



# Overview of Work-at-Height Safety



Labour Department



Safety at work

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## Contents

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<b>1. Introduction .....</b>	<b>1</b>
<b>2. Major Safety Legislation for Work-above-Ground/Work-at-Height .....</b>	<b>2</b>
<b>3. Assessment of Work-above-Ground/Work-at-Height Risks .....</b>	<b>4</b>
<b>4. Safety of Working at Less Than 2 Metres above the Ground .....</b>	<b>5</b>
4.1 Provision of Suitable Working Platforms .....	5
4.2 Mobile Working Platforms.....	6
4.3 Light-duty Working Platforms .....	7
<b>5. Safety of Working at 2 Metres or More above the Ground.....</b>	<b>9</b>
5.1 Provision of Suitable Working Platforms .....	9
5.2 General Requirements for Scaffolding Safety (Applicable to Bamboo Scaffolds, Metal Scaffolds and Truss-out Bamboo Scaffolds) .....	10
5.3 Bamboo Scaffolds .....	11
5.4 Metal Scaffolds .....	13
5.5 Truss-out Bamboo Scaffolds.....	15
5.6 Suspended Working Platforms.....	17
5.7 Power-operated Elevating Work Platforms.....	19
<b>6. Other Safety Matters Related to Work-above-Ground/Work-at-Height.....</b>	<b>21</b>
6.1 Other Points to Note on the Use of Working Platforms.....	21
6.2 Fall Arresting Systems .....	22
6.3 Safety Helmets .....	24
<b>7. Annex: Requirements for Safety Installations such as Working Platforms,     Gangways and Coverings for Openings .....</b>	<b>25</b>
<b>8. References .....</b>	<b>26</b>
<b>9. Enquiries and Complaints .....</b>	<b>28</b>

# 1. Introduction

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1.1 In general, **work-above-ground means carrying out the work at less than 2 metres above the ground**, which mostly involves general interior renovation and cleaning work; whereas **work-at-height means carrying out the work at 2 metres or more above the ground**, which is common in construction works, repair of external walls of buildings, and replacement of windows, water pipes or split type air-conditioners. To ensure the work safety of employees/workers, proprietors/employers/contractors/responsible persons shall provide suitable working platforms/facilities for employees/workers engaged in work-above-ground and work-at-height.

1.2 The Labour Department has produced a number of publications on work-above-ground/work-at-height (see References) for duty holders to understand the risks and the safety measures to be taken when conducting the related work. To further enable duty holders to comprehend the risks and safety precautions of the related work, this overview has been specially prepared to summarise safety information and highlights of work-above-ground/work-at-height for reference purpose. The first part of this overview introduces the mobile working platforms and light-duty working platforms that are generally suitable for work at less than 2 metres above the ground and the relevant safety matters. The second part covers the safety measures to be taken for work at 2 metres or more above the ground, including the use of bamboo scaffolds, metal scaffolds, truss-out bamboo scaffolds, suspended working platforms and power-operated elevating work platforms. **In considering the working methods for work-above-ground/work-at-height and external building renovation, duty holders should, in addition to referring to this overview and other relevant safety codes of practices and guidelines, seek professional advice when necessary to ensure that the use of working platforms, scaffolds, etc. and the established working methods are appropriate in terms of the nature of work, environment and features of workplaces including work at building exterior.**

## **2. Major Safety Legislation for Work-above-Ground/Work-at-Height**

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2.1 The Labour Department enforces the Factories and Industrial Undertakings Ordinance, the Occupational Safety and Health Ordinance and their subsidiary regulations, including the Construction Sites (Safety) Regulations, Factories and Industrial Undertakings Regulations, Occupational Safety and Health Regulation, Factories and Industrial Undertakings (Suspended Working Platforms) Regulation and other legislation to regulate the occupational safety of work-above-ground/work-at-height.

2.2 The Factories and Industrial Undertakings Ordinance (Cap. 59) applies to industrial undertakings, including all construction sites, factories, restaurants, warehouses and shipyards. The Occupational Safety and Health Ordinance (Cap. 509) applies to various types of workplaces, including industrial undertakings, offices, supermarkets, retail shops, property management agencies and schools/educational institutions. The general duties provisions under the Factories and Industrial Undertakings Ordinance and Occupational Safety and Health Ordinance prescribe that employers, proprietors of industrial undertakings and responsible persons of workplaces shall ensure the safety and health of employees/workers, including the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health; the provision of such safety information, instruction, training and supervision as is necessary; and the provision and maintenance of a safe working environment. Therefore, employers/proprietors/responsible persons shall provide suitable working platforms/facilities for employees/workers engaged in work-above-ground/work-at-height. For the related statutory requirements, please refer to “A Guide to the Factories and Industrial Undertakings Ordinance (Section 6A) - General Duties of Proprietors” and “Safe Systems of Work” published by this department.

2.3 The Factories and Industrial Undertakings Ordinance and Occupational Safety and Health Ordinance also prescribe the legal liabilities of employees/workers, including the need to take due care for the safety and health of themselves and of other persons who may be affected by their acts or omissions at work.

