected by a competent person for any damages, kinks, deformation, wear and tear, flattened surface, breakage ropes or erosion before work starts every day. Also, the suspension ropes and safety ropes should be kept vertical so that the suspended working platform can stay balanced when raising and lowering.



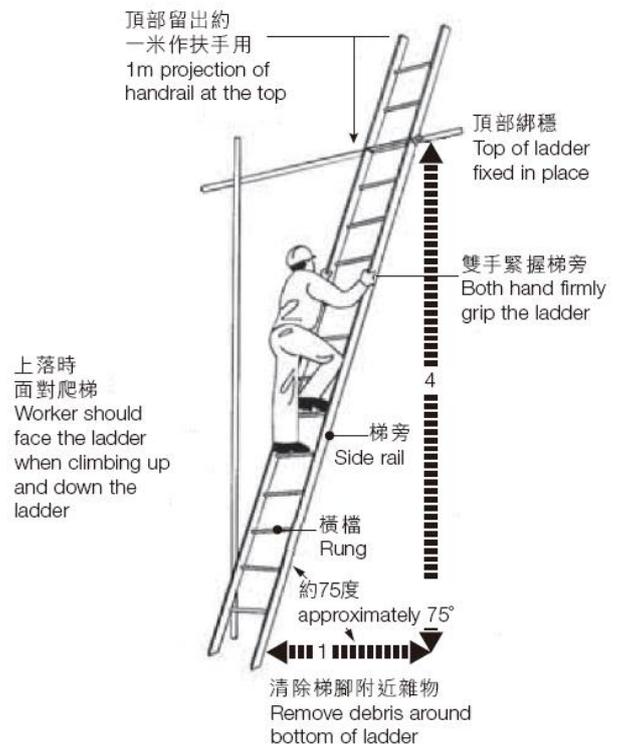
8. Accessories of suspended working platforms such as sunshades - The design and structure of all accessories of suspended working platforms should be approved by a registered professional engineer of relevant discipline. The accessories should be thoroughly examined by a competent examiner before putting to use.



Ladders and Step Platforms

Use of ladders

- In no case shall ladders be used for work at 2m or more above the ground. Ladders, including straight ladders and folding ladders, are usually used for ascending and descending purposes only. It is unsafe to use ladders for work purpose.
- Ladders should be inspected to make sure that they are structurally sound and stable every time before use. When using, the ladder should have an appropriate angle of rest to the support (for straight ladder, the ratio of vertical plane to horizontal plane should not exceed 4:1), or its stability will be affected.
- A ladder should be fixed on the support with its top fastened properly with ropes. If not practicable, have a fellow worker at the bottom to hold the ladder. The top of the ladder should be at least 1m above the resting place to provide for a handhold.
- Workers should face the ladder when they climb up and down the ladder and their hands should be free from tools. Use a tool bag if necessary. Never move horizontally on a ladder or climb to the top of a ladder.
- Ladders should be used for ascending and descending purposes only, and should not be used for work above ground. Workers should maintain a three-point contact when ascending or descending a ladder.
- Measures suggested for work involving different height are as follows:





2m or more:

7. Use suitable working platforms with guard-rails and toe-boards and also a fall arresting system should be provided based on the results of risk assessment;

Less than 2m but more than 900mm:

8. For working platforms or step platforms used near a building edge or floor opening, guard-rails and toe-boards should be provided to avoid risk of falling object from height;

9. If the use of working platform or other

equipment is not practicable, platform ladder with guard-rails may be used based on the results of risk assessment;

10. For work at a height of 1 350mm - 2 000mm, a fall arresting system should be used based on the results of risk assessment.



At 900mm or below:

11. Step platform or platform ladder with or without guard-rails can be used;

12. When the use of working platform, step platform or platform ladder is not practicable:

13. Suitable fall arresting system should be used based on the results of risk assessment.

14. Sufficient information, instruction, training and supervision should be given to related workers on the use of platform ladders.

15. Ensure that the workers follow safe working procedures and adopt necessary control measures.



16. A fall arresting system should comprise a full-body harness attached to an independent and fixed anchor. The anchor should be properly designed, installed and tested.
17. Guard-rails should be situated at 450 – 600 mm and 900 – 1150 mm high from the platform level and form a barrier to prevent the worker falling from the platform.
18. Toe-boards should not be less than 200mm high.
19. Lock the castors before working on a mobile working platform.
20. Normally, straight ladders and extension ladders should be used for ascending and descending purposes only.

The use of boatswain's chairs and wooden ladders is prohibited. Portable ladders provided should comply with the safety requirements of at least one of the followings (the latest version):

- BS EN131 for metal and glass-fibre reinforced plastic ladder;
- BS 2037 for metal ladder;
- EATS13/1 for glass-fibre reinforced plastic ladder;
- BS EN14183 for step platform; or
- Other international standards recognised by ISO.

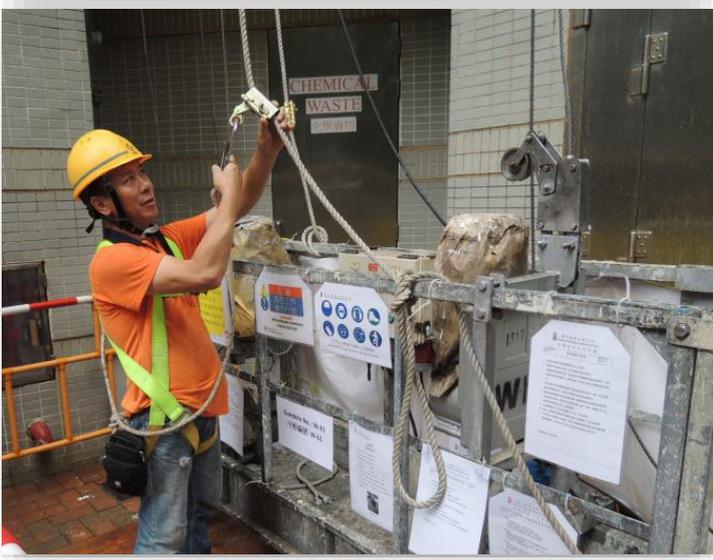


Hop-Up Platforms (Light-duty Working Platforms)

1. The footing poles on both sides of a hop-up platform should be installed properly. When moving up and down the platform, make sure that the working platform and the outriggers are locked in place and the outriggers are fully extended.
2. Before use, make sure that the outriggers and hinges are fully extended and the protective guard-rails are put up and properly locked.
3. When ascending or descending a platform ladder or hop-up platform, workers should maintain a three-point contact (i.e. with both hands grasping the ladder/platform and one leg standing steadily on the ladder/platform, or with both legs standing steadily on the ladder/platform and one hand grasping the ladder or platform at the same time). Also, workers should face the steps of the platform when moving up and down and keep the body's centre of gravity inside the platform. Do not apply excessive force to the platform or induce lateral force that cause it to overturn.



Prevention of Falling from Height



1. Prevention of falling from height - Before commencement of work, workers should put on full-body harnesses attached to an independent lifeline or anchorage approved by registered professional engineers. To achieve the best effect of protection, the harness should be hung at a location higher than the waist. Do not attach full-body harness causally to window frames, window hinge or any other unstable anchorage. One lifeline should be used by one worker only.



2. Requirements on the inspection of fixed anchorages (including eye bolts) - According to the standard of BS EN 795, the manufacturers are required to test the static strength of the anchorages by applying a force of 10kN and maintaining the force for three minutes.

3. When testing the dynamic strength, secure one end of the test lanyard to the anchor device and the other end to a 100kg mass and observe if the mass is arrested when allowed to fall freely through 2.5m. After installation, the anchor device should be tested for its load bearing according to the standard of BS 7883.



Transportable Temporary Anchorage Devices (TTAD)



For works at height with no secure fixed anchorage point or other effective means available to the attachment of fall-arresting equipment, the use of a horizontal bar or wall-mounted transportable temporary anchor device can be considered. These two types of transportable temporary anchor devices must be installed according to the manufacturer's specifications and guidelines, and should be supervised and examined by a competent person. One transportable temporary anchor device should be used by one worker only at any time.

