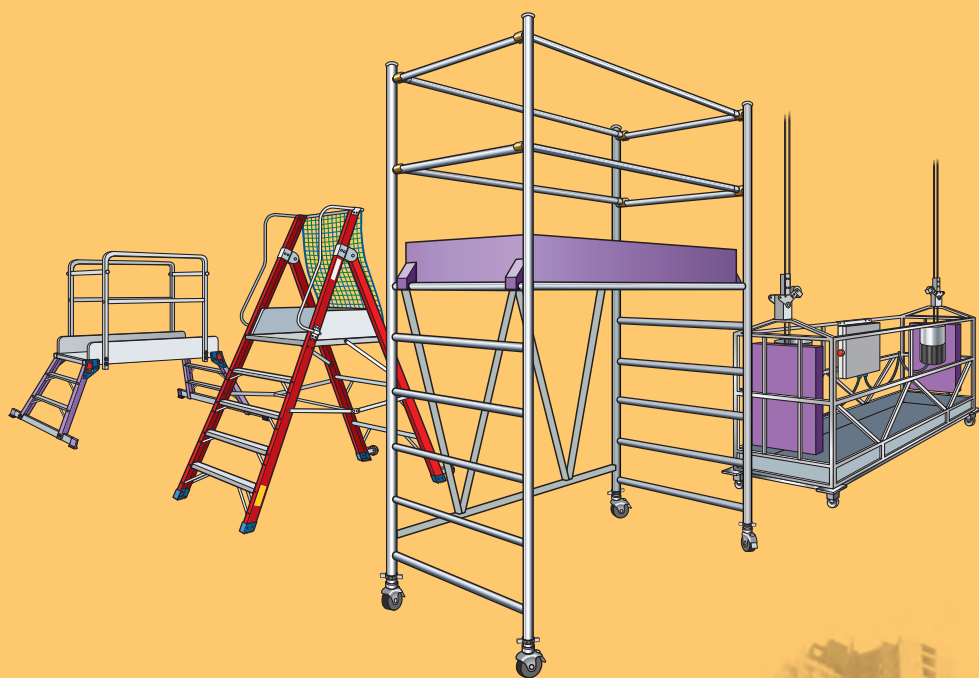




香港房屋委員會  
Hong Kong Housing Authority



# 工地安全手冊

## Site Safety Handbook

2017 Edition

上冊 | Volume 1

# 房委会项目迈向零意外 持续提升工地安全表现 应用创新科技和措施 确保工程重质又安全

**Strive for zero accident of all persons involved in HA projects**  
**Continuous improvement in site safety performance**  
**Persistent adoption of safety innovation**  
**Safety measures for both works quality and safety**

本手册可从香港房屋委员会网站下载：

**[www.housingauthority.gov.hk/sitesafety](http://www.housingauthority.gov.hk/sitesafety)**

我们现已更新2008年出版的《工地安全手册》。新版手册增加了不少内容，包括最新的安全管理措施、新增或已修订的工作守则、促进安全文化的优化措施等，以供在香港房屋委员会新工程建筑项目进行工地作业时参考。

请注意，遵守本手册的指引，并不会令任何人在法律上具有豁免权。工地的管理人员应根据其工地的实际环境和作业情况制订工作指引、安全施工程序、安全管理制度和预防措施，并培训和督导员工，确保工作团队了解和遵从各项施工程序，以防止意外发生。

为编制本手册，职业安全健康局已批准使用和复制有关资料，包括载于该局刊物内的插图、照片及内容。欢迎复制本手册用作一般参考，惟不得作批签、广告及商业用途。复制时请注明出处为「房屋署工地安全小组委员会刊物《工地安全手册》」。

2008年12月          第一版  
2017年2月          第二版

This handbook can be downloaded from Hong Kong Housing Authority Web Site:  
**[www.housingauthority.gov.hk/sitesafety](http://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 Hong Kong Housing Authority new works construction projects.

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, provide training and supervision to workers for a full understanding and compliance with the works procedures to avoid accidents.

Occupational Safety and Health Council have granted permission for the use and reproduction of the information including illustrations, photos and contents contained in the their publications for the purpose of this handbook. This handbook may be freely reproduced for general reference except for endorsement, advertising and commercial purpose. Please acknowledge the source as “Site Safety Handbook” published by the Housing Department Site Safety Sub-committee.

First Edition          December 2008  
Second Edition      February 2017



# 目录 Contents

## 上册 Volume 1

---

### 前言 Foreword

1.	安全讯息 Safety Messages	4
2.	安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety	14
3.	一般工地安全及工地整理 General Site Safety and Housekeeping	44
4.	安全使用机械设备 Safe Use of Plant	88
5.	在工地安全使用电力 Safe Use of Electricity on Site	126

---

## 下册 Volume 2

6.	处理预制混凝土组件 Handling of Precast Concrete Elements	11.	密闭空间工作安全 Safety in Confined Space
7.	棚架、工作平台和高空工作 Scaffolding, Working Platform and Work at Height	12.	个人防护装备 Personal Protective Equipment
8.	挖掘工程和道路工程 Excavation and Roadworks		索引 Index
9.	地基工程 Piling Works		鸣谢 Acknowledgements
10.	拆卸工程 Demolition Works		

# 前言 Foreword

「质素与安全，两者相辅相成」。香港房屋委员会（房委会）以工地安全策略的各项措施为本，致力透过夥伴合作，推动工地安全。房委会要求承建商和承办商确保工作间健康安全，持续提升安全表现。

房屋署工地安全小组委员会由各相关政府部门、法定团体、公共机构、服务供应商、承办商及承办商协会、工会的代表和房屋署人员组成。本手册于2008年首次出版。我们按照房屋署工地安全小组委员会的指示修订本手册，更新安全标准、增加良好作业图片及收录新一辑安全座右铭。本手册分为上、下两册，方便携带使用，而主要加入及更新之内容如下：

- 第二章 – 安全稽核制度、升降机及电梯指定分包合约安全稽核制度、突击安全巡查计划、工作安全行为计划、关顾新人工作安全计划、指差呼称、演习、建筑信息模拟、应用射频识别技术、流动装置应用程序。
- 第三章 – 突出钢筋之保护、抗热服、自动体外心脏去颤器、危险区域、升降机大堂安装防堕扣、升降机槽安装救生绳。
- 第四章 – 升降机槽内建筑工地升降机、吊钩之安全扣、吊运工字桩之特制吊具、射频识别技术探测移动机械附近之工人。
- 第五至十二章 – 充电式手提工具、吊运警报系统、工夫凳及梯台、升降机槽工程、工作安全地带、地基工程之吊运及高空工作安全措施、Y型安全帽带。

我们不时鼓励房委会承建商在业内推广安全文化；提高督导人员的安全意识；透过安全训练和资讯，警惕工友在工作间进行高危工作时注意安全；拟备清晰周全的工作指示／程序，以防止人为错误；制订安全施工方案和预防措施，以免意外发生。更重要的是，各承建商须透过生产和供应链贯彻执行妥善的工地管理、严格遵照安全标准、改善工地监督和巩固团队合作，确保有效实践安全施工。

保障安全不仅是一项行动，也是一种习惯和文化，需要潜移默化和积极培育，承建商和全体工友人人有责。建立安全文化的进程，往往取决于团队的参与和承担。只要时刻注意工地安全，便能轻易缔造一个安全的工作环境，保障工友的生命安全。房屋署致力灌输安全文化，并透过强制要求承建商工地管理和督导人员接受培训，定期举办安全工作坊和一年一度的工地安全研讨会，进行独立安全稽核及突击安全巡查和推广良好作业模式等工作，提高业界的安全意识。我们希望藉着更新本手册，勉励大家更关注安全问题，同心协力，共建工地安全文化。

祝各位身心康泰，安全健康！

房屋署工地安全小组委员会

2017年2月



齐携手 共建安全文化  
同用心 实践社会企业责任

**We develop safety culture hand-in-hand.**

**Working whole-heartedly, we fulfill corporate social responsibility.**

“Safety and quality goes hand in hand”. Building on the initiatives of its Site Safety Strategy, the Hong Kong Housing Authority (HA) strives to promote site safety through partnership. HA requires its contractors and service providers to ensure that the workplace is healthy and safe, and that there is sustained improvement in safety performance.

The Housing Department Site Safety Sub-committee (HDSSSC) comprises members from various related government departments, statutory bodies, public organisations, service providers, contractor associations, trade unions and internal members of Housing Department. The handbook was first published in 2008. **Upon advice of HDSSSC, this 2016 Edition updates reference to safety standards and photos of good practices with a new set of safety mottos on header. It is published in Volume 1 and 2 for handy use and key new topics/information beefed up in the content include the following:**

- **Ch 2 – Safety Auditing System; Lift and Escalator Nominated Subcontracts Safety Auditing System; Surprise Safety Inspection Programme, Work Safe Behaviour Programme; caring programme for new workers; pointing and calling; regular drill; building information modelling; application of radio frequency identification; applications in mobile devices.**
- **Ch 3 – Protruded bars cover; anti-heat stress uniform; automated external defibrillator; danger zone; anchor bolt in lift lobby, lifeline in lift shaft.**
- **Ch 4 – Builders’ lift inside lift shaft; safety latch of lifting hook; tailor-designed lifting gear for H-pile; RFID system to detect workers near plant.**
- **Ch 5-12 – Cordless power tools; lifting alert system; hop-up and step platform, lift shaft works; safety zone in road works; safety precautions in lifting operations and work at height in piling; y-type chin strap for helmet.**

Contractors are encouraged from time to time to promote safety culture in the industry, to raise safety awareness among supervisory staff, to provide training and information to increase workers’ alertness for high risk activities in their workplace, to develop a full and clear set of the work instruction/procedures to prevent human mistakes, formulate safe method statement with precautionary measures to avoid accidents. More importantly all the contractors have to pursue good site management, strictly adhere to the safety standards, enhance site supervision of workers, reinforce teamwork throughout the production and supply chains in order to ensure safety in construction.

Safety is not merely an act, but also both a habit and culture that takes efforts to nurture. It is also the responsibility of the contractors and all workers on works site. Charting the progression of a safety culture is much dependent on team participation and commitment. With due attention to site safety of workers, safe working environment to safeguard workers’ lives can be achieved without difficulties. The HD is committed to inculcating the safety culture by enhancing the safety awareness through mandatory training requirements for contractor’s site management and supervisory staff, convening regular safety workshops and annual site safety forum, conducting independent safety audit and surprise safety inspection, and promoting best practice. Through this updated edition of the handbook, we wish all our readers to reinforce their safety passion in their heart in order to build up a site safety culture.

HDSSSC wishes you all the best!

The Housing Department Site Safety Sub-committee

February, 2017

## 引言 Introduction

建筑工程易生意外，原因在于其本身的特点：多层分判；紧密的工作日程；工人流动性高；狭窄的工作环境；临时的工作环境；涉及费力的工作；使用重型设备和机器；常受天气影响；劳工不足；工人和设备老化、技术错配；部分督导人员和前线工人的安全意识不足及对风险掉以轻心；涉及高处工作，吊运工序以及各类高危活动等。

根据职业安全健康局所作的一项研究，建筑业意外的最普遍因为：

- 工作环境不安全
- 行为不安全
- 安全健康管理不足够
- 工地经验不足

《职业安全及健康条例》第509章及其附属法例规管工作间的安全和健康，而《工厂及工业经营条例》第59章及其附属法例，特别是《建筑地盘（安全）规例》，则规管工业经营（包括建筑工地）的安全和健康。此外，尚有其他相关条例规管建筑安全。

Construction works are accident-prone owing to its inherent characteristics: multi-layer 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.



## 雇主 Employers

根据《工厂及工业经营条例》第6A条，承建商和分包商身为雇主，对于建筑地盘的工作健康和安​​全责无旁贷，并有责任向雇员提供安全和健康的工作环境：

- 在工作间提供和维持安全设备和安全工作系统。
- 在使用、处理、贮存或运送设备或物质方面作出适当安排，确保雇员的安全和健康。
- 向雇员提供足够和合适的资料、指示、训练和监督。
- 在工作间提供和保持安全的出入口。
- 提供和保持安全和健康的工作环境。

为确保工作环境安全和健康，雇主须采取以下一些基本措施：

- 订立安全和健康标准及程序。
- 委派安全主任监察工作环境的安全和健康情况，以及推行安全计划和政策。
- 为工人提供个人防护装备。



雇主定时向雇员提供健康检查

Employer provides a regular health care check to employees

Contractors and Sub-contractors as the Employers have 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 including the following:

- Provide and maintain safe plant and safe systems of work in the work place;
- Make arrangement for ensuring safety and health in connection with the use, handling, storage or transport of articles or substances;
- Provide adequate and appropriate information, instruction, training and supervision to his employees;
- Provide and maintain safe access to and egress from the workplaces; and
- Provide and maintain a safe and healthy working environment.

# 1 安全讯息

## Safety Messages

Basic actions that the employers are required to take to safeguard safe and healthy working environment include the following:

- Set safety and health standards and procedures;
- Appoint safety officers to monitor safe and healthy working environment and implement safety plan and policy; and
- Provide workers with personal protective equipment.



管理层向雇员听取意见的另一方法  
Management provides a channel to collect employees' views

## 雇员 Employees

雇员应与雇主和其他人士合作，遵守安全规程和指示。雇员应：

- 以安全的方式工作。
- 不要作任何危及自己和他人的行为。
- 按规定使用个人防护装备，并在不使用时作适当的护理。
- 倘发现有不安全的活动，即时向主管或监管工作间的负责人员报告。
- 发生意外或出现危险情况时，即时向主管报告。



员工在例会向管理层提出意见及改良建议  
Feedback the needs / suggest safety improvement at regular meeting / forum

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 take reasonable care of them when they are not used;
- Report unsafe activities immediately to supervisors or the responsible person in control of the workplace; and
- Report all accidents and dangerous occurrences to the supervisors immediately upon occurrence.



## 给地盘工友的基本安全提示 Basic Safety Tips for Workers

### 开始

1. 认识和遵守所有安全标志和指示。
2. 切实遵守安全守则及安全工作程序。

### 工地整理

3. 保持工作地方清洁整齐，尽快清理垃圾。
4. 小心楼洞和楼面边缘，确保已有适当护栏保护或盖好，并设有明显的警告标示。
5. 提供充足的照明。

### 安全措施和作业

6. 如发现任何不安全的情况，应立即行动。
7. 如发觉有人以不安全的方法工作，须提醒他们及加以指正。
8. 遇有意外发生，无论是否有人受伤，均须报告。
9. 切勿操作自己不熟悉或未经授权操作的机器。
10. 切勿操作没有护罩或保护系统的机器。
11. 正确使用适当的工具。
12. 工具用毕后应妥为安放。
13. 时常保持警觉，留意移动中的起重机、吊钩、下坠物体或其他起重装置。
14. 熟悉灭火设备的位置和使用方法。
15. 切勿把电线放在地面上或让电线和水接触。
16. 使用装有电流式漏电断路器或有双重绝缘的电力工具，以作对地漏电保护。
17. 正确使用，处理及储存化学品。
18. 切勿进入危险区域。
19. 如已实施工作许可证制度，取得有效的许可证才可开工。

### 个人安全

20. 使用适当的个人防护装备，如头盔、护目镜、耳塞、呼吸器具等。
21. 注意个人卫生。
22. 工地内切勿嬉戏。
23. 工作时切勿饮酒和服用药物。



在当眼处标贴安全标志及告示，能吸引工友的注意事项  
Proper safety sign / precaution notice at prominent location to alert workers



整齐的工地环境可避免意外发生  
A tidy site environment can reduce site accident

# 1 安全讯息

## Safety Messages

### Getting start

1. Be familiar with all safety signs and directions and comply with them.
2. Comply fully with safety codes/safe working procedures.

### Housekeeping on site

3. Keep the workplace clean and tidy and remove refuse if any as soon as possible.
4. Beware of floor openings and edges and ensure that they are protected by proper guard-rails or securely covered with warning displayed prominently.
5. Provide sufficient lighting.



物料存放区应妥善围封及把物料存放有序  
Area for materials is securely fenced off and stored in an orderly manner

### Safety measures and practices

6. Act immediately upon discovering any unsafe conditions.
7. Alert any colleagues performing work in an unsafe manner and advise them accordingly.
8. All accidents, whether injury is involved, must be reported.
9. Do not operate any machines you are not familiar with and/or unauthorized.
10. Do not operate any machines without the provision of protective guards or protection systems.
11. Use suitable tools in a correct manner.
12. Put the tools back in the proper place after use.
13. Keep vigilant at all times and watch out for moving cranes, hooks, falling objects or other lifting equipment.
14. Be familiar with the locations and the operation of fire-fighting equipment.
15. Avoid allowing electric cables lying on the ground or coming into contact with water.
16. Use electrical tools with earth leakage protection by residual current device or those with double-insulation protection.
17. Use, handle and store chemicals in a correct manner.
18. Stay out of danger zones.
19. If a permit-to-work system is in force, start work only after obtaining the permit and the permit remains valid.



在逃生路应张贴安全出路标示及火警逃生路线图  
Post safe exit direction / fire evacuation plan at exit for use under emergency





## Personal Safety

20. Use suitable personal protective equipment such as helmet, goggles, ear plugs and breathing apparatus.
21. Pay attention to personal hygiene.
22. Do not play with colleagues in the works site.
23. Do not drink alcohol or take drugs while at work.



开工前应自行检查个人防护装备  
Self-checking on personal protective equipment before work

## 紧急事故 Emergency

遇有紧急事故，应确定是否需要启动警钟、逃生或疏散。如需要逃生或疏散，应循正确路线到达安全地方。

如有人受伤：

1. 保持镇定并寻求协助。
2. 适当地协助救援。
3. 陪同伤者。
4. 告知管理小组和安全主任。
5. 召唤救护车、通知警方、劳工处和房屋署驻工地的监督人员。

In case of emergency, find out if it is necessary to trigger alarm, escape or evacuate. If escape or evacuation is required, follow the proper escape or evacuation route to a safe place.

In the event of injuries,

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



告示板上贴上紧急联络人姓名和电话号码  
Emergency contact name and phone numbers posted on prominent notice board

## 提升团队士气 Boosting Morale in the Workplace

雇主（即承建商、分包商）和雇员应互助互勉，互相扶持，令各方对工作有满足感和成就感，从而缔造和谐气氛、加强团队精神，促使工作团队不断改进、精益求精，并培养信念积极面对和解决问题，压力自然能迎刃而解，有助贯彻执行安全施工程序，提高工作士气。

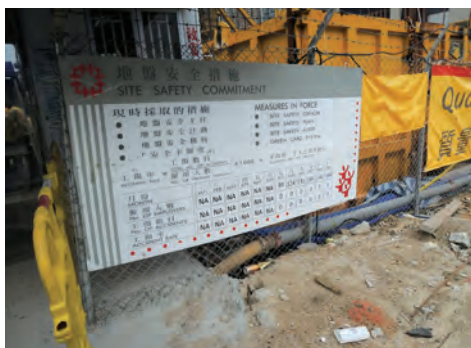
给雇主或高级管理层的一些建议如下：

- 为员工或鼓励员工订立个人发展计划。
- 提供安全及健康的工作环境及工作设备，并制订安全的工作方法，指导员工采用。
- 制订并切实执行公平的规则及合理的奖罚制度。
- 因应员工的能力及经验，分配合适的工作及工作量。
- 提供足够资源，包括人力、物力及技能训练等，令员工有足够能力应付获派的工作。
- 清楚界定员工的角色及责任，并确保所有员工知道。
- 安排足够的休息时间，并提供福利设施，如休息室、饮食设施、洗手间等。
- 提供足够及合适的训练，以培养员工在处理突发事故及难题方面的能力。
- 易地而处，互相体谅。
- 推广健康讯息，安排身体检查。
- 观察员工及机构在以下方面的情况：
  - 员工的健康及行为
  - 机构内的文化及气氛
- 分析各项指标及统计数字：
  - 意外及缺勤率
  - 生产力及施工／服务质素
  - 投诉
  - 医疗保险索偿数字等



承建商于告示板展示各种安全及健康的资讯，让员工贯彻执行

Safety and health information displayed by main contractor on the notice board for workers to follow



告示板展示工地安全统计数字

Site safety statistics displayed on prominent notice board



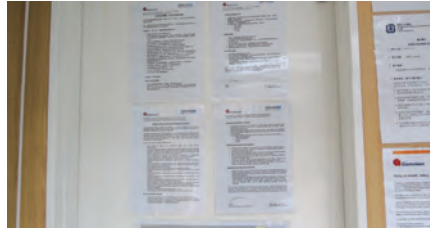




Employers (including contractors, subcontractors) and employees/workers should help and support one another, instill pride and job satisfaction, promote harmony and team spirit, stay focused on what actions one can take for improvement, develop a sense of trust that things will work out eventually and enforce Safe Working Cycle. All these could contribute to reducing stressors and building morale within the workforce.

Some suggestions for **employers** or **senior management** are as follows:

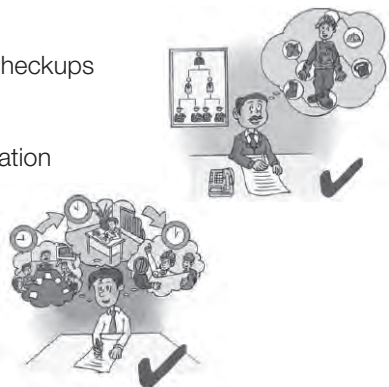
- Formulate or encourage employees to formulate personal development plan
- Provide a safe and healthy working environment and facilities, formulate and instruct the employees to adopt safe work practices
- Formulate fair rules and regulations and a reasonable merit and demerit system. Make sure these are implemented fully
- 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 work assigned to them
- Give employees clearly defined roles and responsibilities and make sure that staff are aware of them
- Arrange sufficient rest periods and provide welfare facilities such as rest room, canteen and toilets, etc.
- Provide sufficient and appropriate training to equip staff with the ability to solve problems and deal with emergencies
- Be considerate
- Promote health messages, arrange physical checkups
- Observe the performance in regard to:
  - employees' health and behaviour
  - culture and atmosphere within the organization
- Analyse various indicators and statistics:
  - rates of accidents and absenteeism
  - productivity and works/service quality
  - complaints
  - medical insurance claim figures, etc.



告示板上的安全政策声明  
Statement of safety policy on notice board



简单设施已提供到舒适休息间  
A simple set-up for a comfortable rest area for workers



# 1 安全讯息

## Safety Messages

给雇员的一些建议如下：

- 以建设性的态度向管理层反映意见，以消除或减少压力来源，例如购买搬运工具、改善工作流程等。
- 制订工作计划、订立工作的缓急次序、改善时间管理。
- 积极面对问题，跟同事与上司讨论解决问题的方法。
- 常做运动，强健体魄。
- 均衡饮食，避免进食不健康的食物，如咖啡、酒精饮品。
- 戒烟。
- 充足睡眠，睡前摒除杂念。
- 练习松弛技巧。
- 与同事、家人、朋友建立良好关系，建立支援网络。
- 接纳别人的支持，及向有需要的同事伸出援手。
- 易地而处，互相体谅。
- 作息有序，安排工余消闲活动，发展个人兴趣。
- 遇到困扰时，向信赖的人倾诉，或找专业辅导人员或心理学家辅导。
- 如出现焦虑不安、抑郁等症状时，应向医生求诊。



Some suggestions for **employees** are as follows:

- Submit your views to the management on eliminating or reducing stressors in a constructive manner e.g. purchase tools, improve work flow, etc.
- Formulate work plans, prioritize work, improve time management
- Face problems positively, discuss with co-workers and superior ways to solve problems
- Exercise regularly to keep your body fit and healthy
- Maintain a balanced diet; avoid excessive unhealthy foods such as coffee and alcoholic drinks
- Quit smoking
- Ensure sufficient sleep, clear your mind of clutter before going to bed
- Learn relaxation techniques
- Build a good relationship with your co-workers, family and friends, establish a support network
- Accept support from others and give a helping hand to co-workers
- Be considerate
- Adopt a healthy way of living, arrange leisure activities, develop personal interests
- When experiencing anxieties, talk to people you can trust or seek counseling from professional counselors or psychologists
- If symptoms of anxieties, unease and depression persist, seek medical help





## 参考资料 References

### 相关法例和规例

- 《职业安全及健康条例》
- 《工厂及工业经营条例》
- 《建筑地盘（安全）规例》
- 《工厂及工业经营（安全主任及安全督导员）规例》
- 《工厂及工业经营（安全管理）规例》

### 相关安全标准、工作守则、安全指引和指南

- 《工厂及工业经营（安全管理）规例指南》（劳工处）

### 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) Regulation.

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

- A Guide to Factories and Industrial Undertakings (Safety Management) Regulation. (LD)

### 引言 Introduction

本章主要介绍安全管理工具，包括安全施工程序、安全气候指数调查、工作安全行为计划、房委会安全稽核制度、房委会升降机及电梯指定分包合约安全稽核制度和工地突击巡查制度，并简述在房委会新工程合约内，这些工具的特点和应用情况。

本章亦会简述如何应用建筑信息模拟系统、无线射频识别系统和流动应用程式等资讯科技，以加强工地安全。

This chapter will mainly cover safety management tools including Safe Working Cycle, Safety Climate Index Survey, Work Safe Behaviour Programme, Housing Authority Safety Auditing System, Housing Authority Lift and Escalator Nominated Subcontracts Safety Auditing System and Surprise Safety Inspection Programme. Brief description on the key features of the functions and their application in Housing Authority New Works contracts is depicted.

A brief description of use of information technology including building information modeling, radio frequency identification and mobile applications in enhancing site safety is also covered.

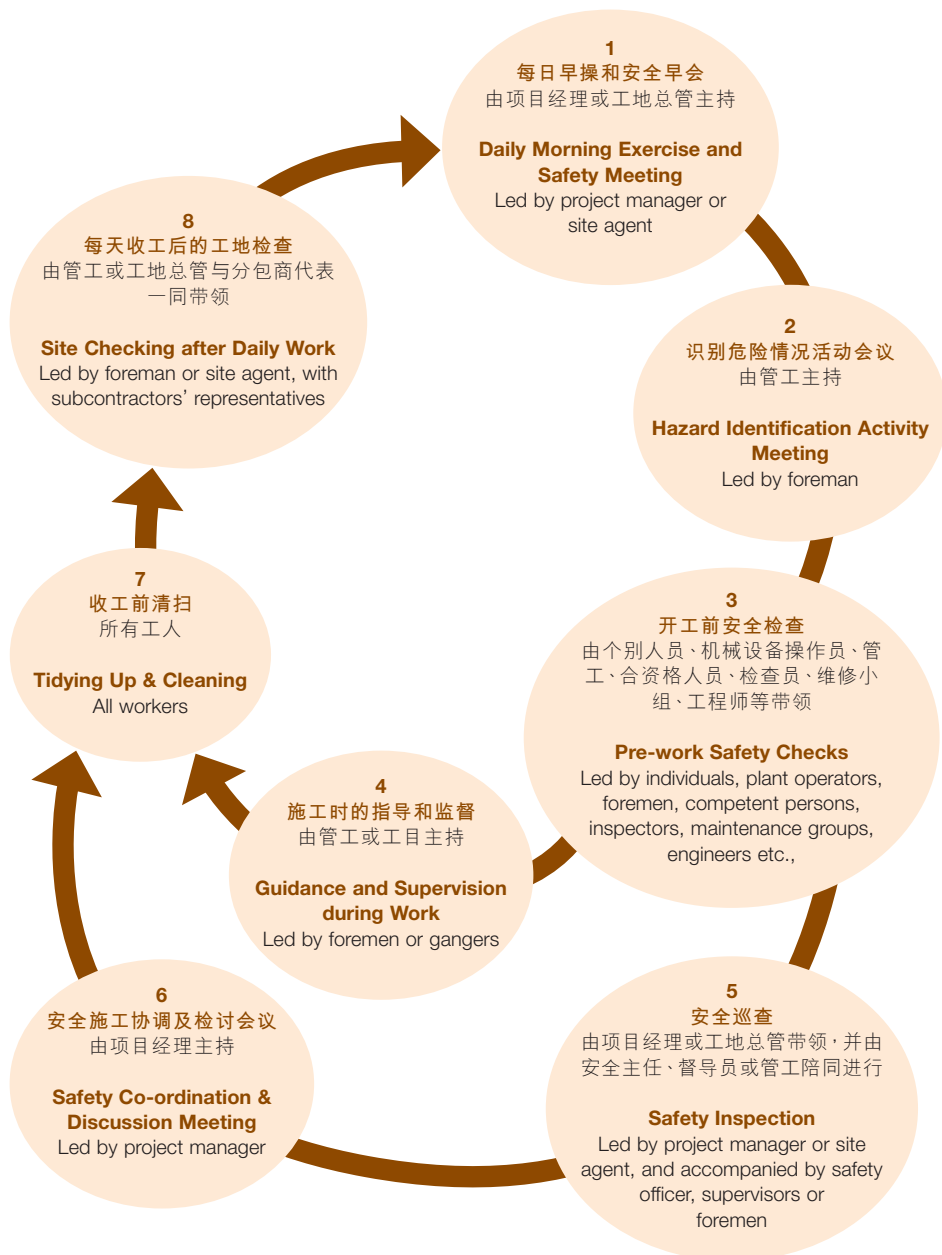
### 安全施工程序 Safe Working Cycle

#### 何谓「安全施工程序」？ What is “Safe Working Cycle”?

- 房委会辖下所有新工程建筑工地均采用「安全施工程序」，以提高安全管理系统的成效。
- 程序由多项预定工作组成，旨在提高安全和健康意识，以防止意外和工伤。
- 程序把安全健康措施纳入有系统的大纲内，强调以身作则和鼓励参与。
- 程序按日、周、月分类。
- “Safe Working Cycle” is adopted in all HA new works construction sites to enhance effective implementation of safety management system.
- It comprises scheduled activities to heighten safety and health awareness and help prevent accidents or injuries.
- It integrates safety and health practices into a systematic framework by placing emphasis on leadership and promoting participation.
- Classified with daily, weekly and monthly cycles.



## 每日安全施工程序 Daily Safe Working Cycle



## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety

### 每日安全施工程序 Daily Safe Working Cycle

#### (1) 每日早操和安全早会

- 由项目经理或工地总管主持，参加者为工人（包括分包商的工人）。
- 简报工地的特别工程和活动、须注意的安全及健康事项，例如工地的危险区域和安全预防措施。
- 为施工作准备，提醒工人提高警觉及检查个人防护装备，注意各项安全规定。
- 培养团队精神，有助加强各工种之间的协调。
- 于户外或室内举行，开工前进行早操或伸展运动。



有盖的安全早会  
Indoor morning briefing



露天的安全早会  
Outdoor morning briefing



进行中的早操  
Morning exercise in progress



早会可培养团队精神  
Morning briefing could promote team spirit

#### (1) Daily Morning Exercise and Safety Meeting

- To be led by project manager or site agent, with workers, including those workers from subcontractors.
- Brief on special site works and activities, prevailing safety and health concerns such as the site hazardous areas and safety precaution.
- Prepare for work, draw attention to safety rules, check personal protective equipment and raise vigilance.
- Promote team spirit for effective works co-ordination with other trades.
- To be conducted in an outdoor or indoor area and include morning exercise/stretching exercise before starting work.



## (2) 识别危险情况活动会议

- 由管工主持，参加者包括各个工种的工人，亦欢迎前线工人参与。
- 识别危险情况、认识风险和制定预防措施。
- 按照安全计划，就危险工作实施安全工作系统。
- 确保工人了解工序、安全要求和措施。
- 训斥多次施工不当或违规的工人。
- 在工地办公室及／或工作间进行。
- 加强团队精神。
- 加强安全施工程序和提高安全意识。



商讨并制定预防措施  
Coming up with a control measures

## (2) Hazard Identification Activity Meeting

- To be led by foreman, with team members from each trade as participants, and participation of front line workers is welcome.
- Identify potential hazards, make aware of risks and come up with control measures.
- Implement safe system of work for hazardous works according to the Safety Plan.
- Ensure understanding of working process, safety requirement & measures by workers.
- Reprimand workers for repeated mal-practice/irregularities.
- To be conducted in site office and/or workplaces.
- Enhance team spirit.
- Reinforce safe working cycle and safety consciousness.



团队在了解工序和安全措施  
Understanding of work process & safety measures



工作交流的集会可增加团队精神  
Group activity meeting could enhance team spirit



## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety

### (3) 开工前安全检查

- 由个别人员、机械设备操作员、管工、合资格人员（即电工、机械技工、搭棚工）、检查员、维修小组、工程师等带领，参加者为全体工人。
- 指派负责人员在开工前检查机械设备、装备、棚架、工具、装置、机器和物料，确保安全妥当。
- 检查时如发现问题，须在纠正后才开工。
- 在工作间进行。
- 提高施工效率，有助减少意外。
- 确保遵照相关法例和规例施工。



对棚架进行安全检查  
Safety check on scaffolding

### (3) Pre-work Safety Checks

- To be led by individuals, plant operators, foremen, competent persons (electricians, mechanics, scaffolders), inspectors, maintenance groups, engineers etc., with all workers as participants.
- Appoint person-in-charge for the inspection and checking plant, equipment, scaffolding, tools, installations, machineries and materials before work commencement to ensure these are in proper and safe condition.
- Identify and rectify the problem revealed from inspection before works commencement.
- To be carried out at the workplace.
- Enhance efficiency and help reduce accidents.
- Ensure compliance with laws and regulations.



开工前对工具进行安全检查  
Safety check of tools before work



使用前应检查机械设备的安全措施  
Checking plant for safe use



开工前检查气焊工具  
Checking gas welding equipment





#### (4) 施工时的指导和监督

- 由管工或工目主持。
- 检查是否符合安全指示和程序。
- 确保已采取识别危险情况活动会议所建议的安全措施。
- 及时采取行动解决问题／纠正不安全的行为，以及进行协调。
- 在工作间进行，由各名管工／工目指导／负责。

#### (4) Guidance and Supervision during Work

- To be led by foremen or gangers.
- Check compliance with safety instructions and procedures.
- Ensure implementation of safety measures as suggested in the Hazard Identification Activity meeting.
- Timely action to settle problem/correct unsafe act and help coordination.
- To be conducted in the workplace under the direction/responsibility of each foreman/ganger.



工目现场监督施工情况  
Works supervision by ganger



指导工程小组  
Guidance given to works team

#### (5) 安全巡查

- 由项目经理或工地总管带领，并由安全主任、督导员或管工陪同进行。
- 每天在施工范围进行安全巡查至少一次。
- 检查工程是否按照已计划的程序进行，并识别／纠正危险情况。

## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety

- 在巡查期间即时指示管工纠正危险活动／状况。
- 展示机构对工地安全的承担。
- 高层管理人员须参与其中。
- 藉此机会评估分包商的表现。

### (5) Safety Inspection

- To be led by project manager or site agent, accompanied by safety officer, supervisors or foreman.
- Carry out safety inspection of works area at least once every day.
- Check compliance of works activity with planned procedures and identify/rectify any potential hazards.
- Direct foremen to rectify dangerous activity/condition as identified in the inspection immediately.
- Demonstrate company's commitment towards safety.
- Participation of senior management.
- Provide an opportunity to assess the performance of subcontractors.



进行中的安全巡查／检查  
Safety inspection/check



识别潜在危险  
Potential hazards identification

### (6) 安全施工协调及检讨会议

- 由项目经理主持，参加者为安全主任／分包商代表。
- 检讨当日的安全事宜，并就改善施工安全提出建议。
- 互相沟通，解决所遇到的问题。
- 检查并确保所有施工资讯、物料和资源均已准备就绪，使下一个工作天的工程能顺利进行。



#### (6) Safety Co-ordination & Discussion Meeting

- To be led by project manager with safety officer/sub-contractors as participants for site safety meeting.
- Review safety issues of the day and suggestions for any safety improvement.
- Communicate and resolve problems encountered.
- Check and ensure availability of all information, materials and resources for smooth works on the following working day.



现场商讨解决所遇到的问题  
Resolving problems encountered

#### (7) 收工前清扫

- 离开工地前，所有工人均须进行清扫，并把工具、机械设备和装备放置在正确地方，并须妥善贮存、分类或处置废物，保持通道畅通无阻。
- 确保工作环境准备妥当，可供下一个工作天施工。
- 保持工作环境清洁，有助提高施工效率。



安全施工协调／检讨会议  
Safety co-ordination/discussion meeting

#### (7) Tidying Up & Cleaning

- Make sure that all workers need to tidy up, clean and place the tools, plant and equipment in the right position, properly store, sort or dispose of waste and keep the circulation path free of obstruction before leaving the site.
- Make the working environment ready for work on the following working day.
- Enhance efficiency by maintaining a tidy working environment.



每天收工前的清扫  
Tidying up works place



每天处置废物  
Disposing waste daily

## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety

### (8) 最后检查

- 由管工或工地总管与分包商代表一同带领。
- 进行最后检查，防止火警、水浸、失窃、棚架倒塌、有人擅闯工地等。
- 防止意外和浪费能源。
- 可藉此评估工人整理工地的表现。
- 确保遵照相关法例和规例施工。



每天收工后的最后检查  
Final checking after daily work

### (8) Final Check

- To be led by foremen or site agent, with subcontractors' representatives.
- Final check on fire hazard, water flooding, theft, collapse of scaffolding, entry of trespassers, etc.
- Prevent accidents and energy wastage.
- Assess workers' performance in housekeeping.
- Ensure compliance with laws and regulations.

## 每周安全施工程序 Weekly Safe Working Cycle

### (1) 每周安全巡查

- 由项目经理或工地总管带领，参加者为安全主任和分包商代表。
- 联合重点巡查位于高危地方／处于危险状况的工作间、设施和装置。
- 厘清承建商和各个分包商的责任。
- 加强各个工作单位之间的沟通和合作，以尽量减少安全问题。
- 强调高层管理人员的承担。
- 在工地和周边地方进行。



每周的工作间巡查  
Inspection on workplaces



## (1) Weekly Safety Inspection

- To be led by project manager or site agent, with safety officer, representatives of sub-contractors as participants.
- Joint weekly inspection with focus on workplaces and facilities, installations on high-risk places/potential unsafe conditions.
- Clarify the contractor and each sub-contractor's responsibilities.
- Strengthen communication and co-operation among parties concerned as to minimize any safety problems.
- Underline the commitment of senior management.
- To be conducted on site and surrounding areas.



安全巡查队进行每周工地及周边的检视  
Safety inspection team conducts inspection on the workplace and surrounding areas

## (2) 每周检查

- 由机械设备操作员／合格人员（包括合格电工和机械技工等）带领。
- 由带领检查工作的组长拟备检查清单。
- 检查机器、装备和设施是否有问题，并进行所需的修理。
- 及早进行维修或更换，以解决问题。
- 如发现机器、装备和设施不符合安全标准，应暂停使用及／或暂时停工。
- 在工作间进行。



## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety

### (2) Weekly Check

- To be led by plant operators/competent persons, including qualified electricians and mechanics, etc.
- Prepare works checklist by leaders.
- Check up machinery, equipment and facilities for abnormality and provide necessary maintenance.
- Resolve problems by timely repair or replacement.
- Suspend the use and/or stop the works when conditions drop below the safety standard.
- To be conducted at the workplaces.



每周都执行的检查装备／工具  
Weekly checking equipment/tools

### (3) 每周安全协调会议

- 由项目经理、工地总管或安全主任主持，参加者为工人和分包商代表。
- 检讨安全运作程序，识别危险区域，协调下周的施工程序。
- 在工地办公室进行。



### (3) Weekly Safety Co-ordination Meeting

- To be led by project manager, site agent or safety officer, with worker and sub-contractors' representatives.
- Review of safe operation procedures, identify the hazardous areas, coordinate the works sequence for the following week.
- To be conducted in site office.



进行中的安全协调会议  
Safety co-ordination meeting



#### (4) 每周清扫和全面清洁

- 由管工带领，参加者为所有工人。
- 彻底清扫和全面清洁工地，以为下周工作作好准备。
- 保持工地整洁，秩序井然。
- 使工作环境更安全，加强工人纪律和提高工作效率。
- 减少因危险情况而造成的意外。
- 在所有工作间进行。

#### (4) Weekly Tidying Up & Overall Cleaning

- To be led by foremen, with all workers as participants.
- Tidy up and clean the whole site to prepare for work next week.
- Keep the site in good working order and discipline.
- Enhance safety of working environment, discipline and efficiency of workers.
- Reduce accidents caused by risky conditions.
- To be conducted at all workplaces.



每周全面彻底清洁  
Weekly overall cleaning work

## 每月安全施工程序 Monthly Safe Working Cycle

#### (1) 每月安全大会

- 由项目经理或工地总管主持，所有人员均须出席。
- 与安全早会一起进行。
- 检讨上月的安全表现。
- 简介安全推广活动。
- 颁奖表扬安全表现出色的工人。



合并每天／每月安全大会  
Joint safety morning/monthly meeting

#### (1) Monthly Safety Meeting

- To be led by project manager or site agent and attended by all staff.
- Jointly held with safety morning assembly.
- Review safety performance in last month.
- Briefing on safety promotional campaign.
- Present awards to workers with outstanding safety performance.

## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety



以颁奖形式鼓励及表扬在安全表现出色的工人  
Present awards to workers with outstanding safety performance

### (2) 每月巡查

- 由总承包商和分包商的合格人员（例如电工、机械技工）带领，参加者为其他合格人员。
- 深入巡查机械、装备、工具和物料。
- 巡查的次数须符合指引／法例的规定。
- 确保设施和装备经常保持可供使用的状况，并在有需要时进行维修／更换。
- 提升生产力、施工质素和安全。



为确保机械能安全运作,需进行详细检查  
Detail inspection/checking of machines for a safe operation

### (2) Monthly Inspection

- To be led by qualified personnel of main contractor and subcontractors such as electrician and plant mechanic, with competent persons, etc. as participants.
- Regular in depth inspections on machines, equipment, tools and materials.
- The frequency of inspection to comply with legislation.
- Keep facilities and equipment in constant serviceable condition, making repair/replacement, if necessary.
- Improve productivity, quality and safety.



物料吊重机进行安全检测  
Perform regular safety checking/inspection to material hoist





### (3) 每月安全训练

- 由安全主任主持，参加者为工人。
- 提供安全训练和意外／事故分析，采取预防措施。
- 加强安全意识和技术，培养积极的安全态度。
- 提供的安全训练，不仅限于法例所规定。



工人参与工地的安全座谈会  
Safety forum for site workers

### (3) Monthly Safety Training

- To be led by safety officer, with workers as participants.
- Provide safety training, analysis of accident/incident occurred and adopt control measures.
- Reinforce safety awareness, skills and foster positive attitude on safety.
- Provide safety trainings, not restricted to legislative requirement.



为操作员工安排正确使用机械的训练  
Practical training on safe use of machinery/plants

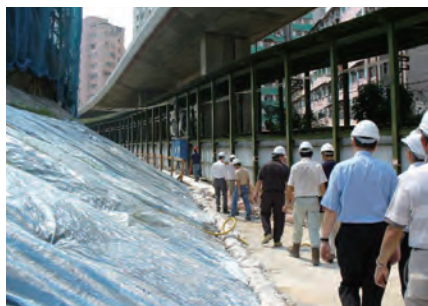
### (4) 每月安全委员会会议

- 由项目经理或工地总管主持，与会者包括安全主任、分包商代表、工地督导员，以及合约经理代表。
- 监察安全施工程序是否有效执行。
- 审阅意外统计数字，提出预防措施。
- 计划未来几个月的安全措施。
- 检讨工地安全表现。
- 审阅工地巡查报告。
- 监察所举办的安全训练课程和内容。
- 发放安全健康资讯。
- 讨论和安排安全推广活动。

## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety



在工地办事处进口，张贴安全健康资讯  
Safety and health information on notice board at site office entrance



安全委员会成员视察工地环境  
Site inspection by safety committee

### (4) Monthly Safety Committee Meeting

- Chaired by project manager or site agent and attended by safety officer, representatives of subcontractors and supervisory site staff, contract manager's representative.
- Monitor effective implementation of Safe Working Cycle.
- Review accident statistics and provide preventative measures.
- Plan safety measures for the coming months.
- Review site safety performance.
- Review safety inspection reports.
- Monitor safety training courses conducted and their contents.
- Disseminate safety and health information.
- Discuss and organize safety promotion activities such as safety campaign.



每月例行的安全委员会会议  
Monthly safety committee meeting





## 安全气候指数调查 Safety Climate Index (SCI) Survey

安全气候指数是衡量前线人员对安全／健康的认知之一项量化指标。

安全气候指数调查可作为量度工具，以具体了解前线员工（包括管理层、工地督导人员和工人）对工作安全的认知和认同。

工地的安全气候水平可归纳为以下七项主要指标或影响因素，水平愈高，代表安全气候愈正面：

- 机构和管理层的承担；
- 为安全事宜提供资源和支援；
- 对冒险行为和风险的认识；
- 对安全规则和程序的认知；
- 个人在安全和健康事宜方面的参与；
- 安全工作态度；以及
- 安全推广和沟通。

SCI as an indicator of frontline personnel's perception on safety/health.

SCI survey as a tool to gauge the safety perception and awareness from the perspectives of frontline personnel (including management staff, supervisors and workers).

The level of Safety Climate attained on site is represented by the following seven key indicators or contributing factors, and the higher the level, the more positive the safety climate:

- Corporate and Management Commitment;
- Safety Resources and Support;
- Awareness of Risk-taking Behaviour and Hazards;
- Perception of Safety Rules and Procedures;
- Personal Involvement in Safety and Health;
- Safe Working Attitude; and
- Safety Promotion and Communication.



在安全告示板上张贴安全守则  
Safety rules displayed on safety board

### 工作安全行为计划 **Work Safe Behaviour (WSB) Programme**

- 人类的行为与他们在工作间的安全表现息息相关。为改善工作间的安全情况，我们对工人的表现进行行为研究，以找出工作安全行为。
- 工作安全行为计划旨在透过观察工人的行为、进行分析和找出问题所在，以协助拟订行动计划。
- 工作安全行为计划的实施步骤：
  - a. 观察和记录危险行为。
  - b. 取得最高管理层的支持。
  - c. 从安全气候指数、意外报告和关键行为清单中找出问题所在。
  - d. 设定目标和提供培训。
  - e. 回馈、检讨、调查和分析。
  - f. 透过安全气候指数进行监察，预测安全趋势，建立新的观察清单，以及提升质素。
- WSB Programme refers to the application of behavioural analysis methods to achieve continuous improvements in safety performance.
- WSB Programme aims to assist the preparation of action plans by observing workers' behaviours, analyzing and producing findings.
- Steps for WSB Programme implementation:
  - a. Observe and record the at-risk behaviours.
  - b. Get support from top management.
  - c. Identify problems by SCI/ accident reports and critical behaviour (checklist).
  - d. Set the goal and provide training.
  - e. Provide feedback, conduct review, investigation and analysis.
  - f. Monitor via SCI and predict the safety trend, new checklist and enhancement.



在安全资讯告示板上张贴主要高危工作  
Major high risk activities displayed on safety information board



## 房屋委员会安全稽核制度 Housing Authority Safety Auditing System (HASAS)

- 旨在：
  - a. 评估新工程项目的安全及健康表现。
  - b. 推广安全管理概念和提升业界的安全标准。
- 新工程合约（即建筑工程、清拆工程、地基工程和土木工程合约）须进行独立安全稽核。
- 在工程合约开展后，委派职业安全健康局的认可安全稽核员进行安全稽核。
- 在整个建筑阶段，每三个月进行一次安全稽核。
- With the aim to:
  - a. evaluate the occupational safety and health performance of new works projects.
  - b. promote safety management concept and improve safety standards of the industry.
- An independent safety audit to be implemented for new works contracts (i.e. building, demolition, foundation and civil contracts).
- Appointing the Accredited Safety Auditor (ASA) of Occupational Safety and Health Council to carry out the safety audit after commencement of the works contract.
- The safety audit is to be conducted once every three months during the whole construction stage.



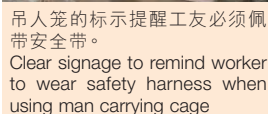
安全稽核制度包括工地巡查识别与物件下堕，高处工作，吊运作业，工地整理，供电系统，塔式起重机及流动式起重机有关的危害

The safety system audit comprises on site tour inspection to identify the job related hazard of falling objects, working at height, lifting operation, housekeeping, electricity, tower and mobile cranes

## 2

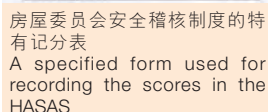
- ### A. 安全及健康管理系统

1. 安全政策
2. 安全架构
3. 安全培训
4. 内部安全规则
5. 安全委员会
6. 危险状况视察计划
7. 工作危险分析
8. 个人防护计划
9. 意外/事故调查
10. 应急措施
11. 安全推广
12. 健康保障计划
13. 评估、挑选和管控分包商



- ### A. Safety and Health Management System

1. Safety Policy
2. Safety Organization
3. Safety Training
4. In-house Safety Rules
5. Safety Committee
6. Programme for Inspection of Hazardous Conditions
7. Job Hazard Analysis
8. Personal Protection Programme
9. Accident/Incident Investigation
10. Emergency Preparedness
11. Safety Promotion
12. Health Assurance Programme
13. Evaluation, Selection and Control of Sub-contractor



- ### B. 工序控制计划

- 为吊机提供已检验的吊运工具  
Examined lifting gears provided  
for lifting crane





## B. Process Control Programme

1. Management of Place of Work
2. Management of Tasks and Operations
3. Management of Powered Plant and Equipment
4. Management of Plant and Equipment for Lifting of Material and Persons
5. Management of Mechanical Plant and Equipment



于结尾时的会议检阅安全稽核的调查结果  
A closing meeting to review the findings in the audit

房委会安全稽核制度亦涵盖工作安全行为计划、安全气候指数调查、创新计划和保健计划（包括热压力和寒冷天气保健）。

Work safe behaviour programme, safety climate index survey, innovation programme and health assurance (heat stress & cold weather) programme are also included in the HASAS.

## 房委会升降机及电梯指定分包合约安全稽核制度 Housing Authority Lift and Escalator Nominated Subcontracts Safety Auditing System (HALENSAS)

- 旨在：
  - a. 为升降机和电梯装置进行独立的安全稽核，以提升稽核制度的成效。
  - b. 评估升降机及电梯承办商在工序控制计划及工地安全方面的表现。
- 委派认可安全稽核员，对指定承办商进行安全稽核。
- 在升降机和电梯装置建造期间，须对指定承办商进行最多三次安全稽核。
- 稽核范围包括工序控制计划和工地核查，以加强监察安全表现。
- 安全稽核涵盖两部分，包括A部及B部：

A部：工序控制计划 — 安全工作系统

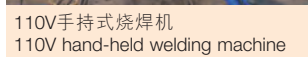
1. 工序安全资讯
2. 工序危险分析
3. 找出安全施工方法
4. 实施安全施工方法
5. 进行监察

- | Summary of Prevalent Verified Safety Audit Parameters Summary (HALENASAS)          |   |               |                               |            |  |  |  |  |  |  |
|--|---|---------------|-------------------------------|------------|--|--|--|--|--|--|
| Form No. 000007  |   |               |                               |            |  |  |  |  |  |  |
| Topic of Current Inspection : (Continuation of Public Safety Inspection Worksheet) |   |               |                               |            |  |  |  |  |  |  |
| Name of Government Institution : _____   |   |               | (Add with Machine Room Entry) |            |  |  |  |  |  |  |
| Assessment Date : _____  |   |               |                               |            |  |  |  |  |  |  |
| Score Verdictable Date : _____   |   |               |                               |            |  |  |  |  |  |  |
| A. Verified Scores of Element A1 to A5   |   |               |                               |            |  |  |  |  |  |  |
| Element  | Item                                      | Maximum Score | Score                         | Percentage |  |  |  |  |  |  |
| A1   | Process Safety Information                | 15            |                               |            |  |  |  |  |  |  |
| A2   | Process-Based Analysis                    | 25            |                               |            |  |  |  |  |  |  |
| A3   | Facility Maintenance                      | 25            |                               |            |  |  |  |  |  |  |
| A4   | Supervision                               | 12            |                               |            |  |  |  |  |  |  |
| A5   | Warning                                   | 12            |                               |            |  |  |  |  |  |  |
|  |   | 100           |                               | 84.6%      |  |  |  |  |  |  |
| B. Verified Scores of Element B1-B11   |   |               |                               |            |  |  |  |  |  |  |
| Element  | Item                                      | Maximum Score | Score                         | Percentage |  |  |  |  |  |  |
| B1   | Working or Single                         | 15            |                               | 100%       |  |  |  |  |  |  |
| B2   | Overcoming Existing Obstacles             | 12            |                               | 100%       |  |  |  |  |  |  |
| B3   | Inspection                                | 10            |                               | 100%       |  |  |  |  |  |  |
| B4   | Life Saving System                        | 6             |                               | 100%       |  |  |  |  |  |  |
| B5   | Plant/Process Safety and Emergency        | 30            |                               | 100%       |  |  |  |  |  |  |
| B6   | Alarms/ Alarms                            | 30            |                               | 100%       |  |  |  |  |  |  |
| B7   | Emergency Shutdown                        | 6             |                               | 100%       |  |  |  |  |  |  |
| B8   | Electrical Wires                          | 4             |                               | 100%       |  |  |  |  |  |  |
| B9   | Emergency Information                     | 30            |                               | 100%       |  |  |  |  |  |  |
| B10  | Emergency Release or Interlocked Shutdown | 30            |                               | 100%       |  |  |  |  |  |  |
| B11  | Score                                     | 3             |                               | 100%       |  |  |  |  |  |  |
| B12  | Control Panel                             | 30            |                               | 100%       |  |  |  |  |  |  |
| B13  | Score                                     | 3             |                               | 100%       |  |  |  |  |  |  |
|  |   | 100           |                               | 84.6%      |  |  |  |  |  |  |
| C. Overall Safety Audit (HALENASAS) Summary  |   |               |                               |            |  |  |  |  |  |  |
| Element  | Maximum Score                             | Score         | Percentage                    |            |  |  |  |  |  |  |
| B. Safety Audit Score Summary (not to be repeated)                                 |   |               |                               |            |  |  |  |  |  |  |
| 1. Total (Element A1-A5) : (Maximum Score : 100.00)                                | 100                                       | 85            | 85.00 %                       |            |  |  |  |  |  |  |
| 2. Total (Element B1-B11) : (Maximum Score : 310.00)                               | 310                                       | 265           | 85.48 %                       |            |  |  |  |  |  |  |

A specified form used for recording the scoring results in the HALENSAS auditing

1. Process safety information
2. Process Hazard Analysis (PHA)
3. Defining of safe methods
4. Implementing
5. Monitoring

1. 高处工作
2. 防止物件下堕
3. 工地整理
4. 吊运作业
5. 烧焊／切割作业和装备
6. 砂轮
7. 手提工具
8. 电力工程
9. 危险品
10. 人力／机械搬运物料
11. 噪音
12. 密闭空间
13. 其他项目







- 审核承建商／分包商履行工地安全措施的情况。

B: Site Verification Checklist

1. Working at height
2. Protection against falling object
3. Housekeeping
4. Lifting operations
5. Welding/Cutting Operation and Equipment
6. Abrasive Wheels
7. Portable tools
8. Electrical Works
9. Dangerous Substances
10. Manual Handling and Mechanical Materials Handling
11. Noise
12. Confined Space
13. Miscellaneous

- Contractor/subcontractor's obligation to ensure site safety is audited.