2.4 The Construction Sites (Safety) Regulations prescribe that on a construction site where workers are at the risk of falling from a height of 2 metres or more, the contractor shall take adequate steps to ensure the safety of these workers, including providing suitable working platforms and measures to prevent the workers from falling, ensuring scaffolding safety, as well as prohibiting the use of boatswain’s chairs. The requirements of the Regulations for safety installations such as guard-rails, toe-boards, coverings for openings, gangways and runs of working platforms are extracted in Annex. Reference can also be made to “A Guide to the Provisions for Safe Places of Work under Part VA of the Construction Sites (Safety) Regulations” published by this department. Furthermore, when workers cannot safely work on the ground or from a permanent structure irrespective of the height, the contractor shall provide and ensure workers’ use of working platforms suitable for the work, including mobile working platforms, step platforms or hop-up platforms.



2.5 Under the Factories and Industrial Undertakings Regulations and Occupational Safety and Health Regulation, if a place such as a platform located within a workplace could be a danger to the safety of persons, the person responsible for the workplace must ensure that the place is securely fenced or sufficiently well protected.

2.6 The Factories and Industrial Undertakings (Suspended Working Platforms) Regulation applies to an industrial undertaking in which any suspended working platform for carrying persons is used. This Regulation specifies that the owner of a suspended working platform shall ensure the work safety of the persons in relation to the operation of the suspended working platform and the personnel working nearby, including conducting regular test and thorough examination on the safety condition of the suspended working platform by a competent examiner, installing automatic safety devices and safety ropes to the suspended working platform, and ensuring that the personnel working on the suspended working platform use suitable safety belts and attach their lanyards to the independent lifelines.

### **3. Assessment of Work-above-Ground/Work-at-Height Risks**

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3.1 Before commencing work-above-ground/work-at-height, all employers/proprietors/contractors/responsible persons should appoint a competent person to conduct a task-specific risk assessment for ascertaining all the work-related hazards and to take, so far as is reasonably practicable, all necessary safety precautions/procedures (including the use of suitable working platforms) to eliminate the hazards.

3.2 An effective risk assessment can ensure that the persons engaged in work-above-ground/work-at-height are not exposed to the risk of falling from height and that the possibility of other accidents is reduced. An assessment conducted by a person with inadequate relevant work experience or by an incompetent person may render the assessment meaningless.

3.3 The competent person should have relevant safety knowledge, practical experience and adequate competence, and be familiar with the work-above-ground/work-at-height hazards before appointing to conduct the risk assessment. For details on conducting risk assessments, please refer to “Five Steps to Risk Assessment” published by this department.

## 4. Safety of Working at Less Than 2 Metres above the Ground

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### 4.1 Provision of Suitable Working Platforms

4.1.1 In Hong Kong, the following types of working platforms are commonly used for work at less than 2 metres above the ground:

- (1) Mobile working platforms; and
- (2) Light-duty working platforms.

4.1.2 Ladders, including straight ladders and folding ladders, are usually used for ascending and descending purposes only. It is unsafe to use such ladders for work purpose (Figure 1). In the past, many accidents involving serious injuries or deaths were caused by workers using ladders for work-above-ground/work-at-height. Even when the work is carried out at a place not so high above the ground, the risks involved must not be overlooked. Therefore, ladders<sup>1,2</sup> should not be used whenever feasible.



Figure 1: Unsafe ladder

<sup>1</sup> Ladders should not be used for work-above-ground unless in very exceptional circumstances and after having conducted a task-specific risk assessment. If the use of ladders is unavoidable, stringent control, such as a permit-to-work system, should be implemented to ensure that adequate and suitable control and safety measures are in place. In general, ladders can be considered for work at less than 2 metres above the ground only when the workplace makes it infeasible to erect any working platforms. For the stringent control on the use of ladders, please refer to the “Guidelines on Work-above-Ground Safety” issued by the Construction Industry Council.

<sup>2</sup> In no case shall ladders be used for work at 2 metres or more above the ground.



## 4.2 Mobile Working Platforms

4.2.1 The following mobile working platform is commonly used for work at less than 2 metres above the ground (Figure 2).



Figure 2: Mobile working platform

4.2.2 The use of mobile working platforms should comply with the safety requirements set out in Sections 5.1, 5.2 and 5.4 of this overview. Special attention should be paid to the following:

- i. The erection, alteration or dismantling of mobile working platforms should be conducted by trained workmen under the supervision of a competent person in accordance with the instructions in the manufacturer's manual;
- ii. The erection and use of mobile working platforms on slopes, stairs, unstable or uneven ground surfaces without authentic accessories from the manufacturer to enhance the stability of mobile working platforms or in locations where the working platforms may be hit or struck by moving objects should be prohibited;
- iii. All the castors should be firmly locked in position while ascending/descending and using the mobile working platforms;

- iv. When a mobile working platform is being moved to another workplace, do not allow any persons to stay thereon or any objects that may increase the risk of overturning the platform or loose objects (e.g. hand tools) that may fall while moving the platform to be placed thereon;
- v. The outriggers of mobile working platforms should be fully extended in accordance with the manufacturer's requirements to ensure their secure foundation and stability;
- vi. The height-to-base ratio of mobile working platforms and other safety recommendations in the manufacturer's manual should be strictly followed. Do not arbitrarily increase the height of mobile working platforms beyond the manufacturer's recommended level; and
- vii. Be aware of the weather conditions if the mobile working platforms are used outdoors. Do not cover the mobile working platforms with canvas to prevent them from overturning in strong winds. Where reasonably practicable, the mobile working platforms should be braced or tied securely to a permanent structure to enhance their stability. In case of typhoon or inclement weather, stop using the mobile working platforms immediately and properly secure them to prevent them from overturning in strong winds, or dismantle and keep the mobile working platforms in a safe place.