Checklist of Working at Height

Name of Organization _____ Date _____

Location of Site _____

Name of Inspector _____ Time _____

1. Scaffolding

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks
(a) Has the construction, addition and alteration works of the scaffold been conducted by trained and experienced workers under the direct supervision of a competent person?					
(b) Is the scaffold secure from collapse by being effectively fastened vertically, horizontally and diagonally?					
(c) Is the scaffold standing on suitable ground surface or foundation?					
(d) Is there any safe access available to the scaffold users?					
(e) Was the scaffold inspected by a competent person before use and at least once every 14 days with the findings duly recorded in the statutory inspection form?					
(f) Was the scaffold inspected again by a competent person after it had been extended or altered or exposed to adverse weather conditions with the findings duly recorded in the statutory inspection form?					
(g) Does the ratio of the height of the tubular tower to its smallest base length meet the safety requirement (i.e. indoor: 3.5; outdoor: 3)?					
(h) Are the base wheels of the mobile tubular tower equipped with an effective locking system?					

2. Working Platform

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks
(a) Are the wooden or plywood boards or metal plates of the working platform structurally sound and of adequate thickness?					
(b) Is the working platform tightly decked with wooden or plywood boards or metal plates?					
(c) Is the working platform suitably decked or fixed with wooden or plywood boards or metal plates to avoid overturning?					
(d) Are materials evenly placed on the working platform and causing no overloading?					
(e) Is the working platform operating at a height of more than 2 metres equipped with guard-rails and toe-board on each side?					
(f) Is the working platform wide enough for people and materials to pass through?					

3. Floor edges, staircase edges, lift shafts and floor openings

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks
(a) Are floor edges, staircase edges, lift shafts or other dangerous places at a height of not less than 2 metres equipped with suitable guard-rails and toe-boards?					
(b) Are the guard-rails of adequate strength and fixed tightly on secure floor slabs to prevent people from falling off?					
(c) Do all floor openings, holes in ground or other dangerous places have coverings of the suitable structure which are fixed tightly at correct places?					
(d) Are the coverings marked with bold characters to indicate clearly their use?					

4. Ladders

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks
(a) Are ladders used only where circumstances do not permit scaffolding?					
(b) Do ladders have all their parts such as side rails, rungs and anti-slip foot-pads in good conditions?					
(c) Are ladders fastened up at the top or, if this is not practicable, fixed securely at the part near their bottom?					
(d) Are all ladders standing on level and firm base?					
(e) Do all ladders extend at least 1 metre above the landing level?					

5. Preventive measures against people from falling

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks
(a) Where circumstances do not permit the erection of a safe working platform, is there any provision of suitable safety nets, safety harness or other similar equipment to prevent people from falling down and hence injuries?					
(b) If safety harnesses are being used, is there any provision of proper anchor points such as independent lifelines and suitable equipment?					
(c) Are all safety nets and safety harnesses kept under proper maintenance?					
(d) Are steps being taken to ensure that the safety net installation is close to the building?					
(e) Are safety nets installed in the manner that the nets are not overstretched and should be allowed to sag slightly?					
(f) Are all independent lifelines and anchor points examined and accepted by registered professional engineer?					

6. Preventive measures against materials from falling

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks
(a) Are the necessary precautions being taken to prevent workers from being struck by falling materials or objects?					
(b) Is the area underneath a work being carried out at height fenced off to avoid risk of falling objects?					
(c) Are steps being taken to prevent scaffolding materials, tools or other materials from being thrown, dumped or dropped from height?					
(d) Are the hand tools secured by workers with hand straps when they are working at height and there is a risk of falling objects?					
(e) Are lifting appliances or lifting gears being used for the safe and proper lowering of scaffolding materials, tools or other objects?					

7. Suspended Working Platform

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks
(a) Has the suspended working platform been designed, inspected and examined by registered professional engineer to ascertain the safe working load?					
(b) Has the erection, alteration and dismantling of suspended working platform been executed by trained and experienced personnel under the supervision of competent person?					
(c) Are the operators or persons working on a suspended working platform at least 18 years old and do they possess a recognized training certificate and relevant working experience?					

3. Working at Height

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks
(d) Has the suspended working platform been inspected by competent person before commencement of daily work and in the intermediate preceding 7 days before its use with the SWP Form 1 duly completed and signing of SWP Form 2 in the preceding 6 months and SWP Form 3 in the preceding 12 months before its use by a competent examiner (registered professional engineer)?					
(e) Has the suspended working platform been inspected by competent person with completion of statutory form after it was altered or exposed to adverse weather condition?					

8. Other Items

Item	Good	Need Improvement	Need Immediate Improvement	N/A	Remarks

Signature of Inspector _____ Time _____

Relevant Legislation and References

- ◆ Factories and Industrial Undertakings Ordinance
- ◆ Factories and Industrial Undertakings (Lifting Appliances And Lifting Gear) Regulations
- ◆ Factories and Industrial Undertakings (Suspended Working Platforms) Regulation
- ◆ Construction Sites (Safety) Regulations
- ◆ Occupational Safety And Health Ordinance
- ◆ Code of Practice for Bamboo Scaffolding Safety (LD)
- ◆ Safety Guide for Bamboo Scaffoldings Work (LD)
- ◆ Code of Practice for Metal Scaffolding Safety (LD)
- ◆ Guidance Notes on Safe Use of Power-operated Elevating Work Platforms (LD)
- ◆ Code of Practice for Safe Use and Operation of Suspended Working Platforms (LD)
- ◆ Guidance Notes on the Inspection, Thorough Examination and Testing of Suspended Working Platforms (LD)
- ◆ Safety Hints on Operation of Suspended Working Platform (LD)
- ◆ A Guide to Ladders and Elevated Working Platforms (LD)
- ◆ Safety Hints on Truss-out Bamboo Scaffolding (Chinese version only) (LD)
- ◆ Safety Measures for Use of Truss-out Bamboo Scaffold (LD)
- ◆ Guidance Notes on Classification and Use of Safety Belts and their Anchorage Systems (LD)
- ◆ Guidelines on the Design and Construction of Bamboo Scaffold (BD)
- ◆ Construction Industry Council - Guidelines on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds (CIC)

Safety in Confined Space



“Confined space” means any place in which, by virtue of its enclosed nature, there arises a reasonably foreseeable specified risk, and without limiting the generality of the foregoing, includes any manhole, chamber, tank, vat, pit, well, sewer, tunnel, pipe, flue, boiler, pressure receiver, hatch, caisson, shaft or silo in which such risk arises.

“Specified risk” means a risk of:

1. Serious injury to any person at work arising from a fire or explosion;
2. The loss of consciousness of any person at work arising from an increase in body temperature;
3. The loss of consciousness or asphyxiation of any person at work arising from gas, fume, vapour or the lack of oxygen;
4. The drowning of any person at work arising from an increase in the level of liquid; or
5. The asphyxiation of any person at work arising from a free flowing solid or the inability to reach a respirable environment due to entrapment by a free flowing solid.

Certified Worker

1. No workers shall enter or work in a confined space other than certified workers
2. Fence off the works area and display appropriate warning signs or notices to prohibit unauthorised entry
3. Certified workers should hold a valid certificate issued under Section 4(1) of the Factories and Industrial Undertakings (Confined Spaces) Regulation





4. Fence off the works area with barriers properly
5. Clear signage to advise no authorised entry to a confined space

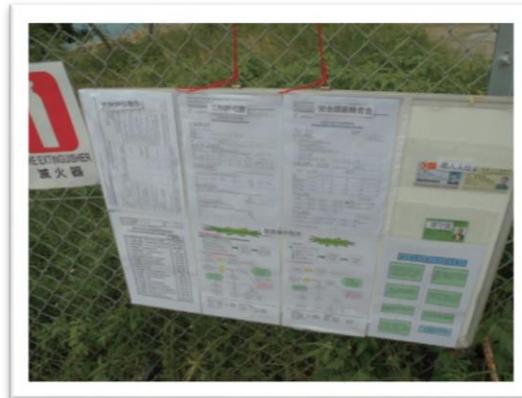


Risk Assessment and Permit-to-work System

1. Risk assessment of a confined space should be conducted by a competent person and a permit-to-work certificate should be obtained before certified workers are allowed to enter a confined space.
2. Post the permit-to-work certificate and risk assessment report at a conspicuous location outside the confined space.
3. Implement the safety precautions in relation to the hazards identified in the risk assessment report.
4. No persons should stay in or be allowed to enter a confined space when the permit-to-work certificate expires.