## 突击安全巡查计划

### Surprise Safety Inspection Programme (SSIP)

旨在：

- a. 提升工程合约的职业安全健康标准。
  - b. 加强监察／评估承建商的安全表现。
  - c. 确保整个建筑工程贯彻「安全第一」的基本原则。
- 由职业安全健康局的独立安全巡查员，就工程合约（即建筑工程、打桩工程和拆卸工程）进行突击安全巡查。
  - 在整个工程期间，可在无预先通知的情况下随时进行突击安全巡查（每三个月进行一次）。
  - 巡查和遵行规定检查涵盖以下五种高危工作：
    - a. 高处工作
    - b. 防止物件下堕
    - c. 工地整理
    - d. 吊运作业
    - e. 供电系统
  - 通常在半天内完成巡查。



独立安全巡查队进行突击安全巡查涵盖五种高危工作，并可在无预先通知的情况下进行  
An independent inspector team carry out a surprise site safety inspection based on the five high risk items without advance notice

## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety

With the aim to:

- enhance the occupational safety and health standards for works contracts
  - strengthen the monitoring/assessment on Contractor's safety performance
  - achieve the fundamental principle of "Safety First" for the whole construction.
- An independent safety inspector of Occupational Safety & Health Council to conduct surprise safety inspection for works contracts (i.e. building, piling and demolition)
  - The surprise inspection to be conducted at any time without prior notice (once every three months) during the whole construction stage.
  - Inspection and compliance check on the five (5) high risk activities comprising:
    - Working at height
    - Prevention of falling object
    - Housekeeping
    - Lifting operation
    - Electrical supply system
  - Normally to be completed in less than a half day.



工作架上装设安全网，减少人体下坠时所受的伤害

Provision of safety net at the falsework for relieving injury of falling from height

突击安全巡查计划的记分表

The form used for recording the scoring results in the SSIP

### 入职安全训练 Safety Induction Training

- 安排安全主任为所有新到工地的工人提供一般和因应工地情况而设计的入职安全训练课程，让他们了解和熟习工地环境。
- 提醒新到工地的工人有关工地、工种或作业涉及的危险事宜，以及所需采取的预防措施。训练课程的内容亦可涵盖安全健康政策、雇主和雇员的一般责任、一般安全规则、福利设施、个人防护装备、应急措施、急救或意外通报制度。
- 在雇员开工后两个工作天内进行。
- 每六个月左右提供重温训练。



为新入职员工提供入职安全训练  
Safety induction to new staff in a small group



- Arrange safety officers to provide general and site specific induction training course to all new comers to understand and get familiar with the site environment.
- Alert persons new to the site to know specific hazards related to the site or work nature and activities in operation, and necessary precautionary measures. The training course may also cover the safety and health policy, the general duties of employers and employees, general safety rules, welfare facilities, personal protective equipment, emergency preparedness and first aid/accident reporting.
- To be carried out within 2 working days of employee commencing work on the site.
- Provide refresher training at an interval of about 6 months.



对在职工亦提供重温安全训练

A refresher safety training to employees in a large class

## 关顾新人工作安全计划 **Caring Programme for New Workers**

- 引入导师／学员夥伴关系，实施关顾新人工作安全计划。
- 委派导师指导实习工人有关在该工地工作的安全要点，关顾期至少三个月（导师与实习员的比例不高于一比四）。在三至六个月的关顾期完结后，倘若安全部确定该实习员已经建立了基本安全概念及能应用安全知识，以及融入地盘安全文化后，实习工人便可除去头盔上的“P”字标签。
- 新工人如已具备相关工作经验，他们的头盔上会附有“N”字标签，在两星期至一个月的关顾期完结后，倘若安全部确定该实习员能应用安全知识及融入地盘安全文化后，新工人便可除去头盔上的“N”字标签。



「P」字是英文「Probationer」的简称，意思为「实习员」，指从事建造业少于半年的工人。相关工人一般统称为「P」牌工人  
“P” label refers to “Probationer”, which implies workers with less than half year of construction work experience



「N」字是英文「Newcomer」的简称，意思为「新力军」，指从未到过该工地工作，而有建造业工作经验的工人。相关工人一般统称为「N」牌工人  
“N” label refers to “Newcomer”, which implies workers have never been working in a particular construction site but possess construction work experience

## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety

- Implement the Caring Programme by introduction of Mentee/Mentor working partnership.
- Assign mentor (with a ratio of 1 mentor to not more than 4 mentees) to provide guidance to mentees on essential site safety aspects related to the site with a caring period not less than 3 months. The “P” label will be removed from safety helmet if the safety office confirms that the probationer has established basic safety concept and is able to apply safety knowledge and familiar with the safety culture of the site after the 3 to 6 months’ caring period.
- Provide “N” label on the helmets of new workers with relevant working experience with guidance on essential site safety aspects related to the site with a caring period not less than 2 weeks. The “N” label will be removed from safety helmet if the safety office confirms that the new worker is able to apply safety knowledge and familiar with the safety culture of the site after the 2 weeks to 1 month’s caring period.

### 工地座谈会 Tool Box Talk

- 安排安全主任，按工地活动和当时的安全事宜拟备座谈会内容。
- 安排曾受训的安全督导员、管工或工目每周举行座谈会一次，参加者为在工地工作并从事与座谈会主题有关活动的工人。
- 座谈会内容涵盖工地作业的潜在危险、针对工程和工种而制定的管制措施、因应恶劣天气和乾燥季节而采取的预防措施，或有关建筑意外的新闻剪报和安全健康资讯。
- 妥为记录座谈会的出席人数、培训员资料等。
- 以口头或书面评估工人对座谈会内容的理解程度。



由安全主任定期安排的工地座谈会  
Regular tool box talk arranged by safety officer



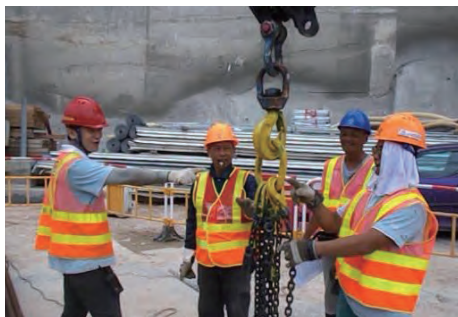
- Arrange safety officer to prepare the contents having regard to the current activities of the site and prevailing safety concerns.
- Arrange trained safety supervisor/foremen/gangers to conduct the talk once per week to workers on site and engaging in activities relevant to the topic of the tool box talk.
- Cover potential hazards of site activities, control measures specific to works and trades, precautionary measures in inclement weather or dry season, or newspaper cutting about construction work accidents, safety and health publications.
- Properly record the attendance and trainers, etc. of the talk.
- Assess the understanding of workers with respect to the contents of the tool box talk verbally or in writing.

## 指差呼称 **Pointing and Calling**

为达到零意外，一项给业界借用之工具「指差呼称」是透过眼，手，口及耳并用，使工作中工人能提高精神和专注集中一些高危工作，减少因疏忽及人为错误导致意外的产生，此四项感官，每项都有其特别功能如下：

- 眼：坚定注视要确认的目标
- 臂及手指：伸展手臂，用手指食指指向目标
- 口：高声及清楚地读出口号以作确认
- 耳：聆听确认的口号

经指差呼称，将可提高工人在高危工作时如吊运操作的警觉性及行动准确性，达到减少人为疏忽，错误或误会而引致的意外。



“指差呼称”——减少因高风险的工序或人为失误而发生的意外  
“Pointing and Calling”——Reduce accident in high risk activity or caused by human error



安全主任领著工友进行“指差呼称”活动  
Safety officer to lead the workers to practise “Pointing and Calling”



## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety

Pointing and calling is a tool for commitment of zero accident by employment of eyes, hands, mouth and ears to achieve the workers' concentration for risk operations, hence reduce the human error or negligence at work. These four components with their special function are as below:

- Eyes: stare at the confirmed target
- Arm and finger: stretch out an arm and point at the target with the index finger
- Mouth: call out the slogan loudly and clearly as confirmation
- Ears: listen to the confirmation slogan

Through the effective co-ordination of each individual's sense organs to enhance the accuracy of and vigilance for works as lifting operation, it would help to reduce accidents arising from high risk caused by human negligence or error.

### 定期练习／演习 Regular practice/drill

- 按照工地本身的要求，定期进行火警演习。
- 就特别装备的使用提供训练和练习机会。
- Conduct regularly the fire drills according to local requirement.
- Provide training for and practicing of the use of special equipment.

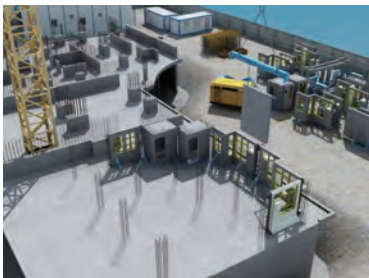


定期进行火警演习及示范怎样操作灭火器具  
Conduct fire drill to give a demonstration on how to use firefighting equipment

### 建筑信息模拟技术 Building Information Modelling (BIM)

- 建筑信息模拟技术以虚拟影像呈现建筑工序，利用三维影像展示的方式能方便工地人员沟通。
- 建筑信息模拟技术可作为一项多用途的训练工具，把设计建筑程序呈现在工人眼前，有助他们识别危险和所涉及的风险。
- 建筑信息模拟技术有助找出结构组件和地下公用设施不相容之处。





利用建筑信息模拟技术说明各类型预制单位的贮存和安装情况，可示范预制组件的贮存、吊运和安装工程

Demonstration of precast element storage, lifting and installation works by outlining the storage and installation of various types of precast units using BIM

- BIM provides a virtual image of the construction process and facilitates the communication among site personnel through 3-dimensional presentation.
- BIM serves as a versatile training tool to let workers visualize the designed construction sequence and identify the potential hazards and risks involved.
- BIM helps identify potential clashes of structure and underground utilities.

## 无线射频识别技术 Radio Frequency Identification (RFID)

- 无线射频识别系统由标签、感应器和处理器组成，当物件移近某个地方时会发出警报。
- 利用机械装置许可证上的无线射频识别标签，可快速查阅该流动机械、操作员和工人的最新资料。
- RFID tags, sensor and processor form a system to trigger alarm when an object is approaching an area.
- Plant permit with RFID chip provides accessibility to information of mobile plant, operators and workers. Updated information of plant can be checked easily.



无线射频识别技术应用于限速范围。在限速范围的两端安装无线射频识别感应器，并在机械装置操作员的头盔上贴上无线射频识别标签，便可利用两点计算出机械装置的速度。这个系统可即时向工地管理职员提供附有记录和数据分析的超速讯息。

RFID used in speed control area in which one pair of RFID sensors are set up on both sides, and RFID tag is attached to plant operator's helmet. The speed of the plant is calculated between the 2 points. The system provides a message of speeding with record and data analysis to the site management staff immediately



吊钩上贴有无线射频识别标签，天线和处理器则设于吊运区内。天线对地面的指定范围发出讯号，如无线射频识别标签进入该范围，警号便会响起。

RFID tag stuck on the hook whereas antennas and processors are provided in the lifting zones. Antenna emits signal to the designed coverage above ground. Alarm and buzzer will be triggered when RFID tag enters the coverage of the signal

## 2 安全管理工具及在工地安全上应用资讯科技 Safety Management Tools and Use of Information Technology in Safety



如有任何人员进入预设距离内的危险区域时，操作员便会接到警报  
Operator is alerted when any personnel enters zone within a preset distance



挖土机的两侧和后面装上无线射频识别感应器，而进入危险范围工作的人员会获发无线射频识别标签

RFID sensors installed on two lateral sides and the back of excavator and RFID tag is issued to personnel who enters the danger zone

### 流动装置应用程式 Mobile Applications in Mobile Devices

- 透过即时通报和提交相片作实时记录，方便沟通。
- 管控所有装备和机械的记录、证明书和牌照，并透过云端科技即时核实装备和机械装置。
- 管理工人的训练记录，方便工人撷取安全预防措施参考。
- facilitate communication through instant reporting, submission of photos with real time record.
- control the record, certificates and licenses of all equipment and plant and enable instant validation of plant and equipment through cloud technology.
- manage the training record of workers and allow retrieval of safety precautionary measures for reference by workers.



利用流动装置应用程式核实机械装置  
Validation of plant using mobile apps



## 参考资料 References:

### 相关条例和规例

- 《工厂及工业经营条例》
- 《建筑地盘(安全)规例》
- 《工厂及工业经营(安全主任及安全督导员)规例》
- 《工厂及工业经营(安全管理)规例》

### 相关安全标准·工作守则·安全指引和指南

- 《安全管理工作守则》(劳工处)
- 《工厂及工业经营(安全管理)规例指南》(劳工处)
- 《安全施工程序—「实践安全行为」手册》(职安局)
- 《安全气候指数调查》(职安局)
- 《实施工作安全行为(WSB)计划》(职安局)
- 《房屋委员会安全稽核制度独立安全稽核计划》
- 《房屋委员会升降机及电梯指定分包商安全稽核制度》
- 《房屋委员会工地突击巡查计划指引》
- 《关顾新人工作安全计划》(建造业议会)
- 《实施「指差呼称」减少人为失误》(职安局)

### Relevant Ordinances and Regulations

- 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) Regulation.

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

- Code of Practice on Safety Management (LD)
- A Guide to the Factories and Industrial Undertakings (Safety Management) Regulation. (LD)
- Safe Working Cycle Handbook (OSHC)
- Safety Climate Index Survey (OSHC)
- Implementing The Work Safe Behaviour (WSB) Programme (OSHC)
- Independent Safety Audit Scheme Housing Authority Safety Auditing System
- Housing Authority Lift and Escalator Nominated Subcontracts Safety Auditing System (HALENSAS)
- Guidelines on Surprise Safety Inspection Programme of the Housing Authority
- Caring Programme for New Workers (CIC)
- The Approach of Pointing and Calling Reduces Human Error (OSHC)

## 危害识别 Hazards

- 在工地内发生的意外，多半与工地整理欠佳有关。这类意外包括：
  - 滑倒、绊倒或在同等高度跌倒；
  - 被移动物件或与移动物件碰撞；
  - 提举或搬运物件时受伤；
  - 与固定或不动物件碰撞；
  - 触及开动中的机器或触及以机器制造中的物件；以及
  - 人体从高处坠下等。
- 优质的工地整理有助建立安全而健康的工作环境，从而提升产品质素、提高工作效率，以及减少事故／意外发生。
- 良好的工地整理包括保持工作环境整洁，制定有系统的施工程序，以及妥善存放机械设备和物料。
- Majority of accidents occurred on construction sites are related to poor housekeeping of working environment:
  - Slip, trip or fall on the same level;
  - Striking against or being struck by moving objects;
  - Being injured whilst lifting or carrying;
  - Striking against fixed or stationary object;
  - Contact with moving machinery or object being machined; and
  - Fall of person from height, etc.
- A high housekeeping standard contributes to a safe and healthy working environment which helps achieve better quality of end product, higher efficiency and reduction of incidents/accidents.
- Good housekeeping practice includes a clean and tidy working environment, systematic arrangement of work activities, and proper storage of plant and materials.



地盘内设置清晰的方向指示／标示  
A clear direction/indication within a construction site



工地通道畅通无阻  
No obstruction to circulation route on site



交通箭嘴标志指引安全的行车路线  
Traffic arrow directing a safe vehicle flow



在适当地点设置安全行人过路处  
Suitable point assigned with a safe pedestrian crossing



在围封范围划定安全的出入途径  
Designated safe means of access to enclosed area



## 急救设备 First Aid Facilities

- 安全主任负责管理工地的急救箱。
  - 急救箱只可存放急救物品。
  - 工作时间内应常备急救箱。
- Safety officer should be in charge of the first aid boxes for a construction site.
  - Only first aid kit is allowed to be kept in the first aid box.
  - The first aid boxes should be available during working hours.



一般急救箱常见的急救用品  
Common items in a first aid box



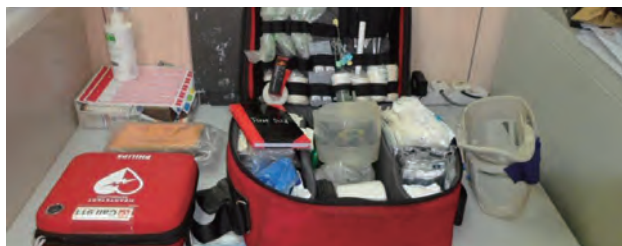
简单的急救箱  
A simple first aid box



在地盘的一般急救站  
Typical first aid station of a construction site



担架  
Stretcher



自动体外心脏去颤器  
Automated external defibrillator



工地提供的担架  
Stretcher provided at workplace



### 工地平面图 Site Layout Plan

- 平面图应显示走火通道及灭火设备的位置。
  - 平面图应指明存放危险／易燃物料的地方为高危地点。
  - 平面图应张贴于工地入口旁的围板上。
  - 应方便紧急应变小组及／或救援人员前往肇事现场。
- Show fire escape routes and location of fire-fighting equipment.
  - Indicate the storage area for dangerous/flammable materials as high risk spot.
  - Paste the layout plan prominently on hoarding adjacent to the site entrance.
  - Emergency team and/or rescue operation team can easily reach the spot/venue in case of emergency.



在入口 (左) 展示及告示板 (右) 张贴工地平面图  
Site layout plan at entrance (left) and notice board (right)

### 硬地施工法 Hard Paved Construction

- 在工地的主要运料路、出入口及车辆清洗处、物料处理及贮存区等指定地点，铺设平坦且去水良好的硬地面。
- 混凝土及碎石垫料、混凝土硬地物料、预制混凝土板和铺面钢板均可用以铺设硬地。
- 采用硬地施工法处理及贮存物料或配件，可更为安全有序。
- 取用时亦更方便，并可减少损坏和污染。
- 改善运料路能提高运输安全，亦可更有效分隔行人和车辆。
- 无论在清理、整齐、尘埃控制、卫生、工地整理和环境管理方面，此项施工法均可改善工地的整体工作环境。



在硬地以重型围栏分隔行人和车辆  
Heavy duty barrier to separate pedestrians and vehicles on a hard paved road





- Provide hard, levelled and well drained paving to specific areas on site: main haul road, exit points cum vehicle washing area, materials handling and storage areas.
- Use concrete and hard cores, concrete hard paved material, precast concrete slab and steel decking for hard paving.
- Enhance handling and storage of materials or components in a safe and orderly manner.
- Improve accessibility, minimize damage and reduce contamination.
- Provide a safer haul road for traffic manoeuvring and better separation of pedestrians and vehicles.
- Improve overall site working environment in terms of cleanliness, tidiness, dust control, hygiene, housekeeping and environmental management aspects.



在硬地以可摺合的围栏分隔行人和车辆  
Folding type barrier to separate pedestrians and vehicles on a hard paved road



为车辆提供安全的运料路  
Provide a safe haul road for vehicle



改善工地环境，取用物料亦更为方便  
Better site environment, better accessibility



在铺设硬地面的地方存放预制混碍土组件  
Hard paved areas for storage of precast concrete products





存放物料的地方整齐有序

Tidy and orderly storage of materials on a hard paved place



## 妥善的出入口 Proper Access and Egress

- 在可能情況下，提供穩固安全的進入或離開工作地點，斜坡，吊船的爬梯
- 設置適合爬梯的扶手，給工人一個方便安全的進出。
- Provide rigid staircase where possible for a safe access/egress to working area, slope and/or gondola, etc.
- To be fitted with railing for staircase to enhance safety.



利用樓梯為工地之高低台提供安全通道

Safe access to different levels by means of staircase



安全通道進入大型模板的工作平台

Safe access to working platform of large panel formwork



于梯级加装钢棒，有助防滑  
Additional steel rod on the staircase as anti-slip device



前往斜坡工作地点的安全通道  
Safe means of access for slope work



前往吊船的安全通道  
Safe means of access to gondola



安全通道进入深坑  
Safe access to deep excavation

## 在危险区域架设路障 Barricade to Dangerous Zone

- 在进行吊运操作或使用起重机械时，应使用围栏围封有关的工作范围，以防止其他人士进入
- 起重机械任何可移动的部分与护栏、围栏或其他设备之间，须留有一条至少600毫米阔、并无障碍物阻塞的通道。
- Fence off areas in which a lifting operation is carried out or a lifting appliance is in use by providing barrier to prevent persons from having access to such areas.
- An unobstructed passageway of not less than 600mm wide shall be maintained between any moving part of a lifting appliance liable to move and any nearby guard rail, fencing or other fixture.



围栏用以阻止其他人等进入正在工作中的重型机械的范围

Fencing off the heavy machinery in use from persons' access



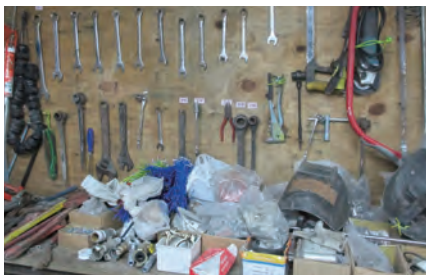
简单围栏可防止意外发生

Fencing off lifing appliance to prevent accident

## 5S工地整理 5S Housekeeping

5S概念源自日本，对工地整理非常有效。这个概念由以下五个元素组成：

- 1S整理 制定整理的标准，区别和处理要及不要的物品。
- 2S存放 考虑个别物品的使用次数有条理地存放。
- 3S清洁 清洁物品以保持其操作状态，扫除及清理工作环境的杂物。
- 4S标准 以目视管理，制定相关标准及制度，把整理、存放及清洁标准化，使各种标示、标签、指引、守则等均有标准。例如，每批灭火筒配以不同色码，过期需要更换的灭火筒便可一目了然。
- 5S修养 养成整理、存放及清洁的良好习惯、依循所订的标准自发地进行有关工作。



2S - 各项手工具放置井然有序

2S - An orderly storage of hand tools

工地整理可依循1S→4S→5S；2S→4S→5S及3S→4S→5S的模式进行。经过反覆的计划、实践、检讨及改善，不断地改进整个工地整理的制度，最后，所建立的良好工作习惯会变成一种修养，而工地整理文化也由此而生。





2S – 常用的吊具及起重裝置也應放置有序  
2S – An orderly storage of lifting facility/  
tools

为使工地整理的措施发挥作用，管理层和前线员工应透过以下途径多作沟通及合作，共同改善工地整理的情况：

- 鼓励员工就改善地盘整洁、通道安全等提出意见。
- 工序及工作计划应列明存放各类物料、危险品、设备、运输工具的地方及出入地盘的安全通道。
- 利用通告向各相关工作单位说明安全处理物料的程序，并在工程进行期间与工人商讨，以不断检讨有关程序。
- 与工程主管及各分包商召开定期会议以加强沟通。
- 举行分享聚会，由表现较佳的员工现身说法和其他工人分享心得。
- 各地盘可以因应本身的工地环境、工程项目及其他特殊情况灵活实施工地整理的措施，让工人养成良好的工作习惯，从而建立工地整理的文化。

Originated in Japan, the concept of 5S is very useful for effective site housekeeping. It comprises 5 elements as follows:

**1S Organization (Seiri)** Set up organizational criteria for identifying and dealing with things that are and are not necessary for the job.

**2S Neatness (Seiton)** Devise a system for neat and orderly storage, taking into account how frequent individual items are used.

**3S Cleanliness (Seiso)** Clean things so that they are kept in working condition, and ensure the cleanliness of the working environment with all the junks wiped out.



2S – 工地材料放置整齐  
2S – An orderly storage of materials



2S – 提供指定地方堆放物料  
2S – Provision of designated area for stacking of materials

### 3 一般工地安全及工地整理 General Site Safety and Housekeeping

**4S Standardization (Seiketsu)** Manage visually and maintain organization, neatness and cleanliness by devising the relevant standards and systems. Standards and norms are set for various signs, labels, guidelines, and rules as appropriate. For example, every batch of fire extinguishers is given a different colour code so that outdated batches can easily be identified for replacement.



3S – 工地环境整齐清洁  
3S – A clean site environment

**5S Discipline (Shitsuke)** Instill the good habits of organization, neatness and cleanliness, follow the standards and norms so drawn up, and put them into practice.



3S-分包商在工地的办公室整洁明亮  
3S-Subcontractor site offices are kept in neat condition with sufficient lighting

Site housekeeping may be carried out in the manner of 1S→4S→5S; 2S→4S→5S; and 3S→4S→5S. Through repeated planning, practising, reviews and modifications, the whole site housekeeping system can be further improved. Finally, discipline, i.e. the culture of housekeeping will be instilled through good working habits.

To achieve effective site housekeeping, communication and cooperation between the management and front-line workforce should be enhanced as follows:

- Employees should be encouraged to put forward their views and opinions on issues including site cleanliness, and access safety, etc.
- Locations for the storage of various materials, dangerous goods, equipment, conveyance tools, as well as safe passages for access to site, should be stipulated in the work procedures and work plans.
- How things are handled safely should be brought to the attention of the parties concerned by notice, and repeatedly reviewed during the course of works in consultation with the workforce.
- Regular meetings should be held with project supervisors and subcontractors to enhance communication.
- Sharing sessions should be held for employees of good performance to share their experience with other workmates.





- Flexible implementation of the measures of housekeeping to suit the working environment, works nature and other particular conditions of each individual construction site could help workers develop good working habits and build up housekeeping culture.



4S –划一标示

4S – standardization of signs



展示5S的例子以培育工地整理文化

Display of 5S examples to instil culture of housekeeping

## 危险品的贮存 Dangerous Goods Store

- 危险品须贮存于消防处认可或发给牌照的危险品仓库内并设有防雷系统，贮存量不得超过牌照所订的上限。
- Dangerous goods are to be stored in a dangerous goods store with lightning protection system approved/licensed by Fire Services Department with quantity not exceeding the limit under the licence.



由消防处发出的牌照（危险品）  
Typical licence issued by FSD  
(dangerous goods)



危险品仓库（供贮存易燃气体用）  
Dangerous goods store (flammable  
gas)



危险品贮存仓  
Dangerous Goods Store

### 3 一般工地安全及工地整理 General Site Safety and Housekeeping

#### 防火措施

#### Fire Precaution and Measure

- 配备供水设施。
- 易燃物品应贮存于危险品仓库内。
- 安装合适的火警探测器和火警钟，并为危险品仓库和烧焊地点等其他工作范围提供防火设备。
- 在危险品仓库周围张贴「危险品」和「不准吸烟」的警告告示，以提高警惕。
- 展示足够的警告牌和「不准吸烟」标志。
- 切勿遗留或堆放棉绒、机油或其他易燃物品。
- 切勿用水扑救电器引起的火警。如情况许可，救火前先截断电器的电源。
- Provide water relaying facilities.
- Store flammable materials in Dangerous Goods (D.G.) Store.
- Install suitable fire detectors with associated fire alarms in place and provide fire protection measures for the D.G. Store and other working area, such as welding spot.
- Post “Dangerous Goods” and “No Smoking” warning notices in the vicinity of the D.G. Store to enhance safety awareness.
- Display sufficient warning signs and “No Smoking” signs.
- Do not leave or accumulate lint, grease, or other flammable materials.
- Do not use water on electrical equipment fires. When it is possible, de-energize electrical equipment before fire-fighting.



一般的不准吸烟标志  
Typical no smoking sign



在贮存地点张贴不准生火／不准吸烟标志  
No fire and smoking sign posted in storage area



火警钟一般都是安设于物料储存处  
Fire alarm bell installed near the material storage area



为较远工作／储存位置可提供流动式手动火警钟  
Portable manual fire alarm call point suitable for remote location



## 防火告示牌 Fire Warning Signs

- 张贴警告告示，提防火警和应采取的防火措施。
- 张贴告示和指示，说明不同种类的燃烧物料所应使用的灭火筒和灭火器具的操作方法。
- Post warning signs and precaution for the avoidance of fire and steps for prevention.
- Notice and instruction for suitable type of fire extinguisher for different types of combustion materials and fire-fighting equipment's operation instruction.



## 灭火设备 Fire Extinguishing Equipment

### 手提灭火器具

- 提供足够数目的手提灭火器具（即灭火筒和沙桶），并善加保养。
- 焊接工程进行时，施工场地附近应设有适当的灭火设备。
- 学习及练习使用灭火筒。
- 定期检查灭火筒，如有需要，作出更换。

### Provision of portable fire-fighting equipment

- Provide and properly maintain sufficient number of portable fire-fighting appliances (i.e. fire extinguisher and bucket of sand).
- During welding work, suitable fire-fighting equipment to be provided near the works area.
- Learn and practise the use of fire extinguishers.
- Inspect fire extinguishers regularly and replace as necessary.

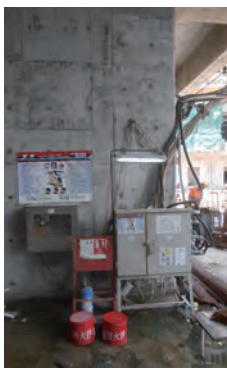
Fire Extinguisher Chart

Extinguisher		Type of Fire				
Colour	Type	Solids (wood, paper, cloth, etc)	Flammable Liquids	Flammable Gases	Electrical Equipment	Cooking Oils & Fats
	Water	✓ Yes	✗ No	✗ No	✗ No	✗ No
	Foam	✓ Yes	✓ Yes	✗ No	✗ No	✓ Yes
	Dry Powder	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✗ No
	Carbon Dioxide (CO2)	✗ No	✓ Yes	✗ No	✓ Yes	✓ Yes

张贴告示和指示及说明不同种类的灭火器具用于扑灭不同种类的失火事故  
Instruction / guideline on notice board and use correct type of fire extinguishers



在高危工作间提供灭火筒  
Provision of fire extinguisher adjacent to high-risk workplace



在标准楼层提供灭火筒和沙桶  
Provision of fire extinguisher and buckets of sand on typical floor



在重要位置提供灭火筒和沙桶  
Fire extinguisher and buckets of sand at strategic locations



在烧焊地点附近提供轻便的手提灭火筒  
A portable fire extinguisher provided near the welding spot

## 公众安全 Public Safety

- 在行人上架设双层围板，以策安全。
- 在行人通道上设置保护檐篷。
- 经常检查保护檐篷并清除垃圾。

- Double deck hoarding to offer protection over pavement.
- Provide pedestrians access under protective canopy.
- Protective canopy needs to be inspected and cleared of debris regularly.



在行人上架设双层围板  
Double-deck hoarding over pavement



以围板覆盖的安全行人道  
Safe walkway under hoarding

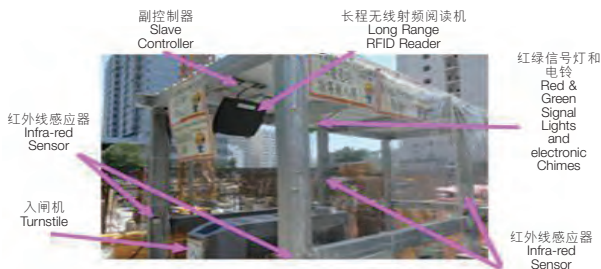




## 车辆及行人通道的管制 Vehicular and Pedestrian Access Control

- 利用无线射频科技设置的非接触式出入监控和记录系统（包含一个长程无线射频阅读器和两组红外线感应器），可探测安全头盔上的射频识别标签。
- 地盘的车辆出入口处设置横向式闸门，控制车辆出入以保行人安全。

- RFID contactless access monitoring and recording system comprising a long range RFID reader and two sets of infra-red sensors is used to detect the RFID tags on the safety helmet.



电脑系统记录实时数据，防止未获授权者入内

The computer system records the real time data and prevents unauthorized access

- Horizontal operating gate is provided to control vehicular traffic for pedestrian safety at the sites vehicular ingress/egress point.

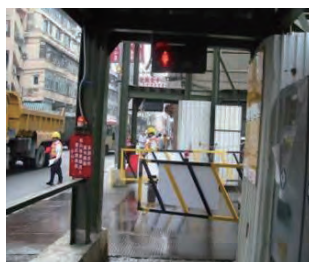
## 工地运料路及交通 Site Haul Road and Site Traffic

- 在车辆运料路上洒水，以免尘土飞扬。
- 在施工地点／工地内提供通道和设定机械设备移动范围。
- 提供指定物料装卸处。
- 在工地出口设置车轮清洗槽。
- 提供足够的警告，提示该处有架空或地下公用设施。
- 在围板或外部围栏提供照明，保障公众安全。
- 提供渠道和排污设施，并善加保养。
- 分隔车辆和行人。
- 遵守《建造业议会刊物：建筑地盘车辆及流动机械的安全指引》。



闸门设有视听式警告器，提醒行人留意进出车辆

Entrance gate equipped with visual and audio alarms to alert pedestrians of vehicular traffic



在靠近入口处，提供的车轮清洗设施

Provision of vehicle wheel-washing facilities at entrance

### 3 一般工地安全及工地整理 General Site Safety and Housekeeping

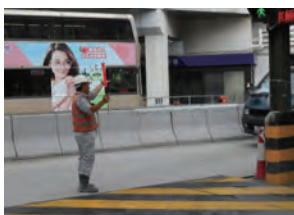
- Spray water onto vehicular haul road to control dust.
- Provide access roads and plant movement areas within the works area/site.
- Provide designated loading and unloading areas.
- Provide wheel-washing bay for vehicles at the exits of the site.
- Provide adequate warning to overhead or underground utilities.
- Provide lighting on hoarding or external fencing for public safety.
- Provide and maintain proper drainage and means of sewage disposal.
- Separate vehicular and pedestrian traffic.
- Observe the Publication "Construction Industry Council – Guidelines on Safety of Site Vehicles and Mobile Plant".



车轮清洗处的喷水器正在运作  
Operation of water-jet in a vehicle wheel – washing area



人车分隔  
Separate vehicular and pedestrian traffic



工作区指导员在地盘入口处指挥交通  
Traffic control at site entrance by banksman



洒水以免尘土飞扬  
Dust control with water spraying



### 公众安全／临时交通安排 Public Safety/Temporary Traffic Arrangement

- 用路障、圆锥筒和灯具妥善围起施工地点。
- 路障两端互相钩连系固，形成连续的路障。
- 在行车道工作时应穿着反光外衣。
- 设置楔形引入／引出路段，并提供行车指示牌。
- 在行车道上排列塑胶路障并附以一系列交通圆锥筒。
- 设置告示板。
- 沿行车道边缘放置圆锥筒和灯具，相互距离不超过三米。
- 在天气恶劣时须固定所有路障。
- 依从掘路许可证所列的条件。



为行车道上的工程采取临时交通安排  
Temporary traffic arrangement for work carried out on carriageway





临时行人过路安排·放置告示及路障·设定行人过路位置

Temporary pedestrian crossing arrangement by provision of signs and barriers to designate the pedestrian crossing location

- Fence off the works area with barriers, cones and lanterns properly.
- Link up and fasten at ends of barriers to form continuous barriers.
- Wear reflective jacket while working on carriageways.
- Provide approach/exit taper with signs to guide the vehicles.
- Provide plastic type barriers guarded by a line of traffic cones on carriageways.
- Provide a display board.
- Place cones and lanterns with spacing not more than 3m along the edge of traffic lanes.
- Stabilize the barriers under adverse weather conditions.
- Follow conditions imposed in Excavation Permit.



由指示牌引导车辆的临时交通安排

Temporary traffic arrangement with signs to guide the vehicles



由接驳路障和指示牌组成的临时行人通道

Temporary pedestrian route formed by connecting barriers and with direction signs

### 3 一般工地安全及工地整理 General Site Safety and Housekeeping



连接地盘入口处的路障，组成连续的路障

Barriers linking up to form a continuous barrier at site entrance



在地盘范围外提供工程资料展示板

Provision of display board for works outside site boundary



由指示牌引导车辆的临时交通安排

Temporary traffic arrangement with signs to direct the vehicles

进行接驳地下公用设施至地盘的工程时，在行车道用圆锥筒／灯具围起施工范围

Fencing off the works area with cones/lanterns at carriageway for underground utilities to be connected to the construction site

### 车辆清洗处 Vehicle Washing Bay

- 重型车辆在离开工地前必须以机械或人手清洗车轮。洗车水经沉淀处理后循环再用。
- Wheels of heavy duty vehicles to be washed mechanically or manually before leaving the site. Water to be re-circulated after sedimentation.



车辆清洗处正进行车轮清洗

Wheels of a vehicle under cleaning in a washing bay



## 临时垃圾槽

### Temporary Refuse Chute

- 临时垃圾槽须通往位于地面的垃圾收集站。
- 各标准楼层的垃圾槽设有弃置口，并装有活门，可安全快速地把建筑废料从高层送往地面。
- 当临时垃圾槽不在使用时，垃圾槽的开口应关上并锁好。
- Temporary refuse chute should be connected to a refuse collection point on G/F level.
- A refuse chute with shutter for dumping on typical floor for safe and prompt delivery of building debris from upper floors down to G/F level.
- The opening of refuse chute on each floor should be locked properly when not in use.



垃圾槽设有指示器，提醒其他使用者垃圾槽正在使用中

Refuse chute with indicator to alert other users that it is in use



垃圾槽闸门没有锁好

No locking of refuse chute doors



垃圾槽闸门没有锁好

No locking of refuse chute doors



给突出的钢筋提供安全保护

Provide safe protection to the projected steel bar



没有保护突出的钢筋

Projecting re-bars without protection

## 垃圾收集站 Refuse Collection Point

- 只可短时间在站内堆放建筑废料、垃圾和建筑物料。
- 实行废物管理系统，将废物循环再用或再造。
- 把垃圾和食物渣滓存放于有盖垃圾桶内，并每天清理。把垃圾就地分类，以供再造或再用。
- 垃圾房内的垃圾桶洒水系统可防止尘土飞扬。



### 3 一般工地安全及工地整理 General Site Safety and Housekeeping



临时垃圾箱·右边是专供存放非惰性废物的垃圾箱  
Container for temporary storage of waste, with non-inert waste specified on the right



废物管理—循环再造  
Waste management – recycling



废物管理—循环再用  
Waste management – reuse

- Keep accumulation of building debris, refuse and building materials only for a short time.
- Implementation of waste management system for reuse or recycling.
- Storage of refuse and foodstuff in covered rubbish bins for daily removal. On-site sorting of waste for recycling or reuse should be adopted.
- Water spray system in refuse store helps to prevent spread of dust.



临时垃圾收集站需要锁好  
Lock the temporary refuse collection point



废物管理—分类  
Waste management – sorting





废物管理—啡、蓝、黄垃圾分类桶  
Waste management – brown, blue and yellow colour bins



大型垃圾柜可收集更多废料  
Large waste storage cabinet for bulky collection



地盘收集厨余的处理机  
A typical food waste composting machine

## 楼洞和楼面边缘

### Floor Opening and Floor Edges

- 楼洞应铺上金属或木板封盖，以防渗水或人体或物品由洞口坠下。
- 在楼洞附近设置适当的警告牌，提醒工地人员。
- Metal or timber cover fixed over the floor opening to prevent seepage of water or falling of person or object through the floor opening to the space below.
- Proper sign to be fixed in the vicinity of floor opening as a warning signal to site personnel.



临时以水泥封盖好的楼洞  
Properly cover floor opening



封盖好的楼洞需要贴上警告标示  
Cover to the floor opening securely fixed with warning notice



提示地盘工人的警告标示  
Warning sign to alert workers

### 围栏、栏杆及屏障

#### Fences, Rails and Barrier

- 楼洞四周、楼面边缘和楼梯边应设置无间断的顶部栏杆（高度为900至1,150毫米）和中间栏杆（高度为450至600毫米）。
- 楼洞的边缘和楼面边缘应设有至少200毫米高的踢脚板。
- Continuous 900-1,150mm (H) top guard-rail and 450-600(H) intermediate guard-rails are required around floor openings, floor edges and along staircase.
- Minimum 200mm (H) toe board is needed along the edge of floor opening and floor edges.



楼梯设置  
Guard-rails along staircase



楼洞的边缘设置围栏  
Guard-rail around floor opening



楼边位置安装有适当的木制围栏  
Proper timber guard rail along edges of working floor

### 对突出金属钢枝所作的防护

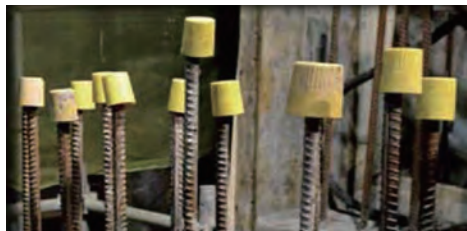
#### Protection to Protruded Metal Bar

- 视乎工人有可能坠下的高度，利用胶盖或金属槽覆盖突出的钢枝。
- Protruding steel bars are covered with plastic caps or metal troughs depending on the height of possible fall of person onto the bars.



以铝槽和胶盖覆盖金属枝  
Aluminium trough and plastic caps to cover the metal bars





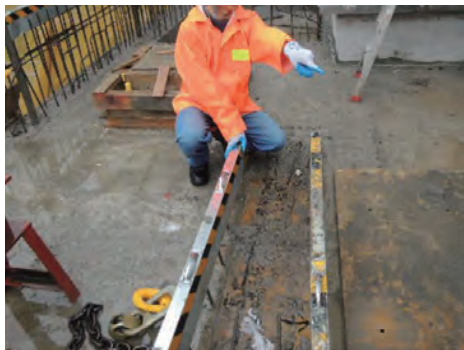
给突出钢筋的临时保护  
Provide temporary protection to protruding metal bars



附带把手的金属槽盖  
Metal trough cover with handle



对突出的螺栓作好防护  
Protection for projecting bolts



## 升降机槽 Lift Shaft

- 升降机槽所有入口处均须设置全高度的临时钢栏栅（可随时不需要钥匙便能从升降机槽内开启），以免人体或物品堕入升降机槽，危及在内工作的人员。
- 开始工作前，在升降机的所有层站、机房或入口张贴安全告示，提醒：
  - 升降机槽内有人工作，以及
  - 其他人切勿或尽量避免走近干扰，以免危害升降机工人的安全。
- 提供足够照明。
- 经常锁上升降机槽闸门。

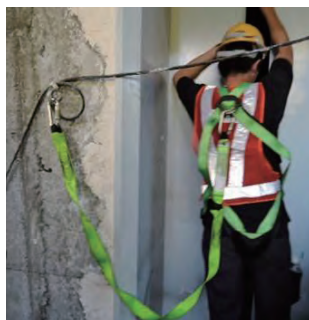


为升降机槽入口提供全高度的四页钢闸  
Provision of 4-leaf full height steel barrier to lift shaft opening

### 3 一般工地安全及工地整理 General Site Safety and Housekeeping



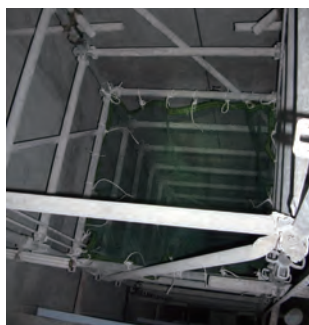
在闸门上张贴足够的安全／警告告示  
Sufficient safety/warning notices and permit-to-work posted to barrier



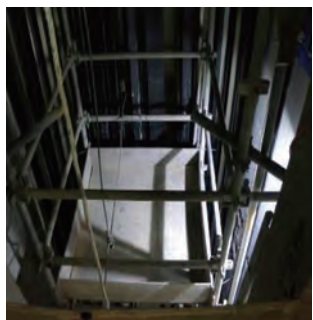
全身式安全带要挂在升降机槽外的牢固点  
Safety harness attached to anchor point outside lift shaft opening



全身式安全带要挂在升降机槽内的救生绳  
Safety harness attached to lifeline inside lift shaft



适用于升降机井道的金属棚架  
Metal scaffold for working inside lift shaft



工作平台需设有高及中栏杆及踢脚板  
Working platform closely planked with top and mid rails and toe board



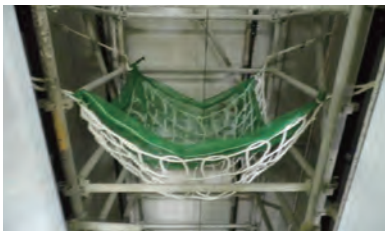
一共有三条救生绳，其中一条需靠近升降机槽入口处  
3 lifelines provided with one close to the lift opening



安全通道进入升降机槽的工作平台  
Proper access to working platform in lift shaft



- Provide secure temporary protective steel barrier of full height to all lift shaft openings (be readily openable from the inside of lift shafts at anytime without the need of separate key operations), to prevent fall of person and falling objects from endangering the workers working inside the lift shaft.
- Provide safety notices for all landings, machine room or the entrances to the lift shaft before commencing work for warning that:
  - lift installation work in progress, and
  - disturbance to the lift workers causing hazard to be avoided or at least kept to a minimum.
- Provide sufficient lighting.
- The metal barrier should be closed at all times.



提供安全网及尼龙网以保护工人高处下堕及高空坠物

Safety net and nylon mesh provided to protect against hazards of fall of persons and falling objects

- 遵守
  - 《升降机槽工程安全指引第1卷 – 施工期间直至移交予升降机安装承建商前》（建造业议会）
  - 《升降机槽工程安全指引第2卷 – 升降机安装期间直至获发占用许可证及交予发展商》（建造业议会）
  - 《升降机槽工程安全指引第3卷 – 整段楼宇占用期间》（建造业议会）
  - 《升降机槽工程安全指引第4卷 – 升降机槽内的建筑工地升降机》（建造业议会）



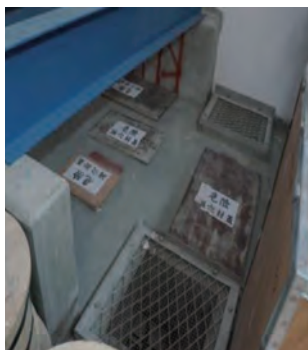
升降机顶上的工作台设有围栏及踢脚板  
Working platform with railing and toe board on lift car top

- Observe
  - Guidelines on Safety of Lift Shaft Works: Volume 1 – During Construction Stage and Before Handing Over to Lift Installation Contractor (Construction Industry Council)
  - Guidelines on Safety of Lift Shaft Works: Volume 2 – During Lift Installation Stage until Issue of Occupation Permit and Handing Over to Developer (Construction Industry Council)
  - Guidelines on Safety of Lift Shaft Works: Volume 3 – Throughout the Occupation Stage of Buildings (Construction Industry Council)
  - Guidelines on Safety of Lift Shaft Works: Volume 4 – Builder's Lift within Lift Shaft (Construction Industry Council)

### 3 一般工地安全及工地整理 General Site Safety and Housekeeping



升降机槽中有充足的照明  
Sufficient lighting for works in the lift shaft



安全封盖好的楼洞需贴上警告标示  
Cover to floor openings securely fixed with warning notice

## 噪音管制 Noise Control

- 使用机动设备进行的建筑工程、模板或棚架架设或拆卸工程、建筑物料的起卸或处理，或锤打工作，必须符合建筑噪音许可证上所列条件，才可以在周日下午7时至上午7时或于公众假日进行。
- 撞击式打桩工程必须符合建筑噪音许可证上所列条件，才可以在公众假日以外日子的上午7时至下午7时的准许时限内进行。
- 工作环境嘈杂，令工人难以沟通，易生意外。
- 所有空气压缩机必须符合指定的噪音标准，并附有噪音标签。

Form 2 (向环保署申请建筑噪音许可证)  
Form 2 (Application for a Construction Noise Permit) from  
Environmental Protection Department

取得建筑噪音许可证 (表格3—使用  
机动设备)后，方可使用列表上的设备  
Obtain construction noise permit  
(Form 3 - use of powered  
mechanical equipment) before  
using the noisy equipment





为建筑地盘设置隔音屏  
Noise screen provided for construction site



设有吸音装备的气压碎石机  
Pneumatic breaker equipped with noise absorber



进行岩石挖掘工程时设置隔音屏。  
A noise screen is provided during rock excavation.

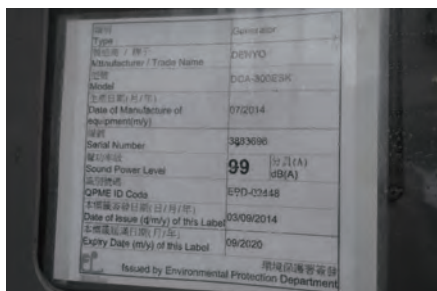
- Construction works involving powered machinery, or erection or dismantling of formwork or scaffolding, or loading, unloading or handling of construction material, or hammering activities between 7 p.m. and 7 a.m. on a weekday or anytime on a public holiday may only be carried out in accordance with the conditions as laid down in the construction noise permit.



在听觉保护区张贴警告牌  
Warning sign posted at ear protection zone

### 3 一般工地安全及工地整理 General Site Safety and Housekeeping

- Percussive piling works may only be carried out during approved hours between 7 a.m. and 7 p.m. on a day other than a public holiday in accordance with the conditions as laid down in the construction noise permit.
- Noisy working environment renders it difficult to communicate leading to accident easily.
- Air compressors shall comply with the prescribed noise emission standard and fitted with a noise emission label.



由环保署发出的优质机动设备标签  
Quality powered mechanical equipment (QPME)  
Label issued by Environmental Protection  
Department



为割碟机安装隔音和隔尘保护罩  
Sound insulation and dustproof protection guard  
provided to abrasive cutter

### 尘埃控制（隔尘网） Dust Control (Dust Screen)

- 建筑工程产生的尘埃、机器和建筑车辆排放的废气，以及化学品和易燃物料喷涂时散发的气体，可刺激眼睛及呼吸系统。
- 拆卸工程扬起的石棉、粉末和尘埃可引致肺尘埃沉着病、肺癌和矽肺病。
- 采取有效措施控制尘埃产生及散播，例如硬地施工法，以水喷洒工地通道，在工地出入口清洗车轮，以不透透的隔尘网覆盖易生尘埃物料，以水喷洒或利用隔尘罩控制易生尘埃的工序，工人应佩戴呼吸器具、口罩及护目镜等。
- Dust generated from construction work, exhaust from machinery and construction vehicles as well as gas from chemicals and combustible spraying will cause irritation to eye and respiratory system.
- Asbestos, powder and dust generated from demolition work may lead to pneumoconiosis, lung cancer and silicosis.





- Take effective measures to control generation and spread of dust, e.g. hard paved construction method, spraying water over haul road, wheel washing of construction vehicles at site entrance, covering dusty materials with dust-proof sheet, spraying water onto or using dust guard to control dust generating works procedure and use of breathing apparatus, masks and goggles etc. by workers.



防止尘埃四散的自动洒水系统  
Automatic water spraying system to control dust



在运料路上洒水，防止尘埃四散。  
Dust control by water spraying over the haul road



在地盘以人手洒水  
Manual water spraying on construction site

## 通气 Ventilation

- 在密封工作间输入鲜风或人工净化空气以循环换气，每小时至少三次。
- Circulate fresh or artificially purified air at the rate of not less than 3 air changes per hour for enclosed workplaces.