### **4.3 Light-duty Working Platforms**

4.3.1 When the accommodation of general working platforms is restricted by the working environment, consideration should be given to using suitable light-duty working platforms to carry out work-above-ground. Light-duty working platforms include step platforms (see Figure 3) and hop-up platforms (see Figure 4).



Figure 3: Step platform



Figure 4: Hop-up platform

#### 4.3.2 Special points to note on the use of light-duty working platforms:

- i. Only light-duty working platforms which conform to international or national standards and relevant statutory safety requirements should be selected;
- ii. Workers using light-duty working platforms should have received relevant safety training provided by the supplier, including the erection and dismantling of light-duty working platforms, or other equivalent training such that they clearly understand the safety matters related to the use of light-duty working platforms;
- iii. Before using light-duty working platforms, follow the manufacturer's manual to fully extend and lock in position the stabilisers or outriggers to ensure that they are stable and in good condition for use;
- iv. When ascending or descending a light-duty working platform, workers should face the platform and maintain a three-point contact with the built-in ladder, i.e. with both hands grasping the ladder and one leg standing steadily on the ladder at the same time, or with both legs standing steadily on the ladder and one hand grasping the ladder. Do not apply excessive force to the light-duty working platform and induce lateral force causing it to overturn; and
- v. Follow the instructions in the manufacturer's manual to determine the number of workers working on the light-duty working platforms. Overloading is strictly prohibited. Light-duty working platforms are mostly designed and constructed for only one worker to work on.

## 5. Safety of Working at 2 Metres or More above the Ground

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### 5.1 Provision of Suitable Working Platforms

5.1.1 The following types of working platforms are commonly used in Hong Kong (see Figure 5):

- (1) Bamboo scaffolds;
- (2) Metal scaffolds;
- (3) Truss-out bamboo scaffolds;
- (4) Suspended working platforms; and
- (5) Power-operated elevating work platforms.



Figure 5: Different types of working platforms

5.1.2 This overview does not specify the use of the above common working platforms for certain kinds of work-at-height. Contractors, proprietors and employers are required to provide suitable working platforms for related work-at-height in accordance with the actual needs and circumstances. The nature of work, design of the related structure, actual working environment and restrictions should be fully considered to determine the type of working platform to be used. When necessary, professional advice should be sought to select the most suitable working platform for carrying out work-at-height, or a working platform or support suitable to be used at a particular workplace should be designed and erected.

5.1.3 Regarding the qualification requirements of a competent person in respect of the erection, alteration and dismantling of bamboo scaffolds and metal scaffolds, please refer to the “Code of Practice for Bamboo Scaffolding Safety” and “Code of Practice for Metal Scaffolding Safety” published by this department.

## **5.2 General Requirements for Scaffolding Safety (Applicable to Bamboo Scaffolds, Metal Scaffolds and Truss-out Bamboo Scaffolds)**

5.2.1 Bamboo scaffolds, metal scaffolds and truss-out bamboo scaffolds are widely used in the maintenance works of buildings/structures as well as other work-at-height. The general safety requirements are as follows:

- i. The scaffold should be so properly designed, constructed and maintained and every part thereof kept so securely supported or suspended so as to ensure that the scaffold is stable;
- ii. Scaffolding members shall be of sound materials, good construction, adequate strength and free from patent defects and should be properly maintained;
- iii. The working platform on the scaffold should be provided with suitable and safe access and egress, closely boarded and provided with the safety installations listed in Annex;
- iv. Catch-fans and protective screens should be provided (except for truss-out bamboo scaffolds);
- v. No scaffold should be erected, substantially added to, altered or dismantled except by trained workmen with adequate experience and under the immediate supervision of a competent person. The competent person should carry out supervisory work under safe circumstances and focus on monitoring the safety condition of the scaffold and the safety of the trained workmen. The competent person should not engage in the scaffolding work. No workman shall make unauthorised alteration to the scaffold or work on an unfinished scaffold;
- vi. The scaffold shall be inspected by a competent person (i) before being taken into use for the first time; (ii) after any substantial addition, partial dismantling or other alteration; (iii) after any exposure to weather conditions likely to have affected its strength or stability or to have displaced any part; (iv) at regular



intervals not exceeding 14 days immediately preceding each use of the scaffold; and the competent person has signed and issued “Form 5” prescribed under the Construction Sites (Safety) Regulations containing a statement to the effect that the scaffold is in safe working order;

- vii. The scaffold to be dismantled should be checked for its strength and stability. The dismantling procedures should be followed in an orderly manner and properly planned, and generally done from the top down in horizontal sections;
- viii. No components for maintaining the stability of the remaining structure should be removed. Unless necessary precautions have been taken, all the ties and bracings should remain secured in the original position; and
- ix. When it is impracticable to erect a safe working platform or provide safe access and egress, the use of safety nets/full body safety harnesses attached to a secure anchorage point or an independent lifeline is required. Do not use scaffolding members for anchorage purpose (For details, please refer to Section 6.2 - Fall Arresting Systems.).