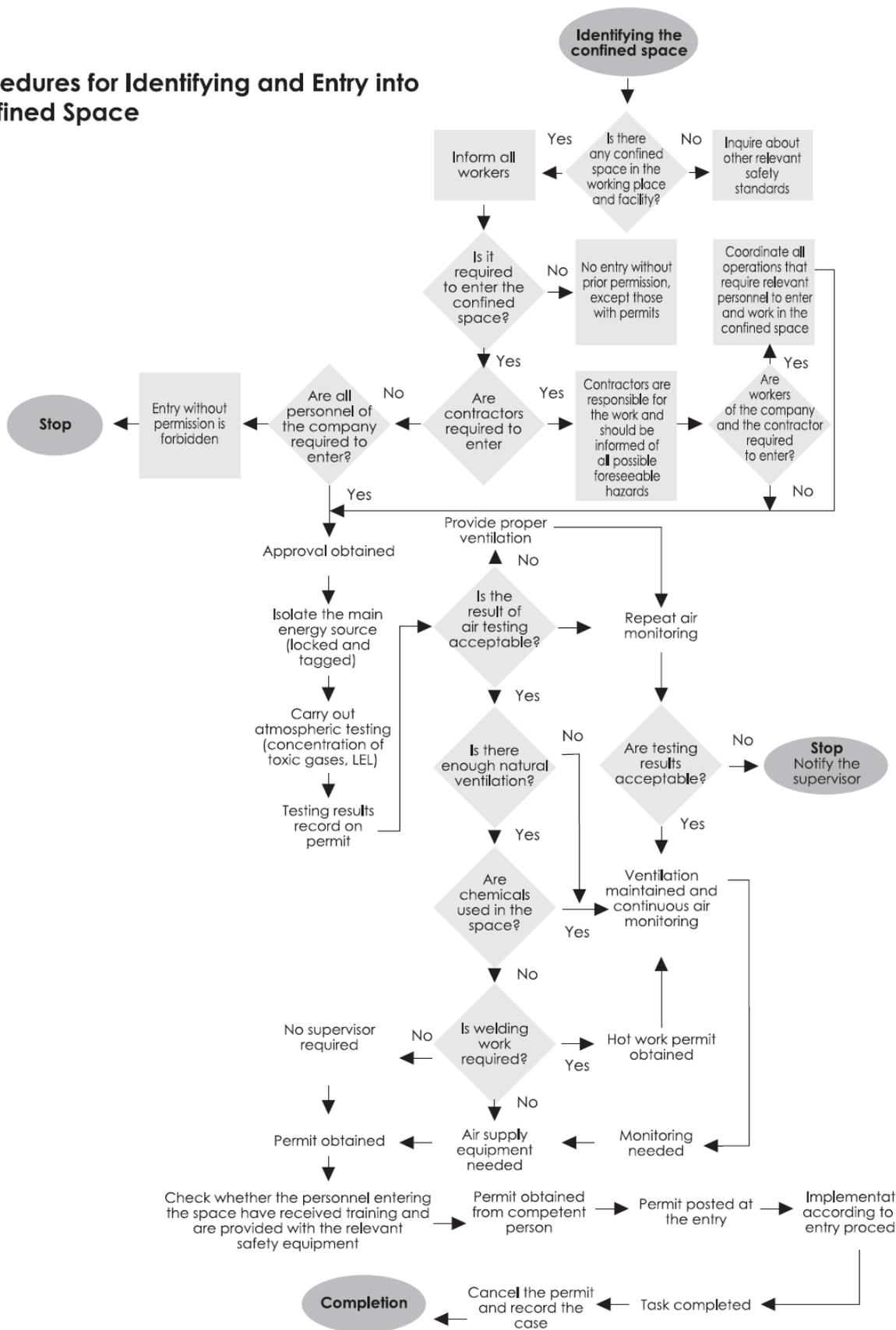
5. Refer to flow chart for processing the permit-to-work certificate before entering a confined space to carry out works.



6. Risk assessment report, permit-to-work certificate, safety facilities checklist and certificate of certified worker/competent person should be displayed at a conspicuous location outside the confined space.



Procedures for Identifying and Entry into Confined Space



Gas Testing

Before every shift in which workers enter a confined space, a competent person needs to conduct air-testing in various parts of the confined space with calibrated gas detector to make sure that the air is fit for breathing. For example, after the air test in the morning session, another air test should be conducted after lunch before workers enter the confined space in the afternoon. The air quality may have changed between the morning and afternoon shifts when the mechanical ventilation of the confined space is switched off.



1. Use a calibrated gas detector to measure the concentration of poisonous/ flammable gases and oxygen inside a confined space.
2. A competent person should use a multi-gas detector to conduct air-testing in the confined space.

Staff Training

All workers inside and co-workers outside a confined space and the emergency rescue team should have received proper training of:

1. safe working procedure;
2. evacuation procedure;
3. emergency rescue operation;
4. use of rescue equipment including breathing apparatus;
5. use of multi-gas detector, emergency lighting, wireless communication equipment;
6. first aid;
7. knowledge of potential risk.
8. On-site training should be given by a safety officer and a competent person to certified workers ready to enter a confined space.



Ventilation

1. Provide mechanical ventilation for confined space where there is a risk of poisonous gases, steam, dust, insufficient oxygen supply or high temperature.
2. Air inlet and exhaust should be separated.
3. Locate exhaust pipe of plant away from the opening of a confined space.
4. Mechanical ventilation/lifeline should be provided at the entrance of a confined space.
5. Provide mechanical ventilation for deep well.



Fire Risk and Explosion

1. Where there is a risk of fire or explosion in a confined space, all electrical appliances used should be of the explosion-proof type.
2. Isolate/shut off all pipelines and ducts connected to the confined space.
3. Earth all electrical apparatuses and use low voltage equipment to avoid risk of electric shock.
4. Provide fire-fighting apparatus near a confined space.



Manhole

1. No certified workers should be allowed to enter a manhole unless a risk assessment is made and a permit-to-work certificate is issued by a competent person.



2. A lifeline should be tied securely to the safety harness of a certified worker entering a confined space and the other end should be held and monitored by a co-worker outside the confined space.

3. Before every shift in which workers enter a confined space, a competent person needs to conduct air-testing in various areas of the confined space with calibrated gas detector to make sure that the air is fit for breathing. For example, after the air test in the morning session, another air test should be conducted after lunch before workers enter the confined space in the afternoon. The air quality may have changed between the morning and afternoon shifts when the mechanical ventilation of the confined space is switched off.