天气炎热时，为大型桩帽内的工作间提供机械通风  
Mechanical ventilation is provided to a working area inside a large pile cap during hot weather

### 温度 Temperature

- 各工作间应维持合适温度及慎防中暑。
- 为工人提供遮阳设施。
- 遵守《建造业议会刊物：在炎热天气下工作的工地安全措施指引》。
- Maintain a reasonable temperature to every workplace and beware of heatstroke.
- Provide sunlight shelter to workers.
- Observe “Guidelines on Site Safety Measures for Working in Hot Weather” (Construction Industry Council)



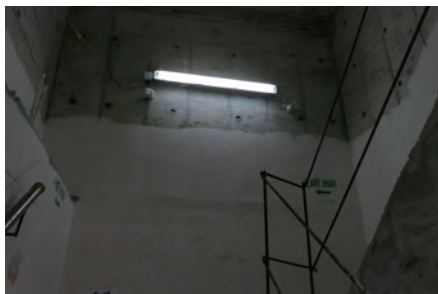
给工人提示的酷热天气警告讯息  
Hot weather warning sign for workers' alert



为工友提供挡阳设施  
Sunlight shelter for workers

### 照明 Lighting

- 确保采光的窗户和天窗清洁和不受杂物阻挡。
- 所有照明系统的安装方式以光线平均和不产生眩光为合。
- Ensure that windows and skylights used for lighting are kept clean and free from obstruction.
- Install all lighting systems in such a way as to ensure even distribution and absence of glare.



为楼梯／通道／出入口提供足够照明  
Provide adequate lighting for staircase/access/egress



## 卫生设施 Hygiene Facilities

- 为工人提供厕所。
- 为工人提供流动临时厕所。
- 为工人提供淋浴室。
- Toilet accommodations are provided for workers.
- Mobile temporary latrines are provided for workers.
- Shower rooms are provided for workers.



临时厕所／淋浴室  
Temporary latrines/shower room



流动临时厕所  
Mobile temporary latrines



建筑地盘内提供可冲厕的厕所和洗涤设施  
Flush water toilets and washing facilities provided inside building floor



太阳能热水系统（左图）为淋浴室（右图）提供热水供应  
Solar water heating system (left) to provide hot water to shower room (right)



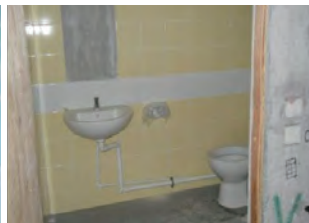
户外划设的洗手和洗鞋区  
Open hand-washing and shoes cleaning area



太阳能热水器冲身室  
Solar heat shower room



太阳能热水器冲身室的储物柜  
Solar heat shower room with locker



大楼每三层设洗手间设备  
Wet toilet at every 3 floors of domestic blocks

## 3 一般工地安全及工地整理 General Site Safety and Housekeeping

### 福利设施 Welfare Facilities

为工人提供休息室：

- 让工人用膳和进食茶点；
- 用作工地管理人员和工人的集合地点，进行安全训练（如入职训练）、早操和举办工地座谈会；以及
- 在天气炎热时供工人纾缓暑热。

为工人提供洗衣房：

- 为工人提供乾净制服保障健康；以及
- 整洁的制服可提升施工团队的形象。

Rest room provided for workers:

- Let workers take meals and tea breaks;
- Serves as a gathering place for the site management team and workers to hold safety training such as induction training, morning exercise and tool box talks;
- Provides a relief for workers from the heat stress in hot weather.

Laundry facility provided for workers

- Let workers have clean uniform to enhance their well being at work;
- Tidy uniform upkeep the image of workforce.



简单的洗衣房，装有洗衣机设备，方便工人

A simple laundry area equipped with electric-washing machines



设备齐全的休息处

Well equipped workers' rest area



工人饮水设施  
Drinking facility



休憩区鱼池  
Rest area



避暑亭  
Refreshing area



设置工人休息室  
Working resting room







## 物料贮存和清理 Storage and Removal of Materials

存放于户外地点的物料均应盖好：

- 以免雨天时积水和物料受损；
- 以防松散物料被强风吹散。
- 所有物料应以安全稳妥的方式堆放整齐。

Materials placed in external area should be properly covered to:

- Prevent water ponding and damage to the material in rainy days;
- Prevent spread of loose materials in windy days.
- All materials should be stacked neatly and in a safe manner.



存放于户外的物料均应盖好  
Properly cover materials in external area



在户外有遮蔽的地方存放物料  
Sheltered external area for placing materials



妥善遮盖／堆放物料  
Properly covered/stacked materials





### 3 一般工地安全及工地整理 General Site Safety and Housekeeping

#### 危害健康物质的管制

#### Control of Substances Hazardous to Health

- 尽量考虑以非腐蚀性物料取代腐蚀性物料。
- 该等物料的贮存室应附有警告标志。
- 应提供安全的贮存室。
- 每个容器只可贮存同一类化学品。
- 工地安全主任应对每种化学品的使用方式进行风险评估。
- 只准合格人士进入化学品贮存室。
- 只准合格人士使用该等物料。
- 根据《工厂及工业经营(危险物质)规例》的规定，盛载化学品的容器应贴有分类化学品标签。
- 必须制订应变计划和备有应急用品，并定期进行处理化学废物泄漏演习。



贮存化学物料时应妥为标签，并标明适当的类别。  
Storage of chemical materials properly labeled with appropriate sign of category



化学品标签塑胶贴  
PVC Sticker of Chemical Signs

- If possible, corrosive materials should be considered to be replaced with non-corrosive materials.
- Storage of materials should be labeled with warning sign.
- Safe storage facilities should be provided.
- Only same types of chemical materials are stored together within a container.
- Site safety officer should make risk assessment on usage of every type of chemical materials.



由合格人士存取危险物料  
Access to dangerous materials by competent person.



- Only competent person is allowed to enter the chemical store.
- Only competent person can use the materials.
- Chemical signs need to be stuck to the containers containing different kinds of chemicals according to Factories and Industrial Undertakings (Dangerous Substances) Regulations.
- A contingency plan, emergency kit and regular drills for handling of chemical waste spillage incidents are required.



只有合格人士才可进入化学品贮存室  
Only competent person allowed to enter the chemical store



化学废物放置在妥为标签的容器中  
Properly labeled container for chemical waste

## 安全标志 Safety Signage

- 善用颜色、形状和图像，让工人容易明白安全指示。
- Make use of colour, shape and graphics to let workers easily understand the message.



涂上警告条纹的安全标志  
Painted with warning strip



涂上警告条纹的安全标志  
Painted with warning strip

### 3 一般工地安全及工地整理 General Site Safety and Housekeeping

#### 体力处理操作 Manual Handling

从事建筑业，体力处理操作是不能避免的，而工作环境所潜在的危險也不少，督导人员和工人应小心处理各项工作：

- 入职前必须有适当训练。
- 工作时佩戴合适的个人防护装备。
- 重新安排需要搬运的物件。
- 尽量借助机械或辅助工具，以减少体力操作处理。
- 采取正确搬运姿势。
- 工作时要确保工作环境妥善，避免出现松脱的钻钉、未盖好的地洞或建筑物料碎屑等。
- 多做运动，强壮体能。

Construction works often involve manual handling and entail hazards in almost every operation. Supervisors and workers must carefully manage such work:

- All new workers should be properly trained.
- All workers should use appropriate personal protective equipment.
- Redesign the load.
- Use mechanical aids whenever possible to reduce the need for manual handling.
- Always use correct posture when lifting.
- Maintain good housekeeping and keep the work site free of loose nails, uncovered holes or scraps of building materials etc.
- Exercise regularly to stay in shape.



搬运大型圆形铁罐时，应使用适合的辅助工具  
When moving metal drums, use a suitable handling aid



不要勉强搬运难以抓握之物件，容易使背部受伤  
Struggling with hard-to-control items might hurt the back



辅助运输工具可减少体力处理操作时的危害  
Use of semi-automatic breaker rack to reduce manual handling operation



- 经常弯腰搬运重物，容易令背部受过大压力而受伤。
- Bending at the waist to lift items might hurt your back.

- 提取重物时应屈膝保持背部挺直，或者向他人求助合力搬运。
- Bend at the knees and keep your back straight when you lift or ask someone's help to lift the item.



- 不要勉强搬运难以抓握之物件，可能会使背部受伤。
- Struggling with hard-to-control items might hurt your back.

- 搬运大型圆形铁罐时，应使用适合的辅助工具。
- When moving metal drums, use a suitable handling aid.



- 不可勉强提举形状特殊或过大的物件，以免发生危险。
- Trying to carry awkward or bulky loads is dangerous.

- 处理大型物件如玻璃或木板时，应使用辅助工具或与他人合力搬运。
- When moving things like big panels or large panes of glass, use a cart or get someone to help.



- 独力及弯腰搬运长铁枝会使脊骨不胜负荷。
- Carry rebar by yourself would put too much strain on your back.

- 搬运长铁枝宜二人合力搬运，提举时亦应动作一致。
- Rebar should be handled by two people, both lifting in unison.



- 携带工具时应避免使背部负荷过重。
- When carrying your tools, be careful not to overload your back.

- 携带工具时可使用手推车和工具箱，既方便又安全。
- Using hand cart and sturdy box to carry your tools is easier and safer.



- 经常重覆弯腰可导致背部受伤。
- Frequent bending over can lead to back injury.

- 把物料放于方便拿取的位置。
- Arrange working materials so that they are within easy reach.



- 工地环境杂乱，容易引起危险。
- An untidy work site poses many hazards.

- 在地盘工作，必须确保工作环境安全及整理妥当，并于有危险的地方加设围栏。
- Maintain good house-keeping and fence off hazardous areas.







## 在炎热天气下工作 Working in Hot Weather

### 工作安排

- 避免长时间在高温或曝晒的环境下工作。
- 留意天气报告。
- 尽量编排工作在较清凉的时间（如清晨）和较清凉的地方（如设有荫棚／遮蔽处的地方）进行。
- 把必须穿戴个人防护装备（例如呼吸器、围裙、长袖手套）的工作，安排在较清凉的时间进行。
- 让工人先行适应高温环境，才执行全部工作。
- 提供辅助机械（例如油压机、铲车、手推车、机械吊机）以减少人手工序，减低体力需求。



### Works Arrangement

- Avoid working in hot environment or under direct sunlight for prolonged periods of time;
- Take heed of weather report;
- Reschedule works to cooler periods (such as early morning) and cooler places (such as sheltered or shaded areas) as far as possible;
- Schedule works requiring use of personal protective equipment (PPE) such as breathing apparatus, apron, long sleeve gloves to cooler times of the day;
- Enable workers to adapt to the hot environment before taking on full workload;
- Reduce the physical demand on workers by minimizing manual work through use of mechanical aids (such as hydraulic jack, forklifts, trolley, and mechanical hoists).

## 作业－休息循环及降温设备

### Work-Break Cycle and Cool Down Facilities

- 让工人定时休息和在不同工种和地点之间轮流工作，使工人可以乘凉，并减少其暴露在酷热环境下的时间。工人于下午有30分钟小休。除此之外，从五月至九月的炎热天气下工作，也让工人在上午工作时段有15分钟小休，以遵守建造业议会发出的《在酷热天气下工作的工地安全指引》。
- 在酷热时段，安排工人在清凉或有遮荫的地方休息。
- 提供淋浴／洗涤设施供清洗和冷却身体。
- 提供冷却空气设备，例如喷雾散热风扇。



高容量的吹风机可使在工作间的工人更舒  
Large blower with high air flow rate to workplace

- Enable workers to cool down and reduce their exposure to hot environment through taking regular breaks and rotating duties and worksites; Observe the Construction Industry Council – Guidelines on Site Safety Measures for Working in Hot Weather, Version 2. On top of regular 30-minute rest period for workers in the afternoon, allow a 15-minute break for workers in the morning during summer months from May to September.
- Make arrangements for workers to take rest in cool or shady place during hot periods;
- Provide shower and washing facilities for washing and external cooling;
- Provide cooling devices such as cooling fans with atomized water spray.

### 饮料 Drinks

- 在方便的地点设置饮水站，提供足够的清凉（摄氏10-15度）饮用水，让工人随时取用。
- 鼓励工人多喝水，以补充因流汗而失去的体液和电解质（一般而言，于高温环境下工作，每小时便应饮用最少半公升水）。
- 不应饮用含酒精饮料，以免令身体脱水。
- 避免饮用含咖啡因的饮料，例如茶和咖啡。咖啡因有利尿作用，会增加水分流失。
- 充分饮水以补充身体水分，但不宜过多以免电解质失衡。



需提供充足饮用水给在闷热的户外工作工人  
Plenty of water provided near workplace

- Provide sufficient cool (10-15° C) drinking water at easily accessible drinking points;
- Encourage workers to take plenty of water to replenish the body fluid and electrolytes lost through sweating (in general, a worker will need to drink at least half a litre of water each hour while working under hot weather);
- Prohibit consumption of alcoholic drinks which could dehydrate the body;
- Avoid drinks containing caffeine (such as tea or coffee) which are diuretic and may aggravate loss of body fluids;
- Drink adequate but not excessive water to replace body fluids since excess can result in electrolytes imbalance.





## 衣服及防护装备 Clothing and Protective Equipment

- 鼓励工人穿着浅色、宽松、天然物料的衣服（以减少吸收热能和增强散热效果，加快汗水挥发），而长袖衣服可减低户外工作时皮肤在阳光下曝晒的机会。然而，过分宽松的衣服或会被机器转动部分缠绕，不应穿着。
- 鼓励工人戴宽边的头盔，对面部、颈及背部有效佳的遮荫保护。

- Encourage workers to keep their shirts on and to wear clothing that are light-coloured, loose-fitting, made of natural materials (to minimize heat absorption and enhance heat dissipation; to enhance perspiration) and long-sleeved (to minimize exposure of the skin to sunlight when working outdoors). Clothing that is too loose is not suitable because of the risk of entangling in the moving parts of machines.



提供有吸热少和汗水挥发强之特性的新款工作服，适合在炎热户外工作的工人  
New type of clothing with less heat absorption and enhanced perspiration feature for workers under hot weather

- Encourage the use of helmet with broad brim to provide better shade to the face, neck and back.

## 在太阳直接照射的情况下工作 Working under Direct Sunlight

- 在地面及阳光直射的楼面工作时，尽可能提供荫棚／遮蔽处。鼓励工人穿着长袖和宽松的恤衫，以及要求工人在外露的皮肤上涂抹最少具太阳防护指数15的防晒油。



- Provide shade/shelter where possible on ground level or floors exposed to sunlight; encourage workers to wear long-sleeved, loose-fitting shirt or other top on; ask workers to apply sunscreen of sun protection factor not less than 15 on exposed skin.



工人戴上配有遮阳设备的安全帽在阳光下工作  
Worker with sunshade facility working under sunlight



安全帽下配上不合规格的遮阳巾  
Helmet on top of make shift sunshade (bad example)

## 在通风差劣的情况下工作

**Working in Areas with Poor Ventilation**

- 让工人与热源保持距离。如无法隔离，则应以隔热材料将热源分隔，把发出的热量减至最低。
- 用排气管或其他合适设备把热空气排出工作地点。
- 使用风扇／吹风机保持空气流通。



使用风扇／吹风机保持工作地点空气流通  
Adequate ventilation for the works area by fans or blowers

- Keep workers away from heat sources or, where this is not possible, insulate the heat sources to minimize heat radiation;
- Remove hot air from the works area by exhaust pipes or other suitable means;
- Ventilate the works area by using fans or blowers.

## 急救程序及设备

**First Aid Procedures and Facilities**

- 制定急救及紧急应变程序，并透过讲座和定期演习，向工地监督人员及工人提供适当培训。如有工人出现与高温相关的失调徵状，应即时施救。
- Develop first aid and emergency procedures and provide appropriate training on these to site supervisors and workers through talks and regular drills; and provide first aid immediately to any workers who show symptoms of heat-related disorders.



按照安全计划书的内容，为可能发生的紧急事件提供合适的应变操作及训练  
Provide appropriate training and practice on emergency matters according to the safety plan

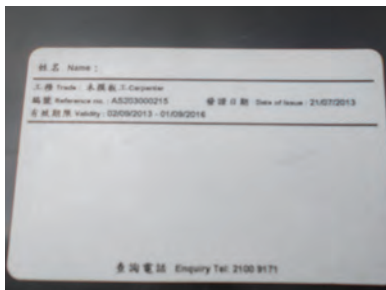
## 银卡（深造级安全训练）

**Silver Card (Advanced Safety Training)**

- 银卡是新工程合约的其中一项要求，规定从事指定工种的工人必须修毕相关工种的深造级安全训练课程。其目的是加强工人的安全作业意识及认识相关的防范措施。
- 指定工种的工人必须持有有效银卡，才可以在房委会的地盘内工作。
- 现时，建造业议会提供以下银卡课程：(1)髹漆装饰工；(2)木模板工；(3)拆卸工（建筑物）；(4)水喉匠；(5)钢筋屈扎工；(6)批荡工和铺瓦工；(7)竹棚工和金属棚架工；(8)工地建材索具工；(9)幕墙工；(10)升降机技工；(11)塔式起重机组装工（安装、拆卸及升降）；(12)隧道工。



- Silver Card, which is a contractual requirement for all New Works contracts, is an accreditation for workers of specific trades who have satisfactorily completed advanced training courses on safety geared to specific trade practices in order to enhance their safety awareness and vigilance for accident prevention.
- Workers of specified trades on HA's sites must be the holders of valid Silver Cards.
- CIC provides Silver Card training for: (1) Painter and Decorator; (2) Carpenter; (3) Demolition Worker (Building); (4) Plumber; (5) Bar Bender and Fixer; (6) Plasterer and Tiler; (7) Bamboo and Metal Scaffolder; (8) Construction Materials Rigger; (9) Curtain Wall Installer; (10) Lift Mechanic; (11) Tower Crane Worker (Erecting, Dismantling, Telescoping and Climbing); and (12) Tunnel Worker.



银卡证书  
Silver card

## 相关条例和规例

### Relevant Ordinances and Regulations

- 《空气污染管制条例》及附属规例
- 《工厂及工业经营条例》
- 《建筑地盘（安全）规例》
- 《危险品条例》及附属规例
- 《工厂及工业经营（易燃液体的喷涂）规例》
- 《工厂及工业经营（保护眼睛）规例》
- 《工厂及工业经营（危险物质）规例》
- 《工厂及工业经营（安全管理）规例》
- 《消防条例》
- 《气体安全条例》及附属规例
- 《噪音管制条例》及附属规例
- 《职业安全及健康条例》
- 《辐射条例》及附属规例
- 《废物处置条例》及附属规例



- Air Pollution Control Ordinance and Regulations.
- Factories and Industrial Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Dangerous Goods Ordinance and Regulations.
- Factories and Industrial Undertakings (Spraying of Flammable Liquids) Regulations.
- Factories and Industrial Undertakings (Protection of Eyes) Regulations.
- Factories and Industrial Undertakings (Dangerous Substances) Regulations.
- Factories and Industrial Undertakings (Safety Management) Regulation.
- Fire Services Ordinance.
- Gas Safety Ordinance and Regulations.
- Noise Control Ordinance and Regulations.
- Occupational Safety and Health Ordinance.
- Radiation Ordinance and Regulations.
- Waste Disposal Ordinance and Regulations.

### 相关安全标准、工作守则、安全指引和指南

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

- 《安全帽的拣选、使用及保养指引》（劳工处）
- 《建筑物拆卸作业守则》（屋宇署）
- 《在酷热天气下工作的工地安全指引》（建造业议会）
- 《地盘车辆及流动机械安全指引》（建造业议会）
- 《处理、运送及处置石棉废物的工作守则》（环境保护署）
- 《包装、标签及存放化学废物的工作守则》（环境保护署）
- 《道路工程的照明、标志及防护工作守则》（路政署）
- 《处理在建筑物内的含石棉物料》（专业守则PN2/97）（环境保护署）
- 《化学品使用过程的危险及安全指南》（劳工处）
- 《建筑活动发出的噪音—法定》（专业守则PN1/93）（环境保护署）
- 《建筑活动发出的噪音—非法定》（专业守则PN2/93）（环境保护署）
- 《个人防护用具须知》（职业安全健康局）
- 《地盘工友安全手册》（劳工处）
- 《小心使用手工具》（劳工处）
- 《建造业体力处理操作》（职业安全健康局）
- 《升降机槽工程安全指引：第1卷 - 施工期间直至移交予升降机安装承建商前》（建造业议会）
- 《升降机槽工程安全指引：第2卷 - 升降机安装期间直至发占用许可证及交予发展商》（建造业议会）
- 《升降机槽工程安全指引：第3卷 - 整段楼宇占用期间》（建造业议会）
- 《升降机槽工程安全指引：第4卷 - 升降机槽内的建筑工地升降机》（建造业议会）



- Guidance Notes on the Selection, Use and Maintenance of Safety Helmets. (LD)
- Code of Practice for Demolition of Buildings. (BD)
- Construction Industry Council – Guidelines on Site Safety Measures for Working in Hot Weather. (CIC)
- Construction Industry Council – Guidelines on Safety of Site Vehicles and Mobile Plant. (CIC)
- Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste. (EPD)
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. (EPD)
- Code of Practice on the Lighting, Signing and Guarding of Roadworks. (HyD)
- Handling of Asbestos Containing Materials in Buildings. (Practice Note PN2/97) (EPD)
- Hazards During Chemicals in Use and Safety Guidelines. (LD)
- Noise from Construction Activities – Statutory. (Practice Note PN 1/93) (EPD)
- Noise from Construction Activities – Non-Statutory. (Practice Note PN 2/93) (EPD)
- Guidelines for the use of Personal Protective Equipment. (OSHC)
- Safety Handbook for Construction Site Workers. (LD)
- Working Safely with Hand Tools. (LD)
- Construction Site Safe Manual Handling. (OSHC)
- Guidelines on Safety of Lift Shaft Works : Volume 1 – During Construction Stage and Before Handing Over to Lift Installation Contractor (CIC)
- Guidelines on Safety of Lift Shaft Works : Volume 2 – During Lift Installation Stage until Issue of Occupation Permit and Handing Over to Developer (CIC)
- Guidelines on Safety of Lift Shaft Works : Volume 3 – Throughout the Occupation Stage of Building (CIC)
- Guidelines on Safety of Lift Shaft Works : Volume 4 – Builders' Lift within Lift Shaft (CIC)

## 4 安全使用机械设备 Safe Use of Plant

### 危害识别 Hazards

- 流动起重机／机器翻侧
- 吊臂／起重钢缆折断
- 吊臂触及架空电缆，导致触电
- 吊重物下堕（吊重物松脱、吊索损坏等）
- 撞倒工人或阻塞
- 机械设备／机器欠缺维修保养，引致危险事故
- 人体下堕
- 被机器或工具所伤
- 火警、烧伤
- 触电
- 接触危险物品
- 滑倒、绊倒或跌倒
- 体力处理操作时受伤
- 噪音



流动起重机翻倒  
Toppling of mobile crane

- Overturning of mobile crane/machine;
- Breakage of jib/lifting cable;
- Hitting overhead power cables by jib causing electrocution;
- Falling objects (from the material being lifted, slings breakage etc.);
- Striking person or obstruction;
- Dangerous occurrence due to mal-functioned or poorly maintained plant/machine;
- Fall of person;
- Being injured by machinery or tools;
- Fire, burning;
- Electrocution;
- Hazardous substance;
- Slip, trip and fall;
- Being injured (manual handling);
- Noise.

### 塔式起重机的架设、拆卸及升降

### Erecting and Dismantling, Telescoping and Climbing of Tower Crane

- 把塔式起重机运送到工地前，须由一名合资格机械工程师（检验员）发出：
  - 运送前配件核实报告；
  - 运送前配件检查报告；
  - 锚固等塔式起重机主要和重要配件检验证书。
- 在架设／拆卸塔式起重机前，安全主任须咨询注册机械／结构工程师，以便进行风险评估。



- 由具备相关资历、经验和资格的工程师监督。
- 工人／操作员必须按照风险评估报告（须备有中文版本）和塔式起重机制造商的指示进行有关工作。
- 在架设塔式起重机时，必须把工作地点围封。
- 使用塔式起重机的工人／操作员须曾受相关训练、具备足够经验／知识，以及懂得吊运手号，并由一名具备至少10年操作同型号塔式起重机经验的合资格人士监督。
- 遵守劳工处发出的《安全使用塔式起重机工作守则》及建造业议会发出的《塔式起重机安全指引》。

- Before delivery of a tower crane to a site, a competent mechanical engineer (examiner) is required to issue
  - a report on pre-delivery verification of components;
  - a report on pre-delivery checking;
  - certification of tower crane main and critical parts such as anchorage, etc.
- Before erecting/dismantling of a tower crane, safety officer should consult a registered mechanical/structural engineer to conduct a risk assessment.
- To be supervised by an engineer with relevant qualification, experience & competence.
- The workers/operators should work in accordance with the risk assessment report (available with Chinese Version) and the instruction of tower crane manufacturer.
- During erection of a tower crane, the venue should be fenced off.
- The crew of tower crane workers/operators should be trained, have sufficient experience/knowledge, understand the signal code and to be supervised by a competent person of at least 10 years of relevant experience in operating tower crane on the same model line.
- Observe “Code of Practice for Safe Use of Tower Cranes” issued by the Labour Department and “Guidelines on Safety of Tower Cranes” issued by the Construction Industry Council.



架设中的塔式起重机  
Erection stage of tower crane



重要部件机查  
Critical Parts Inspection

## 4 安全使用机械设备 Safe Use of Plant

### 与安全吊运作业有关的人员

#### Personnel Involved in Safe Lifting Operations

- 塔式起重机机主应委聘「合格机械工程师」为起重机进行运送前检验，然后把起重机运往建筑工地架设。
- 总承包商应委聘「监督工程师」控制、监控和督导塔式起重机的操作。
- 「合格检验员」负责定期进行起重机械或起重装置的检验和测试。他们需要：
  - 由进行起重工序的东主或起重机械／起重装置的拥有人指定；
  - 属指定有关界别的注册专业工程师；
  - 曾受适当的训练及有实际经验。
- 「合格的人」负责定期进行起重机械或起重装置的检查。他们需要：
  - 由进行起重工序的东主或起重机械／起重装置的拥有人指定；
  - 曾受相关训练及有实际经验。
- 「起重机操作员」负责正确及安全地操作起重机，并能够利用手号与讯号员沟通。他们需要：
  - 年满18岁及持有有效起重机操作证明书；
  - 身体及体格健全；
  - 熟识沟通讯号。
- 「吊索工」负责将荷物装上及卸下起重机。他们需要：
  - 曾受基本安全吊重训练；
  - 正确地选择及使用起重装置；
  - 与讯号员联络来指示起重机的安全移动。

1  紧急停止 Emergency stop	2  停止 Stop	3  准备驱动机械 Ready to move	4  驱离讯号员 Move away from the signaller	5  向讯号员驱进 Move towards the signaller	6  近距离慢行 Move slowly by indicating distance	7  机械转向伸手方向移动 Move towards the hand stretched direction
8  机械转向伸手方向移动 Move towards the hand stretched direction	9  旋转盘向伸手方向转动 Swing towards the hand stretched direction	10  旋转盘向伸手方向转动 Swing towards the hand stretched direction	11  提升吊臂 Raise the boom	12  慢动作提升吊臂 Raise the boom slowly	13  下降吊臂 Lower the boom	14  慢动作下降吊臂 Lower the boom slowly
15  提升吊臂下降吊物 Raise the boom and lower the load	16  下降吊臂提升吊物 Lower the boom and raise the load	17  吊臂伸出 Extend the boom	18  吊臂缩入 Retract the boom	19  使用主吊钩 Use the main hoist	20  使用副吊钩 Use whip line	21  吊钩下降 Lower the hoist
22  吊钩慢慢下降 Lower the hoist slowly	23  吊钩上升 Raise the hoist	24  吊钩慢慢上升 Raise the hoist slowly	25  停止所有操作 Stop everything			

讯号员使用的手号  
Signals used by signaller





- 「讯号员」负责利用手号将吊索工的讯号传递给起重机操作员。凡起重机操作员不能清晰地看见所运载的负荷物或起重机之吊钩便须雇用讯号员。他们需要：
  - 曾受有关安全起重操作的适当训练；
  - 能够指示起重机及负荷物的移动。
- 「吊运督导人员」负责直接监督整个货车式起重机吊运作业。他们需要：
  - 由进行起重工序的东主或起重机械／起重装置的拥有人指定；
  - 在监管吊运操作上应曾接受适当训练和拥有足够经验；
  - 向相关吊运人员解释该次吊运计划和操作；
  - 获授权停止任何不安全吊运作业。
- The owner of a tower crane should engage a “Competent Mechanical Engineer” (CME) to conduct pre-delivery and pre-erection examination of tower crane.
- The contractor should appoint a “Supervising Engineer” to control, monitor and supervise operations on tower cranes.
- The “competent examiner” is responsible for regular examinations and tests of the lifting appliances or lifting gears, and shall be:
  - appointed by the employer or the owner of the lifting appliances/lifting gears;
  - a registered professional engineer within a relevant discipline;
  - properly trained with relevant practical experience.
- The “competent person” is responsible for regular inspections of lifting appliances or lifting gear, and shall be:
  - appointed by the employer or the owner of the lifting appliances/lifting gear;
  - properly trained with relevant practical experience.
- The “crane operator” is responsible for operating the crane correctly and safely, and can communicate with a signaller using hand signals, and shall:
  - be at least 18 years of age and hold a valid crane operation certificate;
  - be physically fit; and
  - be familiar with signal code for communication.
- The “slinger” is responsible for attaching and detaching the load to and from the crane, and shall:
  - have received appropriate training on general safe lifting operations;
  - be capable of selecting lifting gear suitable for the loads; and
  - liaise with the signaller for directing the movement of the crane safely.
- The “signaler” (banksman) is responsible for relaying the signal from the slinger to the crane operator. The signaller is required when the crane operator does not have a clear and unrestricted view of the load carried by the crane or the hook, and shall:
  - have received appropriate training on general safe lifting operations;
  - be able to direct the movement of the crane and loads.



讯号员利用无线电沟通，以确保工序安全进行  
Signaler using radio means for a safe lifting operation

## 4 安全使用机械设备 Safe Use of Plant

- The “lifting supervisor” is responsible for supervising the whole lifting operation of lorry-mounted crane, and shall:
  - be appointed by the employer or the owner of the lifting appliances / lifting gear;
  - have adequate training and experience on monitoring of lifting operation;
  - brief the lifting team members of the lifting plan and operation;
  - have authority to stop the lifting operation in case of abnormality.



### 塔式起重机吊运操作 Tower Crane Lifting

应做事项：

- 起重区域内的地面层须设置中英文警告标志。
- 塔式起重机操作员须持有塔式起重机操作员证明书，并具备足够经验。
- 须定期详细检查、检验及测试塔式起重机。
- 必须备有塔式起重机操作员证明书和起重机核查表，方可进行起重操作。
- 塔式起重机操作员必须能清楚接收讯号员发出的讯号。
- 进行起重操作时，塔式起重机操作员必须能够透过闭路电视观看吊物。



标明安全操作负荷  
Indication of safe working load



闭路电视摄录机设置在吊运区上方，协助塔式起重机操作员进行吊运操作  
CCTV camera with recording function positioned above lifting zone to assist tower crane operator to carry out the lifting



塔式起重机操作员藉闭路电视屏幕监察吊运区情况  
CCTV system helps the tower crane operator to monitor the situation of lifting area



- 进行起重操作时，最好由讯号员与塔式起重机操作员进行沟通。
- 除手号外，利用对讲机或流动电话作为沟通工具是可取的。
- 确保安全负荷自动显示器已安装妥当。
- 提供安全的上落途径。
- 确保吊运路线内不会碰撞任何障碍物。
- 避免在塔式起重机的吊运工作范围互相重迭。
- 吊运时应尽量以较慢速度移动。
- 经常留意吊臂的操作高度及吊钩距离。
- 当停止操作时，应将吊运车停放在最小的半径距离内，并将吊钩升至最高位置。
- 在台风来袭时，应将吊臂转动到背向台风方向及松开制动器让吊臂自由摇动。

## DOs

- Warning signs in both Chinese and English posted to areas at ground level within lifting zone.
- Tower crane operator should possess tower crane operator certificate and with sufficient experience.
- The tower crane should be inspected, thoroughly examined and tested periodically.
- Tower crane operator certificate and inspection form of the tower crane are prerequisite to operation of the tower crane.
- The tower crane operator should be able to receive signal clearly from the signaler.



当塔式起重机吊钩进入吊运区之预设高度，设于吊运区之便携式警报系统便发出警号提醒附近工友  
Portable alarm system installed at lifting zone will emit alarm to alert workers in vicinity when the lifting hook encroaches a preset height of the lifting zone



利用有声警号／可视警报提醒范围内正进行吊运工作

Warning signs together with both audio and visual signals to alert workers if lifting is in progress

## 4 安全使用机械设备 Safe Use of Plant

- The tower crane operator should be able to view the scene of the lifting object through CCTV system during lifting operation.
- It is better for the signaler to communicate with the tower crane operator during the lifting operation.
- Besides signaling by hands, other means of communication such as walkie talkie or mobile phone are advantageous.
- Ensure the automatic safe load indicator has been installed.
- Provide safe means of access and egress.
- The lifting routes do not collide with any object.
- Eliminate overlapping or interference zones between two or more tower cranes.
- Travel speed to be as slow as possible.
- Be aware of the height of lifting, the length of the crane's trolley.
- When the tower crane is not in operation, the crane's trolley to be positioned near the tower at minimum radius, with the hook raised to its highest position.
- During typhoons, the jib to be set to the typhoon's leeward side with the brake released allowing the jib to swing freely.

### 「不可做」事项：

- 起重负荷不可超出安全上限。
- 吊运路线不可在任何建筑物或人的上方经过或超出工地界线。
- 不可让吊钩过份下降而碰上地面或吊运物，否则悬挂吊钩之吊索可能失去拉力而从滑轮松脱。
- 切勿在以下情况进行起重操作：
  - 超出安全起重负荷；
  - 讯号不清晰；
  - 吊物下面有人；
  - 有人在吊物上；
  - 吊物埋在地下；
  - 吊物以倾斜角度往上拉；
  - 吊物没有系紧；
  - 吊物由松脱部分组成；
  - 吊物的重量不明；及／或
  - 已悬挂强风信号。



双重资料牌显示其操作负荷  
Double layers information tags

### DON'Ts

- Lifting load not to exceed safe limit.
- Lifting routes should not come across any building or pass over any person or exceed the site boundary.
- Do not lower the lifting hook too low and touch the ground or the load otherwise the lifting wire will lose tension and easily come off the pulley.



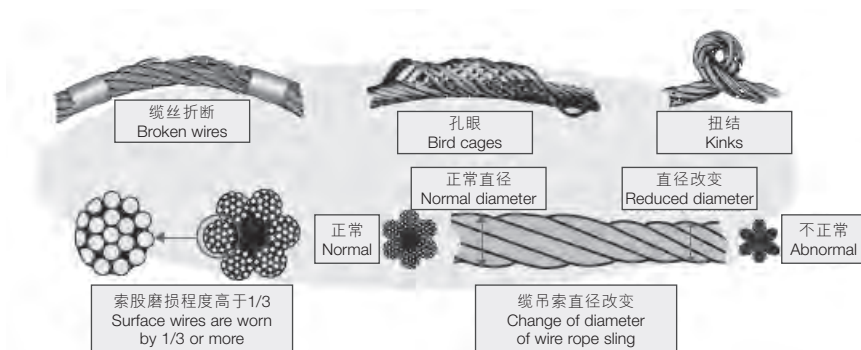
- Do not carry out lifting operations under the following circumstances:
  - safe working load is exceeded;
  - signaling is unclear;
  - there is a person below the object being lifted;
  - there is a person on the object being lifted;
  - the object being lifted is buried below ground;
  - the object being lifted is pulled up at an inclined angle;
  - the object being lifted is not securely tied up;
  - the object being lifted consists of loose parts;
  - the weight of objects being lifted is unknown; and/or
  - strong wind signal is hoisted.

## 起重装置 Lifting Gear

- 起重装置指链吊索、吊索、吊钩、板钳、钩环、转环或有眼螺栓。
- 起重装置在吊重工序中不可缺少，其作用是将物件系紧和悬挂在起重机上。所有吊重装置须由合资格检验员进行测试及刻有安全操作负荷(SWL)。
- Lifting gear means a chain sling, rope sling, hook, plate clamp, shackle, swivel or eyebolt.
- Lifting gear play an important part in the lifting operation. The function is to tie the objects tightly and hang them on the crane. All lifting gear shall be tested by competent examiners and suitably marked with a Safe Working Load (SWL).

## 缆吊索 Wire Rope Slings

- 如发现以下情况，应停止使用及适当地弃置：
- The wire rope sling shall not be used and shall be disposed if they are:





## 4 安全使用机械设备 Safe Use of Plant

- 选择合适的缆吊索。
- 切勿使用破损的缆吊索。
- 吊重时不可超出安全操作负荷。
- 须进行定期检查。
- 不可突然提升。
- 如吊运时使用多于一条吊索，应注意吊索之间的角度。



- Use only suitable wire rope slings.
- Never use damaged wire rope slings.
- During lifting, the Safe Working Load must not be exceeded.
- Regular inspections shall be conducted.
- Sudden elevation is not allowed.
- If more than one wire rope sling is used in lifting, pay attention to the angle between the slings.



起重装置 – 缆吊索及链吊索  
Lifting gear – rope sling & chain sling

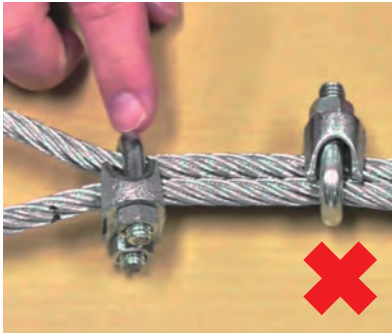
### 缆吊索 – 螺丝钢码扣 Wire Rope Slings – Cable Clip

钢码扣必须按以下方式妥善地安装：

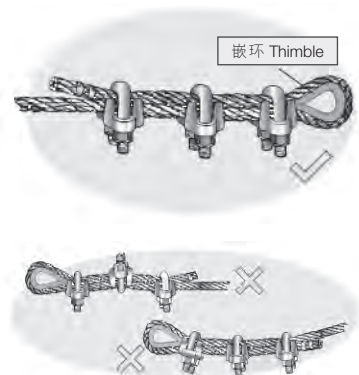
- 缆吊索须装有嵌环。
- 最少有三个钢码扣。
- 安装方向要正确。
- 钢码扣之间的距离须相同。

The cable clip shall be properly installed according to the following points:

- The wire rope sling to be equipped with thimble.
- A minimum of 3 cable clips.
- Correct direction of installation.
- Same distance between the cable clips.

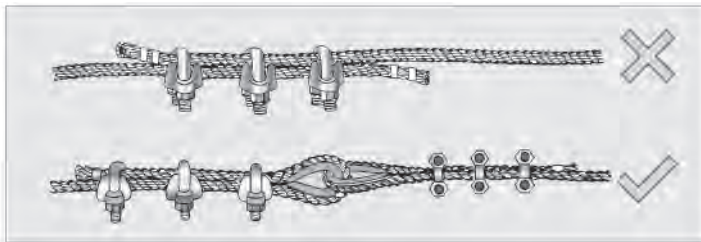


缆吊索安装钢码扣方法不正确  
Rope sling with 3 cable clips wrongly installed



连接绳吊索方法：

Method of connecting the wire rope slings:



## 链吊索 Chain Slings

链吊索由合金制造，如其中一节出现问题会影响整条链吊索的安全性。已损坏的链吊索会突然折断，不像缆吊索般容易察觉。因此，吊运时应尽量选用缆吊索。

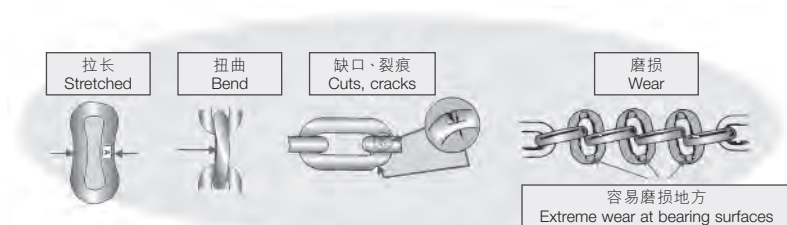
Chain slings are made of alloys. The entire chain becomes unsafe if problems arise in any section. A damaged chain sling will suddenly break and the damage is not as easily detectable as compared to wire rope slings. Therefore, a wire rope sling should be selected wherever possible for lifting.



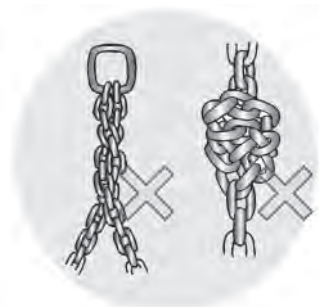
应使用有颜色标示的链吊索  
Colour code applied for chain sling

## 4 安全使用机械设备 Safe Use of Plant

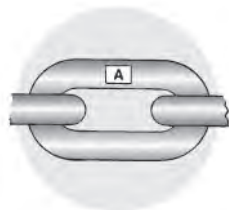
- 如遇以下情况，便应弃用。
- The chain sling shall not be used under the following conditions:



- 不可使用普通链吊索进行吊重工作。
- 不可超出安全操作负荷(SWL)。
- 不可打结或使用螺栓或其他工具缩短链吊索的长度。
- 链吊索没有弹性，在吊运时应避免受到撞击。
- 不应使用锤击打以图令变形的链吊索回复原状。
- 应选购刻有“A”字的链吊索，这是适合一般用途的最佳链吊索。
- 须进行定期检查。



- No ordinary chains shall be used for lifting.
- The Safe Working Load (SWL) shall not be exceeded.
- No knots, bolts or other tools that shorten the chain length shall be used.
- Chain slings have no flexibility, so striking objects shall be avoided while lifting.
- Do not use hammers to reshape a deformed chain sling.
- When purchasing chain slings, those marked “A” shall be selected as they are of premium for normal use.
- Regular inspections shall be conducted.



### 钩环（塞古） Shackle

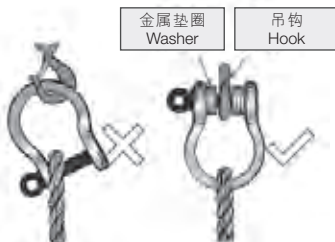
- 不可用普通螺栓代替原有的钩环杆。
- 确保螺栓杆完全锁上。
- 不应使用螺栓杆类形的钩环，因为吊物摆动时吊索可能令螺栓杆松脱。
- 在吊运时不可令钩环侧向一边。
- 钩环杆应经常扣在吊钩上。
- 可使用金属垫圈固定钩环位置。



起重装置 – 钩环（塞古）  
Lifting gear – Shackle



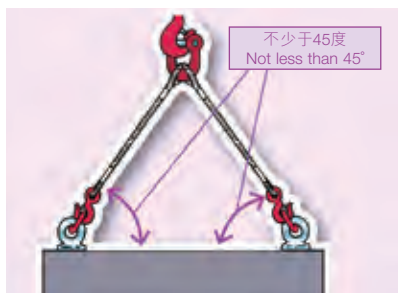
- Never replace the shackle pin with a bolt.
- Ensure the pin is totally locked.
- Do not use screw pin shackles because the sling might unscrew the pin arising from load shift.
- During lifting, shackles shall not lean to one side.
- Shackle pins must always be attached to the hook.
- Washers may be used to centre the shackle.



吊钩与复式吊索支脚之间须使用钩环  
Shackle is needed between the lifting hook and multiple sling legs

## 有眼螺栓 Eye Bolts

- 不可直接将吊钩扣在有眼螺栓上。
- 普通的有眼螺栓只可用于垂直提升。
- 项圈有眼螺栓的提升角度不可小于45度。
- 应使用金属垫圈固定有眼螺栓。
- 不可使用同一条吊索穿过两个有眼螺栓。
- The hook shall not be directly fixed on to the eye bolt.
- Plain eye bolts only apply to vertical lifting.
- The angle of lifting of shoulder eye bolts should not be less than 45°.
- Washers may be used to ensure that the shoulder eye bolt is firmly in contact with the surface.
- Never use a sling through a pair of eye bolts.



## 4 安全使用机械设备 Safe Use of Plant

### 吊钩 Hooks

- 吊钩是吊运工序中不可缺少的起重装置。吊钩种类繁多，可配合不同的吊运用途。
- 所有吊钩均应装上安全扣（特别设计的吊钩除外）。
- 装有转环的吊钩适用于须让负荷物转动的吊运工作。
- 选用合适类型和大小 的吊钩。
- 不可缚上或除下安全扣。
- 吊运时应保持吊钩垂直，如吊钩侧向一方可影响吊钩之安全操作负荷。



为吊钩的安全扣加装保险扣  
Additional safety lock is added to the safety latch of hook



吊钩上的一般安全扣  
Normal safety latch of a hook

- Hooks are a vital part of lifting gear with variety for different lifting purposes.
- All hooks to be equipped with safety latches (other than the specially designed hooks).
- Hooks with swivels can allow loads to revolve during lifting operation.
- Select hooks of suitable type and right size for application.
- Do not tie or remove the safety latches.
- Maintain the hook in a vertical position. If the hook is eccentrically loaded, the Safe Working Load will be reduced.



吊钩及钩环（塞古）妥善的存放  
Proper storage of hooks and shackle





## 吊梁 Spreader Beams

- 吊梁一般用于吊运较长的物件。
- 吊运的重量须计算吊梁的重量。
- 每个吊重连接点均不可超出安全操作负荷。
- Spreader beams are commonly used for lifting long loads.
- The weight of spreader beams shall be included as part of the lifting load.
- Each of the contacted points shall not exceed the SWL.



建筑地盘常用的吊梁  
Commonly used spreader beams on construction site

## 为吊运工字桩特制的起重装置 Tailor – designed Lifting Gear for H-pile

- 切勿超出装置的安全操作负荷
- 提供相关训练并确保工人明白及掌握到安全的固定方法和吊运操作
- 依从制造商的建议及规范作定期检查及维修
- Never exceed the designed SWL
- Provide user training and ensure that workers possess adequate knowledge and are competent for a safe fixing/lifting.
- Periodic inspection and repair according to manufacturer's instruction/specification.



可扣紧工字桩末端的特制起重装置  
Lifting gear tailor designed to clip the end of H-pile

## 色码制度 Colour Coding System








- 使用色码制度标示起重装置已通过检查，适合在指定期间安全使用。
- 钩环按色码髹上指定颜色。
- 吊索须附有护垫，以免轻易被吊物的锋利边缘损坏。
- 起重工字梁按色码髹上指定颜色。
- 必须定期告知工人色码的资料。



为方便工人，张贴关于色码的通告于当眼处  
Posting of colour coding system for giving guidance to workers

## 4 安全使用机械设备 Safe Use of Plant

### 起重装置辨色定期检查表 Colour Code System on Lifting Gears

一月至三月 Jan - Mar	蓝 BLUE	
四月至六月 Apr - Jun	黄 YELLOW	
七月至九月 Jul - Sept	绿 GREEN	
十月至十二月 Oct - Dec	橙 ORANGE	
不能再使用 待移离工地 To be removed from the site	红 RED	
工具待验 Equipment under quarantine	白 WHITE	
不可作吊重用途 Not used for lifting purpose	黑 BLACK	

本季检查颜色为

The colour coding in this quarter is



附有色码的起重装置

Lifting gear with colour code provided

- Colour code system to show that the lifting gear has been checked and can be used safely in the prescribed period.
- Shackles shall be coated with prescribed colour code.
- Slings need to be equipped with protective pad to avoid being damaged easily by sharp edge of the lifting materials.
- Lifting I-beam shall be coated with prescribed colour code.
- Workers should be informed regularly of the colour code system.

### 流动起重机 Mobile Crane

选择合适的起重机时应考虑下列因素：

- 负荷物的重量和体积。
- 吊重高度和负荷物移动的距离及范围。
- 吊重的次数及频率。
- 所需使用的时间。
- 地面情况。
- 其他特别因素。
- 起重机的测试及检验均须由合资格检验员进行，而日常的检查则须由合资格的人负责。所有测试、检验及检查报告和证明书均须妥为保存。
- 吊运时不可超出安全操作负荷。
- 必须定期维修保养起重机，以维持机件的良好操作状态。



吊运时不可超出安全操作负荷

Lifting load not to exceed the SWL

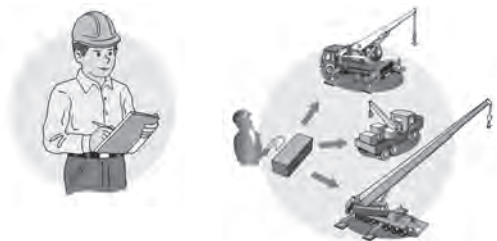


Consider the following factors in selection of cranes:

- Weights and dimensions of loads
- Height of lifting and distances/areas of the load movement
- Number and frequency of lifting.
- Period of time for the lifting operation.
- Ground conditions.
- Other special factors.
- Competent examiners test and examine the cranes and competent person regularly inspects the cranes. All testing, examination, inspection reports and certificates shall be properly kept.
- Do not exceed the Safe Working Load.
- Provide regular maintenance and keep the cranes in good operating conditions.



起重机上清楚标示安全操作负荷  
Safe working load clearly marked on the crane



装在履带起重机的爬梯  
Access ladder installed at crawler crane

## 货车式起重机 Mobile Crane (Lorry-mounted)

- 这类流动起重装置既方便又安全。在移动起重机到其他地方使用时，除可省却装起重机上货车和从货车卸下的工作外，亦无须利用货车拖行起重机，可减少运输途中起重机移动／翻侧／滑动的风险。
- 操作员须曾受相关训练并由持有有效证明书。
- 每日使用前须由曾受训人员详细检查，确保安全装置操作正常，并把检查结果纪录于登记簿。每周须由合格人士详细检查一次，并把检查结果纪录于Form 1。
- 起重机须由合格检验员检验和测试。
- 如起重机易手或属首次使用，须由合格检验员测试和检验。
- 所有测试记录及报告均须妥为保存。

## 4 安全使用机械设备 Safe Use of Plant

- Convenient and safe without the need for loading to or off-loading of the lifting appliance from or stowed by a lorry from one place to the other and to minimize the movement/tipping/sliding off of lifting appliance during the transportation.
- To be operated by a trained person with valid certificate.
- Check thoroughly the safety devices to confirm its good conditions daily by trained person with checking results recorded in log book and full inspection once per week shall be conducted by competent person with inspection result recorded in Form 1.
- Examine, test and verify the crane by competent examiner.
- Upon change of ownership or first use of the crane, test and thorough examination shall be conducted by competent examiner.
- Keep properly all tests records and reports as conducted.



起重垫板的面积不得小于支重脚撑踏板面积的三倍  
The lifting mat of area not less than 3 times of the float of the outrigger leg



当随车式起重机运作前，其支重脚撑应完全伸展及其踏板正确放在起重垫板上  
Lorry-mounted mobile crane under operation should fully extend the outrigger legs

### 流动式起重机操作 Mobile Crane Operations

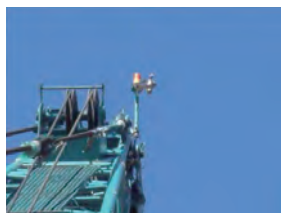
- 须在稳固和平坦的地面操作起重机。
- 在起吊前，应将支重脚撑完全伸展并确保稳固地架设在平坦的地面上。
- 吊运物件不可超出制造商订明的安全操作负荷。
- 切勿突然摆动或急停起重机。
- 切勿在地面拖行负荷物。
- 以安全速度移动负荷物。
- 须熟识手号。
- 应适当地调较吊臂长度，确保起重机是处于安全操作半径内。
- 当起重机上斜或下斜时，应适当地调较吊臂角度，以确保起重机是处于安全操作的状态。
- 应围封起重作业区，防止未经授权人士进入。
- 装设探测器以提醒操作员是否仍有工人留在起重机操作范围内。



流动起重机上需标示安全操作负荷  
Indication/markung of safe working load at mobile crane



备有货车式起重机的额定值降低图，使安全操作负荷一目了然  
De-rating chart of lorry-mounted crane gives quick guide on safe loading capacity

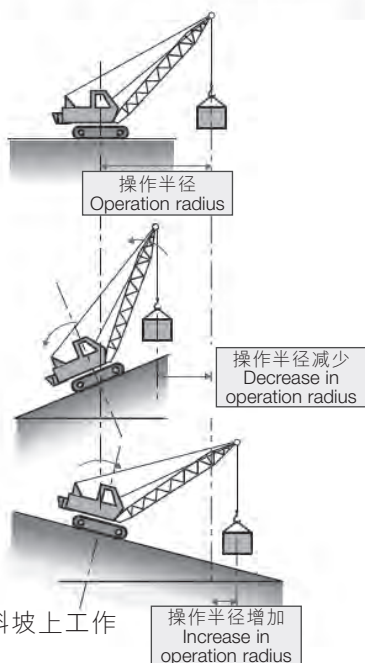


在起重机最高位置安装风速仪，提升吊运安全水平  
Anemometer installed at the highest point of crane for safe lifting operations

- 起重机与围栏之间须保持不少于600毫米阔的无阻通道。
- 在起吊前，埋码员应确保吊运物并没有与其他物料缠绕。
- 于吊运工序实行指差呼称，消除人为失误。



- a. 平路 Level Ground  
正确安全操作半径。  
Correct operation radius.