### 5.3 Bamboo Scaffolds

5.3.1 The erection of bamboo scaffolds (see Figure 6) should conform to the requirements provided in the “Code of Practice for Bamboo Scaffolding Safety” and “Safety Guide for Bamboo Scaffolding Work”, including the following arrangements and safety responsibilities:



Figure 6: Double-row bamboo scaffold for building maintenance works



- i. A working platform should be laid on every lift of a bamboo scaffold. If the entire scaffold is designed as a closely spaced bamboo scaffold<sup>3</sup>, a suitable working platform shall be erected at every working location on a lift (see Figure 7);
- ii. For works with contract commencement date before 1 March 2018 and not meeting the requirements in item (i) above, at least 3 consecutive layers of working platforms should be laid on bamboo scaffolds in compliance with the “Guidelines on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds” issued by the Construction Industry Council in May 2014 (see Figure 8);
- iii. Suitable and adequate quantities of planks and toe-boards that are of good construction and adequate strength and thickness should be provided to serve as working platforms;
- iv. Planks and toe-boards should be laid safely and properly, and maintained in safe conditions;
- v. The strength and stability of working platforms and bamboo scaffolds should be inspected by competent persons. Scaffolds of more than 15 metres in height should be designed and approved by professional engineers; and
- vi. The proper use of working platforms by workers should be managed and supervised.



Figure 7: Closely spaced bamboo scaffold

<sup>3</sup> A closely spaced bamboo scaffold is a bamboo scaffold on which each working platform, gangway or run of double-row bamboo scaffold, is both designed and erected to incorporate additional ledgers (大横杆) (actual diameter equal to or greater than 40 millimetres) above the transoms (小横杆) (i.e. adding closely spaced bamboo above the transom layer (橋橫), so that the bamboo-to-bamboo distance for such ledgers is not more than 100 millimetres, reducing the distance between ledgers for each scaffold layer and helping reduce the risk of workers falling from height when laying planks on or removing planks from the bamboo scaffold.



Figure 8: Three consecutive layers of working platforms

## 5.4 Metal Scaffolds

5.4.1 The erection of metal scaffolds, such as independent tied metal scaffolds (see Figure 9) and mobile metal towers (see Figure 10), should conform to the requirements provided in the “Code of Practice for Metal Scaffolding Safety”. The following points should be noted:

- i. The scaffold should be constructed in accordance with the design and drawings of professional engineers;
- ii. The ground should be firm, level and suitable for erecting the scaffold;
- iii. The maximum safe load (including vertical and lateral loads) imposed on the scaffold should be assessed and strictly adhered to;
- iv. Access to and egress from working platforms on each lift of scaffolds should be made by stairs/ladders; and
- v. The wind forces and overturning forces should be calculated for free-standing scaffolds located outdoors and likely to be subject to wind forces.



Figure 9: Independent tied metal scaffold



Figure 10: Mobile metal tower

#### 5.4.2 Special points to note on the use of mobile metal towers:

- i. When a mobile metal tower is used outside a building, its height to the least base dimension ratio should not be greater than 3. When it is used within a building, its height to the least base dimension ratio should be limited to 3.5;
- ii. When using a mobile metal tower in a location exposed to strong winds, the wind forces should be calculated and the tower be restrained by kentledge, guys, etc. to give a safety factor of not less than 1.5. The capacity of the castors to take the extra load should also be checked;
- iii. Lock the castors before working on a mobile metal tower;
- iv. Never overstretch the body outside a working platform; and
- v. When moving a mobile metal tower, do not allow any persons to stay thereon or any objects that may increase the risk of overturning the tower or loose objects that may fall while moving the tower to be placed thereon.

### 5.5 Truss-out Bamboo Scaffolds

5.5.1 Truss-out bamboo scaffolds (see Figure 11) are a type of bamboo scaffold. They usually appear in single lift truss-out form and are supported by a scaffold structure/metal brackets, such as a truss-out structure projecting from the facade of a building/structure. The whole scaffold is totally dependent upon the existing building/structure for support.



Figure 11: Truss-out bamboo scaffold



### 5.5.2 Special points to note on the use of truss-out bamboo scaffolds:

- i. The scaffold should be designed by a professional engineer to cater for the vertical self-weight of the scaffold, its imposed load and the extra loads resulting from wind forces;
- ii. Secure support such as bracings, I-shaped metal brackets or T-shaped metal brackets (see Figure 12) should be provided for the scaffold. The scaffold should be supported on a balcony, window sill or ledger on an outside wall, and prohibited from resting on the decorative structure of a building;
- iii. Each metal bracket supporting the scaffold must be fixed with 3 or more anchor bolts to ensure the load-bearing capacity and stability of the scaffold;
- iv. The sizes of drill holes should match the diameters of anchor bolts for installing the scaffold;
- v. Anchor bolts should be suitably tightened with adequate embedment depth;
- vi. Anchor bolts should be fixed at a suitable position so that the wall edge distance is at least 3 times the embedment depth;
- vii. The base materials of anchor bolts (e.g. concrete) should have adequate strength and stability. The scaffold should not be erected on brick walls;
- viii. For the requirements of special truss-out bamboo scaffolds, please refer to the “Guide on Construction and Work Safety of Truss-out Bamboo Scaffolds”; and
- ix. When working on a truss-out bamboo scaffold, workers must wear a full body safety harness with its lanyard attached to a secure anchorage (e.g. an eye bolt) or an independent lifeline with a fall arrester (This special requirement is intended to enhance work safety on truss-out bamboo scaffolds. For details about the use of fall arresters, please refer to Section 6.2 - Fall Arresting Systems.).