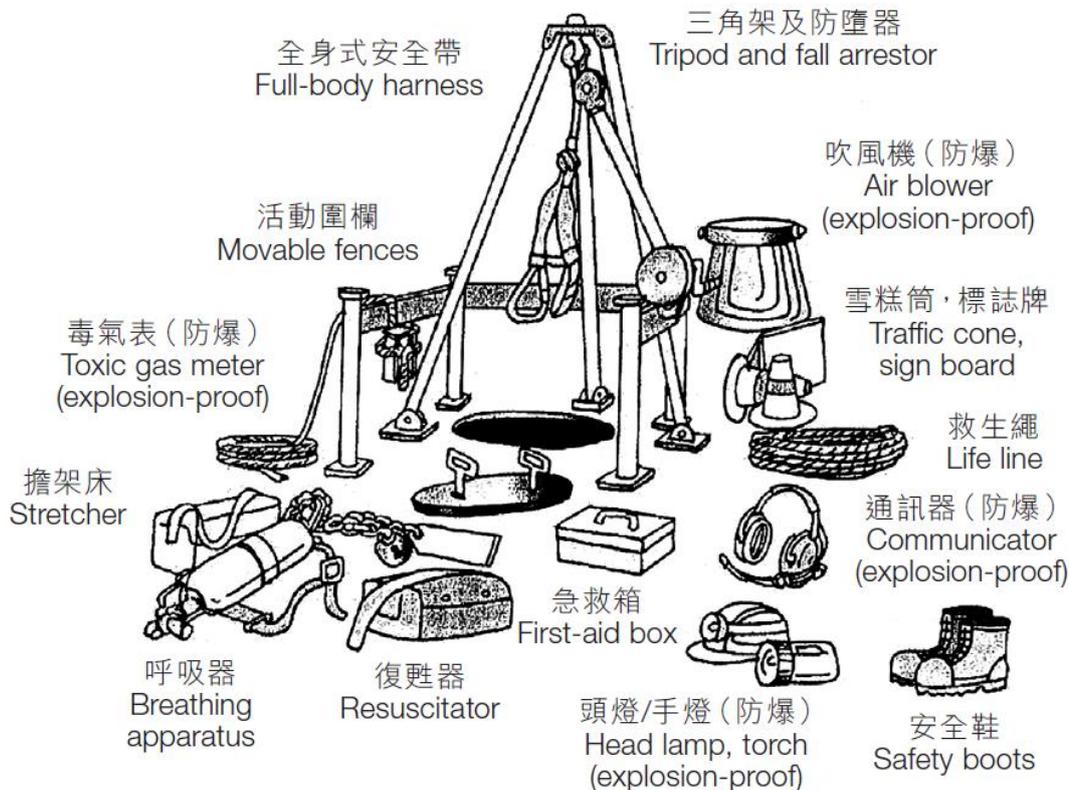
Emergency Plan

1. Draw up an emergency plan/rescue procedure and specify steps/conditions for requesting relevant local government departments (e.g. Fire Services Department) for emergency service.
2. Form a contingency team.
3. Conduct drills on rescue operation and practise the use of rescue equipment regularly.
4. Conduct drills to practise the use of rescue equipment and validate the procedure.



Equipment for Rescue

All personnel entering a confined space should wear a safety harness equipped with lifeline. Other necessary equipment is shown in the figure below.



Safety equipment for confined spaces

Co-worker and Rescue Operation

1. Be vigilant and sound the siren/flash the light if noticing anything unusual.
2. Do not enter a confined space for rescue operation without appropriate breathing apparatus, full-body harness, lifeline, etc.
3. Remove victim from the scene to a safe location before carrying out first aid.
4. Co-workers assist a certified worker to enter/leave a confined space.



Signaling through Lifeline

When wearing respiratory apparatus, signal can still be sent by pulling the lifeline in the following ways:

1. Pull once: require more oxygen.
2. Pull twice: release air duct and lifeline.
3. Pull thrice: help.

Personal Protective Equipment

1. Wear full-body harness with lifeline, safety helmet with Y-type chin strap fastened and safety shoes. If necessary, put on goggles, gloves, protective clothing and approved breathing apparatus.



2. Workers should be equipped with suitable personal protective equipment before entering a confined space.

Relevant Legislation and References

Relevant Ordinances and Regulations

- ◆ Factories and Industries Undertakings Ordinance
- ◆ Construction Sites (Safety) Regulations
- ◆ Factories and Industrial Undertakings Regulations
- ◆ Factories and Industries Undertakings (Confined Spaces) Regulations
- ◆ Occupational Safety and Health Ordinance

Relevant Safety Standards, Codes of Practice, Guidance Notes and Guidelines

- ◆ Code of Practice for Safety and Health at Work in Confined Spaces (LD)
- ◆ Guidance Notes on Protection of Quarry and Construction Workers from Silicosis (LD)
- ◆ Working in Confined Spaces (OSHC)

Safe Use of Electricity on Site

Cable Joint/Wiring Termination

1. Cable Joint

Cable joints of any type along cable runs in final circuits are not allowed.



No cable joint in the final circuits

**Properly connected wiring
(no exposure of live parts)**

2. Wiring Termination at Socket

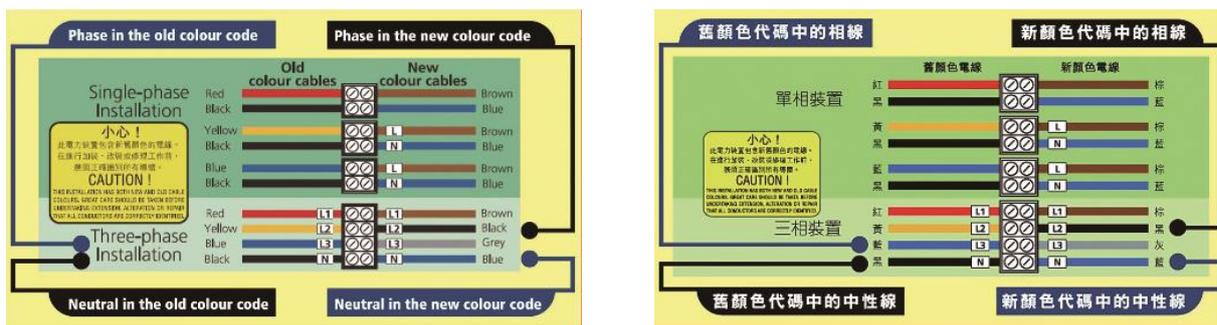
Proper termination of wiring to avoid exposure of live conductors.



**Properly connect wiring in the socket and
no live conductor exposed from the termination block**

3. Correct Cable Colour

All wiring works should be marked with correct cable colour code.



**Table of new and new/old cable colour codes
(The old cable colour code is for reference only)**



**Adopt new cable color code for cable installation
A three phase circuit (Left) and a single phase circuit (Right)**

- 4. Protection should be made against direct contact with live parts.
- 5. Properly insulate or protect installation against direct contact with the live parts (IP3X).



**Live parts should be insulated and protected from direct contact and
the gap of the enclosure should be filled up to IP3X standard.**

Cable Fixing

1. Protection of Cable
 - (a) Cables should be PVC/PVC sheathed as minimum protection and all electrical joints should be properly made.
 - (b) If damage is likely to occur, use conduit/trunking system or armoured cable.



The cable should be properly protected (e.g. by metallic enclosure)

2. Fixing of Cable
 - (a) Fix cables properly at high level to avoid possible damage.



Fix cables at high level

Distribution Board

1. Location

- (a) Locate distribution boards away from wet and humid areas and do not expose the installations to weather unless they are of waterproof type.



- (b) Only Registered Electrical Workers are allowed to reset the switch of distribution board after fault rectification.

2. Clear Circuit Identification

Provide circuit labels to all incoming and outgoing circuits, and post a warning notice/label in both Chinese and English on distribution boards stating the procedure for treatment of electric shock.



Distribution board should be provided with a clear circuit diagram and a poster for treatment of electric shock

Effective Earthing

1. Properly connect the earth conductor of all circuits/exposed conductive parts to the main earth terminal and ensure that they are in good condition.



Earthing cables should be properly labeled and connected at the main earth terminal and to the earth rod.

2. Bonding conductor should be connected to the metal door with warning label “Safety electrical connection - do not remove”.
3. Circuit Protective Device
 - (a) Provide main switch with residual current device (RCD).
 - (b) Protect socket outlets by a residual current device operating at 30mA.
 - (c) Connect portable equipment with appropriate plug for power from socket outlet.





Typical distribution board with circuit protection devices such as MCB/RCD

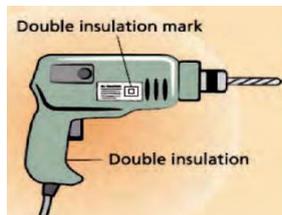
Temporary Lighting

1. Secure Fixing
Securely fix all wiring and lighting fittings.
2. Location
 - (a) Locate lighting fittings away from wet and humid areas.
 - (b) Avoid exposure of the installations to weather unless they are of waterproof type.
 - (c) Waterproof lighting should be used for outdoor.
3. Protection against direct contact
Properly insulate and protect installations against direct contact with the live parts.



Hand-held Electrical Tools

1. Double Insulated/Properly Earthed Hand-held Tools
Use double insulated or properly earthed hand-held electrical tools.



Example of double insulation mark for hand-held tools

2. Cordless Portable Hand-held Power Tools
 - (a) Improve housekeeping as there is no need to handle the fixing of wiring.
 - (b) Avoid the danger of electric shock or trip, slip or fall as there is no trailing cable on the floor or puddles.
 - (c) Cordless electric screwdriver does not need cable cord and is convenient to use.



Transformer Room/Switch Room/ Generator Room

1. Access
 - (a) Free and ready access should be provided for the maintenance and operation of the electrical equipment installed in transformer room, switch room or generator room.
 - (b) All entrances of transformer room, switch room or generator room should be free from obstruction.



Convenience access to transformer room

2. Fire Fighting

Provide appropriate portable fire-fighting appliances (i.e. fire extinguisher and bucket of sand) at fuel storage area and switch/generator room.