- b. 上斜 Uphill position  
负荷物移向起重机，减少操作半径令起重机向后翻倒。  
The load moves toward the crane and reduces the operation radius that may cause the crane to tip over backwards.
- c. 下斜 Downhill position  
负荷物远离起重机，令起重机超越负荷，导致起重机向前翻倒。  
The load moves away from the crane and this may overload the crane and cause the crane to tip over forwards.

避免在斜坡上工作

操作半径增加  
Increase in operation radius



## 4 安全使用机械设备 Safe Use of Plant

- Operate the mobile crane only on a firm and level ground.
- Before lifting, fully extend outriggers and ensure their stability on level ground.
- Never carry a load exceeding the Safe Working Load as specified by the manufacturer.
- Never abruptly swing or stop the crane.
- Never drag the loads on the ground.
- Move the load at a safe speed.
- Fully conversant with the signal code.
- Adjust the boom length to ensure the crane is operating within the extent of the safe operation radius.
- When moving uphill or downhill, the boom angle shall be adjusted to the safe working condition.
- Fence off the operation area to prevent unauthorized entry.
- Maintain an unobstructed passage of at least 600mm wide between the crane and the barrier.
- Install detector to alert the plant operator of any worker located within the operation area of the plant.
- Make sure the load to be lifted is not tangled with other materials before lifting operation is carried out.
- Apply pointing and calling practice as a confirmation tool to eliminate human errors in lifting operation.



以围栏设立一个可分隔的作业区  
Barrier set up to separate the works area



利用闭路电视显示屏监察不同位置的操作情况  
CCTV monitor to have different views of the operation



装设射频识别仪器探测附近是否仍有工人  
RFID device installed to detect surrounding workers



## 建筑工地升降机 Builders' Lift

### 一般要求

- 按照《建筑工地升降机及塔式工作平台（安全）条例》的规定，只有曾接受相关训练的合格操作员才可操作建筑工地升降机。合格操作员须按照有关工作守则的规定，每天检查设备。
- 机电工程署核准设计方案后才可安装升降机。
- 所有建筑工地升降机均必须由合格工人安装和拆卸，并在安装／改装／更改升降高度之后由注册检验员测试／检验。
- 所有建筑工地升降机必须具备有效的使用许可证，并由注册承办商进行维修保养检查、清洁、添加机油及调校。
- 升降机的最高载重量和载人数目上限，必须在吊笼内的当眼处展示。
- 升降机吊笼必须于所有闸门和层门关上后，才可启动或升降。
- 吊笼须设有至少两米高的稳固闸门，并加以围封。
- 各层站必须设有召唤按钮，供有需要使用吊笼人士启动装于特定位置（通常在底座外笼或主出入口）的电钟，并须设有充足照明。
- 在正常运作情况下，吊笼必须由动力驱动上升及下降，并须有直接和稳定的电力供应。
- 在正常运作情况下，不得利用交替启动及释放驱动机制动器或交替开关节流阀的方法，令升降机吊笼藉重力下降。
- 不得装载易燃物品。
- 升降机不得超载，每个吊笼须装有超载感应器，一旦超载或超速时便会清楚亮起警告灯号或发出警报。



升降机吊笼要有足够围封  
Substantial enclosure to builder's lift car cage

### 于升降机槽内

- 在升降机吊锚架的上方设置防水保护平台。
- 于升降机的机厢顶上提供至少一支合适的灭火器。



升降机槽内的建筑工地升降机临时机房  
Builders' lift cathead inside lift shaft



升降机槽内的建筑工地升降机机厢  
Builders' lift car inside lift shaft



建筑工地升降机装有全高度的闸门  
Full height gate for a builder's lift

## 4 安全使用机械设备 Safe Use of Plant

### General Requirement

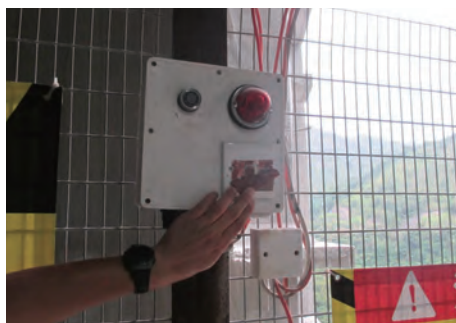
- Only competent operators who have undergone training as stipulated in the Builders' Lifts and Tower Working Platforms (Safety) Ordinance shall be allowed to operate builders' lifts. The competent operator shall carry out daily check of the equipment as specified in the relevant Code of Practice.
- Install the lift upon receiving the design approval from EMSD.
- All builder's lift shall be installed and dismantled by competent workers, tested/examined by registered examiner after installation/alteration/change of height of travel and also on a six-month basis.
- All builders' lifts shall have valid permit to use and be maintained, periodically checked, oiled and adjusted by registered contractor.
- The maximum weight and number of persons including operator shall be prominently displayed in the car cage.
- Never start or run the lift car unless all cage gates and landing doors are closed.
- Provide secure gate of minimum 2m high and protect the car with substantial enclosure.
- Provide every landing with a call button for the passenger to activate an electric bell located at a specified location (usually at the bottom enclosure or main access) when requesting for lift service, as well as adequate lighting.
- The car cage shall, during normal operation, be power driven upwards and downwards at all times via a direct and secure power supply.
- Never allow the car cage to descend under gravitational force by alternatively applying and releasing the driving machine brake or alternatively opening and closing the restrictor valve during normal operation.
- Never carry flammable materials.
- Never allow the lift car to be overloaded during operation and provide it with an overload sensing device to give a clear visual and audio warning signals in case of overloading and over movement.

### Within Lift Shaft

- Provide protection deck above the cathead of the lift.
- Provide at least one suitable fire extinguisher on the cathead of the lift.



建筑工地升降机旁需有展示载人数目的告示  
Capacity displayed adjacent to entrance of a builder's lift



召唤升降机服务的按钮·设于当眼处  
Call button for requesting lift service



## 物料吊重机 Material Hoist

- 只可用于运送物料。
- 吊重机只可从一个位置操作。
- 吊重机的升降槽必须围封。
- 不得载人。
- 操作员须曾受相关训练和符合资格。
- 不得超出订明的安全操作荷载。
- 在所有上落货区，升降槽铁闸须安装互锁装置。
- 物料吊重机和互锁装置必须接受定期调校测试、详细检验和维修，确保状况良好。
- 严禁任何未获授权人士使用物料吊重机。
- 做好统筹工作，确保工人明白和遵守使用物料吊重机的安全程序。
- 由合格检验员定期（每六个月）详细测试／检验物料吊重机，确保机件保持良好状况，可安全操作。



吊重机只供运载物料  
The hoist is only used for material delivery



张贴安全操作荷载及安全使用物料吊重机的告示  
Notice of safe working load and safety rules on material hoist

- To be used for material delivery only.
- Hoist must be operated from one position only.
- Shaft of hoist should be enclosed.
- Must not carry people.
- Operator should be trained and competent.
- Must not exceed the safe working load.
- The hoistway gates should be equipped with interlocking device at all loading/unloading areas.
- Material hoist and interlocking devices must be regularly adjusted, tested, thoroughly examined and maintained to ensure that they are always kept in a good working order.
- Prohibit unauthorized use of material hoists.
- Maintain coordination to ensure workers understand and follow safe procedures on use of material hoist.
- Thorough testing/examination of material hoist by a competent examiner at regular interval of not more than 6 months to ensure its safe working condition.



## 4 安全使用机械设备 Safe Use of Plant

### 搬土机械 Earth-moving Machinery

- 操作推土机时，任何人不得逗留在其移动路线上。
- 在搬土机械的操作地点周围及机动设备可能击中人的地方，须架设活动金属围栏或塑胶网栏，并设置中文和英文警告告示。
- 为挖土机或其他起重机械操作员安排讯号员，以确保操作地点视野清晰无阻和有关机械在该视野情况下安全操作。
- 机器与围栏之间应相隔至少600毫米。
- 负荷物移动机器须由持有有效证明书的人士操作。
- 遵守劳工处发出的《安全使用挖土机工作守则》及《建造业议会：地盘车辆及流动机械安全指引》。

- No person should stand on the track during operation of bulldozer.
- Provide mobile metal barrier or PVC barrier fencing mesh with warning notices in both Chinese and English around the work areas of earth-moving machinery where persons are in danger of being struck by moving equipment.
- Provide a signaler for operator of excavator or other lifting appliance to effect a clear and unrestricted view of works area and view necessary for safe working of appliance.
- Maintain a minimum clear distance of 600mm between machinery and fencing.
- Loadshifting machinery can only be operated by a person who holds a valid certificate.
- Observe “Code of Practice for Safe Use of Excavators” issued by the Labour Department and “Construction Industry Council – Guidelines on Safety of Site Vehicles and Mobile Plant”.



操作员透过闭路电视可观察四周情况  
Install CCTV system for operator to have a clear view of surrounding



在挖土机尾部安装闭路电视摄影机  
CCTV installed at the rear part of Excavator



为挖土机操作员安排讯号员  
Signaler works with the excavator operator



机尾安装防撞棒  
anti-collision rod at the rear of plant





## 钻机 Drilling Rigs

- 妥当地围起现场勘探工程的施工范围。
- 在进行工地勘探前，必须详细核查地下公用设施的记录，并对地下管道进行侦测。
- 钻机应架设在稳固的平台上，活动部分须装有护罩。
- 岩芯管和钻杆应堆叠在钢架上。
- 施工前应由合格人士检查棚架，并在现场勘探工程进行期间，每隔两个星期巡查一次。
- 钻机须设有安全护罩，防止工人在钻探操作期间触及转动中的机件。
- 工地内所有起重设备必须经过仔细检查、检验和测试，并须取得相关的有效检查证明书。工人必须穿着反光工作服和佩戴其他防护装备。
- 使用化学品时须戴上手套和防护衣物，而使用气压喷射器时则须戴上护目镜。
- 使用气压枪安装锚栓时须佩戴安全头盔、护目镜和护耳罩，以及穿上安全鞋。



钻机的活动部分必需设置护罩  
Moving part equipped with shield guard

- Properly fence off the works area for the ground investigation fieldworks.
- Prior to site investigation, thorough checking of underground utilities records and detection of underground services are required.
- The drilling rig should be supported on a stable platform and the moving part is fitted with shield guard.
- Stack core barrels and drill rods on steel frame trestles.
- Competent person to check the scaffolding before the commencement and carry out bi-weekly inspections in the course of the ground investigation fieldworks.
- Equip the drilling rig with shield guard to protect the workers from coming in contact with the rotary components during the drilling operation.
- All lifting equipment on site should be inspected, thoroughly examined and tested with valid certificates. The workers should wear reflective coating and other protective equipment.
- Put on gloves and protective coating when using chemicals. Wear goggles during the use of high pressure jets.
- Wear safety helmet, goggle, ear muffs and safety shoes when using cartridge operated tools to install anchor bolt.



岩芯管和钻杆应放在钢架上  
Stack core barrels and drill rods on steel frame trestles

## 4 安全使用机械设备 Safe Use of Plant

### 货车和卸泥车 Trucks and Dumpers

- 须安排讯号员指挥车辆交通。
  - 承建商须进行风险评估，以找出工地车辆和流动机械设备所引致的风险。
  - 承建商须妥善地设计工地布局 and 行车路线。
  - 安装倒车视像装置或其他倒车安全装置。
  - 覆盖货车上的松散物料，以防止物料从货车跌出。
  - 货车和卸泥车的操作员必须持有有效的操作证明书。
- 
- Arrange signaller to direct the vehicular traffic.
  - Contractor should conduct risk assessment to identify risk from site vehicles and mobile plant.
  - Contractor should properly design site layout and traffic circulation route.
  - Install reversing video device or other reversing safety devices.
  - Provide a cover to a truck to prevent spread of loose materials out from the truck.
  - The operator of truck and dumper should hold a valid certificate.



以胶布覆盖卸泥货车，以防易生尘埃的物料飞散  
Dump truck with PVC cover to prevent spread of dusty materials



卸泥货车配备的左右延展翼，减低物料意外地飞脱车身  
Dump truck equipped with two covers to avoid debris accidentally coming out



安装闭路电视及萤光幕让驾驶员清楚看见车辆后面的交通情况  
Install CCTV and monitor for driver to have view of traffic at rear of vehicle



安排讯号员于狭窄通路指挥交通  
Signaller to control/direct the traffic in a narrow road



## 叉式起重车 Forklift Trucks

- 操作员须持有有效的叉式起重车操作证明书。
- 须按制造商指示操作起重车。
- 不得超出安全操作负荷。
- 操作时，必须确保没有其他人站在负荷物附近或在负荷物之下。
- 遵守《建造业议会：地盘车辆及流动机械安全指引》。
- Operator of forklift truck should hold a valid certificate of forklift truck driver.
- Operation of a forklift truck should be in accordance with the instruction from the truck manufacturer.
- Never exceed the safe working load.
- Ensure nobody close to or underneath the load when operating a forklift truck.
- Observe the "Construction Industry Council – Guidelines on Safety of Site Vehicles and Mobile Plant".



操作员须持有有效的操作证书

Operator should hold a valid certificate of forklift truck driver

## 压土机和压路机 Compacting Machines and Rollers

- 须按制造商指示操作压土机和压路机。
- 须围起压土作业区。
- 操作员须具操作压土机／压路机的有效证书。
- 遵守《建造业议会：地盘车辆及流动机械安全指引》。
- Operation of the plant should be in accordance with the instruction from guideline of the manufacturer.
- Zone of the compaction works should be fenced off.
- Operator should have valid certificate for operating the compacting machine/roller.
- Observe the "Construction Industry Council – Guidelines on Safety of Site Vehicles and Mobile Plant".



操作员需接受足够训练后，才容许操作机械  
Operator should have received operation training for the compacting machine



整个工程范围，应架设围栏

Fencing should be set up for the compacting zone

## 4 安全使用机械设备 Safe Use of Plant

### 小型装载搬土机 Mini Skid Loader

- 操作员须持有有效的小型装载搬土机操作证明书。
  - 须按制造商指示操作小型装载搬土机。
  - 不得超出安全操作负荷。
  - 操作时，必须确保没有其他人站在负荷物附近或在负荷物之下。
  - 遵守《建造业议会：地盘车辆及流动机械安全指引》。
- Operator of mini skid loader should hold a valid certificate of mini skid loader driver.
  - Operation of a mini skid loader should be in accordance with the instruction from the mini skid loader manufacturer.
  - Never exceed the safe working load.
  - Ensure nobody close to or underneath the load when operating a mini skid loader.
  - Observe the “Construction Industry Council – Guidelines on Safety of Site Vehicles and Mobile Plant”.



在小型装载搬土机安装倒车摄影机  
Reverse camera installed to mini/skid loader

### 机器 Machinery

- 须由合格人员操作。
  - 须定期检查和保养维修。
  - 机器拥有人须按相关作业守则、法例等规定，雇用合格人士检验机器。
  - 不得载客。
  - 须为活动部分安装妥善的护罩。
- To be operated by qualified personnel.
  - To be inspected and maintained periodically.
  - To be examined by competent person employed by owner of the machinery, according to the CoP, ordinance, etc.
  - Not permitted to carry passengers.
  - Moving parts to be properly guarded.



升降机或电动绞车必需安装护罩  
Guard provided for lift machines and electric winch







## 燃料 Fuels

- 添加燃料期间，附近不可有明火。
  - 添加燃料处附近须设置灭火筒。
  - 不得贮存过量燃料。
  - 应制订措施，防止贮存地方渗漏燃料及保持贮存地方清洁。
  - 标贴适当的危险品及不准吸烟告示。
- 
- No naked flame in vicinity during refueling.
  - Provision of fire extinguisher near the spot of refueling.
  - No excessive storage of fuel.
  - Measures to prevent leakage of and cleaning to the fuel at the storage location.
  - With proper dangerous goods label and no smoking notice.

## 空气压缩机 Air Compressors

- 操作员须受过充分训练，并熟知控制、启动和关闭程序。
  - 须按制造商指示操作空气压缩机。
  - 机件须保持良好状况。
- 
- Operator of an air compressor should be adequately trained and conversant with the control, start up and shutdown procedures.
  - Operation of the plant must be in accordance with the instruction of the manufacturer.
  - The plant must be maintained in good condition.



空气压缩机操作员须熟知操作程序  
Operator of air compressor should be familiar with operation procedure

## 手提气压碎石机 Handheld Pneumatic Breaker



个人防护装备是在打凿岩石期间不可缺少的装置  
Personal protective equipment must be equipped during the rock breaking operation

- 重型手提气压碎石机的操作员须曾受相关训练。
- 操作时，必须使用护耳罩、护目镜和呼吸器等个人防护装备。



在压缩风喉加上套索  
Compressed air hose fitted with whip check device

- Operator of heavy duty handheld pneumatic breaker must be trained worker of the tool.
- During the operation, personal protective equipment such as earmuffs, goggles and respirator etc. must be worn by the operator of the tool.



## 4 安全使用机械设备 Safe Use of Plant

### 电弧焊接 Electric Arc Welding

- 焊接工作地点附近须设置灭火筒。
- 焊工须受过充分电弧焊接训练。
- 焊接件需接地，回路电线应妥善紧接焊接件。
- 焊条电极夹，电线等应保持可操作状态及无损伤。
- 安装电路开路降压装置。
- 须为焊工提供由劳工处批核的手提护盾或护目镜。如有需要，亦须提供适当的呼吸器。
- 焊工须穿上绝缘手套、围裙、绝缘安全鞋、绝缘地席、深色长袖棉质或羊毛衣服，裤子不得塞进安全鞋内。
- 工作地点须保持乾爽。
- 分隔工作间的范围。
- 焊工须穿上高筒鞋，以防火花掉进鞋内。
- 工作地点须有良好通风。
- 移走焊接工作地点附近的易燃物料，在高空焊接和火花朝下时尤须如此。
- 切勿让电线围绕身体。
- 完成焊接后须切断电源，并确保没有火警危险才可离开工地。
- 焊机须接地并设有漏电保护装置。须为焊机另设电力开关，开关置于防水箱内。
- 遵从劳工处发出的《工作守则：手工电弧焊接工作的安全与健康》之安全方法及预防措施。



焊机壳必须接地（带电部份需要有绝缘保护）  
Shield of welding machine - Earthed  
(Live conductor terminals should be insulated)



焊工穿上个人防护装备方可进行焊接工作  
Welders with personal protective equipment during welding



- Provide fire extinguisher near welding workplace.
- Welders should be adequately trained in electric arc welding.
- Workpiece to be welded is to be properly earthed, and the welding return cable to be clamped to workpiece direct.
- Welding electrode holder, welding lead and return cables should be free from patent defect and properly maintained.
- Open-circuit voltage reducing device should be installed.
- They should be provided with eye protectors approved by Labour Department such as shields and goggles. Appropriate respirator should also be provided if necessary.
- Welders should wear electric insulating gloves, apron, insulating safety shoes, insulating mat, deep colour long sleeved cotton or wool clothing. The trousers should not be tucked into the safety shoes.
- The workplace should be in dry condition.
- Screen off the works area.
- Workers should wear high-top boots to prevent sparks from entering footwear.
- The workplace should be well ventilated.
- Remove combustible materials in vicinity of welding spot especially when welding is carried out at height and sparks falling down below.
- Never put electric cable around the body.
- After welding, cut off power supply and make sure there is no fire hazard before leaving the site.
- The welding machine should be earthed and with earth leakage protection. Provide separate power switch for welding machine with the switch housed in a waterproofing enclosure.
- Follow the safety measures and precautions recommended in the Code of Practice: Safety and Health at Work for Manual Electric Arc Welding issued by the Labour Department.



电弧焊接工须使用护盾、绝缘手套及围裙  
Welders should wear insulating gloves, handheld shield and apron

## 4 安全使用机械设备 Safe Use of Plant

### 气体焊接和火焰切割 Gas Welding and Flame Cutting

- 在密闭空间进行焊接／切割，必须采用工作许可证制度，而气瓶须放在密闭空间之外，并由其他工人看管。
- 焊工必须年满18岁，具备所有有效焊工证书，并接受过充足的安全及健康训练。
- 须为焊工提供由劳工处批核的手提护盾或护目镜。如有需要，亦须提供适当的呼吸器。
- 焊工须穿上高筒鞋，以防火花掉进鞋内。
- 工作地点须通风，而且没有障碍物。焊接工作地点附近须设置灭火火筒。
- 乙炔气瓶阀门须置于阀门杆上，以方便紧急关闭。
- 贮存和使用中的气瓶均须保持垂直。
- 乙炔气瓶和氧气瓶均须设有防止回火安全掣。
- 止回阀应设于吹管每个气体的入口，防止氧气回流至燃气供应、或燃气至氧气供应。
- 乙炔气瓶和氧气瓶须分开贮存在有良好通风的有盖地方。用完的和满载的气瓶须加以注明，附近须设置灭火设备。
- 定期检查气瓶及气喉，查看是否有泄漏迹象。
- 切勿将气瓶放置在热源或电力装置附近，或暴露于有太阳热力的地方。此外，距离火源至少10米。
- 以手推车运送气瓶。
- 氧气瓶使用蓝色胶喉，乙炔气瓶则使用红色胶喉。此外，须更换老化的胶喉，以及不要把气喉放在地上。
- 焊工须穿上皮手套、围裙、安全鞋、深色长袖棉质或羊毛衣服。裤子不得塞进安全鞋内。
- 移走焊接或火焰切割作业范围10米以内的易燃物料。在高空进行焊接时，须避免火花落下。
- 须就气体泄漏、气喉／乙炔气瓶内着火等情况制订紧急程序。
- 遵从劳工处发出的《工作守则：气体焊接及火焰切割工作的安全与健康》的安全方法及预防措施。



乙炔气瓶和氧气瓶须贮存在有良好通风的地方  
Store the acetylene and oxygen cylinders in a well ventilated area



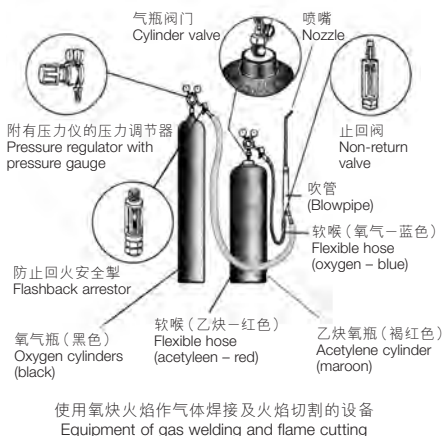
乙炔气和氧气瓶须时存于通风的地方  
Store the acetylene and oxygen cylinders in well ventilated area



气体焊接要注意的安全事项  
Safety measures about gas welding



- For welding/cutting in confined space, adopt a permit-to-work system and the gas cylinders should be placed outside and taken care by other workers.
- Welders should attain the age of 18 years, hold valid certificates and have adequate safety and health training.
- Welders should be provided with handheld shields or eye protectors approved by the Labour Department. Proper respirators should be provided if necessary.
- Welders to wear high-top boots to prevent sparks from entering footwear.
- The workplace should be ventilated and clear of obstruction. Provide fire extinguisher near welding workplace.
- Acetylene cylinder valve should be kept on the valve stem for emergency shut off purpose.
- Keep gas cylinders in a vertical position both in storage and use.
- Flashback arrestor should be installed to both acetylene and oxygen cylinders.
- Non-return valve at each gas inlet of the blowpipe to prevent back-feeding of oxidant gas to the fuel gas line and vice versa.
- Store the acetylene and oxygen cylinders separately in covered area with good ventilation. Empty and full cylinders should be indicated with notice and with fire-fighting equipment nearby.
- Periodic checking of the gas cylinder and the hose for any sign of gas leakage should be carried out.
- The gas cylinders should not be placed close to heat source or electrical equipment or exposed to heat of the sun; be placed at least at 10m away from fire source.
- Transport gas cylinders by trolley.
- Use blue plastic tube for oxygen and red tube for acetylene. Replace aging plastic tubing. Do not place the gas tubing on the floor.
- Welders should wear leather gloves, apron, safety shoes, deep colour long sleeved cotton or wool clothing. The trousers should not be tucked into the safety shoes.
- Remove combustible material within 10m of welding or flame cutting operation. Prevent sparks from dropping downwards during welding at height.
- Establish emergency procedure for cases on gas leakage, fire developed in hose/with acetylene cylinder, etc.
- Follow the safety measures and precautions recommended in the Code of Practice: Safety and Health at Work for Gas Welding and Flame Cutting issued by the Labour Department.



皮手套  
Leather gloves



面盾  
Shield



## 4 安全使用机械设备 Safe Use of Plant

### 圆锯 Circular Saw

- 木工机器四周必须有足够的工作空间。
- 必须适当地设置、安装和使用在圆锯上的护罩和锯尾刀。
- 必须设置推木杆，以免手部触及圆锯的锯片。
- 操作机器时须佩戴面罩和护耳罩。
- 木工机器须设有紧急停止掣。
- 圆锯应提供抽排设备用以收集木糠及微尘至适当位置。
- 定时清除木糠减低火警危害。



盛载木屑之容器  
Receptacle below the cutting bench to receive sawdust

- Sufficient working spaces around woodworking machines must be provided.
- All guards such as crown guard and riving knives on circular saws must be properly provided, installed and used.
- A push stick must be provided to avoid the hands from touching the blade of a circular saw.
- A face mask and earmuffs to be worn during operation of the machine.
- An emergency stop button must be provided on woodworking machine.
- Exhaust extraction equipment should be provided for circular saws to convey chips and particles from cutters into a suitable receptacle.
- Remove sawdust regularly to minimise fire hazard.



风车／圆锯应设有护罩和紧急停止掣  
Circular saw with guard and emergency stop



圆锯上的护罩及锯尾刀  
Guard and riving knife on circular saw

### 屈钢筋机 Steel Bending Machine

- 操作员须受过适当训练。
- 须设有等电位接驳装置，以防触电。
- 须设置护罩，以消除被夹伤的危险。
- 须妥善保护连接屈钢筋机的带电电线。
- 为切割和屈曲钢筋工序预留足够的工作空间。
- Operator of the machine should be properly trained.
- To be provided with equipotential bonding to avoid electrocution.
- To be provided with guard to eliminate the chance of trapping hazard.
- Live wire connected to the machine to be properly protected.
- Allow sufficient working space for cutting and bending steel bars.



为屈曲钢筋机器设置护罩脚掣和互锁装置。如无落下护罩，会截断电源，停止机器的运作  
Foot switch control and interlock guard on the bar bending machine. The device isolates the power supply to halt the operation, if guarding is removed





为扎铁场提供伸缩性保护网  
Foldable net provided above bending yard



为扎铁工地提供保护网  
Safety net provided above steel bending workplace



屈曲钢筋机器需有足够的工作空间  
A typical steel bending machine on site with adequate working space



屈曲钢筋机器需设置的护罩  
Bar bending machine with guarding

## 砂轮 Abrasive Wheels

- 砂轮的安装工作只可由东主以书面委任的合资格人士进行。
- 护罩在结构上须坚固，尺寸要正确，并应装稳在机器架上。
- 切勿以砂轮的边旁研磨。
- 作业时须佩戴可抵受猛力撞击的护目镜。
- 在工作间张贴「使用砂轮」的警告告示。
- 砂轮不应安装在其速度超逾砂轮本身最高许可速度的机器上。



为砂轮机设置护罩和在当眼处张贴安全海报／告示  
Abrasive wheel with guarding and relevant notice/poster is posted at the location

## 4 安全使用机械设备 Safe Use of Plant

- All mountings shall only be done by competent persons appointed in writing by the proprietors.
- Guards must be of rigid construction, proper dimensions and securely anchored to the machine frame.
- Never use the side of an abrasive wheel for grinding.
- High impact resistant goggles should be worn during operation.
- Post “the use of abrasive wheels” warning notice in the workplace.
- Do not mount a wheel on a machine the speed of which exceeds the maximum permissible speed of the wheel.

### 枪弹推动打钉工具 Cartridge Operated Fixing Tools

- 所用的枪弹推动打钉工具须为劳工处认可的种类。
- 操作员须年满18年岁，并持有操作枪弹推动打钉工具的合格证书。
- 操作员须佩戴可抵受猛力撞击的护目镜、安全头盔和护耳罩。
- 开枪前须发出口头警告。
- 切勿在梯具和有易燃气体的空间操作枪弹推动打钉工具。
- 枪弹推动打钉工具在使用后必须妥为存放。



妥善存放枪弹推动打钉工具  
Properly store the cartridge  
operated fixing tool

- Cartridge operated fixing tools should be the approved type by Labour Department.
- Operator to be with age 18 or above and hold certificate of competency for operating the cartridge operated fixing tools.
- Operators should wear high impact resistant goggles, safety helmets and ear muffs.
- Verbal warning should be issued before firing.
- Never operate the tools on a ladder and in a space with flammable gas, etc.
- The cartridge operated fixing tools should be properly stored after use.



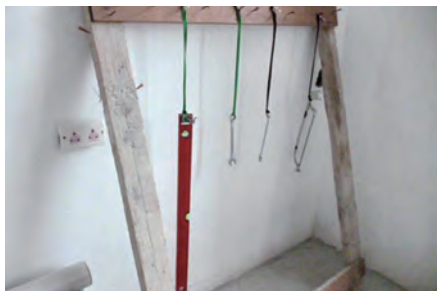
## 手提工具 Handheld Tools

- 每次使用前，须检查工具是否有损坏。
- 切割工具如过钝或变形，须妥善维修处理。
- 应使用适当的手提工具，错误使用可引致爆裂，发生危险。
- 高空作业时须以手带连系手提工具，以防止脱手滑下，凌空飞堕。
- 所有工具须妥为安放及贮存。
- 使用者须懂得如何使用有关工具。
- 如有需要，须为使用者提供有关训练。
- 如使用手提工具工作时会产生碎片、微粒或噪音，应佩戴护目镜、口罩或护耳罩等个人防护装备。
- 须把应手提工具挂在工具腰包上或放于工具箱内或扣紧于个人身上之装备。

- Examine the tools to check if they are free from defects every time before use.
- Blunt cutting edge or deformed working part should be redressed.
- Hand tools used should be correct for the purpose and misuse may lead to fracture, causing danger.
- Handheld tools for work should be fitted with the hand strap during operation at height and to prevent tools from slipping out and falling from height.
- All tools to be properly placed and stored in an orderly manner.
- Users of the tools should know how to use the tools.
- Training to be provided to users if need.
- Wear suitable personal protective equipment such as goggles, masks or ear muffs for protection against flying particles or noise during operation.
- Carry handheld tools in the waist gear or tool box or fix them to personal protective gear when they are not in use.



正确及安全使用手提工具进行安装工作  
A typical safe and correct use of hand tools for a safe fixing work/installation



妥善放置手提工具  
Properly place the hand tools.



利用腰带工具套稳妥地携带手提工具  
Carry handheld tools securely with waist gear



### 参考资料 References

#### 相关条例和规例

- 《建筑工地升降机及塔式工作平台（安全）条例》
- 《工厂及工业经营条例》
- 《建筑地盘（安全）规例》
- 《工厂及工业经营规例》
- 《工厂及工业经营（起重机械及起重装置）规例》
- 《工厂及工业经营（安全管理）规例》
- 《工厂及工业经营（负荷物移动机械）规例》
- 《工厂及工业经营（砂轮）规例》
- 《工厂及工业经营（枪弹推动钉钉工具）规例》
- 《工厂及工业经营（木工机械）规例》
- 《工厂及工业经营（气体焊接及火焰切割）规例》
- 《工厂及工业经营（工作噪音）规例》
- 《工厂及工业经营（吊船）规例》
- 《工厂及工业经营（保护眼睛）规例》

#### Relevant Ordinances and Regulations

- Builders' Lifts and Tower Working Platforms (Safety) Ordinance.
- Factories and Industrial Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Factories and Industrial Undertakings Regulations.
- Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations.
- Factories and Industrial Undertakings (Safety Management) Regulation.
- Factories and Industrial Undertakings (Loadshifting Machinery) Regulation.
- Factories and Industrial Undertakings (Abrasive Wheels) Regulations.
- Factories and Industrial Undertakings (Cartridge-Operated Fixing Tools) Regulations.
- Factories and Industrial Undertakings (Woodworking Machinery) Regulations.
- Factories and Industrial Undertakings (Gas Welding and Flame Cutting) Regulation.
- Factories and Industrial Undertakings (Noise at Work) Regulation.
- Factories and Industrial Undertakings (Suspended Working Platforms) Regulation.
- Factories and Industrial Undertakings (Protection of Eyes) Regulations.



## 相关安全标准、工作守则、安全指引和指商

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

- 《建筑工地升降机设计及建造实务守则》(机电工程署)
- 《塔式工作平台设计及建造实务守则》(机电工程署)
- 《工作安全守则(升降机及自动梯)》(劳工处)
- 《安全使用流动式起重机工作守则》(劳工处)
- 《安全使用塔式起重机工作守则》(劳工处)
- 《安全使用和操作吊船工作守则》(劳工处)
- 《安全使用挖土机工作守则》(劳工处)
- 《有关在供电电缆附近工作的实务守则》(机电工程署)
- 《工作守则:手工电弧焊接工作的安全与健康》(劳工处)
- 《工作守则:气体焊接及火焰切割工作的安全与健康》(劳工处)
- 《塔式起重机安全指引》(建造业议会)
- 《建筑地盘车辆及流动机械的安全指引》(建造业议会)
- 《升降机槽工程安全指引:第4卷 – 升降机槽内的建筑工地升降机》(建造业议会)
- 《砂轮的安全使用》(劳工处)
- 《手工具及动力手工具安全须知》(职业安全健康局)
- 安全健康提示编号55/2015, 海报 – 指差呼称确认, 消除人为失误 – 吊运 – 职安局及房委会
- Code of Practice on the Design and Construction of Builders' Lifts. (EMSD)
- Code of Practice on the Design and Construction of Tower Working Platforms. (EMSD)
- Code of Practice for Safety at Work (Lift and Escalator). (LD)
- Code of Practice for Safe Use of Mobile Cranes. (LD)
- Code of Practice for Safe use of Tower Cranes. (LD)
- Code of Practice for Safe Use and Operation of Suspended Working Platforms. (LD)
- Code of Practice on Safe Use of Excavators. (LD)
- Code of Practice on Working Near Electricity Supply Lines. (EMSD)
- Code of Practice: Safety and Health at Work for Manual Electric Arc Welding. (LD)
- Code of Practice: Safety and Health at Work for Gas Welding and Flame Cutting. (LD)
- Guidelines on Safety of Tower Cranes. (CIC)
- Guidelines on Safety of Site Vehicles and Mobile Plant. (CIC)
- Guidelines on Safety of Lift Shaft Works: Volume 4 – Builders' Lift within Lift Shaft (CIC)
- Safety in the Use of Abrasive Wheels. (LD)
- Safety Guide for Hand Tools and Power Tools. (OSHC)
- Work Safety Alert no. 55/2015, Poster – Pointing and Calling as a Confirmation Tool to Eliminate Human Errors – Lifting – OSHC & HA



## 5 在工地安全使用电力 Safe Use of Electricity on Site

### 危害识别 Hazards

- 触电
  - 灼伤
  - 触电后从高处坠下
  - 触电致死
- 
- Electric shock;
  - Burns;
  - Falling from height after electric shock;
  - Electrocution

### 电缆接头／电线连接

#### Cable Joint/Wiring Termination

##### 电缆接头 Cable Joint

- 沿最终电路的电缆不得有任何一类电缆接头。
- Cable joints of any type along cable runs in final circuits are not allowed.



最终电路不得有电缆接头  
No cable joint in the final circuits



电线应妥善接驳，不得给带电部分外露。  
Properly connected wiring (no exposure of live parts)

##### 插座电线的终接 Wiring Termination at Socket

- 妥善地终接电线，避免带电导体外露。
- Proper termination of wiring to avoid exposure of live conductors.



插座内的电线应妥善接驳于接线座，电线不得外露  
Properly connect wiring in the socket and no live conductor exposed from the termination block



## 电缆的颜色

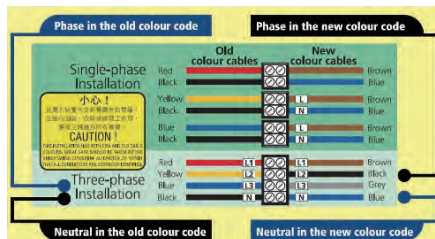
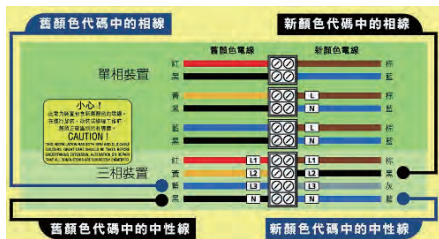
- 所有电缆要以正确的颜色代码标示。

### Correct Cable Colour

- All wiring work shall follow the correct cable colour code.

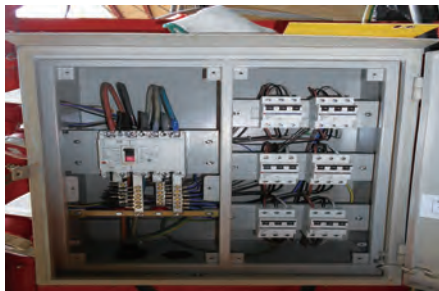
系统	相导线 (或带电荷线)			中性导线	接地导线
单相系统	棕			蓝	绿/黄
三相系统	L1	L2	L3	蓝	绿/黄
	棕	黑	灰		

Systems	Phase (or line)			Neutral	Earth
1-phase system	brown			blue	green/yellow
3-phase system	L1	L2	L3	blue	green/yellow
	brown	black	grey		



颜色代码表及新旧颜色代码表 (旧颜色代码只供参考用)

Table of new and new/old cable colour code (old cable colour code for reference only)



安装电线时，应采用最新的颜色代码标示。如三相电路 (左)，单相电路 (右)

Adopt new cable color code for cable installation (a three phase circuit- LHS, single phase circuit - RHS)

## 5 在工地安全使用电力 Safe Use of Electricity on Site

### 防止直接接触及带电部分的保护装置

- 使用适当的绝缘或保护装置，防止有人直接接触带电部分(IP3X)。

### Protection against “direct contact”

- Properly insulate or protect installation against direct contact with the live parts (IP3X).



使用适当的绝缘或保护，防止意外触及带电部份，而间隙则需要填封达 IP3X 的标准  
Live parts should be insulated and protected from direct contact and gap of the enclosure should be filled-up to IP3X standard

## 安装电缆 Cable Fixing

### 电缆的保护

- 电缆须至少以聚氯乙烯／聚乙烯护套保护，所有电线接头须妥善接驳。
- 如电缆有可能被损毁，应采用导管／线槽系统或装甲电缆。

### Protection of Cable

- Minimum protection of cables shall be PVC/PVC sheath and all electrical joints are properly made.
- When damage is likely, use conduit/trunking system or armoured cable.



电线应有如金属线槽等保护  
Protection of cable by metallic enclosure





## 电缆安装

- 把电缆稳妥地安装在高处，以减少受破损机会。

## Fixing of Cable

- Properly fix the cable at high level to avoid damages.



室外电线，应在高位挂定  
Fixing the outdoor cable at high level

一般电线，如在走廊或楼梯应在高位挂定  
Fixing the cable at high level in corridor, staircase

## 配电箱 Distribution Board

### 位置

- 除非配电箱属于防水类型，否则不应装设在潮湿和露天地方。

### Location

- Arrange the installations away from wet and humid areas and do not expose the installations to weather unless they are of waterproof type.



在消除故障后，只有注册电工方可重设配电箱内的开关  
Only Registered Electrical Worker allowed to reset the switch of distribution board after fault rectification



## 5 在工地安全使用电力 Safe Use of Electricity on Site

### 清晰的电路标签

- 在输入和输出电路上张贴电路标签，并在配电箱上张贴警告告示／标签。

### Clear Circuit Identification

- Provide circuit label to all incoming and outgoing circuits, and warning notice/label in the Chinese and English of the treatment of persons receiving electric shock on distribution boards.



配电箱需贴上清晰的电路图及中英文的触电急救告示

Distribution board should attach with a clear circuit diagram and poster for treatment from electric shock

### 有效接地

- 所有电路的接地线／外露非带电部分均须妥善接驳至总接地终端，并且保持操作正常。

### Effective Earthing

- Properly connect the earth conductor of all circuits/exposed conductive parts to the main earth terminal and ensure the maintenance of its soundness.

### 电路保护装置

- 为总掣装设漏电断路器。
- 装设以30毫安培操作的漏电断路器，以保护电源插座。
- 使用合适的插头接驳电源插座，为手提装备取电。



所有接地线应挂上适当标签及妥善接驳至总接地终端后，并连接到接地棒。

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





### Circuit Protective Device

- Provide main switch with residual current device (RCD).
- Provide socket outlets by a residual current device operating at 30mA.
- Connect portable equipment with appropriate plug for power from socket outlet.



典型配电箱（屏）都装置电路保护器如MCB/RCD  
Typical distribution board with circuit protection device as MCB, RCD



金属可导电部份如门，须由等位电线接地，并挂上标签牌（安全接地终端 - 切勿移去）  
Bonding conductor should be connected to the metal door with warning label "safety electrical connection - do not remove"

### 临时照明装置／轻便的手提工具

### Temporary Lighting/Portable Hand-held Tools

#### 110伏特供电

- 应利用降压隔离变压器以110伏特或以下的电压供交流电，其次级绕组的中心抽头必须接地。

#### 110 V Power Supply

- Power supply at a voltage of 110V a.c. or less from a stepdown isolating transformer having the centre tap of the secondary winding earthed.



降压变压器将高压电降低至110伏特，适合一般手提电动工具使用  
Step-down transformer provides 110V power supply source for use by hand-held tools



## 5 在工地安全使用电力

### Safe Use of Electricity on Site

#### 稳固地安装

- 稳固地安装所有电线和照明装置（一般安装于离地面至少两米的高度）

#### Secure Fixing

- Securely fix all wiring and lighting fitting. (To be mounted at a height not less than 2m above floor level generally).



电力装置（例如照明装置和电线）尽安装于离地面至少两米高处  
Electrical installations such as lighting & wiring to be mounted/fixed at high level ( $\geq 2\text{m}$ )

#### 位置

- 不应把照明装置安装在潮湿地方。
- 除非照明装置属防水类型，否则不应安装在露天地方。

#### Location

- Locate lighting fittings away from wet and humid areas.
- Avoid exposure of the installation to weather unless waterproof type is used.



在室外安装的照明装置，需选用有防水功能的型号  
Waterproof lighting at external area

#### 防止直接接触及带电部分的保护装置

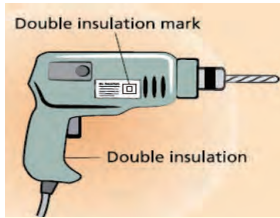
- 使用适当的绝缘和保护装置，防止有人直接接触带电部分(IP3X)。

#### Protection against Direct Contact

- Properly insulate and protect installation against direct contact with the live parts (IP3X).



装置需有保护带电的部分，防止意外被触及  
Live parts protected/insulated



双重绝缘标志的手提电工具例子  
Example of double insulation mark for hand-held tool



常用的双重绝缘手提电工具  
Double insulated hand-held tools commonly used for site works

双重绝缘／妥为接地的手提工具

- 使用已双重绝缘／妥为接地的手提工具。

### Double insulated/properly earthed Hand-held Tools

- Use double insulated or properly earthed hand-held electrical tools.

### 充电式手提工具

- 无须处理安装电线的问题，有助改进工地整理。
- 地台上或水洼里没有电线，可避免触电或绊倒之危险。

### Cordless Portable Hand-held Power Tools

- Improve housekeeping as there is no need to tackle the fixing of wiring.
- Avoid electric shock or trip, slip or fall as there is no trailing cable on water ponds or floor level.

### 电力变压房／电掣房／发电机机房 Transformer Room/Switch-room/ Generator Room

#### 方便出入

- 电力变压房、电掣房和发电机机房须随时方便出入，以供维修保养和操作房内的电力设备。
- 电力变压房、电掣房和发电机机房所有入口均应保持畅通无阻。

### Free Access

- Provide free and ready access for the maintenance and operation of the electrical equipment installed in transformer room, switch room or generator room.
- Every entrance of transformer room, switch room or generator room should be kept free of any obstruction.



充电式手提螺丝起子无需电线，方便使用

Cordless electric screwdriver does not need cable cord and is convenient to use



有通 及方便出入通道的变压器房  
／临时电掣房

Free access to transformer/  
temporary switch room

## 5 在工地安全使用电力 Safe Use of Electricity on Site



发电机装置旁，应放置灭火器具

Fire fighting appliance to be provided next to generator with railing to restrict unauthorised access

### 防火

- 在存放燃料的地方和电掣房／发电机机房提供适当类型的手提灭火器具（即灭火筒和沙桶）。

### Fire Fighting

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



「不准吸烟」警告告示

“No Smoking” warning notice

### 警告告示

- 在存放燃料的地方和电掣房／发电机机房张贴中文和英文告示，标明「不准吸烟」。

### Warning Notice

- Provide warning notice “No Smoking” in both English and Chinese at fuel storage area and adjacent to generator set.

## 低压电掣板 Low Voltage Switchboard

### 工作空间

- 电掣房内所有低压电掣板均应有充足照明和工作空间。
- 清理电掣房内所有多余物料／碎屑。

### Working space

- Provide adequate lighting for and working space to the low voltage switchboard inside switch room.
- Clear away all redundant materials/debris from the switch room.



电掣房内应有充足照明和工作空间

Adequate lighting and working space should be available inside switch room



## 安全隔离电源，后进行电力工作

### Safe Isolation of Electricity Source before carrying out Electrical Works

- 关上供电电源掣，如许可把电源掣与电源彻底隔离。
- 关上／隔离其他无关及／或远端连接的电路。
- 检查该电力装置／电路确定安全且不带电，如需要应为其放电。
- 检查供电电源掣是否安全不带电，或给带电部份提供保护并遮盖。
- 为电源掣上锁，并挂上适当警告牌，实行上锁挂牌的程序。
- 如许可，用指差呼称确认，消除可能人为的失误及执行电力工程许可证制度。
- 最后检测电力装置／电路确实安全，方可进行电力安装，改装或维修工作。
- 只有在某些极端情况下才可进行带电电力工程，进行时并须符合下列条件：
  - 由具备相关经验的合资格人士进行；
  - 事先进行风险评估；
  - 采取充足的安全措施，例如提供个人防护装备等；以及
  - 尽量减少带电工作的时间及范围。



一套齐全的工地电力上锁系统  
A well equipped padlock system of a construction site

- Switch off the incoming power supply switchgear, isolate/rack-out the switchgear from the service position, if possible.
- Isolate/switch-off all non-related outgoing and/or far end connected circuit(s).
- Check the installation/circuit if it is dead and if needed discharge any electricity energy stored in the circuits.
- Check the incoming power supply if it is completely dead or provided with proper protection to the live part of the switchgear.
- Padlock the switchgear and affix with proper warning tag to the switchgear/panel. Implement lockout tagout procedure.
- Apply pointing and calling practice to reduce possible human error and adopt permit-to-work system where possible.
- Measure and confirm there is no volt or residual voltage in the installation/circuit before commencement of any installation/alteration/maintenance works.



## 5 在工地安全使用电力 Safe Use of Electricity on Site



上锁挂牌等安全措施适用于电力安装、改装或维修工程  
A padlock with affixed warning tag to the switchgear panel for a safe installation / alteration or maintenance works

执行电力工程许可证的例子  
Example of implementation of permit-to-work (see also change in description LHS as attached)

- Never carry out live electrical works unless under extreme situations; works can only be carried out:
  - by experienced and competent person,
  - after completion of risk assessment,
  - with adequate precautions provided such as personal protective equipment, etc..
  - with works duration and extent to be kept to a minimum.

### 横跨道路的电缆应置放于足够高度 Cable Crossing Traffic Road at Adequate Height

- 架空电缆如横跨公共道路，应离地面至少5.8米；如在其他位置，则须离地面至少5.2米。
- Hang overhead cables not lower than 5.8m from the ground across public road and 5.2m at other locations.



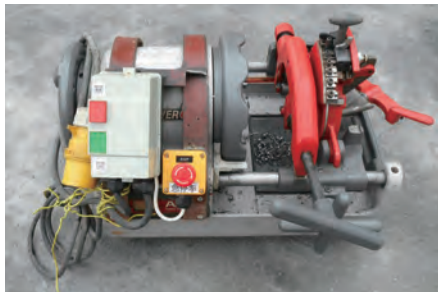
警告告示：此工地的运料路高度限制为5.8米  
Warning notice – height limit of 5.8m across haul road





## 紧急开关 Emergency Switching

- 在电动机器旁边安装紧急停机掣。
- Provide emergency stop switch adjacent to motor driven machines.



电动机器旁，应设有紧急停机掣  
Emergency stop switch should be easily accessible



## 发电机机组装置 Generator Set Installation

- 在机身贴上操作告示，并只许由合格人士检查发电机。
- 在使用蓄电池的地点张贴告示一检查前须移除身上的金属物件；添加电池水时，须穿戴手套、围裙、面罩等。
- 电力装置上须张贴以下告示：
  - 「危险—带电电线。未经授权，不得内进」；
  - 维修期间张贴「危险—在修理中」告示。
- 张贴为触电者进行急救的告示／程序。



展示如何为触电者进行急救的中英文告示  
Notice of first aid for electrical shock in both English & Chinese



设置栏杆以防止有人容易地闯进低电压设备的范围  
Railing to restrict unauthorized access to working zone of low voltage equipment.

## 5 在工地安全使用电力

### Safe Use of Electricity on Site

- Post a notice of operation on the plant body, examine the set by qualified personnel only.
- Post notice at location using rechargeable battery – remove metallic accessories from body before carrying out inspection. Wear gloves, apron, mask etc. when replenishing electrolyte.
- Post warning notice for electrical installation:
  - “Danger Live Wires – Unauthorized Entry Prohibited”,
  - “Danger under Repair” during repair period.
- Post notice/procedure for first aid to electric shock.



于电力装置张贴足够及合适的安全告示  
Adequate notice should be posted to the electrical installation

### 个人防护装备

- 进行电力工程前，穿上装有绝缘鞋底的安全鞋和佩戴绝缘手套，并在适当情况下使用绝缘席。

### Personal Protective Equipment

- Wear safety shoes with electrical resistant soles, insulating gloves, and use of insulating mat where applicable prior to carrying out electrical works.