Figure 12: I-shaped metal bracket and T-shaped metal bracket

5.5.3 For detailed safety information about truss-out bamboo scaffolds, please refer to the “Code of Practice for Bamboo Scaffolding Safety” and “Guide on Construction and Work Safety of Truss-out Bamboo Scaffolds” published by this department.

## 5.6 Suspended Working Platforms



Figure 13: Suspended working platform

5.6.1 Safety precautions on the use of suspended working platforms (see Figure 13):

- i. All materials and components used in the construction and assembly of suspended working platforms shall be of sound construction and adequate for the purpose for which they are intended. The erection and dismantling of a suspended working platform and the alteration of any structure from its original design shall be carried out under the supervision of a competent person;
- ii. A suspended working platform shall be examined and load tested by a competent examiner, namely a registered professional engineer within a specified discipline, after erection, substantial repair, re-erection including repositioning, adjustment to any member involving changes in the arrangements for anchoring or supporting, failure or collapse. Moreover, the suspended working platform should be inspected in the immediately preceding 7 days before its use by a competent person. A certificate in the approved form (Form 1) under the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation in which the competent person has made a statement to the effect that it is in safe working order should be obtained. All suspension ropes and safety ropes should be inspected prior to commencement of daily work;



- iii. A suspended working platform shall be thoroughly examined by a competent examiner in the immediately preceding 6 months before its use. A certificate in the approved form (Form 2) under the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation in which the competent examiner has made a statement to the effect that it is in safe working order shall be obtained;
- iv. A suspended working platform shall be load tested and thoroughly examined by a competent examiner during the immediately preceding 12 months before its use. A certificate in the approved form (Form 3) under the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation in which the competent examiner has made a statement to the effect that it is in safe working order shall be obtained;
- v. A suspended working platform, where applicable, shall be installed with a safety rope on which an automatic safety device is mounted. No person shall tamper or interfere with or render inoperative any safety rope and automatic safety device;
- vi. All the equipment of a suspended working platform shall be properly maintained and the maintenance record should also be kept properly. Rusty, kinky or damaged ropes should be replaced immediately;
- vii. To avoid dangers, do not overstretch the body outside a suspended working platform or overload a suspended working platform. A notice specifying the safe working load, number of persons allowed and the inspection of ropes shall be displayed on the suspended working platform. The notice shall also remind workers to wear a full body safety harness with its lanyard attached to an independent lifeline (Please refer to Section 6.2 - Fall Arresting Systems);
- viii. Adequate arrangements shall be made to prevent undue tipping, tilting or swinging of the working platform. It should be secured to prevent undue horizontal movement while it is in use;
- ix. A suspended working platform shall not be used under weather conditions likely to endanger its stability or cause danger to the persons carried thereon; and
- x. Every person working on a suspended working platform shall be at least 18 years old and have undergone training to operate the suspended working platform and have obtained a certificate in respect of such training.

5.6.2 For detailed safety information about suspended working platforms, please refer to the “Code of Practice for Safe Use and Operation of Suspended Working Platforms”, “Guidance Notes on the Inspection, Thorough Examination and Testing of Suspended Working Platforms” and “Safety Hints on Operation of Suspended Working Platforms” published by this department.

## 5.7 Power-operated Elevating Work Platforms

5.7.1 Power-operated elevating work platforms (see Figure 14) have different names, including cheery pickers and aerial platforms. They can be vehicle-mounted, self-propelled, towed or manually-moved.