Fire-fighting appliances close to generator set

3. Warning Notice

Post warning notice of “No Smoking” in Chinese and English at fuel storage area and switch/generator room.



“No Smoking” warning notice

4. Working space

- (a) Sufficient lighting and working space should be provided for all the low voltage switchboards inside the switch room.
- (b) Clear away all redundant materials and debris from the switch room.



- (c) Sufficient lighting and working space should be available inside the switch room.
- (d) Safely isolate electricity source before carrying out electrical works.
- (e) Switch off the incoming power supply switchgear. Isolate or rack-out the switchgear from the service position, if possible.
- (f) Isolate/switch-off all unrelated outgoing and/or far end connected circuit(s).
- (g) Check if the electrical installation/circuit is dead. If necessary, discharge all electricity left in the installation/circuit.
- (h) Check if the incoming source of power is completely dead, or provide proper protection to or cover the live parts of the switchgear.
- (i) Implement lockout-tagout procedure by padlocking the switchgear and affixing suitable warning tag to the switchgear/panel.
- (j) If practicable, use pointing and calling practice to eliminate possible human errors and adopt a permit-to-work system.
- (k) Conduct final check on the installation/circuit to see if there is any volt or residual voltage left before starting the installation/alteration/maintenance works.
- (l) Never carry out live electrical works unless under extremely exceptional situations. Works should be carried out in compliance with the following conditions:
 - The works should be carried out by qualified persons with relevant experience;
 - Task-specific risk assessments should be conducted beforehand;
 - Adequate safety precautions should be made such as providing personal protective equipment, etc.; and
 - The duration and extent of live electrical works should be kept to the minimum.



A comprehensive padlock system applicable to construction site



Adoption of safety measures such as lockout-tagout procedure for electrical installation, alteration or maintenance works

5. Emergency Switching

Emergency stop switches should be provided adjacent to motor-driven machines.



Emergency stop switch should be easily accessible

Generator Set

1. Post a notice of operation on the plant body. Examination of generator set should be carried out only by a competent person.
2. Post a notice at location where rechargeable battery is being used - Remove all metallic accessories from your body before carrying out inspection. Wear personal protective equipment such as gloves, apron and mask when replenishing electrolyte.
3. The following warning notices should be posted on electrical installations:
 - (a) “Danger Live Wires - Unauthorised Entry Prohibited”; and
 - (b) “Danger under Repair” during repair period.
4. Post notice/procedure for first aid to electric shock.



**Notice of first aid to electric shock
in Chinese and English**



**Put up railings to prevent
unauthorised access to area where
low-voltage equipment is located**



**Adequate and suitable notices
should be posted on electrical installation**

Replacing Lighting Equipment

1. Replace a light bulb/lighting tube only when it is switched off and cool down. Do not touch energised light bulb/lighting tube to avoid burns.
2. Use light bulbs/lighting tubes with power rating not exceeding that recommended by the manufacturers to avoid overheating.
3. Visually inspect the bulbs/lighting tubes and fixtures for any damage. Broken bulbs/lighting tubes should be removed by trained workers.
4. Wear protective goggles when performing tasks associated with replacing bulbs/lighting tubes to avoid injury caused by fragments of broken bulbs/lighting tubes and fittings.
5. Wear protective gloves in case sharp edges and broken bulbs/lighting tubes are detected.
6. Do not apply excessive force when replacing bulbs/lighting tubes.

Live Work

1. Personal Protective Equipment

- (a) Wear safety shoes with electrical resistant soles and insulating gloves before carrying out electrical works. Use insulating mat if necessary.



Insulating gloves for electrical work **Insulating mat for electrical work**

Relevant Legislation and References

Relevant Ordinances and Regulations

- ◆ Factories and Industrial Undertakings Ordinance
- ◆ Construction Sites (Safety) Regulations
- ◆ Factories and Industrial Undertakings Regulations
- ◆ Factories and Industrial Undertakings (Electricity) Regulations
- ◆ Occupational Safety and Health Ordinance
- ◆ Electricity Ordinance
- ◆ Electricity (Wiring) Regulations
- ◆ Electricity Supply Lines (Protection) Regulation

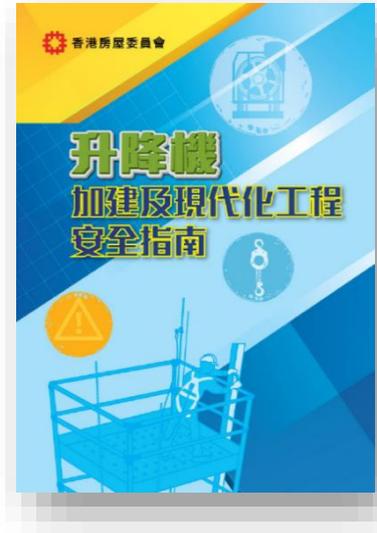
Relevant Safety Standards, Codes of Practice, Guidance Notes and Guidelines

- ◆ Code of Practice for the Electricity (Wiring) Regulations (EMSD)
- ◆ Code of Practice on Working Near Electricity Supply Lines (EMSD)
- ◆ Code of Practice: Safety and Health at Work for Manual Electric Arc Welding (LD)
- ◆ Guide for Safety at Work - Electric Shock Hazard of Manual Electric Arc Welding Work (LD)
- ◆ Guidance Notes for the Electrical Products (Safety) Regulation (EMSD)
- ◆ Guidance Notes on Safety at Work for Maintenance of Low Voltage Electrical Switchgears (LD)

Lift Safety

Lift addition or modernisation projects involve high risk operations. Project managers and frontline workers should enhance their safety awareness and knowledge so as to prevent accidents.

Please refer to “A Guide to Safety in Lift Addition and Lift Modernisation Works” for safety information on lift addition and modernisation works.



Lift Maintenance Works

Responsible persons and lift workers should carry out lift maintenance works in accordance with the safe working procedures and safety measures developed by lift contractors.

Lift contractor should:

1. Formulate a safety plan.
2. Appoint a competent person to conduct task-specific risk assessments to identify all potential hazards associated with the lift maintenance works, taking into account the nature of work and work locations, and formulate safe work methods and procedures with due regard to the results of risk assessments.

Annex B – Common Hazards and Recommended Safety Measures for Lift Maintenance Works, Main Rope Replacement and Lift Major Alteration Works

(Remarks : The purpose of this annex is to describe the common hazards encountered in lift maintenance works, main rope replacement and lift major alteration works and recommend safety preventive and protective measures associated with the common hazards for reference. Please note that these common hazards and the associated safety measures should not be deemed exhaustive and reference should also be made to the relevant sections of the main text of this Volume. It is highly recommended to consult relevant personnel such as a qualified and competent Registered Safety Officer prior to commencement of lift works.

1.0 Lift Maintenance Works

Activities / Locations	Common Hazards	Safety Measures	Action Parties	PPE	Training
Maintenance Works in Lift Machine Room					
1.1 Checking / inspection / cleansing / adjustment of control panel	Fall of person <ul style="list-style-type: none"> - Unprotected raised floor - Inadequate strength or insecure fencing - Defective ladder / staircase - Lack of proper access / working platform - Slippery floor 	<ul style="list-style-type: none"> - Inform and remind "Responsible Person" to rectify any unsafe conditions observed in lift machine room - Fence off unprotected raised floor with barriers of adequate strength - Provide and use a proper access / working platform - Keep lift machine room in clean and tidy condition - Remove waste and debris frequently - Keep passageway free from obstruction 	Competent Personnel + Lift Worker	Safety shoes	Green card training + Induction safety training + Trade specific safety training
	Striking against object <ul style="list-style-type: none"> - Improperly stack or store material / tools / equipment - Inadequate lighting 	<ul style="list-style-type: none"> - Properly stack and store material / tools / equipment - Remove waste and debris frequently - Keep passageway free from obstruction - Provide and maintain adequate lighting - Protect sharp edges 	Competent Personnel + Lift Worker	Safety helmet with chin strap + Safety shoes	
	Falling object <ul style="list-style-type: none"> - Defective concrete on ceiling / wall - Improperly stack material - Improperly handle material / tools 	<ul style="list-style-type: none"> - Check and inspect before entering into lift machine room - Fence off the area where defective concrete observed with barrier - Display warning notice - Properly stack material - Equip hand-held tool with hand strap 	Competent Personnel + Lift Worker	Safety helmet with chin strap	

(Source: CIC Guidelines on Safety of Lift Shaft Works Volume 3)

3. Provide lift workers with adequate training, guidance and supervision.
4. Employ sufficient number of lift workers to carry out the works.
5. Provide suitable and proper site equipment and tools for lift workers.
6. Maintain adequate fire prevention measures at work site.
7. Ensure adequate ventilation and lighting at work site.
8. Adequate, appropriate and effective communication means/devices such as mobile phones or walkie-talkies should be provided for all parties involved in the lift works to maintain effective communication.
9. Fence off the work area properly to ensure that only authorised persons can enter.
10. Display warning notices in prominent positions while carrying out lift maintenance works.