电工适用的绝缘手套  
An example of insulating gloves



电力工作适用的绝缘席  
An example of insulating mat



## 参考资料

### 相关条例和规例

- 《工厂及工业经营条例》
- 《建筑地盘（安全）规例》
- 《工厂及工业经营规例》
- 《工厂及工业经营（电力）规例》
- 《职业安全及健康条例》
- 《电力条例》
- 《电力（线路）规例》
- 《供电电缆（保护）规例》

### 相关安全标准、工作守则、安全指引和指南

- 《电力（线路）规例工作守则》（机电工程署）
- 《有关在供电电缆附近工作的实务守则》（机电工程署）
- 《工作守则—手工电弧焊接工作的安全与健康》（劳工处）
- 《工作安全指引—手工电弧焊的触电危险》（劳工处）
- 《电气产品（安全）规例指南》（机电工程署）
- 《保养低压电开关设备的安全工作指引》（劳工处）

## References

### Relevant Ordinances and Regulations

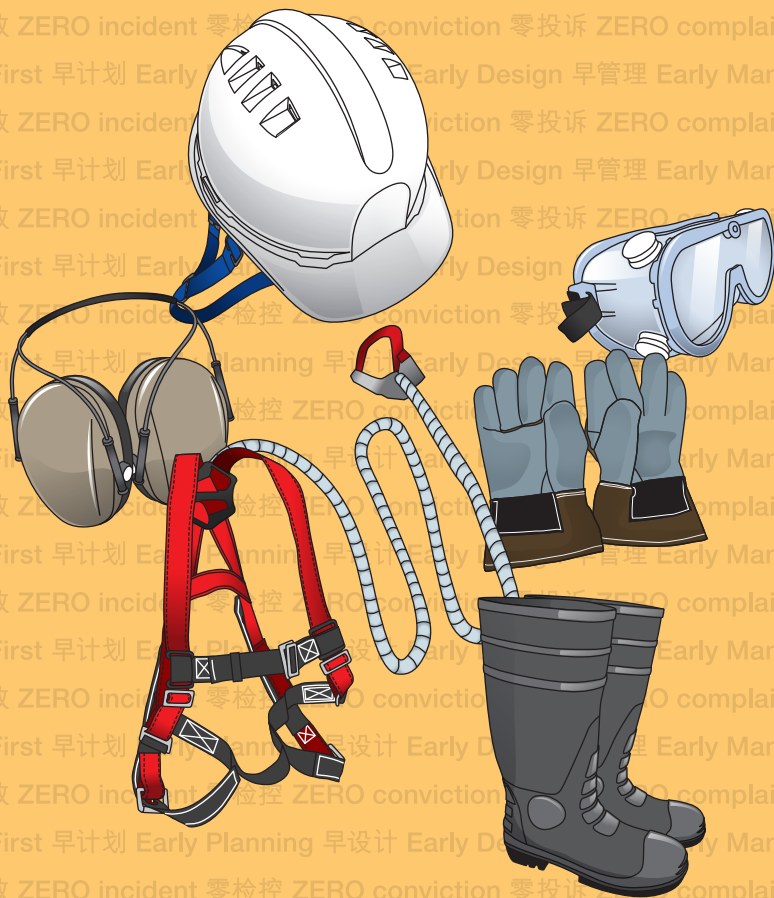
- Factories and Industrial Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Factories and Industrial Undertakings Regulations.
- Factories and Industrial Undertakings (Electricity) Regulations.
- Occupational Safety and Health Ordinance.
- Electricity Ordinance.
- Electricity (Wiring) 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)







工地安全手册

**Site Safety Handbook**

房屋署工地安全小组委员会

**The Housing Department Site Safety Sub-committee**

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

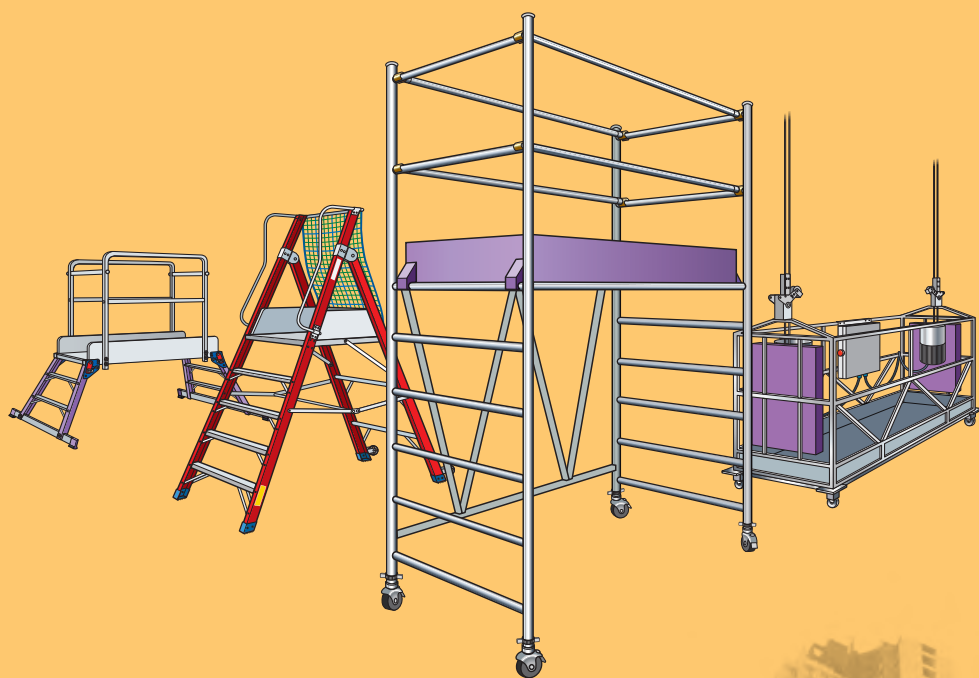


ISBN 978-988-19626-4-5





香港房屋委員會  
Hong Kong Housing Authority



# 工地安全手冊

## Site Safety Handbook

2017 Edition

下冊 | Volume 2

# 房委会项目迈向零意外 持续提升工地安全表现 应用创新科技和措施 确保工程重质又安全

**Strive for zero accident of all persons involved in HA projects**  
**Continuous improvement in site safety performance**  
**Persistent adoption of safety innovation**  
**Safety measures for both works quality and safety**

本手册可从香港房屋委员会网站下载：

**[www.housingauthority.gov.hk/sitesafety](http://www.housingauthority.gov.hk/sitesafety)**

我们现已更新2008年出版的《工地安全手册》。新版手册增加了不少内容，包括最新的安全管理措施、新增或已修订的工作守则、促进安全文化的优化措施等，以供在香港房屋委员会新工程建筑项目进行工地作业时参考。

请注意，遵守本手册的指引，并不会令任何人在法律上具有豁免权。工地的管理人员应根据其工地的实际环境和作业情况制订工作指引、安全施工程序、安全管理制度和预防措施，并培训和督导员工，确保工作团队了解和遵从各项施工程序，以防止意外发生。

为编制本手册，职业安全健康局已批准使用和复制有关资料，包括载于该局刊物内的插图、照片及内容。欢迎复制本手册用作一般参考，惟不得作批签、广告及商业用途。复制时请注明出处为「房屋署工地安全小组委员会刊物《工地安全手册》」。

2008年12月 第一版

2017年2月 第二版

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

**[www.housingauthority.gov.hk/sitesafety](http://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 Hong Kong Housing Authority new works construction projects.

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, provide training and supervision to workers for a full understanding and compliance with the works procedures to avoid accidents.

Occupational Safety and Health Council have granted permission for the use and reproduction of the information including illustrations, photos and contents contained in the their publications for the purpose of this handbook. This handbook may be freely reproduced for general reference except for endorsement, advertising and commercial purpose. Please acknowledge the source as “Site Safety Handbook” published by the Housing Department Site Safety Sub-committee.

First Edition December 2008

Second Edition February 2017



# 目錄 Contents

上册  
Volume 1

前言  
Foreword

- |  |   |
|--|---|
| 1. 安全讯息<br>Safety Messages   | 4. 安全使用机械设备<br>Safe Use of Plant                |
| 2. 安全管理工具及在工地安全上<br>应用资讯科技<br>Safety Management Tools and Use of<br>Information Technology in Safety | 5. 在工地安全使用电力<br>Safe Use of Electricity on Site |
| 3. 一般工地安全及工地整理<br>General Site Safety and Housekeeping   |   |

## 下册 Volume 2

- |   |     |
|---|-----|
| 6. 处理预制混凝土组件<br>Handling of Precast Concrete Elements               | 142 |
| 7. 棚架、工作平台和高空工作<br>Scaffolding, Working Platform and Work at Height | 150 |
| 8. 挖掘工程和道路工程<br>Excavation and Roadworks                            | 178 |
| 9. 地基工程<br>Piling Works   | 190 |
| 10. 拆卸工程<br>Demolition Works  | 202 |
| 11. 密闭空间工作安全<br>Safety in Confined Space                            | 218 |
| 12. 个人防护装备<br>Personal Protective Equipment                         | 230 |
| 索引<br>Index   | 254 |
| 鸣谢<br>Acknowledgements  | 272 |

## 6 处理预制混凝土组件 Handling of Precast Concrete Elements

### 危害识别 Hazards

- 被下坠或移动中的物件击中
- 被倾覆的混凝土组件击中
- Being struck by falling or moving object;
- Being struck by overturning of concrete elements.

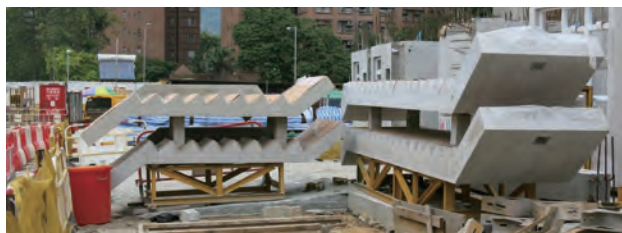
### 贮存地方

- 应提供和指定贮存地方，并以围栏围封。
- 贮存地方应为不受水浸影响的坚硬平地。
- 展示警告标示，禁止未经授权人士进入该范围。
- 设置已获核准的钢架，以稳固地承托预制混凝土组件。



须围封贮存预制组件的地方

Fence off the storage area for precast elements



预制组件应妥善放置在坚硬的平地上

Precast elements properly placed on hard solid level ground



在贮存地方，应展示适当的警告标示

Adequate warning signs at storage area



以钢架稳固地承托预制组件

Steel racks for safely holding the precast elements







## Storage Area

- A designated storage area should be allocated, designed and fenced off.
- The area should be hard solid level ground without any flooding hazards.
- Display warning labels/notice to allow only the authorized person to enter the area.
- Provide approved steel racks for holding precast concrete elements securely.



妥善放置贮存及围封预制组件  
Precast concrete unit properly stored



妥善放置贮存及围封预制楼梯  
Precast concrete staircases properly stored/fenced off

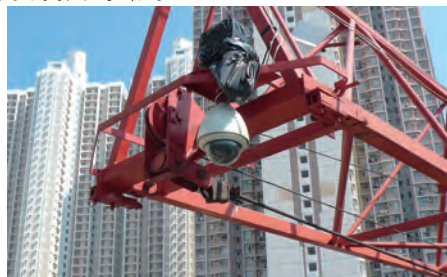


妥善围封未下架的预制楼面板  
Loaded precast concrete slabs are properly fenced off

## 6 处理预制混凝土组件 Handling of Precast Concrete Elements

### 吊运预制混凝土组件 Lifting Precast Concrete Elements

- 在开始起重作业前，委派合格人员进行风险评估。
- 塔式起重机操作员须经过充足训练，持有有效操作证书，并能以讯号或无线电与讯号员沟通。
- 起重作业的讯号员须经过全面训练，并能向操作员发出清晰讯号。
- 讯号员须与塔式起重机操作员保持沟通，避免起重装置过于接近地面，使套在起重装置滑轮上的缆吊索松脱。
- 索具工在进行起重作业前须检查缆吊索。
- 索具工须确保吊重不超出缆吊索的安全操作负荷。
- 塔式起重机应设有安全负荷自动显示器。
- 进行起重作业时，切勿超出安全操作负荷，并须注意安全负荷自动显示器有否发出警号。
- 安全地紧缚所有预制混凝土组件，以防组件移动或移位。
- 使用工字起重梁吊运预制混凝土外墙，而吊运立体预制浴室则应使用吊架。
- 起重装置（例如工字起重梁和吊架）应采用颜色代码系统，以免错误使用装备。
- 吊索和起重梁须由合格检验员于使用前六个月内检验一次，并于每次使用前由合格人士进行检查。
- 检查吊索和起重梁以确保状况良好，而有关设备须贮存在指定地点。
- 细小的预制混凝土组件应放在钢笼或钢桶内吊运，以防在过程中坠下。
- 严格遵从核准的起重程序。
- 塔式起重机操作员须能够清楚接收讯号员发出的讯号。
- 在整个起重作业过程中，塔式起重机操作员必须能清楚观看吊运物。
- 吊运作业的路线应保持在工地范围之内。
- 吊运预制混凝土组件的路线应保持在工人作业区域以外。
- 吊运预制组件的作业应远离架空带电电线。
- 在所有起重装备上贴上适当的测试和检验证明书，例如表格2、表格3、表格5等。
- 确保起重机械和装置具有有效证书。



在塔式起重机吊臂上装设附有录影功能的闭路电视系统  
Tower crane equipped with CCTV camera at horizontal jib



吊运区域低层装设附有录影功能的闭路电视系统，可供操作员监察吊运作业过程  
CCTV camera installed at low level of lifting zone for operator to monitor the lifting operation process



- Competent person to conduct task-specific risk assessment before starting the lifting operation.
- Operator should have received adequate training on tower crane operation and with a valid certificate and communicate with the signaler via signal code/radio.
- Signaler of the lifting operation should be fully trained and can give signal clearly to the operator.
- Signaler should communicate with the tower crane operator so that the lifting gears are not lowered too low to prevent the wire rope slings from becoming loose and dislodged from the pulley of the lifting gear.
- Rigger should inspect wire rope slings before the lifting operation.
- Rigger should ensure the lifting load within the safe working load of the slings.
- Tower crane should be equipped with automatic safe load indicator.
- Never exceed the safe working load during the lifting operation and be aware of any warning signal from the automatic safe load indicator.
- Tie all precast concrete elements safely and securely to prevent any movement or dislodgment.
- Hoisting I-beam and lifting frame should be used during lifting precast concrete façades and volumetric precast bathrooms respectively.
- Adopt colour code system for lifting gear such as hoisting I-beam and lifting frame to avoid wrong use of equipment.
- The slings and lifting beam shall be thoroughly examined by a competent examiner in the proceeding six months before it is used and shall be inspected before use on each occasion by a competent person.
- Check the slings and lifting beam to ensure that they are sound for use and properly stored in a designated location.
- Place small precast concrete elements inside a steel cage or steel bucket to prevent from falling during the lifting.
- Follow strictly the approved lifting procedure.
- Tower crane operator should be able to receive signal clearly from the signaler.
- The tower crane operator should be able to view clearly the object being lifted during the whole lifting operation.
- The route of the lifting operation should be kept inside the site boundary.
- Route of lifting precast concrete elements should be kept clear from works area of workers.
- Lifting the precast elements should be away from the overhead live wires.
- Attach appropriate test & examination certificates to all lifting equipment such as Forms 2, 3 and 5 etc.
- Ensure all lifting appliance and lifting gear provided with relevant certificate.



安全负重显示器自动将不安全载荷的吊运作业发出警告  
Automatic safe load indicator to alert unsafe lifting



安全吊运大型预制组件  
Lifting volumetric precast concrete unit with lifting frame

## 6 处理预制混凝土组件 Handling of Precast Concrete Elements

### 吊运和固定预制混凝土外墙 Lifting and Fixing Precast Concrete Facades

- 塔式起重机必须具有足够的承重能力，起重时须利用有足够支持点的金属梁。
  - 为预制混凝土外墙安装支撑托架。
  - 提供设有扶手的梯台或踏脚架，方便工人把起重梁的吊钩系稳在预制混凝土外墙的有眼螺栓上。梯具只能供上落之用，不得用于高处工作。
  - 在硬地承托和支撑混凝土组件。
- Lifting with the use of a metal beam with adequate supporting points by a tower crane of adequate loading capacity.
  - Install supporting bracket for precast concrete facade.
  - Provide platform ladder or step platform with railing to facilitate the worker to anchor the lifting hook of the lifting beam onto the eye bolt of the precast concrete façade.
- Ladder can only be used for access but not for working at height.
- Support and brace the concrete elements on solid ground.



使用有足够支持点的工字起重梁给预制外墙固定后，才进行吊运  
Hoisting I-beam with supporting points to lift precast concrete facades



为外墙安装支撑托架  
Install supporting bracket for facade



### 吊运和固定预制混凝土楼板 Lifting and Fixing Precast Concrete Slab

- 塔式起重机必须具有足够的承重能力，起重时须利用足够吊钩系稳混凝土楼面板。
  - 必须稳妥地吊运载荷物。
- Lifting with adequate anchor points to the concrete slab by a tower crane of adequate loading capacity.
  - The load should be securely suspended.



在吊运预制楼面板时，须正确安全地稳系吊钩于吊架上，才进行吊运  
Fix properly anchor points of precast concrete slab to lifting frame





## 吊运和固定预制混凝土横梁

### Lifting and Fixing Precast Concrete Beam

- 为工人提供安全的工作平台。(参考第7章)
  - 工人须佩戴安全头盔,把Y型下颌索带索紧和穿上安全鞋。如未能提供安全工作平台,工人便须同时佩戴防堕装置/个人防护装备,包括全身式安全带,其独立救生绳须系稳于结构构件上。
  - 讯号员必须在场,向塔式起重机操作员发出讯号,协助索具工吊运和装嵌预制混凝土横梁。
  - 应提供临时钢料托架,以便安装预制混凝土横梁。
- Provide a safe working platform for workers. (refer to Chapter 7)
  - The workers should wear safety helmets with chin straps fastened and safety shoes. In abeyance of safe working platform provision, the workers must also wear fall arrest/personal protective equipment including safety harnesses, with independent life lines anchored to structural elements.



提供一个安全的工作平台上进行固定预制混凝土横梁后,才进行吊运  
Working platform for fixing precast concrete beams



提供钢料托架,方便安装横梁  
Temporary bracket for fixing precast beam



索具工吊运固定好的预制横梁  
Lifting and fixing precast concrete beams by rigger



## 6 处理预制混凝土组件 Handling of Precast Concrete Elements

- Signaler should be present to communicate with the tower crane operator during the lifting and fixing precast concrete beam by rigger.
- Temporary supporting bracket fixed to wall should be provided for fixing the precast concrete beam.



穿上反光工作服、配合安全头盔及手套等才可进行工作  
Reflective clothing, safety helmet, gloves, etc. in place for lifting works at height

### 天秤吊运警报系统 Tower Crane Lifting Alert System

- 当吊钩下降至进入指定高度的范围，高度检测装置将触发警报装置。
- 此系统有效减低吊运工序的风险。
- Alarm lights and buzzer will be triggered when the hook is descended to a prescribed height and detected by the sensor.
- It helps to reduce the risk of lifting operation.

### 个人防护装备 Personal Protective Equipment

- 佩戴安全头盔，把Y型下颌索带索紧和穿上安全鞋。
- 因应情况需要穿著反光工作服、佩戴全身式安全带、独立救生绳、护耳罩、手套、面罩和护目镜。
- Wear safety helmet with chin strap fastened and safety shoes.
- Wear reflective clothing, safety harness, independent life line, ear muffs, gloves, mask and goggles as need arises.



## 参考资料

### 相关条例和规例

- 《工厂及工业经营条例》
- 《建筑地盘(安全)规例》
- 《工厂及工业经营规例》
- 《工厂及工业经营(起重机械及起重装置)规例》
- 《工厂及工业经营(安全管理)规例》
- 《工厂及工业经营(负荷物移动机械)规例》

### 相关安全标准、工作守则、安全指引和指南

- 《安全使用流动式起重机工作守则》(劳工处)
- 《安全使用塔式起重机工作守则》(劳工处)
- 《建造业议会刊物：塔式起重机安全指引》(建造业议会)
- 《起重机械及起重装置的检查、检验和测试指南》(劳工处)

## References

### Relevant Ordinances and Regulations

- Factories and Industrial Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Factories and Industrial Undertakings Regulations.
- Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations.
- Factories and Industrial Undertakings (Safety Management) Regulation.
- Factories and Industrial Undertakings (Loadshifting Machinery) Regulation.

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

- Code of Practice for Safe Use of Mobile Cranes. (LD)
- Code of Practice for Safe use of Tower Cranes. (LD)
- Construction Industry Council – Guidelines on Safety of Tower Cranes. (CIC)
- Guidance Notes on Inspection, Thorough Examination and Testing of Lifting Appliances and Lifting Gear. (LD)

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

### 危害识别 Hazards

- 人体从高处坠下
- 被下坠的物件击中
- 被困于倒塌的棚架
- 在进行体力操作处理时受伤
- 中暑（炎热天气）
- Fall of person from height;
- Being struck by falling object;
- Being trapped by collapsed scaffolding;
- Injured during manual handling;
- Heat stroke (hot weather).



没有合适围栏造成人体从高处坠下风险  
Risk of fall of person from height due to missing proper guard rail

### 高逾15米的竹棚架 Bamboo Scaffold Greater than 15m in Height

- 高逾15米的竹棚架须由专业工程师设计和核准。
- 连墙器的钢条须具有足够强度，把竹棚架系于建筑物上。
- Bamboo scaffolding greater than 15m in height should be designed and certified by a professional engineer.
- Steel tie rods should be sufficiently strong to tie the bamboo scaffolding to the building.

### 棚架上的工作平台

#### Working Platform on a Scaffolding

- 供在棚架上工作的工人使用。
- 棚架平台至少阔400毫米，铺设桥板路的木板之阔度不得小于200毫米，而厚度不得小于25毫米；如木板之厚度逾50毫米，阔度则不得小于150毫米；木板须搁在至少于3个支持物上；两边踢脚板至少高200毫米，而踢脚板应该是坚硬的木板或金属板。工作平台亦可以金属板铺密或由有孔隙的金属物组成，而任何孔隙面积均不得超逾4,000平方毫米。
- 如棚架同时供工人走过和运输物料，则阔度至少为650毫米。
- 顶部护栏和中间护栏须分别距离平台面900至1,150毫米和450至600毫米。



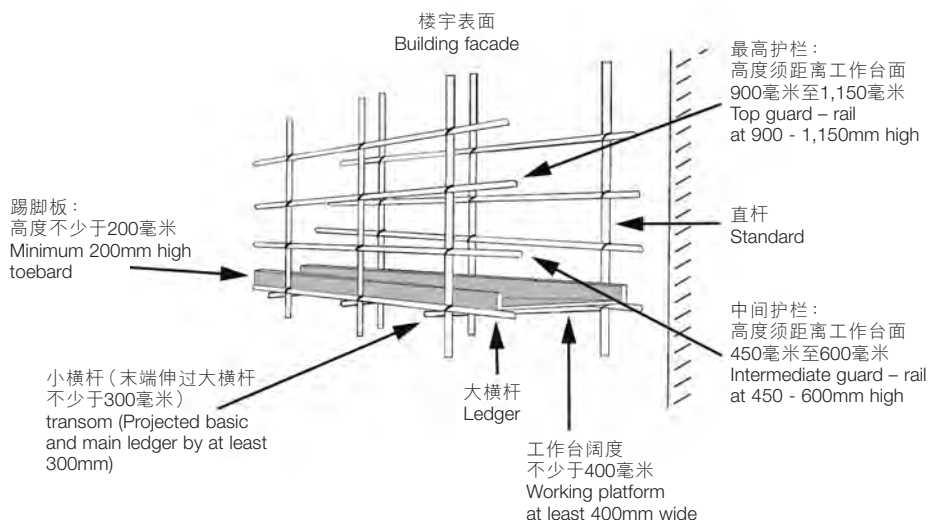
工作平台应设有踢脚板、顶部护栏和中间护栏  
Working platform with toe board, top and intermediate guard-rails



- Required for workers working on the scaffolding.
- Construction of a scaffolding working platform: at least 400mm wide; with closely packed timber plank each of not less than 200mm in width and not less than 25mm in thickness or not less than 150mm in width when the board or plank exceeds 50mm in thickness; each plank shall rest on at least 3 supports; and with at least 200mm high rigid toe board of timber or metal on both sides. The working platform can also be plated or of open metal work without any interstice exceeding 4,000mm<sup>2</sup>.
- The scaffolding platform shall be 650mm wide if it is to allow people and materials to pass through.
- The top and intermediate guard-rails should be at 900 – 1,150mm and 450 – 600mm high from the platform level respectively.



棚架上的工作平台须由踢脚板、中及高栏和密铺的桥板路组成  
Intermediate and top guard-rails with toe board plus closely planking form a working platform on scaffolding



## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

### 搭建竹棚架 Construction of a Bamboo Scaffolding

- 架设、更改和拆卸竹棚架的工作须由曾受训练的工人在合资格人士直接监督下进行。有关工人必须完成正式竹棚工作训练，或已在建造业议会举办的竹棚工中级工艺测试中取得合格的成绩，以及具备一年或以上的竹棚架工作经验。
  - 架设棚架的工序应由下而上、由内而外。
  - 每条「X」形斜杆跨距不得超逾9米，角度从水平面起计不得超逾60度。
  - 竹棚架如高逾7米，便须稳固地系于建筑物上。连墙器的横向间距不得超逾7米，垂直间距不得超逾4米。
  - 竹棚架不得超出负荷。
  - 竹杆的实际直径，横杆不得少于40毫米（第一个棚层的横杆不得少于75毫米），直杆不得少于75毫米。
  - 竹杆的重迭部分，直杆不得少于1.5至2米，横杆、斜杆及斜撑则不得少于2米。
  - 安装拉棚铁（俗称「拉掙」），而拉棚铁之间的水平间距不得超过3米。在离地面高度少于100米的位置，拉棚铁之间的垂直间距不得超过6.3米；在离地面高度100米或以上的位置，拉棚铁之间的垂直间距不得超过4.2米。
  - 拆卸竹棚架前，应检查棚架是否稳固。按照工程计划拆卸棚架，一般次序为由上而下、由外而内。
  - 每日由工地监督人员检查棚架状况。
- Erection, alteration and dismantling of bamboo scaffolding should be conducted by trained workmen under the immediate supervision of a competent person. The trained workmen must have satisfactorily completed a formal training in bamboo scaffolding works or passed the intermediate trade test for bamboo scaffolder of the Construction Industry Council and possess at least 1 year of experience in bamboo scaffolding work.
  - Erection should commence from the bottom to top level and from the interior to external part.
  - Span of each cross-bracing bamboo should not be more than 9m and should not be erected at more than 60° from the horizontal.
  - For bamboo scaffolding higher than 7m, it should be tied to the building securely. Spacing of the tie should not be more than 7m horizontally and 4m vertically.
  - Never overload the bamboo scaffolding.



棚架须要合资格人员检查，并须把填妥的表格5贴于棚架显眼的位置  
A scaffold should be inspected by competent person with a duly signed Form 5 posted on a conspicuous space





## Control the risk at source effectively will improve work performance at height

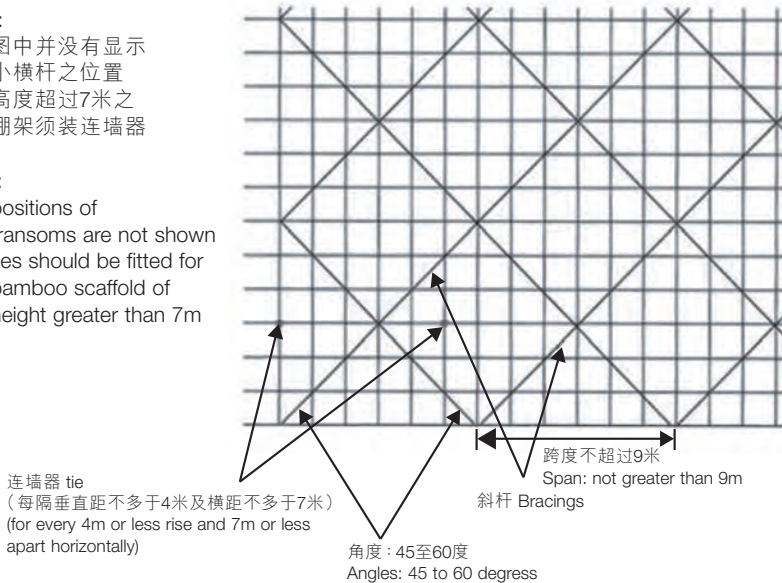
- Effective diameter of bamboo members should not be less than 40mm for a ledger (except the first lift which should not be less than 75mm) and 75mm for a standard.
- For overlapping of two bamboo members, a minimum overlap length from 1.5m to 2m for standards and at least 2m for ledgers and bracing/rackers is required.
- Provide putlogs at a horizontal spacing not greater than 3.0m. At a height of less than 100m above ground, the vertical spacing of putlogs should not be greater than 6.3m while at height of 100m or more, the vertical spacing should not be greater than 4.2m.
- Before dismantling the bamboo scaffolding, the scaffold strength should be checked to be sound, and the works should be proceeded according to the plan, normally from the upper level to lower level, from exterior to interior.
- Arrange site supervisory staff to check the condition of bamboo scaffolding every day.

备注:

- 图中并没有显示小横杆之位置
- 高度超过7米之棚架须装连墙器

Note:

- positions of transoms are not shown
- ties should be fitted for bamboo scaffold of height greater than 7m



竹棚架连墙器及斜杆的位置

Positions of ties and bracings for bamboo scaffold

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

### 搭建金属棚架 Construction of a Metal Scaffolding

- 架设、更改和拆卸金属棚架的工作须由曾受训练的工人在合格人士直接监督下进行。
  - 铺设棚架工作平台的木板至少阔200毫米，厚25毫米。如木板厚度超过50毫米，阔度则至少为150毫米。
  - 金属棚架不得超出负荷。
  - 斜杆应由棚架底部伸延至顶部。
  - 棚架须有足够的直杆、横杆和斜撑系紧，以保持稳固。
  - 为搭棚工和使用棚架的工人提供合适的进出通道。
  - 为安全起见，应为搭棚工提供安全网和全身式安全带。安全网或全身式安全带应系于固定的独立锚固点或独立救生绳上，切勿系于棚架上。
- 
- Erection, alteration and dismantling of metal scaffolding should be conducted by trained workmen under the immediate supervision of a competent person.
  - The board forming the working platform on the scaffold should not be less than 200mm in width and not less than 25mm in thickness or not less than 150mm in width when the board exceeds 50mm in thickness.
  - Never overload the metal scaffolding.
  - Bracing should be extended from the base to the top of the scaffold.
  - Scaffold should be braced vertically, horizontally and diagonally to ensure stability.
  - Provide proper access and egress for scaffolders and users of scaffold.
  - Provide safety nets and full body safety harnesses for protection of scaffolders. Attach the safety net or safety harness to a secure independent anchorage point or an independent lifeline instead of the scaffolding member.



安全网完全覆盖整个棚架  
Entire metal scaffolding is covered with safety net



设有金属桥板、金属踢脚板、顶部护栏和中间护栏的工作平台。  
Working platform with metal plate, metallic toe board, and top and intermediate guard-rails



## 保护幕 Protective Screen

- 进行上层结构工程时，为防止物件从高处下坠，建筑物外墙应以保护幕覆盖。
- 保护幕应稳固系于棚架外面。
- 保护幕不得有缝隙、孔洞，或有碎屑积聚。
- 保护幕应由迟延燃烧物料造成符合英国标准BS 5867-2:2008 (Type B performance requirements)或其他等同的国家或国际标准或规定。



保护幕应覆盖整个受工程影响的外墙  
The affected façade of metal scaffolding for works should be covered with protective screen

- In order to prevent falling object at height during superstructure works, building façade should be covered with protective screen.
- Protective screen to be provided on the façade should be securely fixed to the outer face of scaffolding.
- The protective screen should be free of gap, hole or accumulated debris.
- Protective screen should be made of fire retardant material meeting BS 5867-2:2008 (Type B performance requirements) or other equivalent national / international standards or provisions.



保护幕应覆盖整个外墙棚架  
Entire bamboo scaffolds should be covered with protective screen

## 斜棚 Catch-fan

- 斜棚的斜面应由木板和一层镀锌铁片组成，并有适当承托。斜棚底部或指明位置应设有至少400毫米x200毫米的坑槽。
- 每隔不超过15米的垂直高度装置斜棚。
- 斜棚须由外棚向外伸出的跨度不得少于1500毫米。
- Sloping catch-fan should consist of timber boarding and a layer of galvanized metal sheeting and should be adequately supported. A minimum of 400 x 200 mm channel is required at the bottom of the catch fan or the equivalent to be provided where specified.
- Catch-fan should be provided at not more than 15m vertical intervals.
- The catch-fan should be projected 1500mm minimum horizontally beyond the outer face of the scaffolding.



斜棚应从建筑物外棚向外伸延1,500毫米  
Catch-fan projected at least 1,500mm horizontally from the scaffolding

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

### 法定检查表格 Statutory Inspection Form

- 在下列情况下，合资格人士须检查棚架并填写《建筑地盘（安全）规例》表格五：在棚架首次使用前；定期在紧接每次使用前的14天内；棚架在经过相当程度上的扩建后或其中部分经过拆卸后，或经过其他更改后，以及经历相当可能会影响其强度或稳固性的天气情况之后。



填妥的《建筑地盘（安全）规例》表格五  
Typically completed Form 5 – Construction Sites (Safety) Regulations

- Competent person to check scaffolding and complete Form 5 of Construction Sites (Safety) Regulations after inspection of the scaffold before use for the first time and at regular intervals not exceeding 14 days immediately preceding each use, after substantial addition, partial dismantling or other alteration, or exposure to weather likely to have affected its strength or stability.

### 临时保护篷 Protective Canopy

- 在完成大厦第七楼层的楼板前，须于一楼围绕大厦设置临时保护篷，以便为工人提供安全的进出通道。
- Complete temporary protective canopy at first floor around the building block for workers with a safe access to and egress from the building before the 7th floor slab has been cast.



设置临时保护篷，为工人提供安全的进出通道  
Temporary protective canopy for workers with a safe access/egress



在大厦的第七层楼板工作尚未展开前，应完成设置大厦的临时保护篷  
The erection of protective canopy should be completed before the 7th floor slab is cast



## 流动工作平台

- 流动金属工作平台应由曾受训练的工人在合资格人士的直接监督下架设、更改或拆卸。
- 流动工作平台的每个轮子均须设有锁定装置。
- 移动工作平台时，任何人均不得留在平台上。
- 室外使用的工作平台，其高度与底部最小边长的比例不得超逾3:1，而室内使用的工作平台则为3.5:1。
- 工作平台的四边须设置200毫米高的踢脚板。顶部护栏和中间护栏须分别距离平台面900至1,150毫米和450至600毫米。
- 如工作平台装有外伸支架，须完全伸展，而底座须置于坚硬的平地上。
- 按照制造商的指示架设和操作工作平台。
- 架设、维修保养和拆卸工作平台的工作，须由曾受训练的工人在合资格人员的直接监督下按制造商指示进行。
- 切勿在强风、暴雨等恶劣天气下或危险区域（例如架空电缆）附近使用工作平台。
- 委派曾受适当训练的人员在每两星期及在每次使用前检查工作平台，并定期按照制造商的指示进行维修保养和检查。检查和维修保养的记录须妥为保存。



设有轮子锁定装置的流动工作平台  
Mobile working platform fitted with castors locking device



流动工作平台  
Mobile Working Platform



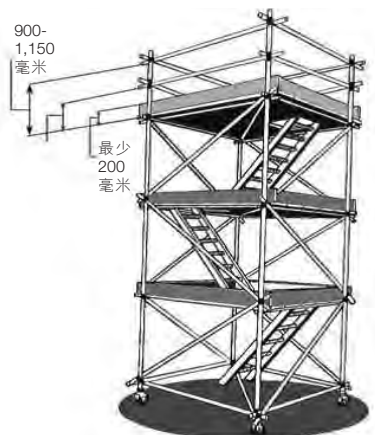
装有踢脚板，顶部及中间护栏的工作平台  
Mobile working platform with toe board, top & intermediate railing



## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

### Mobile Working Platform

- Mobile metal working platform should be erected, altered and dismantled by a trained workman and under the immediate supervision of a competent person.
- Every castor of a mobile working platform should be fitted with a locking device.
- No person is allowed to stay on the platform during its movement.
- The ratio of height to the smallest base dimension should never exceed 3:1 and 3.5:1 for external and internal use respectively.
- 200mm high toe board required for all sides, the top and intermediate railings to be erected at 900 – 1,150mm and 450 – 600mm high from the platform level respectively.
- When fitted with outriggers, all of them should be fully extended and their bases to be firmly rested on solid level ground.
- Method of erection and operation to be in accordance with manufacturer's instruction.
- To be erected, maintained and dismantled in accordance with the manufacturer's instruction by trained workmen under the immediate supervision of a competent person.
- Never use the platform under severe weather (i.e. strong wind, storms, etc.) or near hazardous areas (i.e. overhead power line, etc.)
- Conduct inspection each time biweekly and before use, carry out regular maintenance/check by properly trained persons according to manufacturer's instruction and keep the relevant records.



流动工作台的护栏  
Fencing in mobile working platform

### 踏脚架（工夫凳）Hop-up Platform

- 若离地工作涉及不多于900毫米下坠的风险，可使用踏脚架，而围栏并不是必要的。
- 若离地工作涉及超过900毫米但少于2米下坠的风险，可使用装设围栏的踏脚架。
- For working involving a possible fall of less than or equal to 900mm, a hop-up platform with or without guard-rails may be used.
- For working involving a possible fall of less than 2m but more than 900mm, a hop-up platform with guard-rails may be used.



使用装设围栏的踏脚架  
Use of hop-up platform with railing

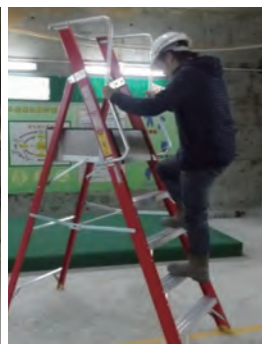


## 梯台 Step Platform

- 若离地工作涉及不多于900毫米下坠的风险，可使用梯台，而围栏并不是必要的。
- 若离地工作涉及超过900毫米但少于2米下坠的风险，应使用装设围栏的梯台。
- For working involving a possible fall of less than or equal to 900mm, a step platform with or without guard-rails may be used.
- For working involving a possible fall of less than 2m but more than 900mm, a step platform with guard-rails should be used.



安全梯台于两旁设置扶手  
Step platform with handrails on both sides



使用装设围栏的梯台  
Use of step platform with railing

## 动力操作升降工作平台 Mobile Elevating Work Platform

- 动力操作升降工作平台须由合资格检验员进行检验／测试。
- 动力操作升降工作平台须由曾受适当训练的人员按照制造商的说明书／指示操作。
- 在操作非自行式或车身安嵌式的动力操作工作平台行驶时，任何人均不得留在平台上。
- 工作平台的四边须设置200毫米高的踢脚板。顶部护栏和中间护栏须分别距离平台面900至1,150毫米和450至600毫米。
- 按照制造商的指示操作工作平台。
- 切勿在强风、暴雨等恶劣天气下或危险区域（例如架空电缆）附近使用／操作工作平台。
- 委派曾受适当训练的人员在每次使用前检查工作平台，并定期按照制造商的指示进行维修保养和检查。检查和维修保养的记录须妥为保存。
- Mobile elevating work platform to be examined/tested by competent examiner.
- Mobile elevating work platform to be operated by a properly trained person according to manufacturer's manuals/instruction.



工人操作及使用动力操作升降工作平台时，须穿上全身式安全带并系稳于工作平台上指定的牢固点上  
Worker needs to wear safety harness attached to a designated anchor point of the mobile elevating work platform when the platform in operation.



动力操作升降工作平台四边装设护栏，避免工人发生意外而受伤  
Mobile elevating work platform fitted with guard on four sides for protection of workers from accident

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

- No person is allowed to stay on the non self-propelled or chassis-mounted mobile elevating work platform when the work platform is travelling.
- 200mm high toe board is required for all sides, the top and intermediate railings to be at 900 – 1,150mm and 450 – 600mm high from platform level respectively.
- Method of operation to be in accordance with manufacturer's instruction.
- Never use/operate the platform under severe weather (i.e. strong wind, storms, etc.) or near hazardous areas (i.e. overhead power line, etc.)
- Provide pre-operation inspection each time before use, carry out regular maintenance/check by properly trained persons according to manufacturer's instruction and keep the relevant records.

### 外间开口 External Opening

- 如工作间的外间开口比毗邻平面高出两米或以上，便须在现场设置900至1,150毫米高的顶部护栏、450至600毫米高的中间护栏和200毫米高的踢脚板。
- For external opening of a workplace where a fall of 2 metres or more exists, top guardrails of height between 900-1,150mm and an intermediate one between 450-600mm from floor level, and 200mm high toe board should be provided to the scene.



设有防护围栏的外间开口  
External opening provided with protective barrier

### 悬空式棚架 Truss-out Scaffold

- 钢料托架须经注册结构工程师核准。
- 每个钢料托架须使用至少三颗锚栓固定在以足够强度物料建成的外部结构上。
- 不得横向安装托架。
- 确保棚架及其所有部分：
  - 状况良好；
  - 以坚固质佳的物料制造；
  - 没有明显瑕疵；
  - 由具备足够实际经验的合资格人士架设、维修保养、更改和拆卸。
- 倾斜承重管（即斜撑）的垂直角度不得超逾30度。
- 工人应佩戴附有防坠装置和连系独立救生绳的全身式安全带。
- 棚架不得超出负荷。
- The steel bracket should be approved by registered structural engineer.
- Minimum three nos. of anchor bolts to be provided for each bracket attached to external structure with adequate material strength.



钢料托架必须有足够强度和按照注册结构工程师核准的施工说明书安装  
Steel bracket with adequate strength installed according to the method statement approved by registered structural engineer



## Control the risk at source effectively will improve work performance at height

- The bracket should not be installed horizontally.
- Ensure that the scaffold and every part of it are:
  - in good conditions;
  - made of strong and sound materials;
  - free from patent defects;
  - erected, maintained, altered and dismantled by competent person with adequate practical experience.
- Angle of the inclined load bearing tube, i.e. the raker, should not exceed 30° from vertical.
- Worker should wear safety harness, fitted with arrestor and attached to independent lifeline.
- Never overload the scaffold.



在工作平台边缘安装护栏  
Guard-rails installed to perimeter of large steel formwork

### 大型钢料模板的工作平台 Platform of Large Steel Formwork

- 应在大型钢料模板上提供合适的工作平台。
  - 工作平台须设有距离平台面900至1,150毫米高的顶部护栏、450至600毫米高的中间护栏和200毫米高的踢脚板。平台上的桥板须铺密。
  - 吊运时不得有人留在模板上。
  - 工作平台须由合格人士检查。
  - 不得在工作平台上摆放物料或设备。
- Large steel formwork should be provided with proper working platform.
  - Working platform should be provided with top guardrails of height between 900 – 1,150mm and an intermediate one between 450 – 600mm high from platform level and a 200mm high toe board. The platform should be closely boarded.
  - No person is allowed on the formwork during lifting.
  - The working platform should be inspected by a competent person.
  - No material or plant is allowed to be placed on the working platform.



工作平台护栏以金属丝网围封  
Parapet wall of a working platform is fenced with wire mesh

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

### 高空工作台（吊船）

- 吊船由四条钢丝绳缆索悬吊而当中的两条安全缆索则配备自动安全装置。
- 吊船须设有距离工作平台面900至1,150毫米高的顶部护栏、450至600毫米高的中间护栏少和200毫米高的踢脚板。
- 使用吊船前，应由合资格检验员彻底检验和进行负载测试，并取得认可证明书（表格2—紧接使用前的六个月内；或表格3—紧接使用前的12个月内），确保吊船可安全操作。
- 每天工作前和紧接使用前七天内，应由合资格人员检查吊船，并取得认可证明（表格1），确保可安全操作。
- 吊船操作员和吊船上的工人须年满18岁，并持有认可训练证明书。
- 吊船上的所有人必须佩戴全身式安全带和独立救生绳，而独立救生绳应系稳在独立于悬吊系统的结构构件上。
- 吊船上必须标明安全操作负荷（包括每次可载的最高人数和其他负载物），并有可清楚辨别该吊船的适当标记。
- 展示显眼的中英文告示：「每日开工前须检查所有吊索」和「吊船上的人员须佩戴安全带；安全带须系于独立救生绳上或稳固的系稳物上」。
- 开工前，在吊索末端加上重物，确保所有吊索均已拉紧。
- 切勿在恶劣天气（例如强风、下雨或雷暴）下使用吊船。
- 应围封吊船正下方的地面范围，避免高空坠物的风险。切勿在吊船边缘放置物料或工具，以防物件坠下。
- 因应不同的工作性质，吊船上应采取相应的安全措施，例如工人在吊船上使用易燃物品，须带备合适的灭火筒。



天台上的吊船设备。救生绳以布料、塑胶套管或类似的方法保护，以免被尖角损坏。

Facilities of gondola at roof. The lifeline is protected with fabric material, plastic tube or similar means to prevent damage by sharp corner.



为吊船上延迟燃烧物料造成的保护幕，以避免物料从高处下堕

Gondola provided with fire retardant protection screen to avoid falling of debris





## Suspended Working Platform (Gondola)

- To be hung by 4 suspension wire ropes with 2 wire ropes fitted with automatic safety devices.
- The gondola should be provided with top guardrails of height between 900-1,150mm and an intermediate one at between 450-600mm high from platform level and a 200mm high toe board.
- To be thoroughly examined and load tested by competent examiner before its use (provided with Form 2 in the immediate preceding 6 months and Form 3 in the immediate preceding 12 months) to ensure that it is in safe working order.
- Inspected by a competent person before commencement of daily work and in the immediate preceding 7 days before its use (provided with Form 1) to ensure that it is in safe working order.
- Operator or workers on the suspended working platform should be at least 18 years old and have a recognized training certificate.
- Every person on a suspended working platform should wear a safety harness with independent lifeline anchored to structural member separated from the suspension system.
- Safe working load inclusive of maximum number of persons and other loads required on a suspended working platform should be shown with an appropriate mark to distinguish it from others.
- Display notice in English and Chinese prominently: "All wire ropes shall be inspected prior to commencement of daily work" and "Every person riding on a suspended working platform shall wear a safety harness properly attached to an independent lifeline or an appropriate anchorage."
- Add a weight at the end of the wire ropes to make sure all the wire ropes are in taut condition before works commencement.
- Never use the platform under adverse weather conditions: strong wind, raining, thunder or storm.
- The area underneath a suspended working platform must be fenced off to avoid risk of falling objects. Never place materials or tools near the edge of the platform to prevent falling object.
- Appropriate safety measures are required for different work nature. e.g. fire extinguisher of appropriate type is required if working on a suspended working platform involves the use of inflammable substances.



悬吊缆索及安全缆索在任何时间都应保持垂直，可考虑于吊缆末端加上重物，以确保缆索没有松弛状况。

The suspension and safety rope should at all times be kept vertical, possibly by means of adding a weight at the end of the suspension rope, so as to ensure no slacking of the ropes above the safety devices

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

安全头盔、安全鞋、全身式安全带和独立救生绳

**Safety Helmet, Safety Shoes, Safety Harnesses and Independent Lifelines**

- 应在吊船上工作的工人提供独立救生绳，并把救生绳系在系稳物上。
- 在吊船上工作时，工人应佩戴安全头盔，把Y型下颌索带索紧和配备防堕装置的全身式安全带，并把安全带系上独立救生绳。
- Independent lifeline with anchorage should be provided to each worker when they are working on a gondola.
- Worker should wear safety helmet with chin strap fastened and safety harness with fall arrestor attached to an independent lifeline during working on the gondola.



工人在吊船上工作时应佩戴适当的个人防护装备

Workers with suitable personal protective equipment (PPE) during working on the gondola

### 出入口 Access

- 在最低楼层提供适当、安全的通道前往工作平台、棚架和吊船。
- Provide proper safe access to egress from working platform, scaffolding and gondola at the lowest floor to be reached by the working platform, scaffolding and gondola.



提供工人进入吊船的安全通道  
Safe access to gondola

### 梯具

- 梯具应坚固完好，并稳妥地放置或设置。
- 梯具一般作上落之用。如工人使用梯具工作时可能会从两米或以上高度坠下，便不应使用梯具。
- 在一些特别工作间（如受环境限制）进行简单工程而工作平台并不可行时，需提供合适的踏脚架或梯台。
- 如未能使用其他工具，而梯具是唯一可行办法，则需由合格人士进行的详细风险评估，订立使用梯具的所有安全措施及签发出工作许可证并配合防堕装置使用，而防堕装置须系在坚固的锚固点上。



以下必需的安全措施，包括：

- 工人不得站在或坐在梯具的顶部工作，应站在一个在失去平衡时能抓紧梯子的位置。
- 使用直梯时，摆放直梯的高度与底部的比例不得超逾4:1。
- 上落梯具时应面向梯具及与梯具保持3点接触。
- 梯具两旁应设有扶手，扶手高度应为1.1米。
- 进行电力工程时应使用不导电梯具，例如玻璃纤维增强塑料梯具。
- 使用的梯具应符合以下安全要求：
  - BS EN131标准，适用于木梯、金属爬梯和玻璃纤维增强塑料梯具；
  - BS 2037标准，适用于金属爬梯；
  - EATS13/1标准，适用于玻璃纤维增强塑料梯具；以及
  - BS EN14183标准，适用于踏脚架。



两旁设有扶手的固定式钢梯  
A steel ladder (fixed type) with handrail on both sides.



梯子级面加上金属杆，增强防滑效果  
Access staircase with additional steel rod as anti-slip device



两旁设有扶手的移动式钢梯  
A steel ladder (easy movable type) with handrail on both sides

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

### Ladder

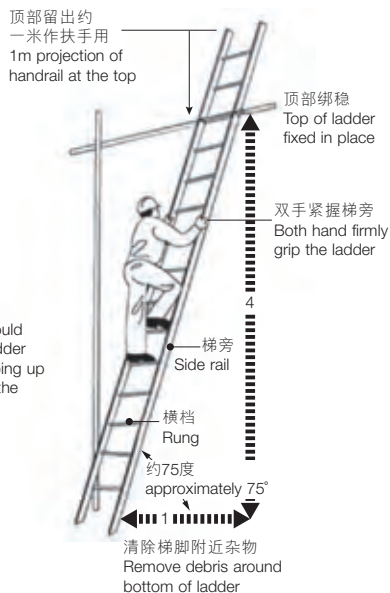
- The ladder should be structurally sound and securely rested/fixed in place.
- Ladder is normally adopted as a means for access and egress and it should not be used for works with a risk of falling for 2 meters or more.
- For light duty work to be carried out in work environment (for example, with restrictive space) where a suitable working platform cannot be erected, provide and ensure the use of suitable step platforms or hop-up platforms as appropriate.
- When it is found practically impossible to use other tools and ladder is the only feasible means, issue a permit-to-work for use of ladder by a competent person with a thorough risk assessment conducted and all necessary safety measures related to use of ladder taken, including adopting a fall arresting system and attaching it to a rigid anchor point.



应使用符合国际标准的梯具  
Ladder should comply with international standard

Necessary safety measures related to use of ladder include:

- Worker should never stand or sit on the top of a ladder during work. He should stand on a position that he can grab the ladder in case he loses his balance.
- Ratio of height and base for erection of straight ladder should be not more than 4:1.
- User of ladder should face a ladder when he climbs up or down on the ladder and should maintain 3-point contact with the ladder.
- Railing should be provided to ladder on both sides and the railing should be extended 1.1 m above the ladder.
- Non-conductive ladder such as ladder made of glass-fibre reinforced plastic should be used for electrical work.
- Ladders for use shall comply the safety requirements as below:
  - BS EN131 for timber, metal and glass-fibre reinforced plastic ladder
  - BS 2037 for metal ladder;
  - EATS13/1 for glass-fibre reinforced plastic ladder
  - BS EN14183 for hop-up platform

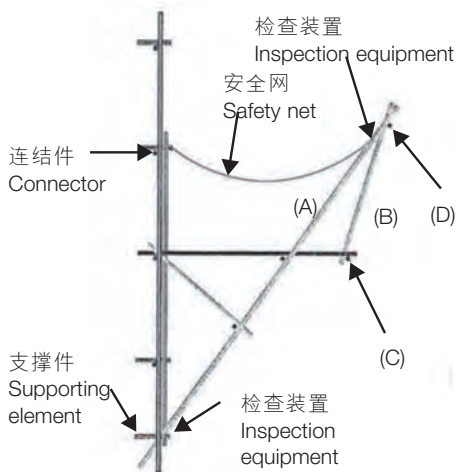


使用梯子的安全要点  
Safety practice when using ladder



## 安全网

- 可承托从高处坠下的工人。
- 并非防坠装置。
- 应考虑其他防止人体从高处坠下的措施，如无其他选择才使用安全网。安全网是最后的方法。
- 可能下堕的高度愈高，安全网的面积应愈大。
- 安全网与工作位置之间的垂直距离应少于六米。
- 根据英国标准，安全网的阔度应在至少3米与4.5米之间。
- 须由具备相关经验的合资格人士按照制造商的指示安装。
- 使用以符合英国／国际标准的防火物料制造的安全网。
- 按照制造商的指示维修保养、检查和测试安全网，并把情况妥为记录。
- 为安全网提供安全的出入通道，例如工作平台。
- 操作／维修保养须知：
  - 避免安全网被化学品破坏，或在物料上受损；
  - 不得在安全网上存放物品；
  - 避免在安全网附近进行产生热力的工序，以及避免有杂物掉进网内；
  - 定期清理网上的杂物和尖锐物件；
  - 由曾受训练的人员按照制造商的指示维修保养安全网。



由棚架向外伸展的安全网之示意图

- 安全网及其支撑构架系于棚架结构上，而棚架结构则稳固地系于建筑物上，这个布置方式也适用于直接系于建筑物上的安全网及其支撑构架。
- 如工程师证明构件(A)已有足够的强度，则可以略去构件(B)、(C)和(D)。

Diagram showing a safety net extending from a scaffolding

- The safety net and its supporting framework are tied to the scaffolding structure which is secured tightly onto the building. This configuration is also applicable to a safety net and its supporting framework that are tied directly onto the buildings.
- Components (B), (C) and (D) can be omitted if it has been certified by an engineer that component (A) is of adequate strength.

## Safety Net

- Being capable of receiving a worker falling from height.
- It is not a fall arrest system.
- Consider other measures to prevent person falling from height before adopting safety net – it is considered the last measure.
- Area of the net increases with falling height of person.
- Maximum vertical falling height to the net from a working area should be set less than 6m.
- Allow the net with catching width of minimum 3 meters to 4.5 meters to meet the BS standards.
- To be installed by experienced and qualified personnel according to instruction of manufacturer.



## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

- Use fire retardant material conforming to BS/international standard for safety net.
- To be maintained, checked and tested according to instruction of manufacturer and properly recorded.
- Provide safe access to/egress along the edge of the net, for example, working platform.
- Considerations of operation/maintenance: –
  - avoid chemical or physical damage;
  - no storage of things on the net;
  - avoid heating procedure nearby or falling of debris onto the net;
  - remove debris, sharp objects regularly;
  - repair by trained person under manufacturer's instruction.