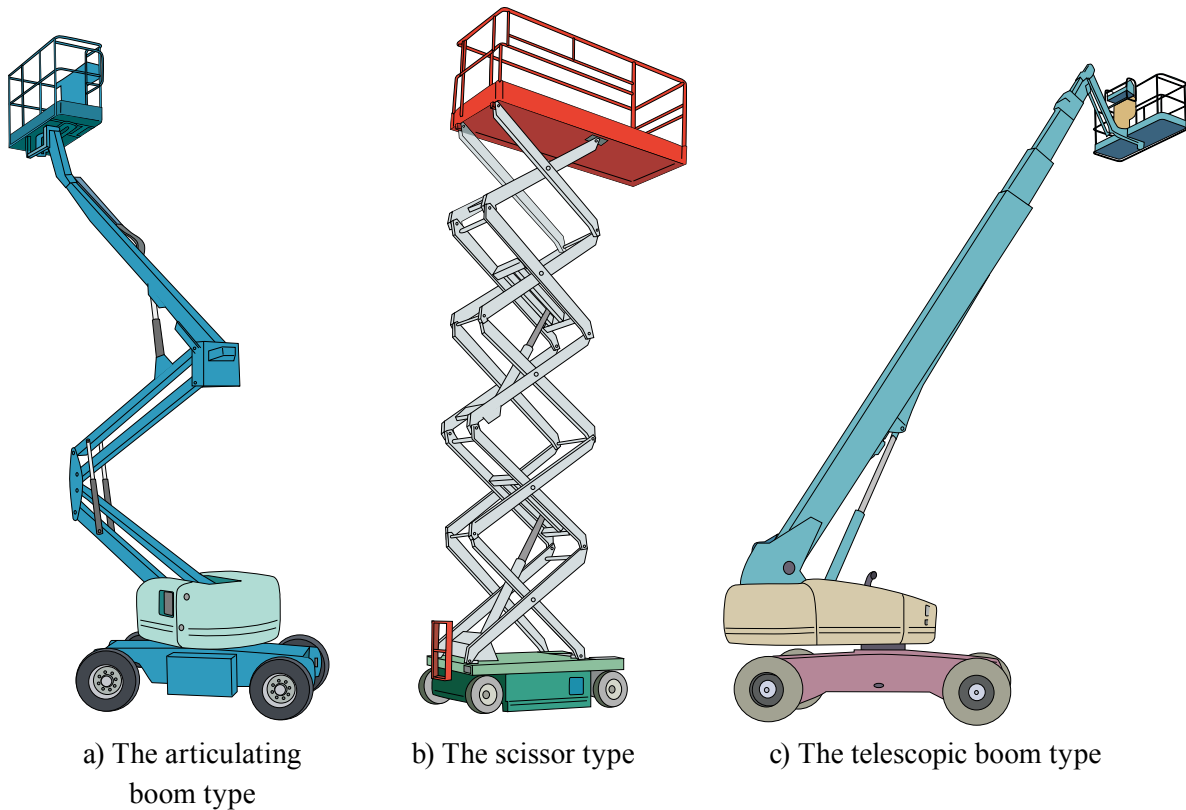


Figure 14: Three types of common power-operated elevating work platforms

5.7.2 Safety precautions on the use of power-operated elevating work platforms:

- i. A power-operated elevating work platform should only be operated by persons who have received suitable training and are competent to operate the machine;
- ii. A power-operated elevating work platform should be used in accordance with the instructions given in the manufacturer's manual. The machine should not be used for other unspecified purposes;
- iii. The operator should conduct a pre-operation inspection to ensure that the power-operated elevating work platform is in a serviceable state;

- iv. Before operating a power-operated elevating work platform, ensure that the machine is set up with its outriggers fully extended and levelled within the manufacturer's tolerances. Where necessary, suitable supporting materials should be placed under the outriggers to provide a firm base;
- v. Never exceed the safe working load of the power-operated elevating work platform;
- vi. Every worker working on the power-operated elevating work platform should wear a suitable full body safety harness with its lanyard anchored to a specific anchorage point designated by the manufacturer to prevent falling from height;
- vii. The surface or floor where a power-operated elevating work platform is operated should be firm, flat, smooth and level, and of adequate load-bearing capacity;
- viii. An alarm or other audible warning devices should be fitted on the power-operated elevating work platform to warn the operator when the machine's base is out of level;
- ix. The power-operated elevating work platform should be operated slowly to avoid sudden stops, starts, turns or changes in direction;
- x. After work, the operator should park the power-operated elevating work platform on level ground in a designated area with its boom lowered and retracted. The engine should be switched off with the parking brake applied and the wheels blocked, if necessary;
- xi. Before leaving the power-operated elevating work platform, all controls should be placed in a neutral position. The ignition key should be removed from the platform and handed back to the relevant personnel for safe custody so as to prevent unauthorised operation of the work platform; and
- xii. A power-operated elevating work platform should be regularly inspected, tested and properly maintained in accordance with the manufacturer's instructions. It should be inspected weekly by a competent mechanic or operator, and regularly and thoroughly examined and tested by a competent examiner to ensure that it is in safe working condition at all times.

5.7.3 For detailed safety information about power-operated elevating work platforms, please refer to the "Guidance Notes on Safe Use of Power-operated Elevating Work Platforms" published by this department.

## **6. Other Safety Matters Related to Work-above-Ground/ Work-at-Height**

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### **6.1 Other Points to Note on the Use of Working Platforms**

6.1.1 The following points should be noted when using working platforms:

- i. Working platforms should be provided with suitable access and egress, e.g. inclined or straight ladders with suitable hand grips;
- ii. While on a working platform, workers should keep the centre of gravity of their bodies within the working platform. Do not overstretch the body outside the working platform or lean against the guard-rails of the working platform. Stepping on the toe-boards or guard-rails (whether intermediate or top guard-rails) of working platforms is strictly prohibited;
- iii. Take note of the safe load-bearing capacity as stated by manufacturers for determining the number of workers and amount of tools allowed on the platform. Overloading the working platform is strictly prohibited;
- iv. All guard-rails and toe-boards on working platforms shall remain erected. They may only be temporarily removed for the access of persons or the movement of materials, but shall be replaced or erected as soon as practicable afterwards;
- v. When workers are on the platform, the work area should be fenced off with warning notices posted underneath to prevent other workers or the public from entering the work area or carrying out other work underneath the platform; and
- vi. The working platform and its components should be properly stored and maintained after use.