Maintenance Works inside Lift Pit

1. Test emergency stopping devices - Test emergency stop switch (commonly known as the Red Button) and lift door interlocking system of the floor to ensure their effectiveness and proper functioning before commencement of any works.
2. Proper precautions before entering from the lowest landing - If it is necessary to access to the lift pit via the lowest landing, actuate the stopping device located inside lift shaft near the landing door at the lowest floor and the car stopping device on the car top, or switch off the main power supply to the lift.
3. Demarcate a safety refuge - Designate an area at the bottom of lift pit as safety refuge before carrying out the work.
4. Safe access and egress - Safe means of access and egress should be provided.
5. Install counterweight screen at lift pit - A counterweight screen of an appropriate height above the lift pit floor should be provided with a warning sign prominently displayed on it.
6. Suitable fall protection system - Use full-body harness with lanyards attached to a designated anchorage.
7. Keep clean - Lift pits should be kept clean and dry. Accumulation of water and garbage should be avoided.
8. Maintain effective communication - Workers on the car top and those in the lift pit should maintain direct and effective communication during the process of restarting the lift.
9. Lighting and ventilation - sufficient lighting and good ventilation should be provided in lift pits.
10. Final check before restarting the lift - Upon leaving the lift pit, make sure that no tools or materials are left behind before resetting the car stopping device and removing the door blocking device.

Maintenance Works inside Lift Shaft

1. Minimise the number of lift workers - The number of people working inside a lift shaft should be kept to a minimum.
2. Barriers - If necessary, erect barriers with warning notices at the openings of lift shaft.
3. Keep landing door closed - Landing doors should not remain open longer than necessary.
4. Safe access and egress - Safe means of access and egress should be provided.
5. Suitable fall protection system - Use full-body harness with lanyards attached to a proper anchorage when working at height.
6. Sufficient work space - Ascertain that there is adequate safe space in the lift pit under the lift car and safe headroom above the top of lift car before allowing workers to enter the lift shaft.
7. Emergency lighting - If necessary, portable torches or emergency lights should be provided for lift workers to work inside a lift shaft.
8. Trapping hazards - When more than one lift is installed within a common lift shaft, sufficient measures (such as providing a partition between adjacent lifts or limiting the service of the adjacent lift) should be taken to prevent trapping hazards and injuries caused by contact with the moving parts of adjacent lift.
9. Lifting safety - If lifting operation is necessary, use approved lifting appliances and lifting gear and the prescribed lifting method.
10. Avoid working under a suspended load and falling objects - Working under a suspended load (e.g. a counterweight or a suspension rope under installation) should be avoided. Adequate safety measures should be in place to prevent accidental fall, slipping or displacement of the suspended load.
11. Safe width opening of landing door during checking - When checking the position of lift car, the landing doors should be opened not more than a clearance of 90mm in width;

12. Door blocking device - When landing doors need to remain open, a proper door blocking device should be fitted in place to mechanically hold the doors in an open position.
13. Clear out objects inside lift shaft - When maintenance work is completed, make sure that no persons and tools remain inside the lift shaft before restarting the lift.
14. Check the effectiveness of safety devices - Before carrying out works on car top, check the safety devices on the car top including the stopping device, the inspection switch on the car top and the control switch for car top movements in down and then up directions to ascertain their effectiveness and proper functioning.
15. Use inspection mode - Whilst lift workers are on car top of a lift, the lift should only be operated on inspection mode (commonly known as “manual slow mode”). Also a lockout-tagout system should be applied. The lift operation switch should not be restored to normal mode under any circumstances.
16. Safe access and egress - Safe means of access and egress should be provided.
17. Limit the number of workers on car top - The number of people working on car top at any one time should be kept to a minimum.
18. Check the position of lift - Lift workers should not access the car top unless the lift has reached a safe position.
19. Stay clear of any moving parts - Lift workers should avoid touching any moving ropes, sheaves and other moving objects.
20. Lighting and ventilation - Sufficient lighting and good ventilation should be provided on car top.
21. Suitable fall protection system - Appropriate toe-boards and guard-rails should be installed to prevent tripping hazards on car top.
22. Effective communication - Effective communication should be maintained among all the parties involved in the works. They should clearly understand the plan and procedure of car movement in the works.
23. Actuate stopping device - Actuate the stopping device if the lift is stationary.

24. Handle portable service lamp properly - The portable service lamp on car top should be placed properly and away from flammable substances.

Safety of Work inside Lift Machine Room

1. Comply with safety requirements - Lift workers working in a lift machine room or pulley room should read and follow the instructions of all safety signs.
2. Proper lighting and ventilation - Adequate lighting and ventilation should be provided in the machine room.
3. Provide guard-rails on working platform - Working platforms at height (commonly known as “high level traction machine working platforms”) should have suitable guard-rails and toe-boards to prevent falling.
4. Keep the doors of lift machine room locked - When works is in progress, all the doors of the lift machine room should be locked whenever the room is left unattended.
5. Isolate dangerous parts - Appropriate protective guards should be installed on the dangerous parts of any machines, the whole lift installation and any moving parts of the machines to protect lift workers from injury when carrying out lift works.

Lift Electrical Safety

When carrying out electrical works inside lift machine room:

1. Control measures to prevent electric shock - If there is a risk of electric shock, lift workers should not carry out work on or close to any live electrical equipment. If this is unavoidable, take suitable safety measures such as wearing insulated gloves and boots to prevent electric shock.
2. Competent workers - All electrical works should be carried out by qualified workers with relevant experience.
3. Isolate live parts - Suitable guards or other forms of protection should be adopted to isolate electrical parts so as to reduce the risk of electric shock by the electrical

components of lift control panels.

4. Lockout and tagout system - Lockout and tagout procedure should be implemented for isolating power source.
5. Display electric shock treatment poster - Electric shock treatment poster should be displayed prominently in the lift machine room.



(Source: <http://www.labour.gov.hk/tc/public/pdf/os/E/ElectricShock.pdf>)

6. Display warning label - Warning label of “Electrical Hazard” should be displayed near the switch.

Relevant Legislation and References

Relevant Ordinances and Regulations

- ◆ Construction Sites (Safety) Regulations, Chapter 59I
- ◆ Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations, Chapter 59J
- ◆ Lifts and Escalators Ordinance, Chapter 618

Relevant Safety Standards, Codes of Practice, Guidance Notes and Guidelines

- ◆ Code of Practice for Safety at Work (Lift and Escalator)
- ◆ Code of Practice for Safe Use and Operation of Suspended Working Platforms
- ◆ Code of Practice for Metal Scaffolding Safety
- ◆ Code of Practice for Safety and Health at Work for Gas Welding and Flame Cutting
- ◆ Code of Practice for Safety and Health at Work for Manual Electric Arc Welding
- ◆ Code of Practice for the Design and Construction of Buildings and Building Works for the Installation and Safe Use of Lifts and Escalators 2011
- ◆ Code of Practice for Fire Safety in Buildings 2011
- ◆ PNAP APP-29 (formerly PNAP 84) “Lift and Escalator Installations”
- ◆ Code of Practice on the Design and Construction of Lifts and Escalators
- ◆ Code of Practice for Lift Works and Escalator Works
- ◆ Code of Practice for the Electricity (Wiring) Regulations 2009
- ◆ Guideline on Safety of Lift Shaft Works
- ◆ Guidance Notes on Classification and Use of Safety Belts and their Anchorage Systems
- ◆ Compliance Notes for Platform Lift
- ◆ Compliance Notes for Lift-under-Repair

Hot Work Operation and Other High-risk Works

Common hot work operations in building maintenance and repair include the following welding works:



- (a) Gas welding and flame cutting; and
- (b) Manual electric arc welding.