### 升降机槽工程 Lift Shaft Works

- 应遵照已核准的安全计划进行安装工程。
- 为升降机安装工程进行风险评估。
- 按照工作许可证制度保管钥匙和批准进入升降机槽。升降机槽内不得同时进行不同工种的工作。
- 避免在升降机槽内进行产生热力的工作和电弧焊接工程。
- 除非属核准的类型，否则各类手提和临时电力装置必须接地。
- 为所有升降机安装工程提供110伏特低压供电及防水插座。
- 所有升降机工程必须有足够照明、通风和良好通讯方式。
- 升降机槽内须设置至少三条紧扣的独立救生绳。
- 升降机槽内须设置以防火物料制造的安全网。
- 确保升降机槽壁与安全网之间没有缝隙。
- 定期清理安全网上的杂物。



只有获许可并持有钥匙的人方可打开闸门进入升降机槽。闸门无需钥匙便可从内侧打开。

Only the permitted person with key can unlock the gate to access the lift shaft. The gate can be opened from inside the lift shaft without use of key.



- 在升降机槽最低层的开口设置锚固点，工人将全身式安全带的绳索紧系在该锚固点后才进入槽底工作。
- 进入升降机槽工作前，佩戴合适的全身式安全带并连接上防堕装置，和个人防护装备。
- Adhere to the endorsed/approved safety plan for installation.
- Carry out risk assessment for lift installation works.
- Adopt permit-to-work system for key custody and permitting entry to the lift shaft, and no work shall be conducted by different trades simultaneously inside the lift shaft.
- Avoid hot work and electric arc welding inside lift shaft.
- Earth all electric appliances for portable or temporary fixed types unless they are the approved type.
- Provide temporary power supply of 110V with circuits equipped with waterproof sockets for lift installation.



安装全高度四扇金属闸门，防止工人擅闯升降机槽。  
Full height 4-leaf metallic gate to restrict unauthorized access to lift shaft



在升降机槽出入闸口张贴的警告告示  
Warning notices posted at lift shaft access gate



在升降机槽口附近设置锚固点，以供系上防堕装置／全身式安全带。  
Provide anchorage near lift shaft opening for anchoring fall arrestor/safety harness



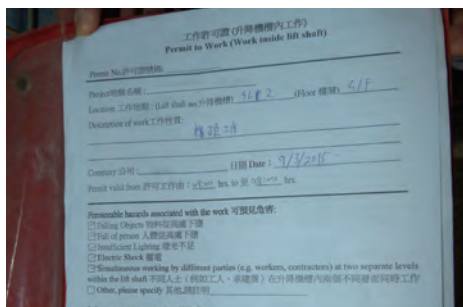
应使用低压电力手提工具  
Use low voltage portable tools



当需要进入升降机槽或井底工作时，工人必需将随带吊绳紧固于独立救生绳  
Worker should attach the lanyard to the independent lifeline before making access to lift pit/shaft

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

- Provide adequate illumination, ventilation and good communication system for all the lift works.
- Provide a minimum 3 nos. of independent lifeline securely anchored inside the lift shaft.
- Provide safety nets made of fire resistant materials inside lift shaft.
- Make sure no gap between the lift shaft walls and the nets.
- Clean and remove the collected debris from safety net regularly.
- Provide anchorage at the lowest landing floor with lift shaft opening for worker to attach lanyard of safety harness before making access to the lift pit.
- Put on suitable safety harnesses, attaching to fall arrestors, and with suitable personal protective equipment provided before making access to lift shaft for works.



工人需得到工作许可证，方可进行升降机顶工作

Worker should have obtained a permit-to-work certificate prior to any works at the lift car top



全身式安全带需稳固系于升降机槽内的独立救生绳后，方可进入工作台

Full body harness should be securely anchored to the independent lifeline prior to access to the working platform



## 高空工作的检查表 Checklist of Working of Height

机构名称 \_\_\_\_\_ 日期 \_\_\_\_\_  
Name of Organization \_\_\_\_\_ Date \_\_\_\_\_

工作地点 \_\_\_\_\_  
Location of Site \_\_\_\_\_

检查员姓名 \_\_\_\_\_ 时间 \_\_\_\_\_  
Name of Inspector \_\_\_\_\_ Time \_\_\_\_\_

项目 Item	妥善 Good	须改善 Need Improvement	须即时改善 Need Immediate Improvement	不适用 N/A	备注 Remarks
<b>1) 棚架 Scaffolding</b>					
a) 棚架的搭建、加建或更改工程是否由受过训练及具足够经验人士在合格人士直接监督下进行? 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) 棚架是否有效地向纵、横及对角稳系以防止塌下? Is the scaffold secure from collapse by being effectively fastened vertically, horizontally and diagonally?					
c) 棚架是否搭建于适当地面或地基上? Is the scaffold standing on suitable ground surface or foundation?					
d) 是否为使用棚架的人士提供安全进出途径? Is there any safe access available to the scaffold users?					
e) 棚架是否由合格人士在使用前及最少每十四天内检查一次及将结果填报于法定表格内? 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) 棚架是否在经过扩建或更改后或于暴露在恶劣天气情况后再由合格人士检查及将结果填报于法定表格内? 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?					

# 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

项目 Item	妥善 Good	须改善 Need Improvement	须即时改善 Need Immediate Improvement	不适用 N/A	备注 Remarks
g) 塔式通架的高度与最小底边长度比率是否符合安全要求(室内限于3.5, 室外限于3)? 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) 流动式塔式通架脚部之滑轮是否装上紧锁系统及保持良好效能? Are the base wheels of the mobile tubular tower equipped with an effective locking system?					
<b>2) 工作台 Working Platform</b>					
a) 工作台的木板、夹板或金属板是否结构良好及有足够厚度? Are the wooden or plywood boards or metal plates of the working platform structurally sound and of adequate thickness?					
b) 工作台的木板、夹板或金属板是否紧密地铺上? Is the working platform tightly decked with wooden or plywood boards or metal plates?					
c) 工作台的木板、夹板或金属板是否排列妥当或妥为系紧以防止翻倒? Is the working platform suitably decked or fixed with wooden or plywood boards or metal plates to avoid overturning?					
d) 工作台上的物料是否平均分布及没有超荷? Are materials evenly placed on the working platform and causing no overloading?					
e) 高于两米的工作台, 是否每边均有适当围栏和踢脚板? Is the working platform operating at a height of more than 2 metres equipped with guard-rails and toe-board on each side?					
f) 工作台是否有足够阔度让人及物料通过? Is the working platform wide enough for people and materials to pass through?					
<b>3) 楼边、电梯边、升降机槽口及楼面洞口 Floor edges, staircase edges, lift shafts and floor openings</b>					
a) 高于两米的楼边、梯边、升降机槽口或其他危险地方是否设有适当的围栏和踢脚板? 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) 围栏是否有足够强度及系稳在坚固的楼面或地台上, 以防止人体坠下? Are the guard-rails of adequate strength and fixed tightly on secure floor slabs to prevent people from falling off?					





项目 Item	妥善 Good	须改善 Need Improvement	须即时改善 Need Immediate Improvement	不适用 N/A	备注 Remarks
c) 所有楼面洞口、地洞或其他危险地方是否设有适当构造的覆盖物，及稳固于正确位置上？ 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) 该等覆盖物是否以粗体字清晰地标明，以显示其用途？ Are the coverings marked with bold characters to indicate clearly their use?					
<b>4) 梯子 Ladders</b>					
a) 梯子是否只用在不能搭建棚架的工作地方？ Are ladders used only where circumstances do not permit scaffolding?					
b) 所有梯子部份例如梯边、梯级及防滑梯脚踏是否结构良好？ Do ladders have all their parts such as side rails, rungs and anti-slip foot-pads in good conditions?					
c) 所有梯子顶部是否系稳或若切实不可行时，有没有在靠近梯子的底部予以稳固？ Are ladders fastened up at the top or, if this is not practicable, fixed securely at the part near their bottom?					
d) 所有梯子是否竖立于平稳及坚固的立足处？ Are all ladders standing on level and firm base?					
e) 所有梯子是否高于其顶部落脚点最少1米？ Do all ladders extend at least 1 metre above the landing level?					
<b>5. 防止人体坠下措施 Preventive measures against people from falling</b>					
a) 在不能搭建安全工作台的情况下，是否有提供适当的安全网、安全带或其他类似设备以防止任何人士因坠下而受伤？ 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) 若使用安全带，是否有提供适当的牢固点例如独立救生绳及适当的装配？ If safety harnesses are being used, is there any provision of proper anchor points such as independent lifelines and suitable equipment?					
c) 所有安全网及安全带等，是否均维修妥当？ Are all safety nets and safety harnesses kept under proper maintenance?					

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

项目 Item	妥善 Good	须改善 Need Improvement	须即时改善 Need Immediate Improvement	不适用 N/A	备注 Remarks
d) 有没有确保安全网装置接近建筑物? Are steps being taken to ensure that the safety net installation is close to the building?					
e) 在安装安全网时, 是否确保网身没有过度拉紧而应略为下垂? Are safety nets installed in the manner that the nets are not overstretched and should be allowed to sag slightly?					
f) 所有独立救生绳及稳固点, 是否经由「注册专业工程师」检验合格? Are all independent lifelines and anchor points examined and accepted by registered professional engineer?					
<b>6) 防止物料坠下措施 Preventive measures against materials from falling</b>					
a) 是否已采取所需的预防措施, 以防止工人遭坠下的物料或物体所击中? Are the necessary precautions being taken to prevent workers from being struck by falling materials or objects?					
b) 工作地点对下的位置是否已被围封以避免物料堕下? Is the area underneath a work being carried out at height fenced off to avoid risk of falling objects?					
c) 是否采取步骤以防止棚架物料、工具或其他物料从高处掷下、倾倒或投下? Are steps being taken to prevent scaffolding materials, tools or other materials from being thrown, dumped or dropped from height?					
d) 工友高空工作而存在工具下堕的风险时, 是否工友已使用手绳以固定手工具? 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) 是否利用起重机械或起重装置, 以安全的方式妥善地卸降棚架物料、工具或其他物料? Are lifting appliances or lifting gears being used for the safe and proper lowering of scaffolding materials, tools or other objects?					
<b>7) 吊船 Suspended Working Platform</b>					
a) 吊船是否由「注册专业工程师」设计、检验及测试, 以确保能承载足够重量? Has the suspended working platform been designed, inspected and examined by registered professional engineer to ascertain the safe working load?					

检查员签名 \_\_\_\_\_ 时间 \_\_\_\_\_  
Signature of Inspector \_\_\_\_\_ Time \_\_\_\_\_

## 7 棚架、工作平台和高处工作 Scaffolding, Working Platform and Work at Height

### 参考资料

#### 相关条例和规例

- 《工厂及工业经营条例》
- 《建筑地盘(安全)规例》
- 《工厂及工业经营规例》
- 《工厂及工业经营(吊船)规例》
- 《工厂及工业经营(安全管理)规例》
- 《建筑工地升降机及塔式工作平台(安全)条例》

#### 相关安全标准、工作守则、安全指引和指南

- 《竹棚架工作安全守则》(劳工处)
- 《金属棚架工作安全守则》(劳工处)
- 《安全使用和操作吊船工作守则》(劳工处)
- 《建筑工地升降机设计及建造实务守则》(机电工程署)
- 《塔式工作平台设计及建造实务守则》(机电工程署)
- 《吊船的检查、检验和测试指南》(劳工处)
- 《竹棚架设计及搭建指引》(屋宇署)
- 《安全使用动力操作升降工作台指引》(劳工处)
- 《工作指南—工作安全(临时支架—防止倒塌)》(劳工处)
- 《升降机槽工程安全指引:第1卷—施工期间直至移交予升降机安装承建商前》(建造业议会)
- 《升降机槽工程安全指引:第2卷—升降机安装期间直至获发占用许可证及交予发展商》(建造业议会)
- 《升降机槽工程安全指引:第3卷—整段楼宇占用期间》(建造业议会)
- 《升降机槽工程安全指引:第4卷—升降机槽内的建筑工地升降机》(建造业议会)
- 《离地工作的安全指引》(建造业议会)
- 《工作安全守则(升降机及自动梯)》(劳工处)
- 《竹棚架工作平台安排指引》(建造业议会)



## References

### Relevant Ordinances and Regulations

- Factories and Industrial Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Factories and Industrial Undertakings Regulations.
- Factories and Industrial Undertakings (Suspended Working Platforms) Regulation.
- Factories and Industrial Undertakings (Safety Management) Regulation.
- Builders' Lifts and Tower Working Platforms (Safety) Ordinance.

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

- Code of Practice for Bamboo Scaffolding Safety. (LD)
- Code of Practice for Metal Scaffolding Safety. (LD)
- Code of Practice for Safe Use and Operation of Suspended Working Platforms. (LD)
- Code of Practice on the Design and Construction of Builders' Lifts (EMSD)
- Code of Practice for the Design and Construction of Tower Working Platforms. (EMSD)
- Guidance Notes on the Inspection, Thorough Examination and Testing of Suspended Working Platforms. (LD)
- Guidelines on the Design and Construction of Bamboo Scaffolds. (BD)
- Guidance Notes on Safe Use of Power-operated Elevating Work Platforms (LD)
- Guidance Notes: Safety at Work (Falsework – Prevention of Collapse). (LD)
- Guidelines on Safety of Lift Shaft Works: Volume 1 – During Construction Stage and Before Handing Over to Lift Installation Contractor (CIC)
- Guidelines on Safety of Lift Shaft Works: Volume 2 – During Lift Installation Stage until Issue of Occupation Permit and Handing Over to Developer (CIC)
- Guidelines on Safety of Lift Shaft Works: Volume 3 – Throughout the Occupation Stage of Building (CIC)
- Guidelines on Safety of Lift Shaft Works : Volume 4 – Builders' Lift within Lift Shaft (CIC)
- Guidelines on Work-Above-Ground Safety (CIC)
- Code of Practice for Safety at Work (Lift and Escalator) (LD)
- Guidelines on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds (CIC)



## 8 挖掘工程和道路工程 Excavation and Roadworks

### 危害识别 Hazards

- 泥土倾泻
  - 触电、火警、因地下公用设施损坏而发生爆炸
  - 窒息
  - 遇溺
  - 绊倒、滑倒或跌倒
  - 工人坠下坑穴／沟槽／高空坠下
  - 遭坠下坑穴／沟槽的物件击中
  - 遭移动的物件撞击
  - 挖土机／机械翻侧
  - 中暑（酷热天气）
  - 噪音
  - 尘埃
- 
- Collapse of soil;
  - Electrocution, fire, explosion due to damage to underground utilities;
  - Suffocation;
  - Drowning;
  - Trip, slip or fall;
  - Fall of person into pit/trench/from height;
  - Being struck by object falling into pit/trench;
  - Being struck by moving object;
  - Overturning of excavator/machine;
  - Heat stroke (hot weather);
  - Noise;
  - Dust.



遭坠下沟槽的物件击中的危害  
Hazard of being struck by materials falling  
into trench



未有于泥坑提供安全进出通道引致工人坠下  
泥坑的危害  
Hazard of fall of person into excavation due  
to unsafe access



## 挖掘沟槽和坑穴 Trench and Pit Excavation

- 在挖掘工程边缘或倾斜地面停泊的车辆，应放置楔子。
- 透过核对施工记录图、利用合适的仪器探测，以及在地面标记走线等方法，确定现有地下设施的位置。
- 利用手提工具挖掘探井，可更安全地确定地下设施的位置。
- 地下公用设施及其外露部分必须有适当的支撑和防护，并张贴警告告示，加以提醒。
- 在煤气管和堆填区附近挖掘时，须使用气体探测器确定是否有易燃或有毒气体存在，以及确定有否足够氧气。



以手提探测器检测地下公共设施的走线及其位置  
Hand-held detector to check routing and locate for underground utilities

- Wedges should be provided for vehicles near edge of excavation or on sloping ground.
- Underground existing services identification by checking record drawings, detection by suitable apparatus, and marking the routing on ground surface.
- Ascertain the location of underground services by hand-dug trial pits.
- Expose and protect underground utilities/services with suitable support, and post warning notices for alertness.
- When excavating in the vicinity of gas mains and landfill areas, use gas detection device to identify presence of inflammable or poisonous gas and the adequacy of oxygen.



以探测器和量度工具等去确定地下公用设施的位置  
On site identification for existing underground utilities with detector and measuring instrument

## 8 挖掘工程和道路工程 Excavation and Roadworks

### 工作安全地带 Work Safety Zone

- 在马路上进行工程，必须安排适当交通标志或摆设工程车辆，并划出工作安全地带，以保护工人。使用适当防护路障，确保工作地带安全。
- 在工作安全地带前端设定缓冲区，让驾车人士有足够时间作出反应和减低车速。
- 遵守路政署发出的《道路工程的照明、标志及防护工作守则》内的要求。
- 于快速公路进行流动作业时，必须使用护航车辆。
- 于快速公路封闭车道时，必须在施工地区前最少600米设置预先警告标志，并在道路开始临时改道的位置设置闪烁箭咀指示灯号。
- For work on carriageway, provide traffic signs, construction vehicle and demarcate work safety zone for protection of workers. Use suitable protection barriers to be used to ensure work zone safety.
- Provide buffer area at the front end of work safety zone for vehicles to react and decelerate.
- Comply with the requirements as stipulated in the Code of Practice for the Lighting, Signing and Guarding of Road Works issued by the Highways Department.
- Use shadow vehicle for mobile operations on expressways.
- For lane closure on an expressway, display advance working signs at 600 metres in advance of works area and flashing arrow signs where temporary diversion begins.



使用防护围栏，划出一个安全的工作地带  
Protection barriers used to ensure a safety working zone



以重型建筑机械及围栏确定出安全工作地带  
Work safety zone demarcated by construction machine and barrier



利用正式公告告知施工期  
Proper notice to public indicating the works duration



为行道上的工程采取临时交通安排  
Temporary traffic arrangement for work carried out on carriageway



## 在进行挖掘工程时保护公用设施 Protection to Utilities in Excavation

- 在开始任何挖掘工程前，须核对公用设施的平面图。
  - 在使用机械挖掘前，应先用手用工具挖掘探洞，以确定现有公用设施的确实位置和深度。
  - 在公用设施附近挖掘时，应采用人手挖掘的方法。
  - 由地面悬挂吊架或在地下安装支柱，以支撑现有公用设施。
  - 稳固地支撑与沟槽平行或横跨其上的现有公用设施。
  - 如挖掘的沟槽深度超过1.2米，应在两旁提供支撑物。
  - 若工程需要支撑水管，应使用工字梁／轧制钢梁代替钢丝。
- 
- Check the utilities layout plan before starting any excavation.
  - Dig trial holes by hand tools to ascertain the exact positions and depths of existing utilities before using mechanical plant for excavation work.
  - Use hand digging method when excavating close to the utilities.
  - Support the existing utilities by hangers suspended from ground surface or propping from underneath.
  - Support properly the existing utilities running parallel to or across the trench.
  - Shoring support should be provided to sides of the trench excavation with depth greater than 1.2m.
  - Use I beam/rolled steel joist (R.S.J.) instead of steel wire ropes to support water pipes.



为深度超过1.2米的挖掘沟槽提供支撑设施  
Shoring support to excavation with depth greater than 1.2m



在挖掘工程中使用工字梁支撑水管  
Water pipe supported by I-beam in excavation



工人以人手挖掘，以免意外损毁公用设施。  
Hand digging to avoid accidental damage to utility



## 8 挖掘工程和道路工程 Excavation and Roadworks

### 围栏 Fencing

在大型挖掘工程，斜坡、泥堆、沟槽、坑穴，如

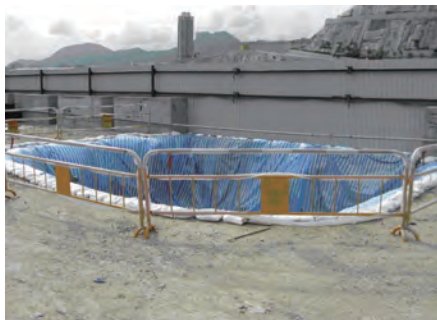
- a. 不少于2米高度或深度
  - 围栏要牢固安装及围绕整个工程范围
  - 在围栏设置合适的警告标志
  - 围栏的顶部和中间栏杆须分别距离地面900毫米至1,150毫米和450毫米至600毫米
  - 在工程范围、通道、围栏和交通标志处提供足够照明
  - 雨季时，须在挖掘工程周围放置土堤、沙包或相类的保护装置
- b. 高度或深度在1.2米至少于2米
  - 围栏可采用可移动的金属型或坚固塑料型并给予整个工地范围设置
  - 若地盘环境不许可，可考虑采用警告带
  - 设置警告标志于适当位置



在挖掘工程边缘设置的围栏和土堤并挂上的警告标志  
Barrier with warning sign and earth bund along the edge of the excavation



在挖掘工程边缘设置的另一款围栏，并挂上的警告标志  
Warning sign affixed to fencing along the edge of the excavation



深坑的斜面盖上塑胶布料，以免受天气影响  
Profile of slope of a deep excavation is protected from weather with PVC sheet







Fencing for mass excavation/slope/stockpile/trench/pit

- a. not less than 2m in height or depth
  - fencing to be rigid securely supported and fixed around the affected area
  - provide warning signs at appropriate locations of the fencing
  - provide top railings at a height of 900mm to 1,150mm and intermediate railings at height 450mm to 600mm above the ground
  - with adequate lighting for the works areas, passages, traffic signs, etc.
  - provide earth bunds or sand bags or similar protection along sides of the affected area during wet seasons
- b. between 1.2m to less than 2m in height or depth
  - fencing may be of mobile metal/plastic rigid type for the affected areas
  - warning ribbons might be adopted if the above is impractical due to site constraint
  - provide warning signs at appropriate positions/locations

## 稳固程度 Stability

- 稳固地支撑所有大型挖掘工程、斜坡或高逾1.2米的泥堆。
- 须按照设计计算结果进行安全挖掘或把泥坑挖掘至安全的斜度，以确保稳固。
- 每日视察挖掘工程，而每星期亦由合格人员彻底检查一次。
- 如挖掘工程深逾1.2米，须在指定表格（《建筑地盘（安全）规例》的表格四）上报告检查的详情。
- 确定挖掘工程边缘没有放置重金属物料或荷载；以及没有重型车辆或机械装置。
- 在挖掘工程边缘停泊的车辆须放置楔子。
- 每星期由合格人士填写法定检查报告（《建筑地盘（安全）规例》的表格四）；在恶劣天气后动工前亦须填写有关报告。

Form 4: EXCAVATIONS AND EARTHWORKS. REPORT OF RESULTS OF WEEKLY EXAMINATIONS. The form includes fields for project name, location, date, and examination details. It has a table for recording examination results with columns for 'Examination Details', 'Result of Examination', and 'Remarks'. There are also sections for 'Examination by Competent Person' and 'Examination by Competent Person'.

在建筑地盘(安全)规例的表格四上报告检查挖掘工程的情况  
Report the stability of excavation on Form 4 under the CS(S)R



挖泥区放置围栏及警告告示  
Barrier with warning notice to excavation

## 8 挖掘工程和道路工程 Excavation and Roadworks

- Securely support all mass excavations, slopes or stockpiles exceeding 1.2m high.
- Stability to be substantiated by design calculation forming the excavation to a safe profile.
- Excavations to be inspected daily and thoroughly examined by a competent person weekly.
- Report on the prescribed form (Form 4 under the Construction Sites (Safety) Regulations) for excavations exceeding 1.2m deep.
- Ensure no heavy metal material or load is placed; and no heavy vehicle or plant moves or are placed near the edge of the excavation.
- Provide wedges for vehicles near the edge of the excavations.
- Statutory inspection report needed to be completed (Form 4 under the Construction Sites (Safety) Regulations) weekly by competent person and after inclement weather prior to work commencement.

### 挖掘物料 Excavated materials

- 除非设计上容许，否则不得在大型挖掘工程、斜坡、沟槽、坑穴或高逾1.2米的泥堆边缘的1.5米范围内堆放挖掘物料。
- Do not store excavated materials within 1.5m of the top edge of mass excavation, slope, trench, pit or stockpile exceeding 1.2m high unless allowed for in the design.



挖掘的物料应妥善遮盖及围封  
Excavated material should be properly covered and fenced off

### 地面水径流 Surface Water Run-off

- 雨季时（四月至十月），在所有挖掘工程、斜坡或高逾两米的泥堆周围放置土堤、沙包或相类的保护装置。
- 乾燥季节（十一月至三月）时，在所有外露超过三星期的挖掘工程、斜坡或高逾两米的泥堆周围放置土堤、沙包或相类的保护装置。



在挖掘工程的斜面盖上有防水功能的塑胶布料  
PVC sheeting covers to profile of slope of excavation



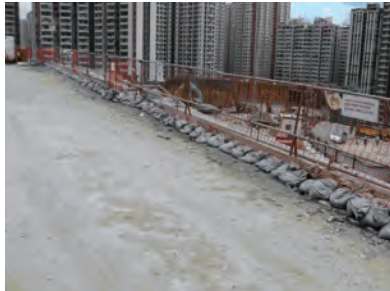
- Wet season (April to October) – provide all excavations, slopes or stockpiles exceeding 2m high, with earth bunds, sand bags or similar protection.
- Dry season (November to March) – provide all excavations, slopes or stockpiles exceeding 2m high, which remain exposed for more than 3 weeks, with earth bunds, sand bags or similar protection.



为免大量地面水流进土坑，挖掘工程的边缘应放有土堤或沙包等  
Provide earth bund or sand bags along edge of excavation to curb surface water run off

### 提供新鲜空气 **Fresh Air Supply**

- 在挖掘地点内或其三米范围内不得有任何燃烧燃料的机械、设备或车辆。
- 在煤气管和堆填区附近挖掘时，须使用气体探测器确定是否有气体积累的情况，以及确定有否足够氧气。
- No fuel burning plant, equipment or vehicle to be placed inside or within 3m of excavation.
- When excavating in the vicinity to gas mains and landfill areas, use gas detection device to identify presence of any inflammable or poisonous gas and the adequacy of oxygen.



挖掘的地点或其3米范围内不许有燃烧燃料的设备  
No fuel burning plant, equipment or vehicle situated within 3m of excavation site

## 8 挖掘工程和道路工程 Excavation and Roadworks

### 出入口 Access and Egress

- 为工人和建筑车辆提供安全的出入口（包括紧急逃生途径），以进出大型挖掘工地／斜坡／高逾1.2米的泥堆（例如，斜度不超过1:6的斜路；两旁设有扶手并稳妥地安装的临时楼梯或梯具）。于梯具末端的扶手应高于地面水平一米以上。
- Provide a safe means of access to and egress from (including emergency escape) mass excavation/slope/stockpiles exceeding 1.2m high, for workers and construction vehicles (e.g. properly formed ramps not exceeding 1:6 gradient; properly fixed temporary staircase or ladder with hand railing on two sides). The ladder should project at 1m above ground level.



为大型挖掘工地提供适当的出入口  
Adequate access and egress from mass excavation



提供临时楼梯，以供安全进出挖掘工地  
Temporary staircase for a safe access/egress from excavation



提供楼梯方便进出挖掘工地／斜坡  
Provide staircase for access to and egress from mass excavation/slope





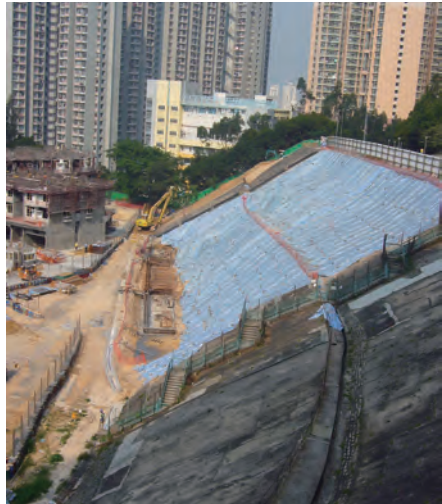
## 在水上或水边工作

### Work over or near Water

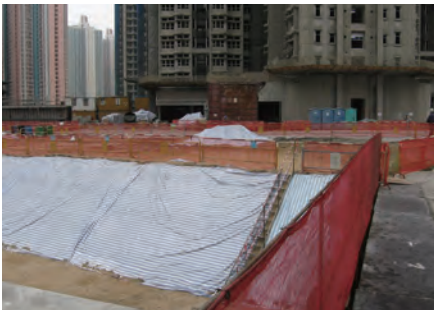
- 确保出入通道足够和稳固，并备有应付水浸的措施。
- 工友若于水面上或水边工作而有下堕／遇溺风险，要确保为工友提供合适的工作台。
- 必须设置随时可供使用的拯救遇溺者设备。
- Ensure that the means of access/egress is sufficient and secure and that arrangement is in place to deal with flooding.
- Ensure proper working platform is provided for workers working over or near water where there is a risk of falling from height/drowning.
- Equipment for rescue from drowning should be readily available for use.

## 在斜坡上工作 Work on Slope

- 进行挖掘时，利用防水布为斜坡提供适当的保护。
- 进行挖掘时，须清除积水。
- 在斜坡底部设置U形排水渠，以收集地面水。
- 堆存的挖掘物料不应高逾两米，并应妥善地覆盖。



用防水布为斜坡提供适当的保护  
Protect slope with tarpaulin cover



用防水布覆盖泥堆  
Cover stockpile with tarpaulin





## 8 挖掘工程和道路工程 Excavation and Roadworks

- Provide proper slope protection by covering with tarpaulin during excavation.
- Remove ponding water during excavation.
- U-channel provided at toe of cutting for the collection of surface water.
- Stockpiling of excavated material should not be more than 2m high and should be properly covered.



在斜坡底设 U 形排水道，并用防水布保护斜坡面  
Provide U-channel at toe of cutting and cover slope surface with tarpaulin



### 个人防护装备 Personal Protective Equipment

- 佩戴安全头盔，把 Y 型下颌索带索紧和穿上安全鞋。
- 在有需要时穿上反光工作服、佩戴安全带、救生绳、护耳罩、手套、口罩和护目镜。
- Wear safety helmet with Y-type chin straps fastened and safety shoes.
- Wear reflective clothing, safety harness, lifeline, ear muff, gloves, mask and goggles as necessary.



使用手提气动碎石机时佩戴全套个人防护装备，例如护耳罩、安全鞋、头盔、眼罩、手套、口罩等。  
Full personal protective equipment such as ear muff, safety shoes, safety helmet, goggles, gloves, mask, etc. for using handheld pneumatic breaker



## 参考资料

### 相关法例和规例

- 《工厂及工业经营条例》
- 《建筑地盘（安全）规例》
- 《工厂及工业经营（密闭空间）规例》
- 《工厂及工业经营（保护眼睛）规例》
- 《工厂及工业经营（工作噪音）规例》
- 《工厂及工业经营（安全管理）规例》
- 《职业安全及健康条例》

### 相关安全标准、工作守则、安全指引和指南

- 《防止石矿及建筑工人患上矽肺病的指引》（劳工处）
- 《工作守则—密闭空间工作的安全与健康》（劳工处）
- 《工作守则—气体焊接及火焰切割工作的安全与健康》（劳工处）
- 《安全使用挖土机工作守则》（劳工处）
- 《道路工程的照明、标志及防护工作守则》（路政署）
- 安全健康通讯第37/2015号—「近岸及海上建筑工程安全指南（劳工处及海事处）」
- 有关「船上及水上建造工程工作安全」的海报（建造业议会）

## References

### Relevant Ordinances and Regulations

- Factories and Industries Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Factories and Industrial Undertakings (Confined Spaces) Regulations.
- Factories and Industrial Undertakings (Protection of Eyes) Regulations.
- Factories and Industrial Undertakings (Noise at Work) Regulation.
- Factories and Industries Undertakings (Safety Management) Regulation.
- Occupational Safety and Health Ordinance.

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

- Guidance Notes on Protection of Quarry and Construction Workers from Silicosis. (LD)
- Code of Practice: Safety and Health at Work in Confined Spaces. (LD)
- Code of Practice: Safety and Health at Work for Gas Welding and Flame Cutting. (LD)
- Code of Practice on Safe Use of Excavators. (LD)
- Code of Practice for the Lighting, Signing and Guarding of Road Works. (HyD)
- Safety & Health Circular No. 37/2015 “Safety in Construction Works over/near Water (LD& Marine Department)”
- Poster “Work Safety on Vessels and Construction Over Water” (CIC)

## 危害识别 Hazards

- 人体从高处坠下
  - 地下公用设施损毁引致触电、火警或爆炸
  - 因接触无适当保护的电器用具而触电
  - 遇溺
  - 遭移动物件撞击
  - 机器翻侧
  - 遭坠下物件击中
  - 在体力处理操作时受伤
  - 绊倒、滑倒或跌倒
  - 中暑（酷热天气）
  - 烧焊产生的危险气体或烟雾
  - 噪音
  - 腐蚀性物质
  - 皮肤病
- 
- Fall of person from height;
  - Electric shock, fire or explosion due to damage to underground utilities;
  - Electrocutation due to contact with unprotected electric appliances;
  - Drowning;
  - Being struck by moving object;
  - Overturning of machines;
  - Being struck by falling object;
  - Injury during manual handling;
  - Trip, slip or fall;
  - Heat stroke (hot weather);
  - Dangerous gas or fumes from welding;
  - Noise;
  - Corrosive substances;
  - Skin diseases.



为大口径钻桩工程进行高空工作的操作员／  
工人应有安全措施提防从高处坠下  
Large diameter bored pile with operators /  
workers working at height-to be cautious of  
hazard of falling from height



工人没有适当保护引致人体从高处坠下的  
风险  
Hazard of fall of person from height due to  
lack of fall protection measure



## 高空工作 Working at Height

- 应提供安全楼梯通往工作平台。
  - 应为高空工作的工人提供适当的工作平台或防堕装置。工作平台须设有从地板起计高度为900至1,150毫米的顶部栏杆和高度为450至600毫米的中间栏杆，并设有至少200毫米高的踢脚板。
  - 为大口径钻孔桩工作台上的工人提供防堕系统，工人须将安全带尾绳扣于指定位置。
  - 为避免需要以吊笼运载工人至高空进行钢板桩互锁工作，应减低露出地面水平的钢板桩高度，以及使用流动工作平台或高架平台。
- Provide and maintain stairway to working platform.
  - Provide workers working at height with a proper working platform or fall arrestor. Top railing at 900-1,150mm and middle railing at 450-600mm from the floor level plus a 200mm high toe-board are required on a working platform.
  - Provide fall arrest system for workers working on the working platform of large diameter bored piling and workers need to anchor their lanyard onto designated anchorage point on the working platform.
  - Avoid use of hanging cage to carry workers to carry out locking of sheet piling at a height by reducing height of sheet piling projecting above ground level, use of mobile working platform or work elevating platform.



提供有扶手的楼梯往返工作平台  
Provide staircase to working platform



为工作平台提供的护栏和踢脚板  
Provide barrier and toe-board to working platform



另一设置扶手的楼梯，供通往工作平台  
Provide handrails to staircase leading to working platform



穿上防堕装置的工人在设有护栏的工作平台上操作机械  
Barrier and fall arrest system for workers working at height



设有护栏的工作平台  
Working platform with railings for workers working at height

## 9 地基工程 Piling Works

### 钻孔围栏 Barrier to Hole

- 在降下钻孔时，应确保放置于工作平台上面的铁筒维持足够高度，仍可用作钻孔的围栏。
- During dipping of bored hole, ensure that an adequate height of casing above the working platform is maintained as a barrier to the hole.



维持一个适当高出工作平台的铁筒可防止意外下堕

Maintain a suitable height of casing above the working platform

### 地下公用设施 Underground Utilities

- 保护地下公用设施，需透过查核图则记录，使用适当的器具和手工具挖掘探井进行探测，以确定现有地下公用设施的资料和作所需的处理方法。
- 一旦发现不明的地下公用设施，立即停止工作。
- Identify and handle underground existing services by checking record drawings, detection using suitable apparatus, making hand-dug trial pits and finally protect underground services.
- Cease work immediately upon discovery of unknown underground utilities.



在怀疑有地下公用设施地点进行挖掘，应以手工具协助

Only hand-dug method allowed to locate the exact underground services

### 机械设备 Plant

- 机械设备应由持有有效证书的人员操作，由合格人士检查，并由身为香港工程师学会注册专业工程师的合格检验员定期进行测试和检验。
- 依从香港房屋委员会新工程合约规格中订明的检修要求。
- 不可超逾香港房屋委员会新工程合约规格中订明的机械设备操作年限。
- 机械设备应放在平坦的地面操作。
- 不可超逾机械设备的最大荷载量。
- 应于大型的圆形钢套管底部放置楔子。



在大型圆形钢套管底部放置楔子

Provide proper wedges at bottom of large circular steel casing





- 机械设备操作员应留意附近的障碍物和地面情况。在需要时，应由具经验的讯号员协助。
- Plant should be operated by qualified personnel with valid certificate, inspected by competent person, tested and examined periodically by competent examiner who is a registered professional engineer in the registry of professional engineer of the Hong Kong Institution of Engineers.
- Observe the overhaul requirement laid down in the Hong Kong Housing Authority's new works contract specification.
- Do not exceed the maximum service age of plant laid down in the Hong Kong Housing Authority's new works contract specification.
- Plant should rest on level ground for operation.
- Do not exceed the maximum loading capacity of plant.
- Proper wedges should be provided at bottom of large circular steel casing.
- Plant operators should pay attention to nearby obstructions and ground surface condition and should be assisted by experienced signalers where necessary.



在平地上操作小口径钻桩机  
Piling machine operated on level ground



大口径钻孔桩一般涉及的机械  
Plant and equipment used in large diameter bored pile construction



专为吊运字H字板桩用途的吊具  
Tailor-made lifting gear for H-beam

## 9 地基工程 Piling Works

### 起重操作 Lifting

- 每件起重机械均应标明安全荷载量。
- 机械设备操作员应知悉吊运物料的总重量和起重装置的荷载量。
- 每次起重操作，应有一名讯号员。
- 吊索或铁链等起重装置应妥为贮存，远离腐蚀性化学品，以免被侵蚀。
- 索具工应确保吊运的物品没有拉扯到附近其他物件，才可向讯号员发出已准备好吊运的讯号。
- 应围封起正进行吊运工作或机械设备正在移动的危险区域及设立警示牌，未获授权人士不得入内。
- 为旧式吊重机/打桩机提供标记，让起重机操作员了解吊索下降的距离，从而得知大口径钻孔桩内泥夹的位置。

- Safe working load should be clearly marked on each lifting appliance.
- Plant operators should know the total weight of materials to be lifted and the capacity of lifting gears.
- There should be a signaller engaged for lifting operation.
- The lifting gears such as wire or chain sling should be properly stored and not subject to attack by corrosive chemicals.
- Rigger should make sure the load to be lifted is not clung to other objects in vicinity before giving signal to the signaller that the load is ready for lifting.
- Fence off the danger zone in which lifting operation is in progress or plant is manoeuvring and display warning notices. No unauthorized entry of any person is allowed.
- Crawler crane (older type)/piling rig should be provided with an indicator/markings so that the operator can know the dropping distance of the sling and therefore the position of the grab for operation inside a large diameter bored pile.



讯号员手持电子通讯仪器，确保吊运过程顺利/安全。

Signaller with electronic equipment to ensure a smooth/safe lifting operation



索具工手持引导绳，确保吊运过程安全。

Rigger with guiding rope to ensure a safe lifting operation



加设吊索以提升安全度（桩锤头）

Additional sling to enhance safety (hammer head)

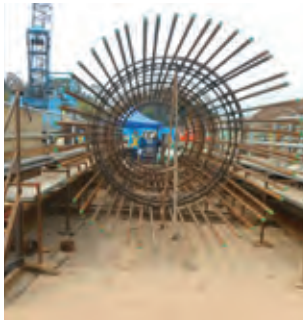


## 钢筋笼 Reinforcement Casing

- 工人应明白以体力处理操作方式搬运钢筋的安全方法，并予以实行。
- 紮钢筋笼的铁线尾端应朝笼内方向。
- 应按照建造业议会发出的《扎结桩铁笼指引》，在平地扎结钢筋笼。
- Ensure workers understand and carry out manual handling of reinforcement in a safe manner.
- End portion of steel wire for erection/tying reinforcement casing should point to inside of casing.
- Erect the reinforcement cage on level ground with reference to the Construction Industry Council Guidelines on Fabrication of Reinforcement Cages of Bored Piles.



扎结钢筋笼的铁线应朝笼内方向  
Tying wire to reinforcement casing  
arranged to point inside



为安全紮结钢筋笼提供工作平台  
Working platform provided for safe  
erection/tying of reinforcement  
casing



为安全紮结钢筋笼提供弧型结构支架底座  
Arc-shaped fabrication frame  
provided for a safe erection/tying of  
reinforcement casing

## 架空电缆 Overhead Cables

- 除非得到许可，否则切勿在架空电缆附近操作打桩机或起重机械。
- 在架空电缆附近操作机械设备时，须采取适当的防护措施，例如使用龙门架。
- Do not operate piling or lifting appliance near overhead cables unless with permission.
- Appropriate precautionary measures such as portal frame should be needed for plant operation near overhead cables.



在一般情况下，不得在架空电缆附近进行吊运工作  
Under normal circumstances, no  
crane operation allowed adjacent to  
overhead cables

## 9 地基工程 Piling Works

### 工地整理 Housekeeping

- 为地盘做好排水和清除地面积水，避免工人误踏地面的洞穴或孔口。
- Proper site drainage and clearance of water ponds to prevent risk of tramping into holes or cavities in ground.



围封工作地区及为移动机械安装防撞棒  
Fence off works area and provide warning rod on moving plant



围起施工范围防止工人意外堕入洞穴  
Fencing off works area to prevent accidental fall into holes

### 电弧焊接、气体焊接和火焰切割

### Electric Arc Welding, Gas Welding and Flame Cutting

- 电弧焊接的工作，必须由合资格电焊工进行。
- 围封工作范围。
- 气体焊接和火焰切割的工作，只可由接受过强制性安全健康训练并持有效经《工厂及工业经营（气体焊接及火焰切割）规例》发出证书的人员进行。
- 定期检查火焰切割器具有否漏气迹象。
- 乙炔气瓶和氧气瓶均须装上防止回火安全掣。
- 止回阀应设于吹管每个气体入口，防止氧气回流至燃气供应，或燃气至氧气供应。
- 焊接机电线须有足够负荷量，所有电路均有适当的地线。



曾受训练的焊工在进行火焰切割／电弧焊接时佩戴个人防护装备，例如护目镜、面罩、手套等。

Trained welder carrying out flame cutting/arc welding with personal protective equipment such as goggles, mask, glove





- 工人应配戴合适个人防护装备，如认可护眼用具，眼罩，手提护盾，围裙及烧焊手套等。
- 须以火焰切割的高身物件应使用起重机或其他设施吊在适当位置，以免倒下。
- Electric arc welding work should be conducted by competent welding worker.
- Screen off the works area.
- Gas welding and flame cutting work should only be performed by a person who has completed a mandatory safety and health training and possessed a valid certificate under the Factories and Industrial Undertakings (Gas Welding and Flame Cutting) Regulation.
- Periodic checking of flame cutting apparatus for sign of gas leakage.
- Flashback arrestor should be installed to both acetylene and oxygen cylinders.
- Non-return valve at each gas inlet of the blowpipe to prevent back-feeding of oxidant gas to the fuel gas line and vice versa.
- Adequate loading capacity of electrical cables of welding machine and proper earthing of electrical circuitry.
- All welders should wear proper personal protective equipment such as approved eye protectors, hand shield, aprons and gloves, etc.
- Tall object to be flamed cut should be hung in place by crane or other device to prevent the object from falling down.

## 噪音 Noise

- 在噪音环境下工作须戴上认可的护耳罩。
- 经常润滑机械的活动部分，把机器的「生口板」关上，以及定期进行检查和维修保养，以减少噪音。
- Wear approved ear protector in noisy working environment.
- Lubrication of moving parts of machine, closing access cover or inspection panel of machines and periodic inspection and maintenance to reduce noise generated.



在噪音环境下工作应佩戴合适的护耳罩或耳塞  
Suitable ear muff or ear plugs adopted in a noisy working environment



## 9 地基工程 Piling Works



整个打桩过程须使用胶垫以减少噪音  
Plastic cushion to reduce noise generated during the course of piling



利用隔音罩减少噪音  
Reduce noise by means of noise barrier



利用震锤减少打闸板桩产生的噪音  
Noise attenuation using vibration hammer during sheet piling installation



### 处理废气 Exhaust Control

- 为机器安装废气净化器以减少废气排放。
- Reduce emission of exhaust gas by installing exhaust – cleaning equipment to plant.



废气须经废气净化器过滤后才可排放到大气中  
Exhaust gas filtered by exhaust-cleaning equipment before discharging to atmosphere



## 危险物质 Dangerous Material

- 在打桩工程中最常接触到的危险物质为水泥和尘埃，这些物质可引致皮肤病或其他疾病。
- 为危险物料加上适当的标签，防止因误用而引起意外。
- 适当使用个人防护装备，适当贮存危险物料，以及清楚知道在紧急情况下的应变计划。



应为危险物料贴上标签，及妥善存放于订明的地方  
Dangerous materials should be properly labeled and stored in designated area

- Cement and dust are common dangerous material encountered during piling works and could cause skin disease or other health issues.
- Proper label of dangerous materials can prevent inadvertent use and avoid accident.
- Proper use of personal protective equipment, proper storage of dangerous material, and good knowledge of contingency plan in case of emergency should be observed.

## 个人防护装备 Personal Protective Equipment

- 戴上配有Y型下颌索带的透气安全头盔和穿著安全鞋。
- 高空工作时佩戴连接独立救生绳或稳固系稳物的全身式安全带。
- 穿著反光衣。
- 酷热天气下工作时穿著建造业工人抗热工作服。
- 烧焊工人应佩戴认可护目镜、手提护盾，并在需要时戴上呼吸器具。
- 在噪音环境下工作时，戴上认可护耳罩。
- 处理有毒或刺激性物质时，戴上隔热手套／围裙和呼吸器具。



开工前，工人需要配戴合适的个人防护装备  
Workers should put on appropriate personal protective equipment before works commencement



工作时选择和佩戴适当的个人防护装备  
Select and wear suitable personal protective equipment for works

## 9 地基工程 Piling Works

- Wear ventilated safety helmet with y-type chin strap and safety shoes.
- Wear safety harness linked to independent lifeline or a fixed and secure anchor when working at height.
- Wear reflective clothing.
- Wear anti-heat stress construction uniform in hot weather.
- Welders should wear approved eye protector, hand held shield and respiratory apparatus if necessary.
- Wear approved ear protector in noisy environment.
- Wear heat insulated gloves/apron and respiratory apparatus when handling poisonous or irritating substances.

### 贮存物料 Storage of Materials

- 所有物料应以安全的方式整齐堆放。
- All materials should be stacked neatly and in a safe manner.



在指定并围起的范围内整齐堆放物料  
Materials stacked neatly in a designated and fenced area



钢筋笼底部放置楔子  
Proper wedges to be provided at bottom of reinforcement casing



在指定并围起的安全范围内整齐堆放物料  
Materials stacked neatly in a safe fenced and designated area



## 参考资料

### 相关法例和规例

- 《工厂及工业经营条例》
- 《建筑地盘（安全）规例》
- 《工厂及工业经营规例》
- 《工厂及工业经营（喷砂打磨）特别规例》
- 《工厂及工业经营（职业病呈报）规例》
- 《工厂及工业经营（在压缩空气中工作）规例》
- 《工厂及工业经营（保护眼睛）规例》
- 《工厂及工业经营（工作噪音）规例》
- 《工厂及工业经营（安全管理）规例》
- 《工厂及工业经营（起重机械及起重装置）规例》
- 《工厂及工业经营（气体焊接及火焰切割）规例》
- 《工厂及工业经营（负荷物移动机械）规例》
- 《职业安全及健康条例》

### 相关安全标准·工作守则·安全指引和指南

- 《工厂及工业经营（工作噪音）规例简介》（劳工处）
- 《安全使用挖土机工作守则》（劳工处）
- 《扎结钻桩铁笼指引》（建造业议会）
- 《工作安全指引—手工电弧焊的触电危险》（劳工处）

## References

### Relevant Ordinances and Regulations

- Factories and Industrial Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Factories and Industrial Undertakings Regulations.
- Factories and Industrial Undertakings (Blasting by Abrasives) Special Regulations.
- Factories and Industrial Undertakings (Notification of Occupational Diseases) Regulations.
- Factories and Industrial Undertakings (Work in Compressed Air) Regulations.
- Factories and Industrial Undertakings (Protection of Eyes) Regulations.
- Factories and Industrial Undertakings (Noise at Work) Regulation.
- Factories and Industrial Undertakings (Safety Management) Regulation.
- Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations.
- Factories and Industrial Undertakings (Gas Welding and Flame Cutting) Regulation.
- Factories and Industrial Undertakings (Loadshifting Machinery) Regulation.
- Occupational Safety and Health Ordinance.

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

- A Guide to the Factories and Industrial Undertakings (Noise at Work) Regulation. (LD)
- Code of Practice on Safe Use of Excavators. (LD)
- Guidelines on Fabrication of Reinforcement Cages of Bored Piles. (CIC)
- Guide for Safety at Work – Electric Shock Hazard of Manual Electric Arc Welding Work. (LD)



# 10 拆卸工程 Demolition Works

## 危害识别 Hazards

- 对公众安全和邻近环境构成危险
- 高空坠物
- 人体从高处下堕
- 被困于倒塌的建筑物内
- 被下坠物件击中
- 腐蚀性物质
- 肺尘埃沉着病（由石棉、铅、灰尘等引起）
- 噪音
- 爆炸／火警／触电（损坏水管、渠道、电线、煤气管、易燃物品、光纤、电话、电讯、电台及电视缆线等）



有害物料如石棉要妥善储存及放置在恰当地方

Harmful substances such as asbestos must be stored / placed properly

- Endangering public safety and adjacent environment;
- Fall of object from height;
- Fall of person from height;
- Being trapped in collapsed building;
- Being struck by falling object;
- Corrosive substances;
- Pneumoconiosis (e.g. asbestos, lead, dust);
- Noise;
- Explosion/fire/electric shock (damage to live water pipes, drainage, electricity, gas, flammable substance, optical fibre, phone telecommunication, radio and TV lines)

## 拆卸计划 Demolition Plan

- 现场勘察：结构图（改动、现状）、邻近建筑物、易燃物品、有害物质和现有的屋宇装备等。
- 制订拆卸工序、施工方案、安全预防措施和应变措施，供各有关当局核准。拆卸计划须：
  - 显示摄录镜头的位置；

Daily Monitoring Work Inspection Checklist for Demolition Works DCDA-P-08

Job Location: \_\_\_\_\_ Date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Demolition Work Order No.: \_\_\_\_\_

Goal of the Safety Management: To ensure the demolition work is carried out in a safe and sound manner.

No.	Description of Work	Inspector	Sub-Inspector	Other
1	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
2	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
3	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
5	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
6	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
7	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
8	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
9	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
10	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

DCDA-P-08 (continued)

Daily Monitoring Work Inspection Checklist for Demolition Works DCDA-P-09

Job Location: \_\_\_\_\_ Date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Demolition Work Order No.: \_\_\_\_\_

Goal of the Safety Management: To ensure the demolition work is carried out in a safe and sound manner.

No.	Description of Work	Inspector	Sub-Inspector	Other
1	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
2	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
3	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
5	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
6	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
7	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
8	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
9	Preparation of Demolition Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
10	Preparation of Safety Management Plan	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

DCDA-P-09 (continued)

每日检查清单用以识别拆卸工程的潜在危害

Daily inspection checklist helps to identify potential hazards of the demolition works





## Follow the process control programme to keep a safe work site

- 列明对已识别危害所采取的预防措施；
- 备有工地安全监督计划；
- 取得各级人员的共识，并一致遵行；
- 如有需要，因应不能预知的危害修订拆卸计划，并让各工作单位知悉各项变动。
- 安排安全训练。
- 提供急救设施。
- 备存勘察资料、安全训练记录和检查报告，供随时查阅。



拆卸机械通过斜道驶至下一层  
Demolition plant descend a ramp to a lower level

- On-site surveys: structural plan (alteration, existing condition), adjacent buildings, flammable substance, substances hazardous to health and existing building services etc.
- Demolition plan approved by relevant authorities, with sequence, method statements, safety precautions and contingency measures:
  - showing location of video camera.
  - with precautions to combat identified hazards.
  - provide site safety supervision plan.
  - to be agreed and observed by all levels of staff.
  - if necessary, to be revised to cope with unforeseeable hazards and inform all parties of any changes.
- Safety training.
- First-aid facilities.
- Information of surveys, safety training records and inspection reports should be documented and readily accessible.

## 10 拆卸工程 Demolition Works

### 截断公用设施装置 Disconnection of Services

- 开始拆卸工程前，必须截断所有公用设施装置的管道。
- Disconnect all services connections before commencement of demolition works.



拆卸工程前，要求电力公司必需把主供电截断  
Prior to demolition, the main power supply must be dead and disconnected by Power Company

### 围板和棚架 Hoarding and Scaffolding

- 架设围板和棚架围封拆卸工程范围。
- 所用围板和棚架必须以不可燃烧物料制造。
- Provide hoarding and scaffolding to enclose demolition works area.
- All materials used to be non-combustible.