6.1.2 Weather and surrounding environmental factors

- i. After erection, alteration, partial dismantling and exposure to severe weather, the working platform shall be inspected by a competent person before use to ensure that it is in safe working order; and
- ii. The surroundings of working platforms should be free from exposed live metal parts or potentially exposed live conductors to prevent electrical hazards.

## 6.2 Fall Arresting Systems

6.2.1 When it is impracticable to provide a suitable working platform and safe access and egress to workers carrying out work-at-height, full body safety harnesses should be used. The use of full body safety harness with an independent anchorage or fall arresting system (see Figures 15 and 16) is only a last resort of fall protection when there is no alternative.



Figure 15: Full body safety harness attached to an independent anchorage



Figure 16: Transportable temporary anchor device

6.2.2 The following key points should be noted when using safety harnesses and their anchorage systems:

- i. Safety harnesses and their anchorage systems should meet the specifications of international or national standards, and should be fitted and used in accordance with the manufacturer's instructions;
- ii. The anchorage system should be able to offer continuous protection throughout the period when the user is exposed to the risk of fall;

- iii. An inspection should be conducted prior to using the full body safety harness and its anchorage system to ensure that the whole system is in safe and serviceable condition. The key inspection items should include those set forth in the manufacturer's instructions;
- iv. Full body safety harnesses should be used with their lanyards attached or connected to an anchorage. An anchorage can be a fixed anchor, an independent lifeline or a fall arresting system and should be strong enough, and the strength should have been checked by a Professional Engineer of the structural discipline;
- v. All anchorages should be designed to withstand a minimum pull-out force of 6 kN;
- vi. In the case where an eye bolt is chosen as fixed anchorage, the design and construction, the strength and stability, the fittings and embedded material should be designed and checked by a Professional Engineer of the structural discipline;
- vii. A "competent person" who has competent and accredited with training of "Competent Person for the Selection, Installation, Use, Inspection and Testing of Anchor Devices for the Attachment of Personal Fall Protection Equipment for Truss-out Bamboo Scaffolds" from the Occupational Safety and Health Council can also carry out inspections and tests on cast-in anchors/ anchor devices used in works of truss-out bamboo scaffolds;
- viii. The lanyard of the safety harness should not be anchored to the railings or any member of a temporary scaffolding or bamboo scaffolding, or to any section of water, gas and drainage pipes as these structures or devices are not designed to withstand sudden shock load or impact force;
- ix. When it is impracticable to provide fixed anchors or other means for attachment of fall arresting equipment due to restrictions of the site environment, transportable temporary anchor devices can be used (see Figure 16);
- x. Each lifeline should be used by only one person at any time;
- xi. A vertical independent lifeline should be fitted with an end stop; and
- xii. Safety harnesses should be thoroughly examined by a competent person regularly at periods not exceeding 12 months and in accordance with the manufacturer's instructions. When safety harnesses are not in regular use during any 6-month period, they should be re-examined before use.

6.2.3 For details about the use of fall arresting systems, please refer to the "Guidance Notes on Classification and Use of Safety Belts and their Anchorage Systems" published by this department.



## 6.3 Safety Helmets

6.3.1 In addition to the above safety measures, contractors and employers should provide safety helmets with chin straps (commonly known as “helmet straps”) (see Figure 17) to workers to strengthen work-above-ground/work-at-height safety, and ensure that they are properly used at work so as to prevent the helmets from accidental displacement or loosening and loss of head protection when workers fall from height.



Figure 17: Safety helmet with a chin strap

6.3.2 Special points to note on the use of safety helmets:

- i. Safety helmets with chin straps which conform to international or national standards should be selected;
- ii. Workers should wear safety helmets with the chin straps fastened for maximum head protection;
- iii. Safety helmets should be adjusted to fit the size of the users' heads for adequate protection;
- iv. Safety helmets should be checked before use to ensure that each part is undamaged and in serviceable condition, in particular the correct assembly of the shell and harness; and
- v. Do not apply paints, solvents or adhesives to safety helmets. It may weaken the shell without any visual damage.

6.3.3 Workers should pay attention to overhead space and look out for any obstruction to prevent striking on heads accidentally.

6.3.4 For details about the use of safety helmets, please refer to the “Guidance Notes on the Selection, Use and Maintenance of Safety Helmets” published by this department.