1. Gas welding and flame cutting refer to welding or cutting operation with a flame produced by mixing a fuel gas and an oxidant gas in a blowpipe. The flame generated is hot enough to fuse metal surfaces together for welding, whereas in case of cutting, hot enough for formation of molten oxides of the metal concerned.
2. Manual electric arc welding operations include the common manual metal arc welding (MMA welding), metal inert gas arc welding (MIG welding) and tungsten inert gas arc welding (TIG welding).
3. Other high-risk activities in building maintenance and repair include:
 - Repair and replacement of iron grilles;
 - Surface or underground construction works; and
 - Handling of flammable substances and chemicals.
4. Common surface or underground construction works include installation, repair and replacement of various types of underground pipes and facilities. Workers are often required to handle and use and exposed to chemical products such as paint, adhesive solution, thinner, turpentine and alcohol during building maintenance and repair works. The following paragraphs suggest some general safety measures which will be useful reference for creating a safer working environment for our workers.

Gas Welding and Frame Cutting/ Manual

Electric Arc Welding

Before commencement of welding operation:

The work area should be enclosed with suitable warning signs or notices displayed to prohibit unauthorised entry. Appropriate protective measures should be taken to ensure that all workpieces, the workplace and adjacent area are free from combustible/flammable substances and fire hazards. Remove the combustible/flammable substances or protect them with fire retardant covers as necessary. Appropriate fire extinguishing apparatuses such as fire extinguishers and sand buckets should be readily available near the work sites.



Surface and Underground Construction

Works

Operational safety guidelines:

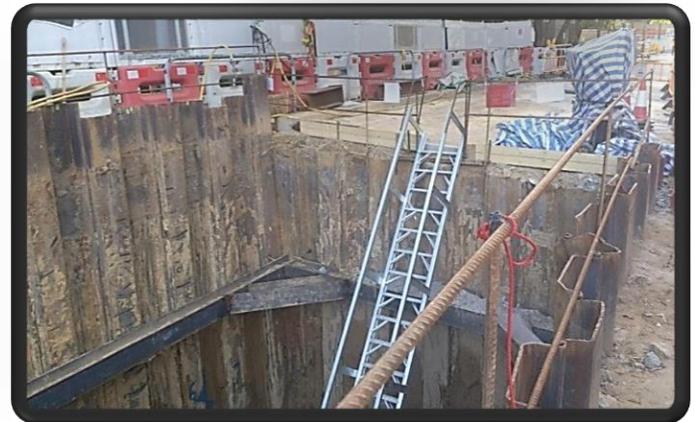
1. The work area should be enclosed with suitable warning signs, notices and night-time warning lanterns to prohibit unauthorised entry. Appropriate protective measures should be taken to ensure that the works would not affect the escape route or the loading and unloading facilities of the adjacent buildings. Arrangements should be made to effectively segregate vehicles and pedestrians and to provide traffic diversion instructions as necessary.
2. Prior to any surface or underground construction works, it may be necessary to obtain an excavation permit from the Highways Department and also the utility record plans from relevant utility undertakings such as the gas, electricity and telecommunication companies, Drainage Services Department and the Water Supplies Department.

Investigation should be conducted by a competent person to identify and record the locations of various underground utilities with the help of suitable detectors.

3. Arrangements should be made to protect the underground utilities from damage during surface or underground construction works. When the excavation uncovers the related underground facilities, further surveys should be conducted by competent persons to determine the exact location, routing and depth with the help of suitable equipment. The continuation of excavation will depend on the survey results.



4. A bracing frame should be installed to stabilise and protect the underground utilities from damage during surface or underground construction works. Temporary bracing panels should be erected on all sides of the mud pit to prevent pit from collapsing.



5. A safe and rigid mean of access and egress should be provided during surface and underground construction works. After significant alteration and adverse weather conditions such as strong winds and heavy rain, the mud pit should be inspected by a competent person for its stability before excavation can be resumed. Any water accumulated inside should be cleared away before work resumption.

2. Piling Works

- (a) Establish liaison with the underground utility providers early at the planning stage can facilitate detailed discussion of work schedule, identification of the required pipe diversions or formulation of precautionary measures to protect the safety of construction workers, the general public and the underground utilities. If necessary, consideration should be given to revising the project proposals to avoid areas densely embedded with underground utilities.

3. Hot Work Operation

- (a) Before excavation, ensure that all the underground gas and electricity supplies in the work area are cut off, and the workplace and adjacent areas are free from combustible/flammable substances and fire hazards. Remove the combustible/flammable substances or protect them with fire retardant covers as necessary.

- (b) Appropriate fire extinguishing apparatuses such as fire extinguishers and sand buckets should be readily available near the work sites.



- (c) If cutting off the supplies is not reasonably practicable, the excavation should only be carried out under a stringent permit-to-work system with adequate and appropriate safety measures to protect workers from hazards.

4. Backfilling Works

- (a) All warning tapes, tiles, protection plates or other protection materials should be reinstated in their original position by the working party. The electricity companies should be approached to make up cable protection materials if they are found to be damaged or missing before backfilling.

- (b) The same backfilling materials should be used unless otherwise agreed with the underground utility providers. In general, cement bonded sand of suitable fineness should be used as covering material for backfilling. Unsuitable filling materials which are likely to cause damage or reduce the rating of the underground cables (e.g. rock, rubble, bituminous material, brick, stone, timber, rubbish and other materials of high thermal resistivity) must not be used.
- (c) The backfill should be adequately compacted to prevent any settlement which may subsequently damage the underground utilities. No power compaction should take place until a 150mm cover of selected fine fill or sieved soil has been suitably compacted above the underground cable. Concrete backfill should not be used within 300mm of an underground cable.



Contact information of public utilities and sources of related safety information:

Public Utilities Name	Website	Contact No
The Hong Kong and China Gas Company Limited (Towngas)	www.towngas.com	2880 6988
Water Supplies Department	www.wsd.gov.hk	2824 5000
CLP Power Hong Kong Limited	www.clp.com.hk	2678 2678
The Hong Kong Electric Company Limited (HK electric)	www.hkelectric.com	2887 3411

Suppliers of Fixed Line Service/Broadband Service/Subscription Television Service:

Television Service Company Name	Website	Contact No
Hong Kong Broadband Network Limited	www.hkbn.net	128 100
Hong Kong Cable Television Limited	www.i-cable.com	183 2832
Hutchison Global Communications Limited	www.hgc.com.hk	1223
Hong Kong Telecommunications Limited	www.hkt.com	1000
Smartone Mobile Communications Limited	www.smartone.com	2880 2688
WTT HK Limited	www.wtthk.com	121 000

Handling Flammable Substances and Chemicals

1. General safety measures - All containers containing flammable substances and chemicals should be suitably labeled and stored separately in a cool and well-ventilated place built with fire-resistant materials. Do not keep excessive stock of flammable substances and chemicals. Suitable control measures and personal protective equipment should be used when handling flammable substances and chemicals.



2. All heat sources (such as smoking, naked flame or processes using heating devices) should be removed or isolated in places where flammable substances and chemicals are stored and handled. The use of spark-generating equipment should be prohibited in the vicinity and steps should be taken to prevent static electricity. Appropriate fire extinguishing apparatuses such as fire extinguishers and sand buckets should be readily available in places where these substances are stored and handled.