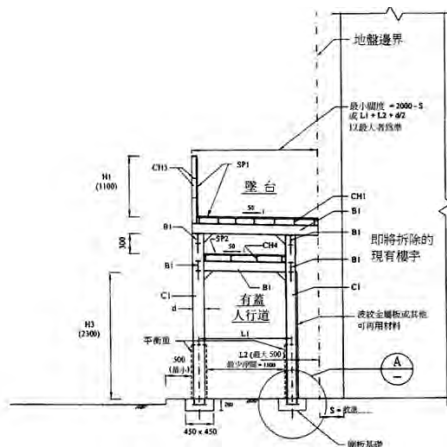
利用保护幕和以塑胶或柏油帆布制造的隔尘网，围封整幢须拆卸的建筑物，再搭建中层斜棚。  
Building to be demolished to be fully enclosed by protective screen and dust screens of plastic or tarpaulin sheet, with intermediate catch-fans



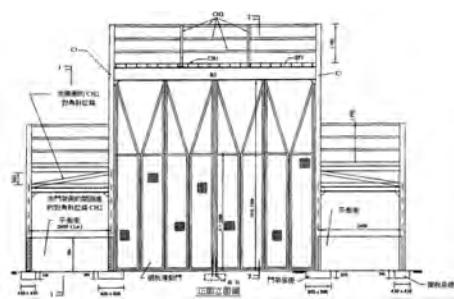
在围板和有盖行人路提供临时照明，以方便行人。  
Hoarding and covered walkway with adequate temporary lighting for pedestrian



沿地盘界线的围板和有盖行人路设置坠台，以保护行人。  
Hoarding and covered walkway with catch platform along the site boundary to protect pedestrian



根据屋宇署《认可人士及注册结构工程师作业备考APP-21》所示的样本，坠台和有盖行人道属不同的结构构件  
Catch platform and covered walkway are 2 separate elements as shown on PNAP APP-21 of BD



屋宇署《認可人士及註冊結構工程師作業備考APP-21》所示的門架樣本  
Example of gantry from PNAP APP-21 of BD

## 10 拆卸工程 Demolition Works

### 污染 Contamination

- 如建筑物被化学品或有毒物质污染，须清除污染物，或向工地人员提供防护装备。
- In case of building contaminated by chemical or poisonous material, remove the contamination or provide protective equipment to site personnel.



拆卸工程前，应取样检验怀疑受污染的土壤：受污染的物质必须被移离  
Prior to demolition, soil sample should be collected/ tested and the contaminated soil must be removed

### 作好准备 Preparation

- 每日早上展开拆卸工程前，所有适任技术人员和安全主任须巡查各项预防和安全措施。
- 按照拆卸计划提供足够的支撑物／支柱，防止建筑物在工程期间倒塌或损坏附近物业。
- Morning walk by all technical competent persons (TCPs) and safety officer to check all precautionary and safety measures every day prior to starting demolition works.
- Sufficient shoring and propping according to demolition plan to prevent the structure from collapse or causing damage to adjacent property during the course of demolition.



适任技术人员和安全主任须确保已采取足够的预防和安全措施  
Checking by TCPs and safety officer to ensure adequate precautionary and safety measures provided



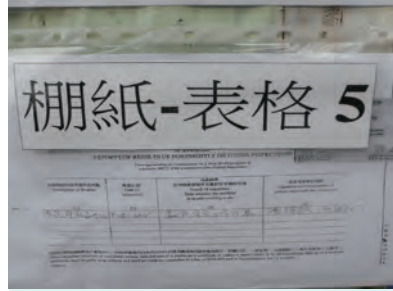
提供支撑和支柱承托须拆卸的建筑物  
Shoring and propping for buildings to be demolished



## 高空工作

### Working at Height

- 提供合适的工作平台／棚架。
- 提供合适的护栏、踢脚板和工作平台通道。
- 合资格人员须对工作平台进行使用前检查和定期检查，并填报及贴上由建筑地盘（安全）规例要求的表格5。
- 如提供工作平台并不可行，便须采取其他安全措施，例如提供防堕装置，以防止从高处坠下。



于显眼位置，挂上已批核的表格5  
Duly signed Form 5 displayed on conspicuous space

- Provide suitable working platform/scaffolding.
- Provide proper guard-rails, toe-board and access to working platform.
- Working platform needs to be inspected by competent personnel before use and periodically. Display Form 5 (under the Construction Sites (Safety) Regulations) which has been duly signed.
- In case provision of working platform is not feasible, provide other safety measures such as fall arrest system to prevent falling from height.

## 使用重型机械

### Use of Heavy Machinery

- 使用挖掘机、搬土机等重型机械前，须先进行评估和加固楼宇结构，以确保建筑物能承受重型机械和拆卸物料的重量。
- 划定机械的安全活动范围。
- 机械操作员必须完成适当的楼宇拆卸训练课程并取得屋宇署认可的相关证书。
- 监督安全拆卸施工程序的执行情况。
- 依从合约对大型建筑机械装置的规格所订明的检修要求和使用年限。



使用合适的重型机械进行拆卸工程  
Suitable heavy machinery for demolition works

- Before using heavy machinery such as excavator or earth moving machine, carry out assessment and strengthen the building structure so that it can withstand the weight of machinery used and debris resulting from demolition.
- Delineate the working zone of machinery.
- Plant operator must complete an appropriate building demolition training course and obtain relevant certificate accepted by BD.
- Supervise the implementation of safe demolition working procedures.
- Observe the overhaul requirements and age limit of major construction plant mentioned in specification.



## 尘埃管理 Dust Control

- 评估产生尘埃（例如石棉尘、铅尘、矽尘埃等）的风险。
  - 石棉尘必须由注册石棉承办商处理。
  - 采取防尘措施，例如洒水和架设隔尘网。
  - 佩戴合适的护目镜、口罩等。
  - 工人应注意个人卫生，饮食前先洗手和洗脸。
- Assess the risk of generation of dust such as asbestos dust, lead dust and silica dust.
  - Asbestos dust must be handled by registered asbestos contractor.
  - Take precautionary measures to control dust, e.g. water spraying and dust-proof net.
  - Use and wear appropriate goggles, masks, etc.
  - Workers should pay attention to personal hygiene: wash their hands and faces before eating and drinking.



在工地洒水以减少尘埃飘散  
Spraying water to reduce the risk of spreading dust from the works site

## 噪音和震荡 Noise and Vibration

- 使用较宁静的机械或工具。
  - 评估工作区的噪音水平。
  - 在高噪音的机器上贴上警告标示，提醒在附近工作的工人。
  - 确保听觉保护区内所有人员均佩戴认可的听觉保护器。
  - 使用风钻和风炮时须穿戴防护手套，避免因震荡而受伤。
- Use machinery or tools of lower noise level.
  - Assess noise exposure levels of workers.



为拆卸工程范围提供隔音屏障  
Noise screen provided for demolition works



## Follow the process control programme to keep a safe work site

- Post warning sign on noisy machinery to remind workers working in the vicinity.
- Ensure all personnel to wear approved ear protector within the hearing protection zone.
- Wear protective gloves to avoid injury arising from vibration when using pneumatic drills and breakers.



使用隔音屏阻隔产生的噪音  
Noise shelter to screen the noise generated



使用低噪音液压器械进行拆卸工作  
Low noise hydraulic breaker for demolition works

### 拆卸楼宇结构／临时结构

### Demolition of Building/Temporary Structure

- 依从已核准的拆卸施工程序和采取相关的安全措施。
- 确保已切实采取稳定拆卸物的安全措施。
- Observe approved working procedures of demolition and related safety measures.
- Ensure implementation of safety measures to stabilize the building being demolished.



遵守拆卸施工步骤  
Observe approved working procedure of demolition



正确执行施工步骤／程序，确保拆卸工程安全进行。  
Proper working steps/procedures to enhance safety for demolition works

## 火焰切割工作的安全措施 Safety of Flame Cutting

- 把所有易燃物品移离火焰切割工作范围。
- 火焰切割工作范围下面的地方亦不应摆放任何易燃物品。
- 确保工地空气流通，或使用机械通风装置，以防止金属烟雾积聚。
- 烧焊工人需持有效经《工厂及工业经营（气体焊接及火焰切割）规例》发出的证书及佩戴个人防护装备，例如设有Y型下颌索带的安全头盔、认可护目镜、手套、呼吸器、围裙、安全鞋等。
- 清理烧焊后遗留的火屑，提供灭火器具和在工程范围禁止吸烟。



在火焰切割工作时，焊接工人应佩戴合适的个人防护装备  
Welder should put on adequate personal protective equipment during the course of flame cutting works

- Remove all combustible materials away from work areas for flame cutting.
- The area below the work areas for flame cutting should also be cleared of all combustible materials.
- Ensure good ventilation or use mechanical ventilation so that no metallic vapours accumulate.
- Welder should possess valid certificate under (Factories and Industrial Undertakings (Gas Welding and Flame Cutting) Regulation) and wear suitable personal protective equipment such as safety helmet with Y-type chin strap, approved eye protector, gloves, respirator, apron, safety shoes etc.
- Remove burns left after welding, provide fire-fighting equipment and prohibit smoking in works area.

## 摄录镜头和视像记录 Video Camera and Record

- 在适当位置安装摄录镜头，拍摄整个拆卸工地。
- 拆卸计划图则须展示摄录镜头的位置。
- 摄录镜头须在工作楼面的拆卸工程完工后才拆除。
- 记录整个拆卸过程，以供日后参考和检讨。
- 视像记录须至少保存60天。



安装闭路电视系统监察拆卸工地的各个区域。  
CCTV system to monitor various areas of the demolition site.



- Video cameras installed at strategic locations to cover the entire demolition works area.
- Video camera locations to be shown in demolition plan.
- Cameras to be dismantled upon completion of the demolition work of the working floor.
- Record the entire demolition process for reference and review purposes.
- Video records to be kept for at least 60 days.



## 红旗 Red Flags

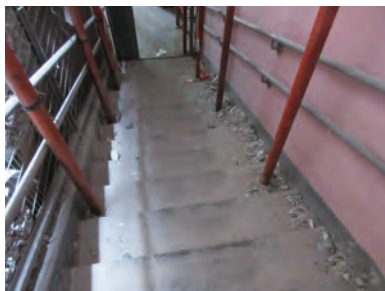
- 用红旗标示拆卸机械的作业范围，限制出入。
- Red flags for demarcating the restricted area for operation of demolition plant.



移动拆卸机械在红旗标示的范围内，可安全进行作业  
Red flags set up to demarcate the restricted area for safe operation of moving machinery

## 保持通道畅通无阻 Clear Access

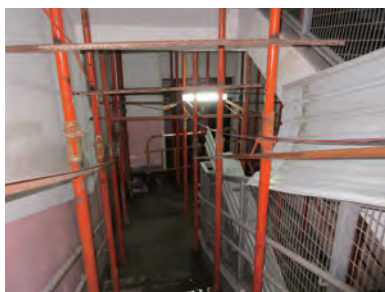
- 检查临时出入口、通道、梯级及其平台，以及逃生路线，确保其结构稳固，并经常保持畅通无阻。
- 分隔工人和工程车辆的通道。
- 清晰地标示已拆卸或废弃的范围。
- Inspect temporary access, passages, staircases, landing and means of escape to ensure access ways are stable, maintained clear and unobstructed at all times.
- Separate access for workers and works vehicles.
- Clear signs for dismantled or abolished areas.



保持畅通无阻的通道  
Clear/clean access

## 照明 Lighting

- 紧急通道和逃生路线应经常维持充足的照明。
- Sufficient lighting for emergency access & escape route at all time.



出入口应保持充足照明  
Adequate temporary lighting for access and egress

## 10 拆卸工程 Demolition Works

### 消防装置和走火通道 Fire Services Installation & Fire Escape

- 在每幢楼宇指定的楼梯平台放置灭火筒和灭火沙桶。
- Fire extinguisher and sand pack at selected staircase landings in every block.



在梯间适当的位置提供灭火筒／灭火沙桶  
Fire extinguisher/sand pack at staircase

### 恶劣天气 Inclement Weather

- 在恶劣天气下不得进行拆卸工程。
- No demolition work in inclement weather.



雷暴警告  
Thunderstorm  
warning



暴雨警告  
Rainstorm  
warnings



热带气旋警告  
Tropical  
cyclone

恶劣天气下不得进行拆卸工程  
No work during inclement weather

### 消减污染 Pollution Abatement

- 采取消减噪音和空气污染的措施。
- Take measures to abate noise and air pollution.



妥善处理有污染的物料  
Proper handling of pollution materials





## 不可超出负荷 No Overloading

- 瓦砾、机器和废物的重量不可超出楼宇结构的负荷。如有需要，应为工人提供安全带和独立救生绳。
- Do not overload the building structure or scaffolding due to debris, machinery and waste. If necessary, provide safety harness and independent lifeline for workers.



拆卸下的废料，应及时移除，以免超出负荷  
Debris on the demolishing floor must be removed/cleared regularly to avoid overload to the structure

## 物件下堕 Falling Object

- 为免物件下堕，切勿在墙洞和地洞附近放置任何物品。
- 妥善贮存瓦砾、工具和装备，以免物件下堕。
- 使用工具袋和工具绳，缚好容易松脱的部件。
- 现有楼宇内原本以绳索或吊索悬吊物件（例如升降机机厢和对重装置）应加以固定，以待日后拆除。
- 在外墙设置保护幕。
- 竖设围栏分隔拆卸工程范围与路人。
- 工地内所有人士均应佩戴设有Y型下颚索带的安全头盔和安全鞋。



在楼面地台开口位置，应竖设围栏防止物料下堕  
Hole/opening on the demolishing floor should be protected with fencing from falling object

- To prevent falling object, do not place materials near openings on walls and floors.
- Properly store demolition debris materials, tools and equipment to prevent falling object.
- Properly fix all loose parts with bags and strings.
- Objects which are originally hung by ropes or wires in existing building need to be fixed in position for removal, e.g. the counterweight and lift car.
- Provide protective screen on external walls.
- Provide fencing to separate the public from the demolition works area.
- All people on the site should wear safety helmets with y-type chin straps and safety shoes.

## 10 拆卸工程 Demolition Works

### 拆除石棉 Asbestos Removal

- 按照环境保护署的规定安排收集和处置石棉废物，以免石棉纤维漏出。
- 确保所有石棉拆除工作由认可专门承办商按照劳工处的要求以保障工人的安全及健康。
- Arrange collection and disposal of asbestos waste in accordance with the requirements of Environment Protection Department to avoid leakage of asbestos fibers.
- Ensure all asbestos removal works are conducted by approved specialist contractor in accordance with the requirements of the Labour Department to ensure the safety and health of workers.



为处理石棉的工人提供的全身防护衣物  
Full protective clothing for workers handling asbestos



以帆布完全围封石棉工程范围  
Full enclosure of asbestos work zone by canvas sheet



方便工人脱除防护衣物的洗衣场  
Equipped laundry for workers to remove protective clothing



为工人提供防护衣物和呼吸器  
Provide protective clothing and respirator for all workers



贮存石棉废物于容器内，并加上标签  
Containers for asbestos waste and stuck with label





## 个人防护装备 Personal Protective Equipment

- 佩戴设有Y型下颌索带的安全头盔和安全鞋。
- 按需要配备反光衣物、安全带、独立救生绳、护耳罩、手套、口罩、面罩、护目镜。
- Wear safety helmet with y-type chin strap and safety shoes.
- Wear reflective clothing, safety harness, independent lifeline, ear muff, gloves, mask, face shield and goggles as need arises.

## 不当的作业模式 Bad Practice

- 违反安全工作程序，容易导致工业意外。
- Violation of safe working procedure will easily lead to industrial accidents.



缺乏支撑的横梁  
No support to beam



阻塞通道  
Obstruction to circulation route



往返工作楼层的通道给废料阻塞  
Obstructed access/egress



泥石堆积和可能掉落泥石  
Accumulation of debris



棚架损毁  
Damage of scaffolding



没有妥善围封／承托拆卸工程范围  
No proper fencing/support to demolition areas



撑杆之间未有以系条联系  
No tie to props



撑杆未有贴紧楼底  
Props do not support the bottom of ceiling



棚架倒塌  
Collapse of scaffolding

## 参考资料

### 相关条例和规例

- 《工厂及工业经营条例》
- 《建筑地盘(安全)规例》
- 《工厂及工业经营规例》
- 《工厂及工业经营(起重机械及起重装置)规例》
- 《工厂及工业经营(气体焊接及火焰切割)规例》
- 《工厂及工业经营(保护眼睛)规例》
- 《工厂及工业经营(工作噪音)规例》
- 《工厂及工业经营(石棉)规例》
- 《工厂及工业经营(危险物质)规例》
- 《工厂及工业经营(吊船)规例》
- 《工厂及工业经营(安全管理)规例》
- 《职业安全及健康条例》
- 《空气污染管制条例》
- 《废物处置(化学废物)(一般)规例》

### 相关安全标准、工作守则、安全指引和指南

- 《工作守则: 石棉工作的安全与健康》(劳工处)
- 《工作守则: 气体焊接及火焰切割工作的安全与健康》(劳工处)
- 《建筑物拆卸作业守则》(屋宇署)
- 《地盘监督作业守则》(屋宇署)
- 《工厂及工业经营(工作噪音)规例简介》(劳工处)
- 《安全使用挖土机工作守则》(劳工处)
- 《拆卸楼宇安全工作指引》(职业安全健康局)
- 《石棉管制的工作守则》(环境保护署)
- 《处理、运送及处置石棉废物的工作守则》(环境保护署)
- 《认可人士及注册结构工程师作业备考APP-21》(屋宇署)
- 《专业人士环保事务咨询委员会专业守则第2/97号》(环境保护署)
- 《Handling of Asbestos Containing Materials in Buildings》(只有英文版本)  
(环境保护署)
- 《安全处理少量完整石棉波纹水泥瓦片的指引》(环境保护署)



## References

### Relevant Ordinances and Regulations

- Factories and Industries Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Factories and Industrial Undertakings Regulations.
- Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations.
- Factories and Industrial Undertakings (Gas Welding and Flame Cutting) Regulation.
- Factories and Industrial Undertakings (Protection of Eyes) Regulations.
- Factories and Industrial Undertakings (Noise at Work) Regulation.
- Factories and Industrial Undertakings (Asbestos) Regulation.
- Factories and Industrial Undertakings (Dangerous Substances) Regulations.
- Factories and Industrial Undertakings (Suspended Working Platforms) Regulation.
- Factories and Industrial Undertakings (Safety Management) Regulation.
- Occupational Safety and Health Ordinance.
- The Air Pollution Control Ordinance.
- The Waste Disposal (Chemical Waste) (General) Regulation.

### Relevant Safety Standards, Code of Practice, Guidance Notes and Guidelines

- Code of Practice: Safety and Health at Work with Asbestos. (LD)
- Code of Practice: Safety and Health at Work for Gas Welding and Flame Cutting. (LD)
- Code of Practice for Demolition of Buildings. (BD)
- Code of Practice for Site Supervision. (BD)
- A Guide to the Factories and Industrial Undertakings (Noise at Work) Regulation. (LD)
- Code of Practice on Safe Use of Excavators. (LD)
- Safety Guidelines for Demolition of Building Structures. (OSHC)
- Code of Practice on Asbestos Control (EPD)
- Code of Practice on the Handling, Transportation and Disposal Asbestos Waste. (EPD)
- Practice Note for Authorised Persons and Registered Structural Engineers (PNAP APP-21). (BD)
- Practice Note for Professional Persons (ProPECC Note 2/97). (EPD)
- Handling of Asbestos Containing Materials in Buildings. (EPD)
- Guidance Note on Safe Handling of Small Quantities of Intact Corrugated Asbestos Cement Sheet. (EPD)



# 11 密闭空间工作安全

## Safety in Confined Space

### 危害识别 Hazards

- 火警、爆炸
  - 因吸入有毒气体、缺氧或体温上升而失去知觉
  - 窒息
  - 遇溺
  - 被腐蚀性物质灼伤
  - 触电
  - 绊倒、滑倒或跌倒
- 
- Fire, explosion;
  - Unconsciousness due to toxic gases, lack of oxygen, rise in body temperature;
  - Suffocation;
  - Drowning;
  - Burns by corrosive substances;
  - Electric shock;
  - Trip, slip or fall.

### 密闭空间 Confined Space

- 「密闭空间」指任何被围封的地方，而基于其被围封的性质，会产生可合理预见的指明危险，在不局限上文的一般性的原则下，「密闭空间」包括任何会产生该等危险的沙井、密室、贮槽、下桶、坑槽、井、污水渠、隧道、喉管、烟道、锅炉、压力受器、舱口、沉箱、竖井或筒仓等。
- 
- “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.



典型的地下密闭空间  
A typical confined space



## 风险评估 Risk Assessment

- 在容许核准工人进入密闭空间前，必须先由合资格人士进行风险评估和发出工作许可证。
- 可参考对进入密闭空间工作的工人发出许可证的流程表。
- Risk assessment of a confined space should be conducted by a competent person and permit-to-work certificate should be obtained before certified workers are allowed to enter a confined space.
- Refer to flow chart for processing the permit-to-work before entering a confined space to carry out works.

密闭空间的风险评估应由合资格人士进行  
Risk assessment (confined space) should be completed by a competent person



清楚标示未经授权，不得进入密闭空间  
No authorized entry to confined space



在密闭空间外的当眼处应展示风险评估报告、工作许可证、安全设施检查清单和核准工人/合资格人士证明书  
Risk assessment report, permit-to-work certificate, safety facilities checklist and certificate of certified worker/competent person displayed in a conspicuous location outside a confined space



核准工人应持有根据《工厂及工业经营(密闭空间)规例》第4(1)条发出的有效证书  
Certified workers should hold a valid certificate issued under Section 4(1) of the Factories and Industrial Undertakings (Confined Spaces) Regulations

# 11 密闭空间工作安全

## Safety in Confined Space

### 工作同伴和救援行动

#### Co-worker and Rescue Operation

- 提高警觉，并在发现不寻常情况时发出警号／亮起闪灯。
- 如没有配备适当的呼吸器具、全身式安全带、救生绳等设备，不得进入密闭空间进行救援。
- 把伤者抬离现场，到达安全地方后才进行急救。
- Be vigilant and emit siren/flash light in case of abnormality.
- No entry to a confined space for rescue operation without appropriate breathing apparatus, safety harness, lifeline, etc.
- Remove victim from the scene to a safe location before carrying out first aid.



工作同伴协助核准工人进入密闭空间  
Co-workers assist a certified worker to enter a confined space



在密闭空间入口附近设置的急救箱和灭火器  
Provision of first aid box & fire-fighting apparatus near the entrance of a confined space

### 员工训练 Training to Staff

- 进入密闭空间工作的工人、在外面守候的工作同伴和紧急救援人员须在以下各方面接受适当的训练：
  - 安全工作程序；
  - 撤离程序；
  - 紧急救援行动；
  - 呼吸器具等救援装备的应用；
  - 多种气体探测器、紧急照明和无线通讯器材的应用；
  - 急救；
  - 对潜在风险的认识。



由安全主任和合格人士为准备进入密闭空间的核准工人提供实地讲解训练  
On-site training given by a safety officer and competent person to a certified worker ready to enter a confined space



## Strictly follow work procedures to prevent accident

- All workers inside and co-workers outside a confined space and the emergency rescue team should have received proper training of
  - safe working procedure;
  - evacuation procedure;
  - emergency rescue operation;
  - use of rescue equipment including breathing apparatus;
  - use of multi-gas detector, emergency lighting, wireless communication equipment;
  - first aid;
  - knowledge of potential risk.



对进入密闭空间工作的人员和一起工作的员工给予训练

Provide training to personnel required to enter confined space and to their co-workers

## 通风 Ventilation

- 如密闭空间可能有有毒气体、蒸气、尘埃，又或有氧气供应不足或高温的风险，便应提供机械通风设备。
- 空气入口和排气口必须分开。
- 机械设备的排气口须远离密闭空间入口。
- Provide mechanical ventilation for confined space, where there is a risk of poisonous gases, steam, dust, insufficient oxygen supply or high temperature.
- The air inlet and exhaust should be separated.
- Locate exhaust pipe of plant away from the opening of a confined space.



吹风机为密闭空间提供鲜风的主要机械

An air blower provided for mechanical ventilation of confined space

## 11 密闭空间工作安全 Safety in Confined Space



在密闭空间入口提供机械通风／救生绳  
Mechanical ventilation/lifeline provided at the entrance fo confined space



为深井提供机械通风系统  
Deep well provided with mechanical ventilation



机械通风系统需为密闭空间抽入足够的鲜风  
Fresh air supply via mechanical ventilation system to a confined space



### 沙井 Manhole

- 在容许核准工人进入沙井前，必须先由合格人士进行风险评估和发出工作许可证。
- 救生绳的一端，应稳妥地系在进入密闭空间工作的核准工人的全身式安全带上，而另一端则由在密闭空间外守候和监察的工作同伴手持着。



使用经过校准的气体探测器量度密闭空间内有毒／易燃气体的浓度  
A calibrated gas detector used to measure the concentration of poisonous/flammable gases inside a confined space





- 每更开始前，合资格人士必须使用经过校准的气体探测器测试密闭空间不同位置的空气，确保适合呼吸才可让工人入内工作。例如，在早更已进行空气测试，午饭后便须再测试空气，方可让工人入内工作。由于午饭时间关掉密闭空间的机械通风，因此两更的空气质素或会改变。
- Risk assessment of a manhole should be conducted by a competent person and a permit-to-work certificate is required for certified workers before being allowed to enter a confined space.
- A lifeline should be tied securely to the safety harness of the certified worker entering a confined space and the other end should be held and monitored by a co-worker outside the confined space.
- 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.



在密闭空间工作时，工人的救生绳需系稳在密闭空间外  
The lifeline of the worker working inside the confined space is tied securely outside a confined space



安全主任以气体探测器测试密闭空间内的空气成份  
Safety officer uses multi-gas detector to conduct air-testing of the confined space



安全主任应在工作许可证上记录空气测试结果  
Safety officer records the results of air test of a confined space in the certificate

# 11 密闭空间工作安全 Safety in Confined Space

## 火警和爆炸风险 Fire Risk and Explosion

- 如密闭空间存在火警或爆炸风险，所有电器必须防火和防爆。
- 所有连接至密闭空间的管道和线槽均须切断隔离。
- 所有电器均须接地，并须采用低压电力装备以防止触电。

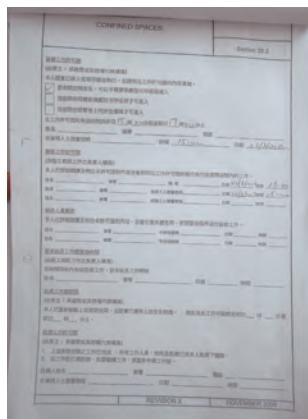
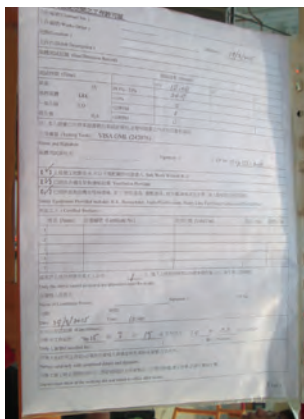


在密闭空间附近设置灭火器  
Provision of fire-fighting apparatus near a confined space

- Where there is a risk of fire or explosion in a confined space, all electrical appliances adopted should be fireproof and explosion-proof.
- Isolate/shut off all pipelines and ducts connected to the confined space.
- Earth all electrical apparatus and use low voltage equipment to avoid risk of electric shock.

## 工作许可证 Permit-to-work

- 没有工作许可证，不得进入密闭空间。
- 如许可证上规定的时间已过，任何人均不得继续留在或进入该密闭空间。
- 工作许可证和风险评估报告必须张贴于密闭空间外的当眼处。



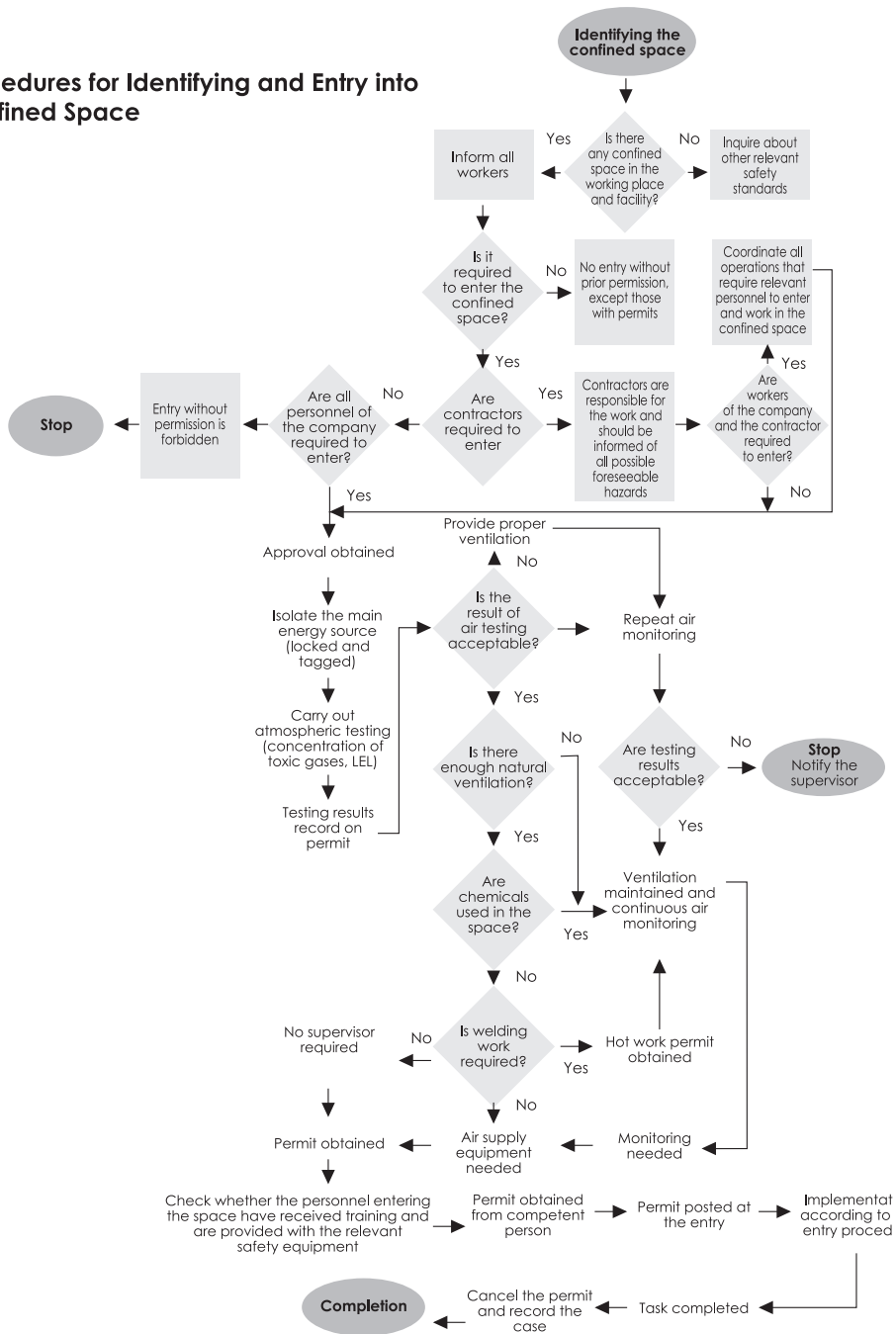
由合格人士发出，准许进入密闭空间的工作许可证。  
Permit-to-work certificate obtained from competent person for entering a confined space

- No entry to a confined space without a permit-to-work certificate.
- No people should stay in or be allowed to enter a confined space when the permit-to-work certificate expires.
- Post the permit-to-work certificate and risk assessment report at a conspicuous location outside the confined space.

## 辨認及進入密閉空間之決策流程



## Procedures for Identifying and Entry into Confined Space





## 应急计划

### Emergency Plan

- 制订应急计划／救援程序和步骤／要求当区政府部门（例如消防处）提供紧急服务的情况。
- 成立应急队伍。
- 定期进行演习，熟习救援行动和救援装备的应用。



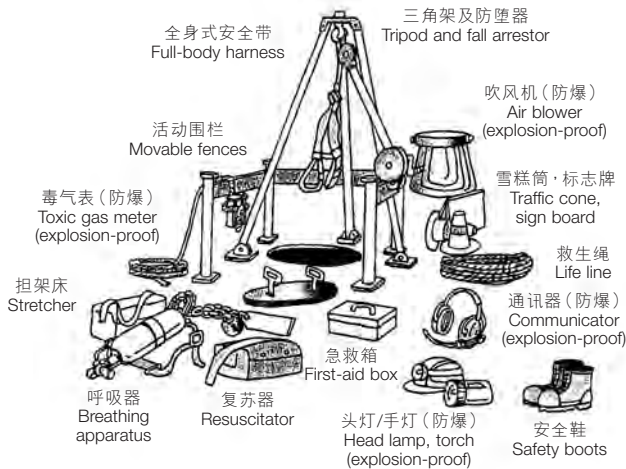
经进行演习，可熟习救援装备的应用和核实救援程序是否正确。

Drills to practice the use of rescue equipment and validate the procedures

- Formulate an emergency plan/rescue procedure and steps/conditions to request for an emergency service from local government departments, such as Fire Services Department.
- Form a contingency team.
- Conduct drills on the rescue operation and practicing the use of rescue equipment regularly.

## 救援装备 Equipment for Rescue

- 所有进入密闭空间的人员均须佩戴系上救生绳的全身式安全带。其他所需装备如图所示。
- All personnel entering a confined space should wear safety harness with lifeline. Other necessary equipment are shown in the attached figure.



密闭空间安全设备  
Safety equipment for confined spaces



## 11 密闭空间工作安全 Safety in Confined Space

### 利用救生绳发出讯号 Signaling through Lifeline

- 佩戴呼吸器具时，仍然可以利用救生绳发出以下讯号：
  - 拉绳一次：需要更多氧气。
  - 拉绳两次：放松供气喉管和救生绳。
  - 拉绳三次：求救。
- When equipped with respiratory apparatus, signal may still be sent by pulling the lifeline in the following ways –
  - pulling once: require more oxygen.
  - pulling twice: release air duct and lifeline.
  - pulling thrice: help.

### 个人防护装备 Personal Protective Equipment

- 佩戴系上救生绳的全身式安全带、索紧了Y型下颌索带之安全头盔及安全鞋。视乎情况，戴上护目镜、手套、保护衣物和核准呼吸器具。
- Wear safety 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.



工人进入密闭空间前，应配备合适的个人防护装备。  
Worker should be equipped with suitable personal protective equipment before entering a confined space



工人进入密闭空间前，应把全身式安全带和救生绳系稳。  
Full-body harness and lifeline securely fixed before entering a confined space



## 参考资料

### 相关条例和规例

- 《工厂及工业经营条例》
- 《建筑地盘（安全）规例》
- 《工厂及工业经营规例》
- 《工厂及工业经营（密闭空间）规例》
- 《职业安全及健康条例》

### 相关安全标准、工作守则、安全指引和指南

- 《工作守则—密闭空间工作的安全与健康》（劳工处）
- 《防止石矿及建筑工人患上矽肺病的指引》（劳工处）
- 《密闭空间安全须知》（职业安全健康局）

## 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) Regulation.
- 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)

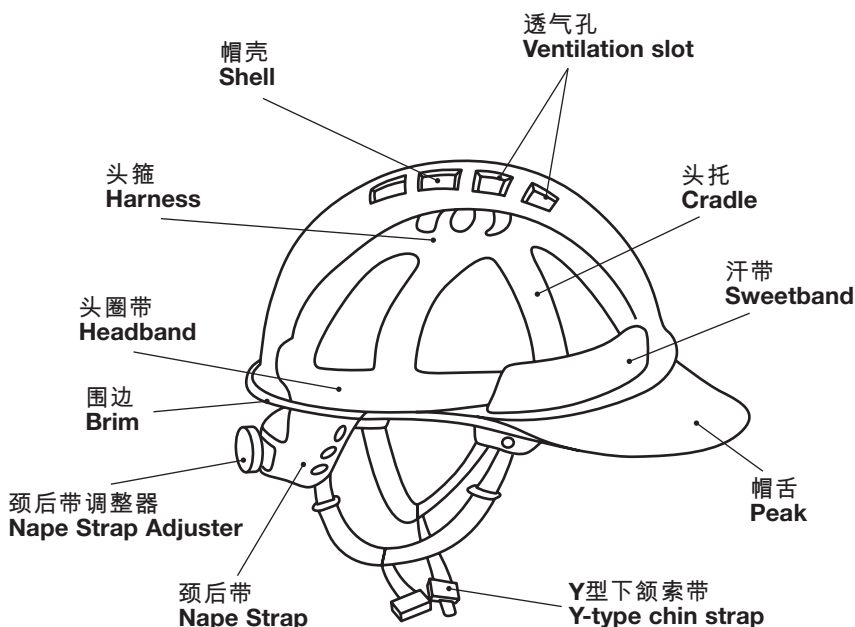
## 12 个人防护装备 Personal Protective Equipment

### 头盔 Helmet

- 任何人士必须佩戴适当头盔，方可进入工地。
- 安全头盔必须铸有透气孔和配备Y型下颌索带，若有遮阳配件、耳塞、吸震头托和哨子则更佳。
- No person is allowed to enter a construction site unless he is wearing a suitable safety helmet.
- Safety helmet to be cast with ventilation vents, equipped with Y-type chin straps and better with sunshade accessories, ear plugs, vibration absorber and whistle.



经核准的安全头盔  
Typical safety helmets





## 国际／国家安全头盔标准 International/National Standards of Safety Helmets



中国标准  
People's Republic of  
China Standard  
GB2811安全帽  
GB2811 Safety helmets



国际标准  
International Standard  
ISO3873工业用安全帽  
ISO3873 Industrial safety helmets



新加坡标准  
Singapore Standard  
SS98工业用安全帽之规格  
SS98 Specification for  
industrial safety helmet



美国标准  
American Standard  
ANSI Z89.1工业用安全帽  
ANSI Z89.1 Standard for  
Industrial Head Protection



澳洲／新西兰标准  
Australian /  
New Zealand Standard  
AS/NZS1801职业用安全帽  
AS/NZS1801  
Occupational Protective Helmets



欧盟标准  
European Standard  
EN397工业用安全帽之规格  
EN397 Specification for  
Industrial Safety Helmets



日本标准  
Japanese Industrial  
Standard  
JIS T8131产业用安全帽  
JIS T8131 Industrial safety helmets



加拿大标准  
Canadian Standard  
CSA Z94.1安全帽  
CSA Z94.1 Safety helmets

## 12 个人防护装备 Personal Protective Equipment

- 头盔应存放于工地入口的铁笼内，方便工人在进入地盘前佩戴。

安全头盔应附有适当的标记，以显示所符合的国际／国家标准，并铸上或压上标记，以显示下列资料：

- 标准编号；
- 制造商的商号或识别标记；
- 制造年份和月份；
- 安全头盔的种类（由制造商定名）一标记在帽壳和头箍上；
- 大小或尺码范围（以毫米为单位）一标记在帽壳和头箍上。



地盘入口处供存放安全头盔的铁笼  
Metal cages for storing safety helmets located at site entrance

- Safety helmets should be stored into cages at an entrance of a construction site for workers to put them on before entering the construction site.

A safety helmet should bear appropriate marking for conformity to certain international/national standards, and shall carry impressed marking for:

- the number of standard;
- the name or identification mark of the manufacturer;
- the year and month of manufacture;
- the type of helmet (named by manufacturer) – marked on shell and harness;
- the size or size range (measured in mm) – marked on shell and harness.



制造商的商号及标准编号标记在帽壳上  
Name of manufacturer and number of standard cast on the shell of helmet

制造商的商号  
Name of  
Manufacturer  
标准编号  
Number of  
Standard





## 有关安全头盔的建议 Recommendations on Safety Helmets

- 市面上有多种可供建筑行业采用的安全头盔标准，但使用最广泛的标准是ISO 3873—1977和相应的英国标准协会(BSI)标准。
- 职安局曾对安全头盔进行研究，并在结论中提出下列意见／建议：
  - 虽然行内均以ISO 3873为标准，但有些标准在更换周期和安全性检查方面的要求较为严格，使用者在选购安全头盔时应考虑这些规格。
  - 使用者在选择安全头盔时，除了要求安全头盔外壳能承受50焦耳的冲击能量外，安全系数亦不应低于2。
  - 天气对由硬质塑胶制造的安全头盔外壳影响极大。强烈紫外线、高温、高湿度引致塑胶材料变脆，从而使受冲击强度降低，因此地盘管工及工人应因应安全头盔的制造材料而定期更换。
  - 在没有损坏的情况下，地盘使用的安全头盔一般两、三年要更换一次；经过两至三年的使用，一般安全头盔的受冲击强度明显下降，难以为使用者提供预期的保护。
  - 除非安全头盔的安全认证指明更长的使用期，否则硬质塑胶安全头盔的使用期限不得超过两年，这项建议比劳工处的指南和GB标准（中国国标）所提出的三年及两年半略为严格。
  - 使用者在每次使用前应小心检查安全头盔外壳及帽箍。
- Among a myriad of available standards for the construction industry, ISO 3873-1977 and the corresponding BSI are the standards commonly used for safety helmets.
- Advice/suggestions on safety helmet from a survey results by OSHC as follows:
  - Although the ISO 3873 standard is universally accepted, some standards may be stricter than others in terms of replacement cycle and safety inspection; users should consider these specifications when choosing safety helmets.
  - Users should consider a safety factor of helmets of not less than 2 on top of the standard 50J impact energy in the selection of safety helmet.
  - Weathering conditions, such as strong UV light, high temperature and high humidity, have remarkable influence on plastic hard hats, making them brittle and hence reducing their impact strength. Site foremen and workers should keep in mind the manufacturing materials of the helmets and replace used helmets regularly.
  - 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 there is a longer life span in the safety certificate of safety helmet, it is recommended that the maximum service time of plastic hard hats should not exceed 2 years, which is more stringent than the 3 years or 2-1/2 years as stipulated in Labour Department's guidance notes or the GB standards.
  - Users should check the hard shell and suspension harness every time before use.

## 12 个人防护装备 Personal Protective Equipment

### 安全头盔使用期限的检查 Checking on Expiry Date of Helmet

以下是铸在安全头盔上的常用标记和制造日期格式，方便使用者检查：

Common example of impressed marking on helmet with manufacturing date for easy checking:



CE : 代表已通过有关的欧盟标准  
08 : 代表于2008年制造  
圆点 : 一个圆点表示一季，两个圆点即表示于第二季制造。  
解读 : 此安全头盔符合欧盟标准，于2008年第二季制造。  
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 : 代表于2008年制造  
箭咀 : 箭咀指向12代表于12月制造  
解读 : 此安全头盔于2008年12月制造  
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

安全头盔必须：

- 定期用适当的清洁剂（例如清水）清洁；
- 每两年更换，或按照制造商建议的使用期限更换；
- 调校至适合佩戴者头部的松紧程度；
- 保持帽壳与头顶有足够缓冲距离；
- 检查头盔有否出现裂纹、变形及是否适宜使用；
- 属已核准的型号／类别；
- 配有透气孔；
- 配有EN397 认证的Y型下颌索带；以及
- 配有遮阳配件以供在光线刺眼的户外环境中使用。

Safety helmets must:

- be cleaned regularly with appropriate agent such as water,
- be replaced every two years or according to the lifetime suggested by the manufacturer,
- be adjusted to fit the head correctly,
- have a buffer between the head and the shell,
- be checked for crack, distortion and sound for use,
- be of approved model/type,
- be fitted with ventilation slots,



- be equipped with Y-type chin strap certified in compliance with EN397
- be fitted with sunshade accessories for shiny outdoor condition

安全头盔须适当保养，不要出现以下情况：

- 用有机溶剂清洗；
- 在其上钻孔；
- 涂上或喷上油漆；
- 有损坏时仍然使用；
- 将其抛掷或敲击；
- 在安全头盔内再戴上其他帽子；以及
- 存放／放置在阳光下、炎热或潮湿的环境中。

Safety helmets require proper maintenance. The following should not be done:

- Clean them with organic solvents
- Drill holes in them
- Paint or spray them
- Use them when they are damaged
- Throw or strike them
- Wear any other hat under the safety helmet
- Store/place them under sunlight, hot or humid environment



用有机溶剂清洗  
Clean them with organic solvents



在其上钻孔  
Drill holes in them



涂上或喷上油漆  
Paint or spray them



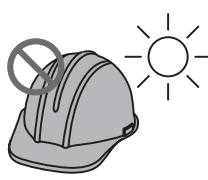
有损坏时仍然使用  
Use them when they are damaged



抛掷或敲击  
Throw or strike them



在安全帽内再戴上其他帽子  
Wear any other hat under the safety helmet



存于阳光下  
Store under sunlight

## 12 个人防护装备 Personal Protective Equipment

### 安全鞋履 Safety Footwear

- 若作业地方的地面湿滑、凹凸不平、有尖锐或下坠物件等，容易使脚部受伤，工人便应穿著安全鞋。
- 安全鞋应装有钢鞋头，以保护脚底和脚趾，并有吸震鞋垫，防刺穿及防滑鞋底。
- Wear suitable safety shoes when working area is at high risk of foot injuries from slippery or uneven ground, sharp objects, falling objects etc.
- Safety shoes should feature steel head to provide protection to sole and toes. It should be penetration resistant, slip resistant and with vibration absorber.

### 国际／国家安全鞋标准 International/National Standards of Safety Shoes

- 美国国家标准 (ASTM F2412及F2413)；
- 澳洲／新西兰标准 (AS/NZS 2210.2)；
- 欧盟标准 (ENISO20345, ENISO20346, EN ISO 20347)；
- 日本工业标准 (JIS T8101)；以及
- 加拿大标准 (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);
- Canadian Standard (CSA Z195-M92)



安全鞋旨在用于保护足部，免受外物撞击及穿透弄伤

Safety shoes to protect against impact/penetration to foot



安全靴旨在用于烂泥多的地方，用以保护足部及足踝

Safety boots to protect the foot and ankle in muddy area



安全水鞋旨在用于被水淹的地方

Safety rain boots to protect the legs against water in flooding area



## 防坠措施 Fall Protection

- 防止地盘内的工人从高处坠下。
- 在任何情况下，均应尽量提供安全工作平台。
- To prevent any person on a construction site from falling at height.
- In all circumstances, safe working platforms shall be provided as far as practicable.



在离地高于2米的地方工作，必需使用工作平台  
Use working platform for working at height of 2 meters or above

## 国际／国家安全带标准 International/National Standards of Safety Harness

- 美国国家标准协会 (ANSI-A10.32: 2012) ;
- 澳洲／新西兰标准 (AS/NZS1891.1: 2007) ;
- 欧盟标准 (EN 361: 2002) ;
- 中华人民共和国国家标准 (GB 6095-2009) ; 以及
- 日本工业标准 (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)

## 安全带（全身式安全带） Safety Harness

- 安全带是最后的安全防线，当设置工作平台、护栏及棚架并非切实可行的情况下，才应使用。但使用吊船时，工友就必须使用安全带并系稳于救生绳。
- 将安全带与独立救生绳／锚固点／防坠装置系稳，才可开始工作（包括进出工作间的安全通道）。
- 应选用为使用者提供全身支撑的全身式安全带。



## 12 个人防护装备 Personal Protective Equipment

- 依循安全带制造商指示的程序装配、调校、使用、贮存和保养安全带。
- 使用前应检查安全带设备，如有损坏，不应使用。
- 为使用安全带的人员提供训练，并妥善保存训练纪录。经常检讨训练内容以作更新，并定期开办复修训练课程。
- 高空工作时，职业安全规例要求雇主采取的基本安全措施，包括提供适合的工作平台、安全出入口及架设适当护栏。惟有此等安全措施并不切实可行，才使用安全带。
- 全身式安全带应与连接器、随带吊绳、能量吸收器及防坠缓冲一起使用。
- 由合格人士定期检查／检验安全带的状况。
- 为工作种类选用适当的安全带。



工作前应将随带吊绳系于牢固点  
Tie the lanyard to anchorage point securely before works commencement



全身式安全带 (背面)  
Back view of a full-body safety harness



全身式安全带 (正面)  
Front view of a full-body safety harness



- Safety harness is the last resort of defence and shall be used when the provisions of working platform, guard-rails and scaffolds, etc. are not practicable. For the use of suspended working platform, worker must wear safety harness attached to independent lifeline.
- Tie safety harness to independent lifeline/fixed anchorage/fall arrestor securely before working (including making access to and egress from the place of work).



全身式(降伞式)安全带是防坠装置系统的一部份  
A full-body safety harness form part of a fall arrest system

- Use safety harness to provide support to the whole body of the user.
- Follow manufacturer's instruction of safety harness on fixing, adjustment, usage, storage and maintenance process.
- Inspect the safety harness equipment before use and do not use in case of damage.
- Provide training to users of safety harness and keep proper record of training. Review scope of training for any updating and provide re-fresher training users at regular intervals.
- For working at height, the occupational safety regulations require employers to adopt basic safety precautions including the provision of suitable working platforms, safe access and egress and the erection of suitable guardrails, etc. If these safety precautions are not feasible, safety harness can then be used.
- Safety harness should be used together with connector, lanyard, energy absorber and fall arrest device.
- Check/examine the working condition by competent person regularly.
- Select suitable type of safety harness for works.

## 高空工作的防坠系统

### Fall protection system for working at height

- 为高空工作设置整套防坠系统时，除了安全带外，还须考虑工作地点周围的情况，以免在下坠时撞击附近的结构物，亦要注意环境因素，避免高温、烟尘或强风影响系统内各项组件的性能。

## 12 个人防护装备 Personal Protective Equipment

- In addition to a safety harness, the entire fall protection system for working at height must also be considered together with the area surrounding the worksite so as to, for example, prevent striking against nearby structures in the event of a fall. Environmental factors should also be taken into account so as to avoid high temperatures, smoke or strong wind affecting the performance of each of the components of the fall protection system.

### 防坠装置 Fall Arrestor

- 一套有效的防坠系统由独立救生绳／固定锚固点、防坠装置及全身式安全带组成。
  - 必须为在吊船工作或攀登固定爬梯的工人提供防坠装置。
- An independent lifeline/fixed anchorage, a fall arrestor and a full-body harness form a fall arresting system.
  - A person working on a gondola or climbing permanent ladders should be provided with a fall arresting system.



高空工作的个人抗坠防护系统  
Fall protection system for working at height



独立救生绳／锚固点、防坠装置、随带吊绳及全身式安全带组成一套防坠系统，配备防坠装置的工人在吊船上可安全地工作

The independent lifeline/fixed anchorage, fall arrestor and a safety harness with lanyard form a fall arresting system. Worker with fall arresting system working in a gondola.



## 防护衣物 Protective Clothing

- 在处理可能会渗入皮肤的铅及铅制品（包括含铅油漆）以及其他有害化学品时，应穿著不渗透的防护工作服、手套及佩戴防尘帽。
  - 在道路上或移动的机械设备附近工作时，应穿著符合EN20471标准之反光衣物。
  - 在烧焊期间应穿著隔热围裙。
- 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 to EN20471 when working on roads or near moving plant.
  - Wear heat insulating apron during welding process.



工人应根据危害类别及其风险选择合适的防护衣物  
Worker should put on appropriate protective clothing taking into account the hazards and risk involved



基本个人防护装备  
A basic personal protective equipment for workers



常见的反光衣  
Common type or reflective vest

## 12 个人防护装备 Personal Protective Equipment

防护工作服可按危害类别，分为下列几种：

The following types of protective clothing to be adopted for protection from different kind of hazards:



- (1) 一般用途防护衣物 — 包括雨衣  
General purpose protective clothing  
including raincoats



- (2) 耐热工作服／围裙 — 适用于  
烧焊工序，以防止火屑或熔金  
属飞射所引起的烧伤  
Heat-resistant work clothing/  
aprons for welding to prevent  
burns from sparks, fragments  
and flying molten metals



- (3) 高温作业工作服 — 适  
用于在熔炉或焗炉等附  
近工作的工人  
High-temperature work  
clothing, for working  
around smelting  
furnaces, oven, etc.



- (4) 低温保暖工作服 — 适  
用于长时期在冷藏库  
工作的工人  
Low-temperature work  
clothing, for working in  
a refrigerated area for  
a long duration



- (5) 防静电工作服 — 适用于易燃物品  
的处理场所或若产生静电或会影响  
电子产品质量的生产场所  
Anti-electrostatic work clothing, for  
workplaces where highly flammable  
materials are handled or where  
static charges might affect the  
quality of electronic products



- (6) 不渗透性工作服 — 适用于化学  
品泄漏处理、石棉处理等工作  
Impermeable work clothing, for  
protection against chemicals  
spilling and asbestos handling,  
etc.