## 7. Annex: Requirements for Safety Installations such as Working Platforms, Gangways and Coverings for Openings

<b>Width of working platforms, gangways and runs</b>	<ul style="list-style-type: none"> <li>• not less than 400mm.</li> <li>• not less than 650mm for gangway or run used for the movement of materials.</li> </ul>
<b>Construction of working platforms, gangways and runs</b>	<ul style="list-style-type: none"> <li>• closely boarded or planked. (a working platform, gangway or run-               <ul style="list-style-type: none"> <li>(a) consisting of open metal work having interstices none of which exceeds 4000mm<sup>2</sup>; or</li> <li>(b) the boards or planks forming it are secured to prevent movement and the space between adjacent boards or planks does not exceed 25mm.</li> </ul>               need not be closely boarded or planked if there is no risk of persons below the platform, gangway or run being struck by materials or articles falling through the platform, gangway or run.)             </li> <li>• boards or planks forming platforms shall-               <ul style="list-style-type: none"> <li>(a) be of sound construction, adequate strength and free from patent defect;</li> <li>(b) be not less than 200 mm in width and not less than 25 mm in thickness or not less than 150mm in width when the board or plank exceeds 50mm in thickness;</li> <li>(c) not protrude beyond its end support to a distance exceeding 150mm;</li> <li>(d) rest securely and evenly on its supports; and</li> <li>(e) rest on at least 3 supports.</li> </ul> </li> </ul>
<b>Coverings for openings</b>	<ul style="list-style-type: none"> <li>• so constructed as to prevent the fall of persons, materials and articles; and</li> <li>• clearly and boldly marked so as to show its purpose or be securely fixed in position.</li> </ul>
<b>Height of toe-boards</b>	<ul style="list-style-type: none"> <li>• not less than 200mm (toe-boards are not required for stairs).</li> </ul>
<b>Height of guard-rails</b>	<p>The height of a guard-rail above any place of work on a working platform, gangway, run or stairway shall be-</p> <ul style="list-style-type: none"> <li>• top guard-rail: not less than 900mm and not more than 1150mm;</li> <li>• intermediate guard-rail: not less than 450mm and not more than 600mm.</li> </ul> <p>For working platforms on bamboo scaffolds, these height dimensions may not apply if the platforms are protected by not less than 2 horizontal bamboo members spaced at intervals between 750 mm to 900mm.</p>

## 8. References

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The Labour Department strives to enhance the awareness of contractors/proprietors/employers and workers/employees on work-above-ground/work-at-height safety. Codes of practices, guidance notes, guidelines, etc. relevant to the risks and safety measures for working at height were issued for the industry to understand the statutory requirements and their safety responsibilities with a view to reducing accidents through their compliance. These publications include:

A Guide to the Provisions for Safe Places of Work under Part VA of the Construction Sites (Safety) Regulations

Code of Practice for Bamboo Scaffolding Safety

Safety Guide for Bamboo Scaffolding Work

Code of Practice for Metal Scaffolding Safety

Guide on Construction and Work Safety of Truss-out Bamboo Scaffolds

Guidance Notes on Classification and Use of Safety Belts and their Anchorage Systems

Guidance Notes on the Selection, Use and Maintenance of Safety Helmets

Safety at Work - A Guide to Personal Protective Equipment

Prevention Against Fall from Height

Occupational Safety for Repair, Maintenance, Alteration and Addition Works - Safety Hints for Contractors and Workers

Occupational Safety for Repair, Maintenance, Alteration and Addition Works - Safety Hints for Owners and Tenants of Commercial and Residential Units

Occupational Safety for Repair, Maintenance, Alteration and Addition Works - Safety Hints for Owners' Corporations

Occupational Safety for Repair, Maintenance, Alteration and Addition Works - Safety Hints for Property Management Companies

Occupational Safety and Health Management in Renovation and Maintenance Works for the Property Management Industry

Safety Handbook for Construction Site Workers

Safety Hints for Construction Workers

Safety Hints for Demolition of Unauthorized Building Works

Code of Practice for Safety and Health at Work (Land-based Construction over Water - Prevention of Fall)

Household Chores - Safety Hints for Window Cleaning Work

A Casebook of Fatal Accidents Related to Work-at-Height

A Casebook of Occupational Fatalities related to Renovation and Maintenance Works

《地盤意外個案簡析系列—油漆工作》(Chinese version only)

《地盤意外個案簡析系列—模板工作》(Chinese version only)

Publications on the requirements for the safe operation and installation of power-operated working platforms issued by the Labour Department include:

Guidance Notes on Safe Use of Power-operated Elevating Work Platforms

Code of Practice for Safe Use and Operation of Suspended Working Platforms

Guidance Notes on the Inspection, Thorough Examination and Testing of Suspended Working Platforms

Safety Hints on Operation of Suspended Working Platforms

For further information, please refer to the “Guidelines on Work-above-Ground Safety” published by the Construction Industry Council and 《使用輕便工作台及流動工作台的安全指南》 published by the Occupational Safety and Health Council.

## 9. Enquiries and Complaints

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### Enquiries

If you wish to enquire about this Overview or require advice on occupational safety and health (OSH) matters, please contact the Occupational Safety and Health Branch of the Labour Department (LD) through:

Telephone : 2559 2297 (auto-recording service available outside office hours)

Fax : 2915 1410

E-mail : [enquiry@labour.gov.hk](mailto:enquiry@labour.gov.hk)

Information on the services offered by the LD and on major labour legislation is also available on our website at [www.labour.gov.hk](http://www.labour.gov.hk).

For details on the services offered by the Occupational Safety and Health Council, please call 2739 9000.



Labour Department's Website

### Complaints

If you have any complaint about unsafe operations and environments at workplaces, please call the LD's OSH complaint hotline at 2542 2172 or fill out and submit an online OSH complaint form on our website. All complaints will be treated in the strictest confidence.



Online OSH Complaint Form