Relevant Legislation and References

Relevant Ordinances and Regulations

- ◆ Factories and Industrial Undertakings Ordinance and Regulations
- ◆ Occupational Safety and Health Ordinance and Regulation
- ◆ Factories and Industrial Undertakings Ordinance
- ◆ Factories and Industrial Undertakings (Electricity) Regulations
- ◆ Factories and Industrial Undertakings (Dangerous Substances) Regulations
- ◆ Factories and Industrial Undertakings (Protection of Eyes) Regulations
- ◆ Factories and Industrial Undertakings (Fire Precautions in Notifiable Workplaces) Regulations
- ◆ Factories and Industrial Undertakings (Gas Welding and Frame Cutting) Regulation
- ◆ Factories and Industrial Undertakings (Spraying of Flammable Liquids) Regulations
- ◆ Factories and Industrial Undertakings (Carcinogenic Substances) Regulations
- ◆ Construction Sites (Safety) Regulations
- ◆ Occupational Safety And Health Ordinance
- ◆ Land (Miscellaneous Provisions) Regulations
- ◆ Electricity Ordinance

Relevant Safety Standards, Codes of Practice, Guidance Notes and Guidelines

- ◆ Safety Rules of Gas Welding and Frame Cutting (Occupational Safety and Health Branch of LD)
- ◆ Safety Rules of Manual Electric Arc Welding (Occupational Safety and Health Branch of LD)
- ◆ Practical safety rules of working near electricity supply lines (EMSD)
- ◆ Highways Department Safety tips of excavation works on streets and pavements (HyD)

International/National Standards

Safety Helmet

國際／國家安全頭盔標準

International/National Standards of Safety Helmets

	中國標準 People's Republic of China Standard	GB2811安全帽 GB2811 Safety helmets
	國際標準 International Standard	ISO3873工業用安全帽 ISO3873 Industrial safety helmets
	新加坡標準 Singapore Standard	SS98工業用安全帽之規格 SS98 Specification for industrial safety helmet
	美國標準 American Standard	ANSI Z89.1工業用安全帽 ANSI Z89.1 Standard for Industrial Head Protection
	澳洲／新西蘭標準 Australian / New Zealand Standard	AS/NZS1801職業用安全帽 AS/NZS1801 Occupational Protective Helmets
	歐盟標準 European Standard	EN397工業用安全帽之規格 EN397 Specification for Industrial Safety Helmets
	日本標準 Japanese Industrial Standard	JIS T8131產業用安全帽 JIS T8131 Industrial safety helmets
	加拿大標準 Canadian Standard	CSA Z94.1安全帽 CSA Z94.1 Safety helmets

Safety Footwear

International/National Standards of Safety Shoes

- ◆ 美國國家標準 (ASTM F2412 及 F2413) ;
- ◆ 澳洲／新西蘭標準 (AS/NZS 2210.2) ;
- ◆ 歐盟標準 (EN ISO 20345, EN ISO 20346, EN ISO 20347) ;
- ◆ 日本工業標準 (JIS T8101) ; 以及
- ◆ 加拿大標準 (CSA Z195-M92) 。
- ◆ American National Standard (ASTM F2412 and F2413);
- ◆ Australian/New Zealand Standard (AS/NZS 2210.2);
- ◆ European Standard (EN ISO 20345, EN ISO 20346, EN ISO 20347);
- ◆ Japanese Industrial Standard (JIS T8101); and
- ◆ Canadian Standard (CSA Z195-M92)

Fall Protection

International/National Standards of Safety Harness

- ◆ 美國國家標準協會 (ANSI-A10.32: 2012) ;
- ◆ 澳洲／新西蘭標準 (AS/NZS1891.1: 2007) ;
- ◆ 歐盟標準 (EN 361: 2002) ;
- ◆ 中華人民共和國國家標準 (GB 6095-2009) ; 以及
- ◆ 日本工業標準 (JIS T8165: 2012) 。
- ◆ American National Standard Institute (ANSI-A10.32: 2012);
- ◆ Australian/New Zealand Standard (AS/NZS 1891.1: 2007);
- ◆ European Standard (EN 361: 2002);
- ◆ People's Republic of China National Standard (GB 6095-2009); and
- ◆ Japanese Industrial Standard (JIS T8165: 2012)

Protective Clothing

- ◆ Wear impermeable protective overalls, gloves and dust caps when handling lead and lead-based products including lead paint and other harmful chemicals which may be absorbed through skin.
- ◆ Wear reflective clothing in compliance with EN20471 when working on roads or near moving plant.
- ◆ Wear heat insulating apron during welding process.

Acknowledgements

This handbook is an updated version to the first one published in 2008. This second edition is revised and published by the Estate Management Division of the Housing Department with assistance and support from site supervisory and inspectorate staff. We would like to thank the stakeholders in the industry who gave us tremendous support and valuable inputs in making this edition a useful and pragmatic reference on working safety. We are also much indebted to the Occupational Safety and Health Council for granting special permission to use and reproduce information including illustrations, photos and contents contained in the Council's publications for the purpose of this handbook.

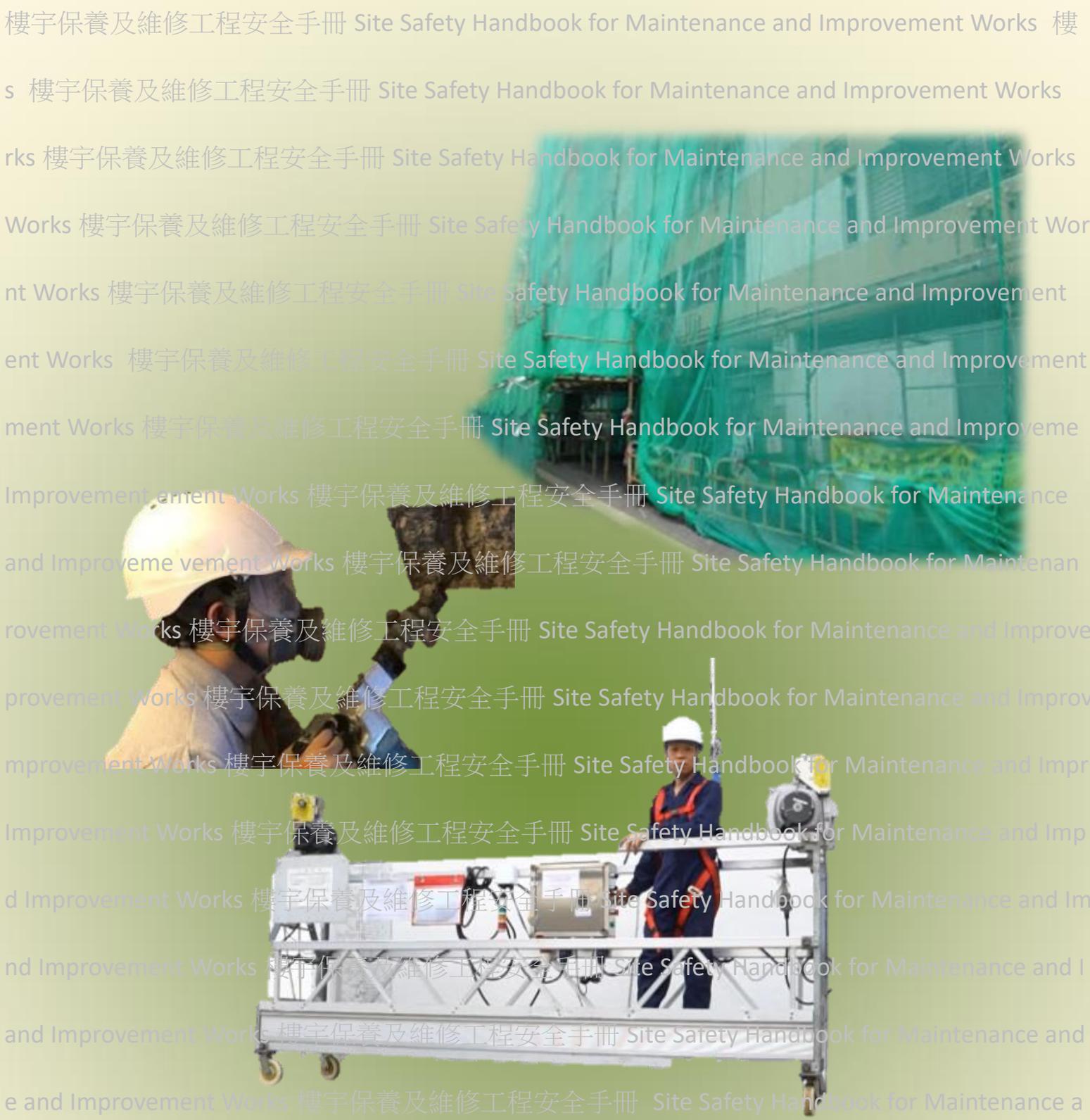
Estate Management Division
Housing Department
December, 2018

Please feel free to send your comments to the Statutory Compliance Unit, Estate Management Division, Housing Department:

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(Printed with environmentally friendly ink on paper made from woodpulp derived from renewable forests)



Site Safety Handbook for Maintenance and Improvement Works

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