- (7) 反光衣 — 在交通繁忙的道路上／经常有车辆移动的地方工作时，色彩鲜明的反光衣能令工人更显眼，减低被车辆或机械碰撞的机会  
Reflective clothing, for working in busy traffic/frequent vehicle movement location, brightly coloured reflective clothing could increase the visibility of workers and reduce their chances of being struck by vehicles or machinery



- (8) 救生衣 — 减低工人跌进水中时遇溺的风险  
Life jackets, for safeguarding the risk of drowning when worker falls into water



- (9) 防切割的工作服 — 适用于操作锋利刀具或机器的工人  
Work clothing to prevent cuts, for workers operating sharp blades and machines

## 护目镜 Goggle

- 在工地从事可能损害眼睛的工作人员，均应佩戴护目镜。选用的护目镜必须符合英国标准BS 2092(一般用途)或其他相关安全标准／规格(EN166：一般规格；EN169：焊接)。
- 在烧焊、切割砖石、钻孔和操作枪弹推动打钉工具时，必须佩戴适当的护眼用具。
- 使用砂轮或一些会产生碎屑的手用工具时，应佩戴护目镜。
- 烧焊时，应佩戴防紫外线的护目镜。
- 操作枪弹推动打钉工具时，应使用可抵受猛力撞击的护目镜。
- Worker should wear goggle for site activities when there is foreseeable risk of eye injury. The goggle selected shall comply with BS 2092 general purpose or other relevant safety standard/specifications (EN 166: general, EN 169: welding)



护目镜于工作时保护眼睛对抗外来物体，如瓦砾  
Goggles offer protection for eyes against foreign matters such as debris during works



防眩光的护目镜  
Anti-glare goggle for works under glare

## 12 个人防护装备 Personal Protective Equipment

- Wear appropriate goggles during welding, masonry cutting, drilling and bolt anchoring using cartridge operated fixing tools.
- Wear goggles when using abrasive wheels or hand tools involving production of small debris.
- Wear UV-proof goggles during welding.
- Wear high impact resistant goggles during operation of cartridge operated fixing tools.

各式眼睛防护设备介绍：

### Introduction to various kinds of eye protection equipment:

#### A) 防护式眼罩 Protective goggles

适合用于阻隔尘埃、微粒、飞屑、化学品溅液及烟雾。

Suitable for protection from dust, particles, flying chips, chemical splattering and smoke



(附透气孔·不适合腐液及烟雾)  
(Goggles with direct vents are not suitable for protection from chemical splattering or smoke)



(附间接透气孔)  
(Fitted with indirect vents)

#### (B) 安全眼镜 Safety glasses

适合用于阻隔微粒、飞屑、碎片冲击。

Suitable for protection from particles, flying chips and the impact of fragments.



(正面保护)  
(Frontal protection)



(有侧翼保护)  
(Fitted with side protection)



电焊用的面罩  
Face shield for electric arc welding



- (C) 眩光、气焊、熔炉用的护目镜适用于熔炉作业（另加护面罩）、眩光、金属溶液、强光及气焊等情况。

Goggles for protection from glare, gas welding and smelting furnaces – Suitable for smelting furnace work (with an added face shield), glare, molten metal, strong light and gas welding.



- (D) 电焊用头罩、面罩适合用于电焊、电火花、强烈紫外光照射（可与安全眼镜并用）等情况。

Electric arc welding helmets and face shields/suitable for protection from electric arc welding, electric sparks and strong UV-radiation (can be used together with safety goggles), etc.



## 耳塞 Ear Plugs

- 在无须大幅减低噪音的环境，可使用耳塞。  
可再用的软胶耳塞一般能令噪音减低18至25分贝。
- Wear ear plugs where the attenuation demand is not excessive. The attenuation of some soft plastic re-usable ear plugs ranges from 18 to 25 dB(A).

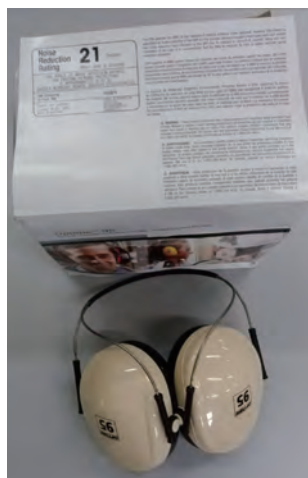


胶耳塞一般能降低噪音水平由18至25分贝  
Plastic ear plugs attenuates the noise level normally in the range of 18 to 25 dB(A)

## 12 个人防护装备 Personal Protective Equipment

### 护耳罩 Ear Muff

- 如须减低多达40分贝的噪音，可使用护耳罩。应确保保护耳罩的软垫能覆盖和完全封闭耳朵。
  - 在听觉保护区内或高噪音机器附近工作，又或使用枪弹推动打钉工具时，应佩戴护耳罩。
  - 应佩戴劳工处认可的护耳罩。
- Wear ear muff where a large attenuation of up to 40 dB(A) is demanded. Ensure that the cushion can wrap around the whole ear and provide a good seal.
  - Wear ear muff when working within hearing protection zone or in the vicinity of noisy equipment or during use of cartridge operated fixing tools.
  - Wear ear protectors that have been approved by the Commissioner for Labour.



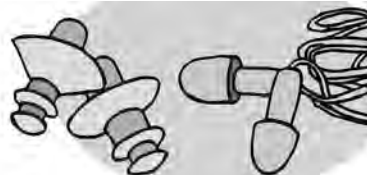
在高噪音环境，护耳罩可将噪音水平降低达40分贝  
Ear muff attenuates the noise level of up to 40 dB(A) suitable in a noisy environment

个人保护听觉用具种类：

#### Different types of ear protectors:

##### (1) 弹性耳塞

Elastic earplugs



可清洗多次使用。  
Cleanable, reuseable earplugs.

##### (2) 发泡耳塞

Foam earplugs



压缩放进耳道自动回复原状。  
When compressed and inserted into ear cavity, they expand to completely fill the ear cavity.

##### (3) 耳罩

Ear muffs



耳罩隔音量高，适合高度噪音，可与安全帽配合。  
Ear muffs offer a high level of sound reduction and are suitable for high noise levels. They can be used in combination with a safety helmet.



### 正确佩戴耳塞的方法

#### The correct use of earplugs

以左手绕过后脑，轻提右耳顶端，使耳道张阔，将耳塞放入耳道，轻压并钻入。

Pass your left hand behind your head and lift up the top of your right ear to open the ear cavity. Insert the earplug into the ear cavity, pressing and turning lightly.



### 用完即弃口罩 Disposable Respirator

- 进行打磨木器及磨光、喷漆、用蒸气进行洁净工作时，应佩戴口罩。如空气中含有害或有毒尘埃或气体，工作地点为密闭空间，又或进行引起大量尘埃的拆卸工程时，亦应佩戴口罩。
- 采取充足措施以确保口罩紧贴面部。
- 只可在氧气充足的环境使用口罩。



用完即弃口罩  
Disposable respirator

- Wear respirator when sanding and rubbing down wood; spraying paint; steam cleaning; the atmosphere contains harmful or toxic dusts or gases; when working in a confined space or carrying out demolition work giving rise to lot of dust.
- Adequate steps should be taken to ensure good fitness between the face of wear and the tight-fitting facepiece.
- The respirator can only be used in environment with sufficient supply of oxygen.

### 呼吸器 Breathing Apparatus

- 在沙井等氧气不足的环境下，呼吸器最能保护使用者免受有毒气体侵害。
- It offers the most effective protection against toxic gases, especially in an oxygen deficient environment such as manholes.



使用呼吸器须为经核准类别  
Breathing apparatus to be of an approved type



## 12 个人防护装备 Personal Protective Equipment

### 呼吸防护用具种类

#### Different types of respirators

预防上述各类危害的呼吸防护用具，基本上可分为三类：

There are basically three kinds of respirators for protection from the above-mentioned hazards:

- (1) 防尘口罩 Dust respirators  
(缺氧环境绝不适用)  
(Not suitable for oxygen deficient environments)



- (2) 防毒面罩 Cartridge or canister  
配有可更换滤毒剂 (缺氧环境绝不适用)  
(Not suitable for oxygen deficient environments)



- (3) 供氧式呼吸器 Breathing apparatus
- (a) 备有可携带气樽的自供空气式 — 供气时间有限制 (即15分钟) ;  
Self-contained Breathing apparatus – with air supply last for a certain time limit (i.e. 15 minutes),
- (b) 与供气系统接上的自供空气式 — 由外部设备/大气无限量供气。  
Linked to an air supply system – to supply free air (uncontained) from external source/atmosphere



## 手套 Gloves

- 处理有锋利边缘和尖角的金属片和其他物件，或进行烧焊和切割时，应佩戴合适的手套。
- 佩戴棉手套可吸收汗水，有助牢固地抓紧物件。
- 处理化学品时，应佩戴防化学品手套。
- 处理灼热物件或进行烧焊时，应佩戴隔热手套。
- 处理钢筋或尖锐物件时，应佩戴皮手套。
- 处理电器和进行电焊时，应佩戴绝缘手套。
- 操作震动式机器时，应佩戴防震手套。



建筑行业常用的防护手套(由左至右)：耐热用手套，处理化学物品用手套，扎铁用皮革手套，一般作业用棉质手套

Common protective gloves (from left to right) adopt in building industry: heat-resistant gloves, chemical-proof gloves, leather gloves for handling re-bar, cotton gloves for common task

- Wear suitable gloves when handling sheet metal and other objects, with sharp edges and corners or during welding and cutting.
- Wear cotton gloves to facilitate better grip of the object by absorbing sweat.
- Wear chemical-proof gloves when handling chemicals.
- Wear heat insulating gloves when handling hot objects or welding.
- Wear leather gloves when handling steel reinforcement or sharp objects.
- Wear electric insulating gloves when handling electric appliances and electric welding.
- Wear anti-shock gloves when operating vibrating machines.



处理化学物品用的强韧手套

Gloves with property of high mechanical strength and chemical resistance

### 常见的防护手套：Common protective gloves:

#### (1) 一般作业用手套（棉质／皮革）

Gloves for common tasks (cotton/leather)



#### (2) 处理化学物品用手套

Gloves for handling chemicals



## 12 个人防护装备 Personal Protective Equipment

- (3) 耐热手套  
Heat-resistant gloves



- (4) 耐寒手套  
Cold-resistant gloves



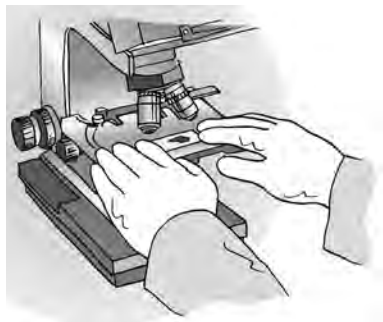
- (5) 防切割手套  
Cut-resistant gloves



- (6) 防震手套  
Anti-shock gloves



- (7) 即弃手套  
Disposable gloves



- (8) 电气手套  
Gloves for electrical work





一般作业用手套  
General purpose gloves



防切割及微震适用手套  
Cut-resistant & anti-shock gloves



一次过使用可弃手套  
Disposable gloves



电气用手套  
Gloves for electrical work



耐寒用手套  
Cold-resistant gloves



耐热用手套  
Heat-resistant gloves



一般作业用手套（棉质）  
Cotton Gloves for common tasks



一般作业用手套（皮革）  
Leather Gloves for common tasks

## 12 个人防护装备 Personal Protective Equipment

### 参考资料

#### 相关法例和规例

- 《工厂及工业经营条例》
- 《建筑地盘(安全)规例》
- 《工厂及工业经营规例》
- 《工厂及工业经营(密闭空间)规例》
- 《工厂及工业经营(喷砂打磨)特别规例》
- 《工厂及工业经营(木工机械)规例》
- 《工厂及工业经营(砂轮)规例》
- 《工厂及工业经营(在压缩空气中工作)规例》
- 《工厂及工业经营(易燃液体的喷涂)规例》
- 《工厂及工业经营(枪弹推动打钉工具)规例》
- 《工厂及工业经营(保护眼睛)规例》
- 《工厂及工业经营(工作噪音)规例》
- 《工厂及工业经营(安全主任及安全督导员)规例》
- 《工厂及工业经营(可致癌物质)规例》
- 《工厂及工业经营(危险物质)规例》
- 《工厂及工业经营(安全管理)规例》
- 《职业安全及健康条例》

#### 相关安全标准、工作守则、安全指引和指南

- 《电器产品(安全)规例指引》(机电工程署)
- 《安全帽的拣选、使用及保养指南》(劳工处)
- 《安全带及其系稳系统的分类与使用指引》(劳工处)
- 《香港建筑地盘使用安全帽现状调查及安全帽防护功能的评估》(职业安全健康局)
- 《个人防护用具须知》(职业安全健康局)





## References

### Relevant Ordinances and Regulations

- Factories and Industrial Undertakings Ordinance.
- Construction Sites (Safety) Regulations.
- Factories and Industrial Undertakings 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 Site. (OSHC)
- Guidelines for the use of Personal Protective Equipment. (OSHC)

## Abbreviation

### 简称

#### A

<b>Abrasive wheels</b>	35, 121, 122, 124, 125, 244, 253	<b>砂轮</b>	34, 121, 124, 125, 243, 252
<b>Access and egress</b>	05, 48, 72, 94, 154, 186, 211, 239	<b>出入口</b>	05, 47, 48, 70, 72, 186, 211, 238
<b>Accredited Safety Auditor (ASA)</b>	31, 34	<b>认可安全稽核員</b>	31, 33
<b>Acetylene cylinder</b>	119, 197	<b>乙炔气瓶空</b>	118, 196
<b>Air compressor</b>	70, 115	<b>气压缩机</b>	68, 115
<b>Asbestos</b>	70, 87, 202, 208, 214, 216, 217, 242	<b>石棉</b>	70, 86, 202, 208, 214, 216, 242

#### B

<b>Bamboo scaffolding</b>	150, 152, 153, 177	<b>竹棚架</b>	150, 152, 153, 176
<b>Barrier</b>	46, 47, 59, 60, 106, 110, 160, 180, 182, 183, 191, 192	<b>路障；围栏；屏障</b>	46, 47, 49, 59, 60, 106, 110, 180, 182, 183, 192
<b>Basic safety tips</b>	07	<b>基本安全提示</b>	07
<b>Boosting morale</b>	10	<b>提升团队士气</b>	10
<b>Breathing/Respiratory apparatus</b>	09, 71, 81, 200, 220, 221, 227, 247, 248	<b>呼吸器具；呼吸器</b>	07, 70, 81, 199, 220, 227, 247, 248
<b>Builder's lift</b>	107, 108, 124, 125, 177	<b>建筑工地升降机</b>	107, 124, 125, 176
<b>Building Information Modelling (BIM)</b>	14, 40, 41	<b>建筑信息模拟</b>	14, 40, 41

#### C

<b>Cable clip</b>	96, 97	<b>螺丝钢码扣</b>	96, 97
<b>Cable colour</b>	127	<b>电缆颜色</b>	127
<b>Cable fixing</b>	128	<b>安装电缆</b>	128
<b>Cable joint</b>	126	<b>电缆接头</b>	126
<b>Cables</b>	88, 126, 127-129, 136, 195	<b>电缆</b>	88, 125, 126, 127-129, 136, 195
<b>Caring Programme for new workers</b>	37, 43	<b>关顾新人工作安全计划</b>	37, 43



Cartridge operated fixing tools	122, 124, 244, 246, 253	枪弹推动打钉工具	122, 124, 243, 246, 252
Catch-fan	155, 204	斜栅(棚)	155, 204
CCTV	92, 94, 106, 110, 112, 144, 210	闭路电视	92, 106, 110, 112, 144, 210
Chain sling	95-98, 194	链吊索	95-98, 194
Checklist of working at height	171	高空工作的检查表	171
Chin strap	147, 148, 164, 188, 200, 210, 213, 215, 228, 230, 235	下颌索带	147, 148, 164, 188, 199, 210, 213, 215, 228, 230, 234
Circuit identification	130	电路标签	130
Circuit Protective Device	131	电路保护装置	130
Circular saw	120	圆锯	120
Co-worker	12, 220, 221, 223	工作同伴/同事	12, 220, 221, 222
Code of Practice	13, 43, 87, 89, 108, 110, 117, 119, 125, 139, 149, 177, 180, 189, 201, 217, 229	工作守则/实务守则	13, 43, 86, 89, 107, 110, 116, 118, 125, 139, 149, 176, 180, 189, 201, 216, 229
Colour coding	101, 102	颜色标示	97, 101, 102
Combustible materials	117, 210	易燃物料	116, 210
Common causes of industrial accident	04	工业意外一般原因	04
Compacting machine	113	压土机/机械	113
Competent examiner	91, 95, 103, 104, 109, 145, 159, 163, 175, 193	合资格检验员	90, 95, 102, 103, 109, 144, 159, 162, 192
Competent person	15, 18, 24, 26, 76, 77, 89, 91, 103, 104, 111, 114, 122, 136, 145, 152, 154, 156, 158, 161, 163, 166, 171, 175, 184, 193, 219, 220, 223, 224, 239	合资格人士	15, 18, 24, 26, 76, 77, 89, 91, 102, 103, 111, 114, 121, 135, 144, 152, 154, 156, 157, 160, 161, 162, 164, 171, 175, 183, 192, 219, 220, 222-224, 238
Confined space	35, 119, 189, 218-229, 247, 253	密闭空间	34, 118, 189, 218-229, 247, 252

Contamination	47, 206, 212	污染	46, 206, 212
Contractor	05, 10, 11, 23, 26, 35, 36, 67, 87, 91, 108, 112, 177	承建商	05, 10, 22, 26, 35, 67, 86, 90, 107, 112, 176
Control of substances hazardous to health	76	危害健康物质的管制	76

## D

Daily safe working cycle	15, 16	每日安全施工程序	15, 16
Dangerous goods	35, 52, 53, 54, 86, 115	危险品	34, 51, 53, 54, 85, 115
Dangerous material	76, 199	危险物质	76, 199, 216
Dangerous zone	08, 49, 194	危险区域	07, 42, 49, 194
Demolition	31, 36, 70, 85, 87, 202-204, 206-213, 215-217, 247	拆卸	31, 35, 70, 84, 86, 202-204, 206-213, 215, 216, 247
Demolition plan	202, 203, 206, 210	拆卸计划	202, 203, 206, 210
Disconnection of services	204	截断公共设施	204
Disposable respirator	247	用完即弃口罩	247
Distribution board	129, 130, 131	配电箱	129, 130, 131
Drill	40, 77, 84, 227	演习	40, 76, 84, 227
Drilling rigs	111	钻机	111
Dumper	112	卸泥车	112
Dust	47, 58, 62, 70, 71, 178, 199, 202, 208, 221, 244, 247	尘埃	46, 57, 70, 71, 112, 178, 199, 202, 208, 221, 244, 247
Dust control	47, 58, 70	尘埃控制	46, 70
Dust screen	70	隔尘网	70

## E

Ear muff	111, 115, 120, 122, 123, 148, 188, 197, 215, 246	护耳罩	111, 115, 120, 122, 123, 148, 188, 197, 199, 215, 246
Ear plug	09, 197, 230, 245, 246, 247	耳塞	07, 197, 230, 245, 246, 247
Earth-moving machinery	110	搬土机械	110



Earthing/earthed	116, 130, 131, 133, 169, 197, 224	地线：接地	116, 130, 131, 133, 168, 196, 224
Electric arc welding	116, 117, 125, 139, 169, 196, 197, 201	电弧焊接	116, 117, 125, 139, 168, 196
Electric shock/ Electrocution	88, 120, 126, 130, 138, 139, 190, 201, 202, 218, 224	触电	88, 120, 126, 130, 137, 139, 178, 190, 201, 202, 218, 224
Electrician	18, 24, 26, 129, 138	电工	18, 23, 26, 129, 138
Electricity	126, 128, 130, 132, 134, 135, 136, 138, 139	电力	126, 128, 130, 132, 134, 135, 136, 138, 139
Emergency	08, 09, 46, 84, 199	紧急事故	08, 09, 84
Emergency plan	227	紧急计划行动	227
Emergency switching	137	紧急开关	137
Emergency team	46	紧急应变小组	46
Employee	05, 06, 11, 12, 37, 52	员工	05, 06, 10, 12, 36, 37, 51
Employer	05, 06, 11, 37, 239	雇主	05, 06, 10, 36, 238
Equipment for rescue	187, 227	救援设备	187, 227
Equipotential bonding	120	等电位接驳装置	120
Erection, dismantling, telescoping and climbing of tower cranes	88	塔式起重机的架设、拆卸及升降	88
Excavated materials	184, 188	挖掘物料	184, 187
Excavation	69, 178-186, 188	挖掘工程	69, 178-186, 188
Exhaust control	198	处理废气	198
Explosion	178, 190, 202, 218, 224	爆炸	178, 190, 202, 218, 224
External opening	160	外间开口	160
Eye bolt	95, 99, 146	有眼螺栓	95, 99, 146

## F

Fall arrestor	147, 160, 164, 169, 170, 191, 207, 227, 239, 240	防堕装置	147, 160, 164, 167, 169, 191, 207, 227, 237, 239, 240
---------------	--	------	---



<b>Fall protection</b>	237	<b>防坠措施</b>	237
<b>Falling object</b>	08, 31, 35, 36, 155, 163, 174, 190, 202, 213, 236	<b>下坠物件</b>	08, 31, 34, 35, 155, 162, 190, 202, 213, 236
<b>Fences, fencing</b>	49, 50, 58, 64, 110, 113, 182, 183, 213, 215, 227	<b>围栏 ; 栏杆</b>	49, 50, 57, 64, 110, 113, 142, 182, 183, 213, 227
<b>Final check</b>	22	<b>最后检查</b>	22
<b>Fire escape routes</b>	46	<b>走火通道</b>	46
<b>Fire extinguishing equipment</b>	55	<b>灭火设备</b>	55
<b>Fire fighting</b>	08, 40, 46, 55, 119, 134, 210, 220, 224	<b>灭火</b>	07, 40, 46, 55, 118, 134, 210, 220, 224
<b>Fire precaution and measures</b>	54	<b>防火措施</b>	54
<b>Fire risk</b>	224	<b>火警风险</b>	224
<b>Fire warning signs</b>	55	<b>防火告示牌</b>	55
<b>First aid box</b>	45, 220, 227	<b>急救箱</b>	45, 220, 227
<b>First aid facilities</b>	45, 203	<b>急救设备</b>	45, 203
<b>Flame cutting</b>	118, 119, 124, 125, 189, 196, 197, 201, 210, 217	<b>火焰切割</b>	118, 119, 124, 125, 189, 196, 197, 201, 210, 216
<b>Floor opening</b>	08, 63, 64, 68, 172, 173	<b>地洞</b>	08, 63, 64, 68, 172, 173
<b>Foreman</b>	15, 17-20, 22, 25, 39	<b>管工</b>	15, 17-20, 22, 25, 38
<b>Forklift trucks</b>	113	<b>叉式起重车</b>	113
<b>Fresh air supply</b>	185, 222	<b>新鲜空气之 供应</b>	185
<b>Front line workers</b>	04, 17	<b>前线工人</b>	04, 17
<b>Fuel</b>	115, 134, 185	<b>燃料</b>	115, 134, 185
<b>Full body harness/ Safety harness</b>	66, 147, 148, 154, 160, 163, 169, 170, 200, 220, 223, 227, 228, 237, 239, 240	<b>全身式安全带 ; 降伞式安全 带 ; 背套式安 全带</b>	66, 147, 148, 154, 159, 160, 162, 169, 170, 199, 220, 222, 227, 228, 237, 238, 240



## G

Gas welding	18, 118, 119, 124, 125, 189, 196, 197, 201, 210, 217, 245	气体焊接	18, 118, 119, 124, 125, 189, 196, 201, 210, 216, 245
General duties	05, 37	一般责任	36
Generator	137	发电机	133, 134, 137
Generator room	133, 134	发电机机房	133, 134
Getting start	08, 145, 181	开始	07, 144, 181
Gloves	81, 111, 117, 119, 138, 148, 188, 196, 197, 200, 209, 210, 215, 228, 241, 249, 250, 251	手套	81, 111, 116-118, 137, 138, 148, 188, 196, 197, 199, 208, 210, 215, 228, 241, 249, 250, 251
Gondola	48, 49, 162, 163, 164, 240	吊船	48, 49, 124, 125, 162, 164, 240
Goggle	09, 71, 111, 115, 117, 122, 123, 148, 188, 196, 208, 215, 228, 243, 244, 245	护目镜	07, 70, 111, 115, 116, 121, 122, 123, 148, 188, 196, 208, 215, 228, 243, 245
Guidance and supervision during work	15, 19	施工时的指导和监督	15, 19

## H

Handheld pneumatic breaker	115, 188	手提气动碎石机	115, 188
Handheld tools/Portable tools	35, 123, 131, 133, 169, 179	手提工具	34, 123, 131, 133, 169
Hard cores	47	碎石垫料	46
Hard hat	57, 111, 122, 147, 148, 164, 188, 199, 210, 213, 215, 228, 230-235, 253	安全头盔	57, 111, 122, 147, 148, 164, 188, 199, 210, 213, 215, 228, 230-235, 253
Hard paved construction	46, 71	硬地施工法	46, 70
Hazard	15, 17, 19, 20, 31, 32, 34, 37, 39, 41, 44, 88, 126, 142, 150, 178, 190, 202, 203, 218, 241, 242	危险情况：危害识别	15, 17, 19, 31-33, 36, 38, 40, 44, 88, 126, 142, 150, 178, 190, 202, 203, 218, 241, 242

Hazard identification activity	15, 17, 19	识别危险情况活动	15, 17, 19
Helmet	38, 41, 57, 83, 87, 111, 122, 147, 148, 164, 188, 200, 210, 213, 215, 228, 230-235, 246, 253	头盔/安全帽	07, 37, 41, 57, 83, 86, 111, 122, 147, 148, 164, 188, 199, 210, 213, 215, 228, 230-235, 246, 253
Hoarding	46, 56, 58, 204	围板	46, 56, 57, 204
Hong Kong Housing Authority/ Housing Authority	03, 14, 31, 33, 43, 193	香港房屋委员会/ 房委会	02, 14, 31, 33, 43, 192
Hook	08, 41, 91, 93, 94, 95, 99, 100, 146	吊钩	07, 41, 90, 91, 93, 94, 95, 99, 100, 146
Hop-up platform	158, 166	工夫凳	164, 166
Hot weather	71, 72, 74, 81, 83, 87, 150, 178, 190, 200	炎热/酷热天气	71, 72, 74, 81, 83, 87, 150, 178, 190, 199
Housekeeping	08, 22, 31, 35, 36, 44, 46-48, 50-54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 196	工地整理	07, 22, 31, 34, 35, 44, 46, 48, 50-54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 196
Housekeeping (5S)	50-53	工地整理(5S)	50-53
Housing Authority Lift and Escalator Nominated Subcontracts Safety Auditing System (HALENSAS)	14, 33, 34, 43	房委会升降机及电梯指定分包商合约安全稽核制度	14, 33, 34, 43
Housing Authority Safety Auditing System (HASAS)	31-33, 43	房屋委员会安全稽核制度	31-33, 43
Hygiene facilities	73	卫生设施	73
I-beam	102, 145, 146, 181	工字梁	101, 181
Inclement weather	39, 158, 160, 163, 171, 175, 184, 212	恶劣天气	38, 157, 159, 162, 171, 175, 183, 212



<b>Independent lifelines</b>	147, 148, 154, 161, 163, 164, 170, 173, 174, 200, 213, 215, 239, 240	<b>独立救生绳</b>	147, 148, 154, 160, 162, 164, 168-170, 173, 174, 199, 213, 215, 237, 240
<b>Information Technology</b>	14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42	<b>资讯科技</b>	14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42
<b>Insulation</b>	08, 116, 117, 128, 132, 133, 138, 249	<b>绝缘</b>	07, 116, 117, 128, 132, 133, 138, 249

## J

<b>Jib</b>	88, 93, 94, 144	<b>吊臂</b>	88, 93, 144
------------	-----------------	-----------	-------------

## K

<b>Kicking board/ toe-board</b>	64, 191	<b>踢脚板</b>	64, 191
---------------------------------	---------	------------	---------

## L

<b>Ladder</b>	103, 122, 146, 166, 173, 186, 240	<b>梯具：爬梯</b>	103, 122, 146, 164, 165, 173, 186, 240
<b>Lanyard</b>	169, 238, 239, 240	<b>随带吊绳</b>	169, 238, 240
<b>Large steel formwork</b>	161	<b>大型钢料模板</b>	161
<b>Lifting</b>	08, 31, 51, 88, 92, 94, 102, 111, 144-146, 194	<b>起重：起重操作</b>	07, 31, 88, 101, 111, 144, 146, 194
<b>Lifting appliance</b>	49, 91, 92, 104, 110, 124, 145, 149, 174, 194, 195, 201, 217	<b>起重机械</b>	49, 90, 91, 103, 110, 124, 144, 149, 174, 194, 195, 201, 216
<b>Lifting frame</b>	145, 146	<b>吊架</b>	144, 146, 181
<b>Lifting gear</b>	32, 91, 92, 95, 96, 98, 100, 101, 102, 124, 145, 149, 174, 193, 194, 201, 217	<b>起重装置/吊运工具</b>	90, 91, 95, 96, 98, 100, 101, 124, 144, 149, 174, 194, 201, 216
<b>Lift shaft</b>	65-68, 87, 168-170, 172, 177	<b>升降机槽</b>	65-68, 86, 168-170, 172, 176

Lighting	08, 58, 67, 68, 72, 87, 108, 131, 132, 134, 180, 183, 189, 204, 211, 221	照明	07, 57, 65, 68, 72, 107, 131, 132, 134, 180, 182, 189, 204, 211, 220
Live wire	120, 138, 144	带电电线	120, 137, 145
Lockout Tagout	135	上锁挂牌	135, 136
Lorry-mounted mobile crane	92, 103, 105	货车式起重机	91, 103, 105
Low voltage switchboard	134	低压电掣板	134

## M

Machinery	04, 07, 18, 24, 44, 70, 88, 110, 114, 208, 209, 213, 243	机器	04, 07, 18, 23, 44, 70, 88, 110, 114, 208, 213, 243
Manhole	218, 222, 223, 247	沙井	218, 222, 247
Manual handling	78, 87, 88, 150, 190, 195	体力处理操作	78, 86, 88, 150, 190, 195
Mask	120, 138, 148, 196, 215	面罩	120, 137, 148, 196, 215
Material hoist	26, 109	物料吊重机	26, 109
Maximum loading capacity	193	安全荷载 (最大)	192, 194
Means of access and egress	94	上落途径	93
Mechanical engineer	89, 91	机械工程师	88, 90
Metal scaffolding	66, 154, 177	金属棚架	66, 154, 176
Mini Skid Loader	114	小型装载 搬土机	114
Mobile Applications in Mobile Devices	42	流动装置应用 程式	42
Mobile crane	31, 88, 104, 105, 125, 149	流动式起重机	31, 88, 104, 105, 125, 149
Mobile elevating work platform	159, 160, 177	动力操作升降 工作台	159, 176
Mobile working platform	157, 158, 191	流动工作平台	157, 158, 191
Monthly inspection	26	每月巡查	26





Monthly safe working cycle	25	每月安全施工程序	25
Monthly safety committee meeting	28	每月安全委员会会议	27
Monthly safety meeting	25	每月安全大会	25
Monthly safety training	27	每月安全训练	27
Morning walk	206	早上巡查	206
Multi-layer subcontracting	04	多层分判	04

## N

“N” label	37, 38	“N”字标签	37
National standards	155, 231, 232, 236, 237	国家标准	155, 231, 232, 236, 237
Noise	35, 68, 70, 86-88, 123, 124, 178, 189, 190, 197, 198, 201, 202, 208, 209, 212, 217, 245, 246, 253	噪音	34, 68, 85, 86, 88, 123, 124, 178, 189, 190, 197, 198, 199, 201, 202, 208, 209, 212, 216, 245, 246, 252
Noise control	68, 86	噪音管制	68, 85

## O

Occupational Safety and Health Council (OSHC)	04, 31, 36, 43, 87, 125, 217, 229, 253	职业安全健康局	04, 31, 35, 43, 86, 125, 216, 229, 252
Overhead cables	88, 136, 195	架空电缆	88, 136, 195
Overloading	108, 152, 154, 161, 172, 213	超出负荷	152, 154, 160, 172, 213

## P

“P” label	37, 38	“P”字标签	37
Permit-to-work	08, 119, 135, 136, 166, 169, 170, 219, 223, 224	工作/工程许可证	07, 118, 135, 136, 164, 168, 170, 219, 222, 224

<b>Personal protective equipment</b>	06, 09, 16, 37, 78, 81, 87, 115, 116, 123, 136, 147, 148, 164, 170, 188, 196, 197, 199, 210, 215, 228, 230, 232, 234, 236, 238, 240, 241, 242, 244, 246, 248, 250, 252, 253	<b>个人防护装备</b>	05, 06, 07, 09, 16, 36, 78, 81, 115, 116, 123, 135, 147, 148, 164, 169, 188, 196, 197, 199, 210, 215, 228, 230, 232, 234, 236, 238, 240, 241, 242, 244, 246, 248, 250, 252
<b>Personal safety</b>	09	<b>个人安全</b>	07
<b>Piling</b>	36, 70, 190, 192, 194, 195, 196, 198-200	<b>地基/打桩</b>	36, 68, 190, 192, 194, 196, 198, 200
<b>Pit excavation</b>	179	<b>挖掘坑穴</b>	179
<b>Plant</b>	21, 33, 41, 42, 44, 58, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 195, 221, 241	<b>机械设备</b>	21, 32, 42, 44, 57, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 195, 221, 241
<b>Plant operators</b>	15, 18, 24, 41, 193, 194	<b>机械设备 操作员</b>	15, 18, 23, 41, 193, 194
<b>Platform</b>	111, 150, 151, 191	<b>平台</b>	111, 150, 191
<b>Pneumatic breaker</b>	69, 115, 188	<b>气压碎石机</b>	69, 115, 188
<b>Pointing and Calling</b>	39, 40, 43, 106, 125, 135	<b>指差呼称</b>	39, 43, 105, 125, 135
<b>Pollution abatement</b>	212	<b>消减污染</b>	212
<b>Potential hazards</b>	20, 39, 202	<b>潜在危险</b>	20, 38, 202
<b>Power supply</b>	108, 117, 120, 131, 135, 169, 204	<b>供电: 电源</b>	107, 116, 120, 131, 135, 168, 204
<b>Precast concrete beam</b>	147, 148	<b>预制混凝土横梁</b>	147
<b>Precast concrete elements</b>	142-146, 148	<b>预制混凝土组件</b>	142, 144, 146, 148
<b>Precast concrete facade</b>	145, 146	<b>预制混凝土外墙</b>	144, 146



Precast concrete slab	47, 143, 146	预制混凝土板/楼面板	46, 143, 146
Pre-work safety check	15, 18	开工前安全检查	15, 18
Procedure for identifying and entry into confined space	225, 226	辨识及/和进入密闭空间之决策流程	225
Project manager	15, 16, 20, 21, 23, 24, 25, 28	项目经理	15, 16, 19, 20, 22, 24, 25, 27
Propping	181, 206	支柱	181, 206
Proprietor	122	东主	121
Protection to utilities	181	保护公用设施	181
Protective canopy	56, 156	保护檐篷	56, 156
Protective clothing	111, 214, 228, 241, 242	防护衣物	111, 214, 228, 241, 242
Protective screen	155, 162, 204, 213	保护幕	155, 162, 204, 213
Protruded metal bar	64	突出金属钢枝	64
Public safety	56, 58, 202	公众安全	56, 57, 58, 202

## Q

Qualified personnel	114, 138, 167	合资格人员/士	114, 137, 167
---------------------	---------------	---------	---------------

## R

Radio Frequency Identification (RFID)	14, 41, 42, 57, 106	无线射频识别	14, 41, 42, 57, 106
Railings	66, 67, 150, 158, 191	围栏	66, 67, 150, 158
Refuse collection point	61, 62	垃圾收集站	61, 62
Reinforcement casing	195, 200	钢筋笼	195, 200
Rescue operation	220, 221, 227	救援行动	220, 227
Respirator	115, 117, 119, 200, 210, 214, 228, 248	呼吸器	115, 116, 118, 199, 210, 214, 228, 248
Rigger	85, 145, 147, 194	索具工	84, 144, 147, 194
Risk Assessment	76, 89, 112, 136, 145, 166, 169, 179, 181, 183, 185, 187, 189, 219, 223, 224	风险评估	76, 88, 89, 112, 135, 144, 164, 168, 179, 181, 183, 185, 187, 189, 219, 222, 224
Roadwork	87, 178-189	道路工程	86, 178, 180, 182, 184, 186, 188, 189

Roller 113  
RSE 160, 217

压路机 113  
注册结构工程师 160, 216

## S

Safe Climate Index (SCI) Survey 14, 29, 30, 33, 43

Safe Isolation of Electricity Source 135

Safe use of electricity 126, 128, 130, 132, 134-136, 138

Safe working cycle 11, 14-17, 22, 25, 28, 43

Safe working load (SWL) 93, 95, 96, 98, 100-106, 113, 114, 145, 163

Safety at confined space 228

Safety belts 253

Safety committee 28, 32

Safety consciousness/awareness 17, 27

Safety coordination and discussion 15, 21

Safety footwear/shoes 236

Safety harness, Full body harness 66, 147, 148, 154, 159, 161, 163, 164, 169, 170, 200, 220, 223, 227, 228, 237, 238, 239, 240

Safety helmet 57, 87, 111, 122, 147, 148, 164, 188, 200, 210, 213, 215, 228, 230-235, 246, 253

Safety induction training 36

Safety inspection 15, 20, 23

Safety net 36, 67, 121, 154, 167, 168, 170, 173, 174

安全气候指数调查 14, 29, 30, 33, 43

安全隔离电源 135

安全使用电力 126, 128, 130, 132, 134-136, 138

安全施工程序 10, 14-17, 22, 25, 27, 43

安全操作负荷 92, 95, 96, 98, 100-105, 113, 114, 144, 162

密闭空间安全 228

安全带 252

安全委员会 27, 28, 32

安全意识 17, 27

安全施工协调及检讨 15, 20

安全鞋履 236

全身式安全带；降伞式安全带；背套式安全带 66, 147, 148, 154, 159, 160, 162, 164, 169, 170, 199, 220, 222, 227, 228, 237, 238, 240

安全头盔 57, 86, 111, 122, 147, 148, 164, 188, 199, 210, 213, 215, 228, 230-235, 246, 252

入职安全训练 36

安全巡查 15, 19, 20, 22, 23

安全网/保护网 36, 67, 121, 154, 167, 168, 173, 174



<b>Safety officer</b>	06, 09, 13, 15, 20, 21, 23, 24, 27, 28, 37, 38, 39, 43, 45, 76, 89, 206, 220, 223, 253	<b>安全主任</b>	05, 09, 13, 15, 19, 20, 22, 24, 27, 36, 38, 39, 43, 45, 76, 88, 206, 220, 223, 252
<b>Safety shoes</b>	111, 117, 119, 138, 147, 148, 164, 188, 200, 210, 213, 215, 228, 236	<b>安全鞋</b>	111, 116, 118, 138, 147, 148, 164, 188, 199, 210, 213, 215, 227, 228, 236
<b>Safety signage</b>	07, 77	<b>安全标志</b>	07, 77
<b>Safety standards</b>	13, 24, 31, 43, 86, 125, 139, 149, 177, 189, 201, 217, 229, 243, 253	<b>安全标准</b>	13, 23, 31, 43, 86, 125, 139, 149, 176, 189, 201, 216, 229, 243, 252
<b>Scaffolding/Scaffold</b>	18, 22, 69, 111, 150-156, 158, 160, 162, 164, 166, 168, 170-172, 174, 176, 177, 204, 207, 215, 239	<b>棚架</b>	18, 22, 68, 111, 150-156, 158, 160, 162, 164, 168, 170-172, 176, 204, 207, 215, 237
<b>Shackles</b>	95, 98-100, 102	<b>钩环 (塞古)</b>	95, 98-101
<b>Shoring</b>	181, 206	<b>支撑物</b>	181, 206
<b>Signaler</b>	90, 91, 93, 94, 110, 112, 145, 148, 193, 194	<b>讯号员</b>	90-93, 110, 112, 144, 147, 193, 194
<b>Signaling</b>	228	<b>发出讯号</b>	228
<b>Silver Card</b>	84, 85	<b>银卡</b>	84, 85
<b>Silver Card (Advanced Safety Training)</b>	84	<b>银卡 (深造级安全训练)</b>	84
<b>Site activities</b>	39	<b>工地作业</b>	38
<b>Site agent</b>	15, 16, 20, 22-25, 28	<b>工地总管</b>	15, 16, 19, 22, 24, 25, 27
<b>Site haul road</b>	57	<b>工地运料路</b>	57
<b>Site layout</b>	46, 112	<b>工地平面图: 工地布局</b>	46, 112
<b>Site layout plan</b>	46	<b>工地平面图</b>	46
<b>Site safety</b>	44-87	<b>工地安全</b>	44-87
<b>Site traffic</b>	57	<b>工地交通</b>	57



# 索引 Index

Slings	88, 96, 98, 102, 145, 194	吊索	88, 96, 99, 101, 144, 194
Socket	126, 131, 169	插座	126, 130, 168
Spreader beam	101	吊梁	101
Stability	106, 154, 156, 183, 184	稳固程度：稳固	104, 154, 156, 183
Steel bending machine	120, 121	屈钢筋机	120, 121
Step platform	146, 159	梯台	146, 159
Stockpiling	188	堆存	188
Storage and removal of materials	75	物料贮存和清理	75
Storage area	47, 54, 115, 142, 143	贮存地方/区	47, 54, 115, 142
Storage of material	47, 48, 76, 200	贮存物料	46, 48, 76, 200
Subcontractor (SC)	11, 15, 16, 20, 22, 24, 26, 28, 32, 35, 52	分判商：分包商	10, 15, 16, 20, 22, 24, 26, 27, 32, 35, 51, 52
Sunshade	83	荫棚	83
Surface water run-off	184	地面水径流	184
Surprise Safety Inspection Programme (SSIP)	14, 35, 36	突击安全巡查计划	14, 35, 36
Suspended working platform (Gondola)	124, 125, 163, 174, 175, 177, 217, 239	高空工作台（吊船）	124, 125, 162, 174-176, 216, 237
Switch room	133, 134	电掣房	133, 134

## T

Temperature	72	温度	72
Temporary lighting	131, 204	临时照明	131, 204
Temporary refuse chute	61	临时垃圾槽	61
Temporary traffic arrangement	58-60, 180	临时交通安排	58-60, 180
Tidying up	15, 21, 25	清扫	15, 21, 25
Toe board	64, 66, 67, 150, 151, 154, 157, 158, 160, 161, 163, 172, 191, 207	踢脚板	64, 66, 67, 150, 151, 154, 157, 159-162, 172, 191, 207
Tool Box Talk	38, 39, 74	工地座谈会	38, 74



<b>Tower crane</b>	31, 85, 88, 89, 91-94, 125, 144-146, 148-149	<b>塔式起重机</b>	31, 84, 88-90, 92-93, 125, 144, 146, 147, 149
<b>Training</b>	05, 11, 27, 28, 36, 37, 40, 41, 43, 74, 84, 85, 91, 92, 101, 108, 113, 119, 123, 145, 152, 163, 197, 203, 207, 220, 221, 239	<b>训练</b>	05, 10, 27, 36, 37, 40, 42, 74, 84, 90, 91, 101, 107, 113, 118, 123, 144, 152, 162, 196, 203, 207, 220, 221, 238
<b>Transformer room</b>	133	<b>电力变压房</b>	133
<b>Trench</b>	178, 179, 181, 183, 184	<b>沟槽</b>	178, 179, 181, 182, 184
<b>Truck</b>	112	<b>货车</b>	112
<b>Truss-out scaffold</b>	160	<b>悬空式棚架</b>	160

## U

<b>U-channel</b>	188	<b>U形排水渠</b>	187
<b>Underground utilities</b>	58, 60, 111, 178, 179, 190, 192	<b>地下公用设施</b>	57, 60, 111, 178, 179, 190, 192
<b>Utilities</b>	58, 60, 111, 178, 179, 181, 190, 192	<b>公用设施</b>	57, 60, 111, 178, 179, 181, 190, 192

## V

<b>Vehicle washing bay/ area</b>	46, 60	<b>车辆清洗处</b>	46, 60
<b>Vehicular and pedestrian access control</b>	57	<b>车辆及行人通道的管制</b>	57
<b>Ventilation</b>	71, 84, 119, 170, 210, 221, 222, 223	<b>通风</b>	71, 84, 118, 168, 210, 221, 222, 223
<b>Ventilation vent</b>	230	<b>透气孔</b>	230
<b>Vibration</b>	208, 209	<b>震荡</b>	208

## W

<b>Warning notice</b>	54, 63, 66, 68, 110, 122, 130, 134, 169, 179, 183	<b>警告告示/标示</b>	54, 63, 66, 68, 110, 121, 130, 134, 169, 179, 183
-----------------------	---	----------------	---

<b>Weather</b>	04, 33, 39, 59, 71, 72, 74, 81, 82, 150, 156, 158, 160, 163, 171, 175, 178, 182, 184, 190, 200, 212, 233	<b>天气</b>	04, 33, 38, 58, 71, 72, 74, 81, 150, 156, 157, 159, 162, 171, 178, 182, 183, 190, 199, 212, 233
<b>Weekly check</b>	24	<b>每周巡查</b>	23
<b>Weekly safe working cycle</b>	22	<b>每周安全施工程序</b>	22
<b>Weekly safety coordination</b>	24	<b>每周安全协调</b>	24
<b>Weekly safety inspection</b>	23	<b>每周安全巡查</b>	23
<b>Weekly tidying up</b>	25	<b>每周清扫</b>	25
<b>Welding</b>	55, 116, 117, 118, 119, 124, 125, 139, 169, 189, 196, 197, 201, 210, 217, 243	<b>焊接</b>	55, 116-119, 124, 125, 139, 168, 189, 196, 201, 210, 216, 243
<b>Welfare facilities</b>	11, 37, 74	<b>福利设施</b>	10, 36, 74
<b>Wire rope sling</b>	95-97, 145	<b>缆吊索</b>	95-97, 144
<b>Work on slope</b>	105, 187	<b>在斜坡上工作</b>	105, 187
<b>Work over or near water</b>	187	<b>在水上或水边工作</b>	187
<b>Work Safe Behaviour Programme (WSB)</b>	14, 30, 33	<b>工作安全行为计划</b>	14, 30, 33
<b>Work safety zone</b>	180	<b>工作安全地带</b>	180
<b>Working at height</b>	04, 31, 35, 36, 146, 171, 174, 190, 191, 200, 207, 239, 240	<b>高空工作</b>	04, 31, 34, 35, 146, 171, 174, 190, 191, 199, 207, 238, 239, 240
<b>Working cycle</b>	11, 14, 15, 16, 17, 22, 25, 28, 43	<b>施工程序</b>	10, 14, 15, 16, 17, 22, 25, 27, 43
<b>Working in hot weather</b>	72, 81	<b>在炎热天气下工作</b>	72, 81



<b>Working platform</b>	48, 66, 67, 108, 124, 125, 147, 150-152, 154, 156-164, 166, 168, 170, 172, 174, 176, 177, 187, 191, 192, 195, 207, 237, 239	<b>工作平台</b>	48, 66, 67, 107, 124, 125, 147, 150-152, 154, 164, 166, 168, 170, 172, 174, 176, 187, 191, 192, 195, 207, 237, 238
<b>Workplace, Workplaces</b>	04-06, 17-19, 22-25, 55, 71, 72, 81, 117, 122, 160	<b>工作间</b>	04-06, 17-19, 22- 23, 25, 55, 71-72, 81, 116, 121, 160

## Y

<b>Y-type chin strap</b>	147, 148, 164, 188, 200, 210, 213, 215, 228, 230, 235	<b>Y型下颌索带</b>	147, 148, 164, 188, 199, 210, 213, 215, 228, 230, 234
--------------------------	--	---------------	--

本手册于2008年首次出版，而本手册第二版由房屋署发展及建筑处安全及健康小组负责更新及编制，并得到署内的工地督导和督察人员提供协助。手册能成为业界的一本实用安全工具书，端赖各有关方面的鼎力支持和宝贵意见，我们特此衷心感谢房屋署工地安全小组委员会各位委员，以及下列机构：

- 机电工程署
- 环境保护署
- 消防处
- 香港警务处
- 正宏工程有限公司
- 中国建筑工程(香港)有限公司
- 中信钻探工程有限公司
- 金门建筑有限公司
- 基翔工程发展股份有限公司
- 兴胜建筑有限公司
- 协兴工程有限公司
- 建荣工程有限公司
- 保华建筑营造有限公司
- 瑞安承建有限公司
- 新福港营造有限公司
- 泰升地基工程有限公司
- 有利建筑

承蒙职业安全健康局以上机构惠允使用和复制有关资料，包括载于该局的刊物内的插图、照片及内容，特此致谢。

房屋署  
发展及建筑处  
安全及健康小组  
2017年2月





The handbook was first published in 2008 and was updated by the Safety and Health Unit of the Development and Construction Division, Housing Department. With the assistance and support from site supervisory and inspectorate staff, the first edition of the handbook was revised. Being a pragmatic safety publication for handy reference by the industry, the handbook manifests synergistic support and contribution from Housing Department Site Safety Sub-committee members and also the following organisations for their valuable comments / inputs :

- Electrical and Mechanical Services Department
- Environmental Protection Department
- Fire Services Department
- Hong Kong Police Force
- Chatwin Engineering Limited
- China State Construction Engineering (Hong Kong) Limited
- Chung Shun Boring Engineering Company Limited
- Gammon Construction Limited
- Gold Ram Engineering & Development Limited
- Hanison Construction Company Limited
- Hip Hing Engineering Company Limited
- Kin Wing Engineering Company Limited
- Paul Y. General Contractors Limited
- Shui On Building Contractors Limited
- Sun Fook Kong Construction Limited
- Tysan Foundation Limited
- Yau Lee Construction Company Limited

We are also much indebted to the special permission from OSHC / the above for the use and reproduction of some information including illustrations, photos and contents contained in the Council's publications for the purpose of this handbook.

Safety and Health Unit  
Development and Construction Division  
Housing Department  
February, 2017

如有任何意见，欢迎联络房屋署建筑及发展处工程安全及健康小组：

高级经理 (工程安全及健康)

刘赐添先生

电邮：timothy.lau@housingauthority.gov.hk

电话：2129 3355

传真：2129 3390

经理 (工程安全及健康)

温颂恩女士

电邮：chungyan.wan@housingauthority.gov.hk

电话：2129 3499

传真：2129 3390

---

Please feel free to send your comments to Safety and Health Unit, Development and Construction Division, Housing Department:

Senior Manager/Safety & Health

Mr. Timothy Lau

E-mail：timothy.lau@housingauthority.gov.hk

Tel.：2129 3355

Fax：2129 3390

Manager/Safety & Health

Ms Joanne Wan

E-mail：chungyan.wan@housingauthority.gov.hk

Tel.：2129 3499

Fax：2129 3390

确保工作场所健康安全 订定严格工地安全标准

[illegible]



[illegible]



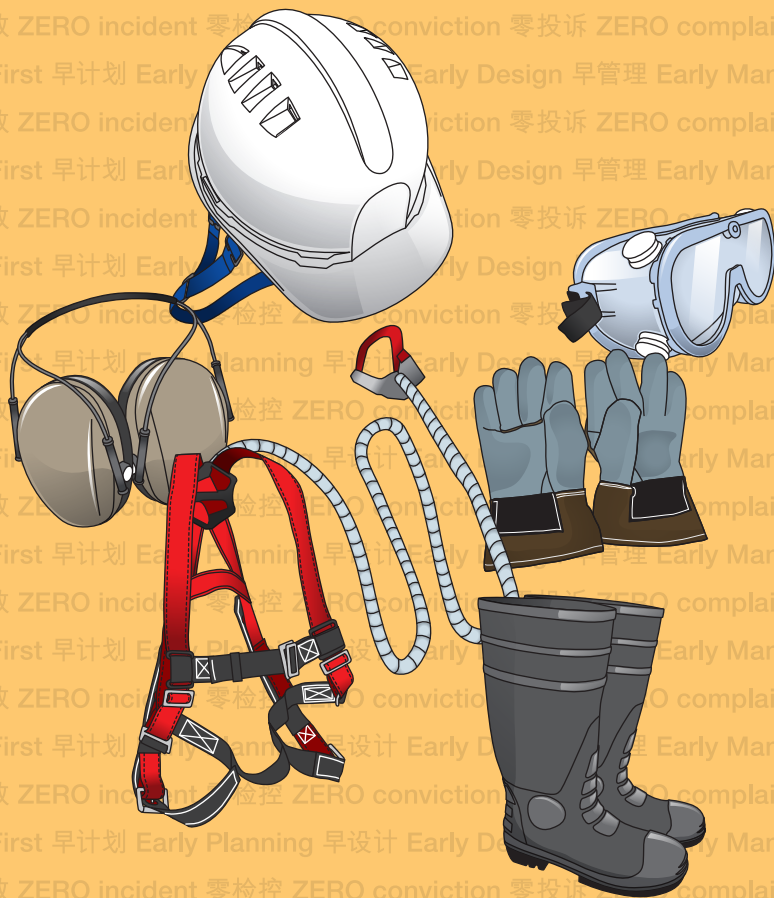


**Ensure a safe and healthy workplace. Set stringent site safety standards.**

[illegible]







工地安全手册

**Site Safety Handbook**

房屋署工地安全小组委员会

**The Housing Department Site Safety Sub-committee**

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